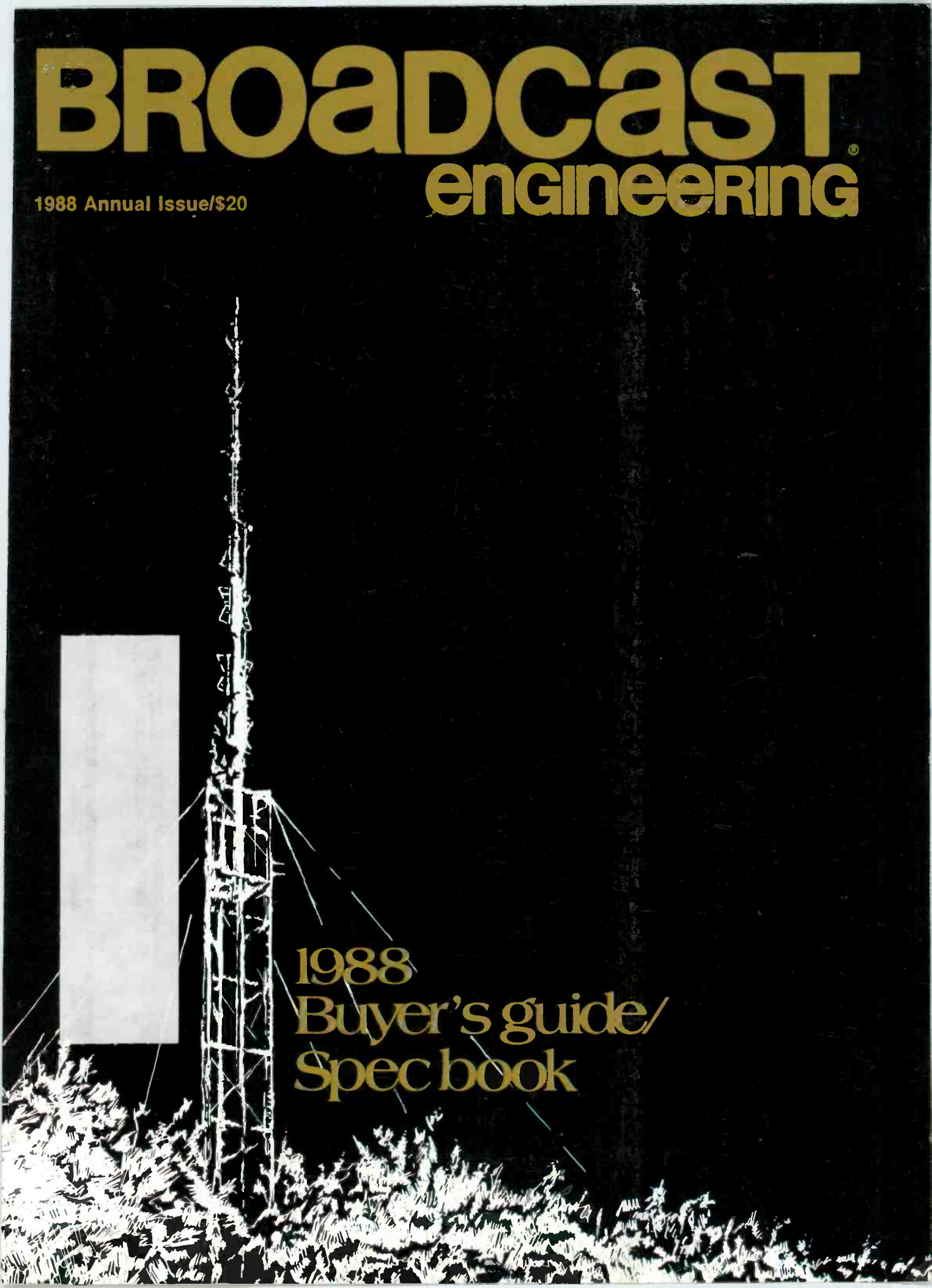


# BROADCAST<sup>®</sup> engineering

1988 Annual Issue/\$20



1988  
Buyer's guide/  
Spec book

# CHANGE CONSOLE SETUPS IN SECONDS!

## The New ADM Computer Controlled BCS-PC



Once again, ADM has achieved a quantum leap in audio console technology. By adding a computer to our most successful stereo broadcast console, setups can now be changed in seconds, not just once, but as often as needed. More important, this is not merely an adaptation of a recording or post production console which lacks essential broadcast features. The BCS-PC is solely designed for broadcast console automation.

With the BCS-PC console it is possible to store and recall many of the most important console operations and make a setup in seconds. You can automate input pre-selection, module on/off status, input group muting and output bus assignment. The BCS-PC can address your house router and save its source and console destination selections along with the console presets.

Easy to use? You bet! Set up the console as you normally would and a couple of key strokes saves that setup for future use.

Editing can be accomplished by using either the integral keyboard or by resetting the console switches manually. Console status is displayed on the monitor as well as by the console LED indicators associated with each push button.

Computer failure? No problem! ADM has engineered the BCS-PC to totally ignore a computer failure. The console continues to operate manually, as it always has.

With the addition of automation to the BCS, ADM has not forgotten its primary goal of providing a fully functional stereo console. The BCS-PC still has such features as: input pre-selection and bussing, VCA control of all main program paths for superior noise free tracking, four band VCA controlled stereo equalizer, five stereo auxiliary busses, 4 independent stereo monitors, operation and muting for up to three studios- plus more. Call your ADM representative or ADM for further information.

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Company

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## In A Compact, Maneuverable System

Midwest utilizes a heavy-duty structural system to combine a 1.8M dual offset-fed antenna with an extended body one-ton van. The result is a powerful satellite communications system that can maneuver easily in city traffic or on narrow country roads.

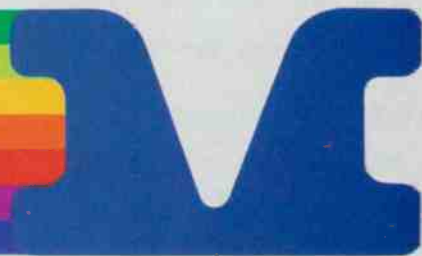
The Vertex 1.8M antenna has a transmit gain of 46.6 dbi and meets the 29-25 log  $\Theta$  FCC 2° spacing curves. The standard RF package includes a single thread 300 watt TWT amplifier, a Ku exciter with two agile audio subcarriers, a Ku receiver and a spectrum monitor. Modular dual 200 watt phase combined amplifiers, providing fail-safe

redundancy are optional, as are several baseband equipment packages. The S-18's spacious, acoustically treated interior provides an optimum work environment. The unit has ample storage space, and there is enough room for the addition of a VTR editing system.

The S-18 is a flexible satellite communications system, ideal for up-linking news or special events, and easily adaptable for voice and data applications.

Contact Midwest for complete information.

The Midwest S-18. Performance and Flexibility. In a compact, maneuverable package.



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1988 BG/SB Volume 29 Number 13

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A listing of more than 1,000 broadcast manufacturers provides you with the companies that offer the equipment you need. The blue listings indicate advertisers in this issue and the page number of their ads.
- 59 **Manufacturers' Addresses**  
If you ever need the address and/or telephone number to contact a company, this directory provides the most up-to-date information.
- 95 **Dealers/distributors**  
This directory puts you in close contact with the dealers and distributors within particular states that carry the equipment you need.

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The Fall **Buyers' Guide/Spec Book** is a comprehensive reference manual for radio and TV broadcasters. This special BE publication can be used as a guidebook whenever an equipment purchase is being planned. Keep this annual publication on your desk for reference throughout the year. (Cover concept and design by Kristi Sherman.)

## BROADCAST engineering

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**SUBSCRIPTIONS: BROADCAST ENGINEERING** is mailed free to qualified persons within the United States and Canada in occupations described here. Non-qualified persons may subscribe at the following rates: United States and Canada; one year, \$25.00. Qualified and non-qualified persons in all other countries; one year, \$30.00 (surface mail); \$108.00 (air mail). Back issue rates, \$5, except for the Buyers' Guide/Spec. Book, which is \$20. Rates include postage. Adjustments necessitated by subscription termination at single copy rate. Allow 6-8 weeks for new subscriptions or for change of address. Second class postage paid at Shawnee Mission, KS.

**BROADCAST ENGINEERING** Volume 29, No. 13 (USPS 338-130) is published monthly (except in the fall, when two issues are published) by Intertec Publishing Corporation, 9221 Quivira Road, P.O. Box 12901, Overland Park, KS 66212. Second class postage paid at Shawnee Mission, KS, and additional mailing offices. POSTMASTER: Send address changes to BROADCAST ENGINEERING, P.O. Box 12983, Overland Park, KS 66212.

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Advertising offices listed on page 242.

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### And with our Vectorscope they get...

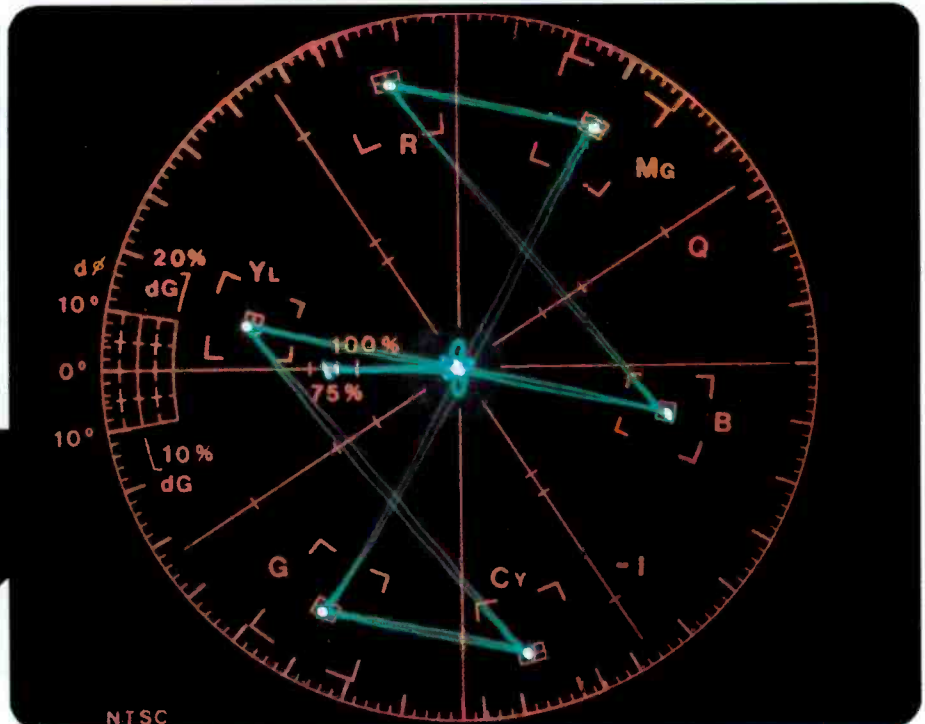
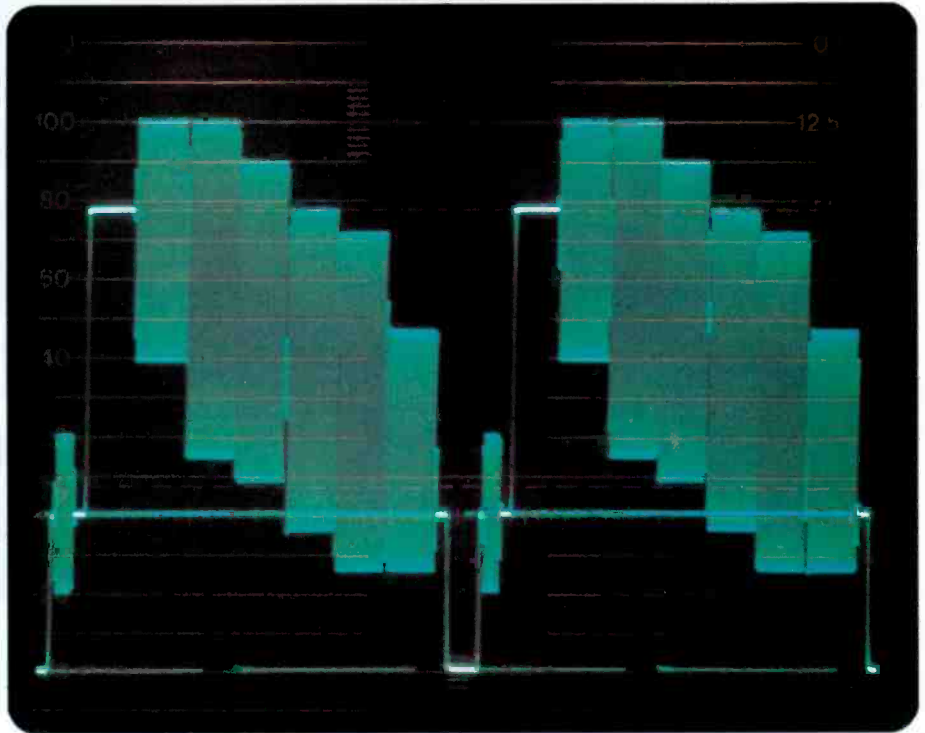
... $\pm 1^\circ$  vector phase accuracy... two loop-thru inputs and a loop-thru external sync input... independent selection of chrominance and sync signals... vector measurement of input A sub-carrier... calibration of input sensitivity to 1V full scale or 75% or 100% saturation, variably controllable 0.5-5 times... non-synced circle, for self-check of gain balance and quadrature phase... differential gain and phase measurements.

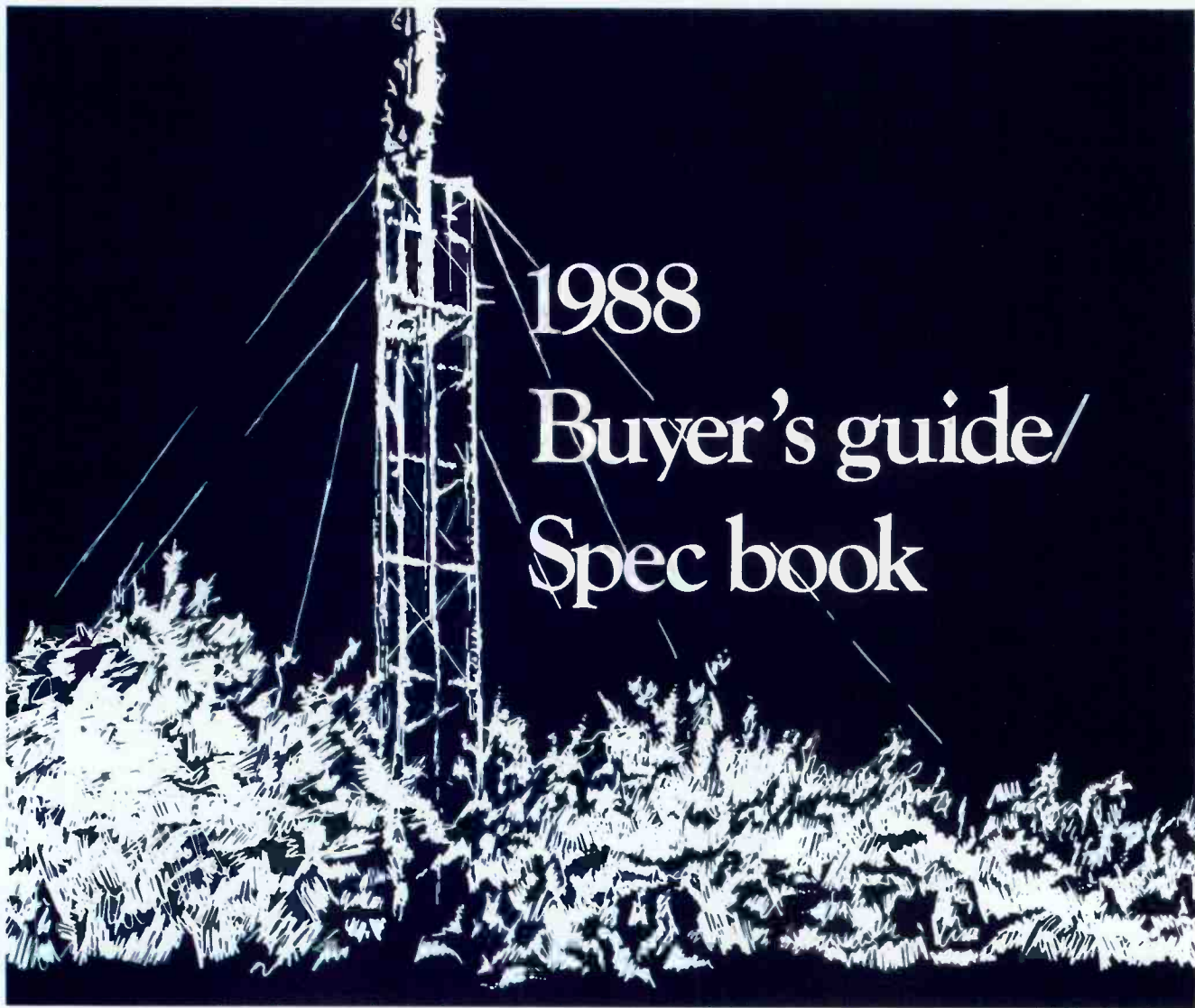
For more information call 516-921-7200. Or write Hitachi Denshi America, Ltd., 175 Crossways Park West, Woodbury, NY 11797.

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Hitachi Waveform Monitor V-079 & Vectorscope V-069  
(Also available: Models V-099 & V-089)





# 1988 Buyer's guide/ Spec book

In compiling the 1988 **Broadcast Engineering Buyers' Guide/Spec Book**, we have tried to bring you information about the companies and products you need as a member of the broadcast community. The process of gathering material for this issue is a challenge, particularly in this dynamic industry. While there was a reduction in the number of companies responding to our inquiries for current information, the total remains at more than 1,000 entries under *Manufacturers' Addresses*, each listed with address and phone number to aid you in making contact with them. Following the address section is your reference to *Dealers and Distributors*, a convenient way to locate possible sources close to you to fill your equipment needs.

The *Product Listings* portion of this issue brings you more than 350 types of equipment and services you may need during the year. They are divided into basic sections following the Product Listings heavy stock page. The general divisions in products include:

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The 7th annual *Spec Book* portion of this issue has been compacted to bring you as much equipment information as possible. More than 40 categories of equipment are included with major specifications in a side-by-side presentation to allow easier comparisons to be made. The compilation includes a wide range of equipment. But in a publication of this size, it is not possible to include every manufacturer, on a worldwide basis, or every product available from those listed. In many cases, manufacturers may have other models that will more closely fit your needs and budgets. The names of advertisers in this issue are color highlighted throughout the issue. The advertisements may provide other information for your equipment search.

The *Spec Book* is provided as a place to start your search for new or replacement equipment. Accuracy is tantamount in preparing the material, but we advise

you to always check with manufacturers for possible changes resulting from equipment upgrades. Pricing, because it is subject to changes based upon the economy and special system packaging by the manufacturers, cannot be included here.

Finally, you will again find Reader Service Numbers for each of the products in *Spec Book*. From your response card choices, your request is quickly sent to manufacturers, indicating your interest in a particular equipment model or series of products.

The staff of **Broadcast Engineering** appreciates the chance to bring you this annual special issue as a reference book to simplify equipment acquisition. If you have questions or suggestions, you will find the staff ready to listen and to give you a hand on locating additional information, if possible. The purpose of our publication is to serve this industry of which you are an important part. Our ultimate goal is to assist you in continuing to be an active and growing member of the world of broadcasting.

*The Editors.*





Introducing the Model 200.

A powerful production switcher  
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Telex: 847109

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While trendy audio products come and go, certain ones are timeless. Their true value is appreciated more year after year.

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Orban also manufactures the reliable 111B Dual Spring Reverb as well as attractive acrylic security covers which fit all standard 19" rack mount products.

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Nakamichi USA  
19701 S. Vermont Ave.

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213-538-8150  
(Atlanta, GA)  
404-325-7676  
(New York, NY)  
212-989-4240  
(San Diego, CA)  
619-281-1292  
(Denver, CO)  
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(Hilo, HI)  
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(Houston, TX)  
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(Hollywood, CA)  
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(Nashville, TN)  
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(Royston, Herts, England)  
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Telex: 81381

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Redmond, WA 98052  
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Minneapolis, MN 55427  
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Nova Systems  
50 Albany Turnpike  
Canton, CT 06019  
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Omicron Video  
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Canoga Park, CA 91304  
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Los Angeles, CA 90038  
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Orban Associates  
645 Bryant St.  
San Francisco, CA 94107  
415-957-1067

Alan Osborne Associates  
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Westlake Village, CA 91361  
805-495-8420

Paco Electronics  
714 West Olympic Blvd. #1439  
Los Angeles, CA 90015-1439  
213-747-6540

PESA/Phier Electronica SA  
Albala, 12  
28037 Madrid, Spain  
754-0078  
(Miami, FL)  
305-556-9638

Polyline  
1233 Rand Road  
Des Plaines, IL 60016  
312-298-5300

PolyPhaser  
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Gardnerville, NV 89410  
702-782-2511

QEI Corporation  
Box D  
Williamstown, NJ 08094  
609-728-2020

RAMSA/Panasonic Audio  
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Cypress, CA 90630  
714-895-7200

Rank Cintel  
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(North Hollywood, CA)  
818-765-7265  
(Ware, England)  
Phone: (0920) 3939  
Telex: 81415

Richardson Electronics  
One Branca  
East Rutherford, NJ 07073  
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ROH/div. Anchor Audio  
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Torrance, CA 90502  
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Scip Electronics Systems  
16169 Sunset Blvd., #304  
Pacific Palisades, CA 90272

Skotel  
1445 Provencher  
Brossard, Quebec, Canada  
J4W 1Z3  
514-465-8990

Solid State Logic  
Begbroke, Oxford  
England OX5 1RU  
Phone: 44-8675-4353  
Telex: 837400 SSL OXG  
(New York, NY)  
212-315-1111  
(Los Angeles, CA)  
213-463-4444

Sound Technology  
1400 Dell Ave.  
Campbell, CA 95008  
408-378-6540

Spectrum Communications  
1055 W. Germantown Pike  
Norristown, PA 10943  
215-631-1710

Standard Tape Laboratory  
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Hayward, CA 94545  
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(Van Nuys, CA)  
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(Barrington, IL)  
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(New York, NY)  
212-255-4462  
(Dallas, TX)  
214-943-2239  
(Regensdorf, Switzerland)  
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Oceanside, CA 92054  
619-722-6162

Swintek Telecommunications  
587 Division St.  
Campbell, CA 95008  
408-378-8091

Tamron Industries  
24 Valley Road  
Port Washington, NY 11050  
516-883-8800

TASCAM/Teac Pro Products  
7733 Telegraph Road  
Montebello, CA 90640  
213-726-0303  
(Arlington Heights, IL)  
312-640-6181  
(Little Ferry, NJ)  
201-641-5600  
(Aiea, HI)  
808-487-3588  
(Atlanta, GA)  
404-458-2880

Tektronix  
Box 500, MS 58-694  
Beaverton, OR 97077  
503-627-2230  
(Los Angeles, CA)  
818-999-1711  
(Santa Clara, CA)  
408-496-0800  
(Denver, CO)  
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(Atlanta, GA)  
404-449-4770  
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312-259-7580  
(Boston, MA)  
617-861-6800  
(Long Island, NY)  
718-895-8010  
(Dallas, TX)  
214-550-0525  
(Washington, DC)  
301-948-7151

Tentel  
1506 Dell Ave.  
Campbell, CA 95008  
408-379-1881

Thomson Video Equipment  
17, rue du Petit Albi  
F-95000 Cergy  
St. Christophe, France  
Phone: (1) 34.20.70.00  
Telex: 204780 F

Total Spectrum Manufacturing  
20 Virginia Ave.  
West Nyack, NY 10994  
914-358-8820

Ultimate  
18607 Topham St.  
Reseda, CA 91335  
818-345-5525

United Ropeworks (USA)  
PO Box 306  
Montgomeryville, PA 18936  
215-368-6611

Utah Scientific  
1685 West 2200 South  
Salt Lake City, UT 84119  
801-973-6840

Varian/Continental/TVT  
Box 270879  
Dallas, TX 75227  
214-327-4532 parts  
214-327-4533 service

Videotek  
243 Shoemaker Road  
Pottstown, PA 19464  
215-327-2292

Ward-Beck Systems  
941 Progress Ave.  
Scarborough, Ontario  
Canada M1H 2X4  
Phone: 416-438-6550  
Telex: 065-25399

Western Electronics Products  
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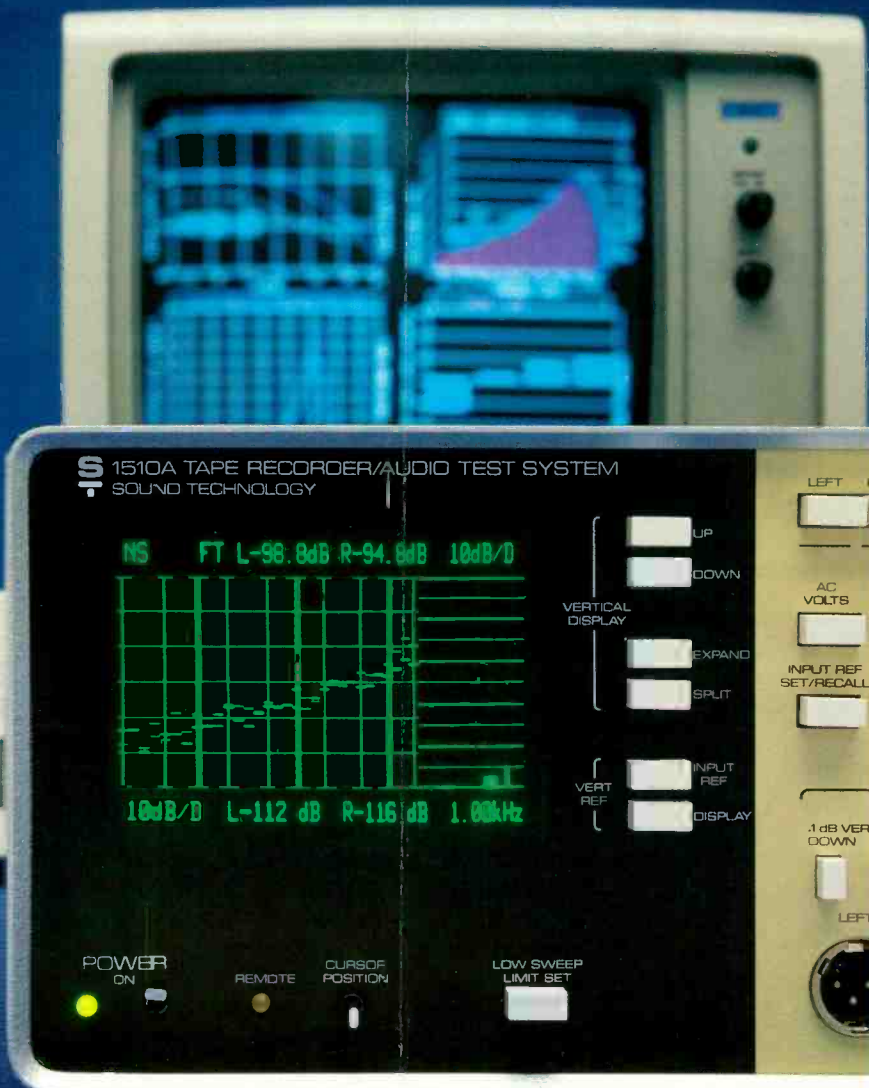
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Audio Export Georg Neumann & Co.  
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Audio Kinetics Ltd.  
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Calrec Audio (Calrec By AMS)  
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Penny & Giles  
Pro-Bel Ltd.  
Richmond Sound Design, Ltd.  
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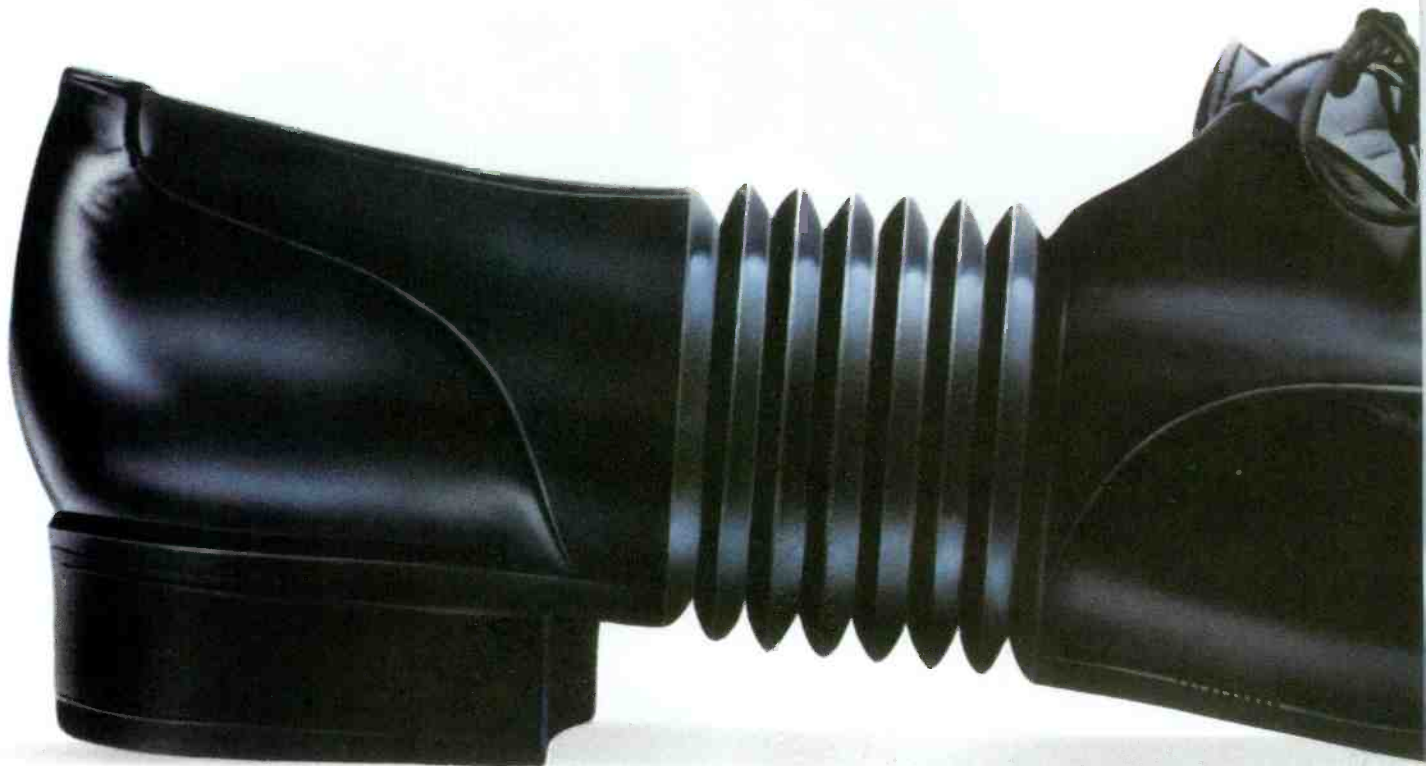


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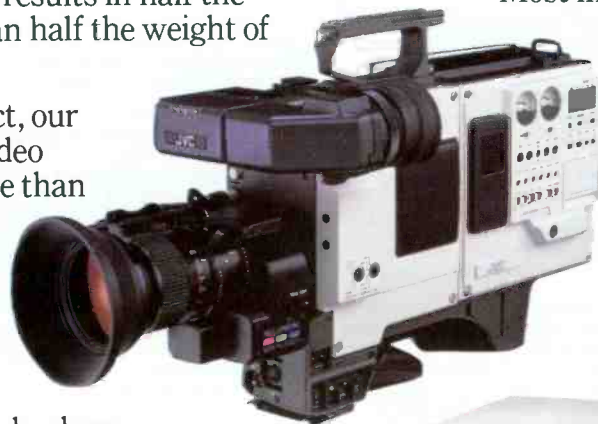
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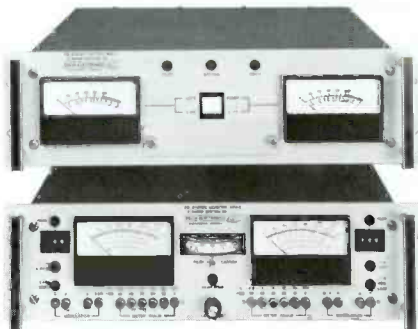
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# DELTA BROADCAST PRODUCTS



## ASE-1/ASM-1

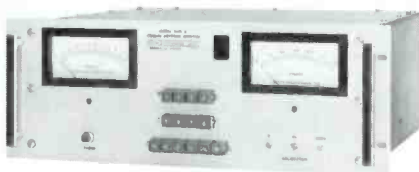
**AM Stereo without compromise.** The AM Stereo Exciter and Modulation Monitor provides a C-QUAM™ quadrature modulated stereo signal featuring low distortion and channel separation greater than 35 dB throughout the audio spectrum. The ASE-1 generates a signal to produce a phase modulated transmitter carrier. An L + R audio signal AM's this carrier to produce the C-QUAM signal, the only signal completely compatible with all C-QUAM, multimode and envelope detector receivers.

C-QUAM is a registered trademark of Motorola, Inc.



## RCS-1V

**This Remote Control System calls you when it needs help!** The RCS-1 combines microprocessor technology with easy operation. Features include direct interface boards for antenna monitors, patented remote modulation bargraphs, automatic logging, and synthesized speech telephone interface. Additional input and control boards to expand remote control capabilities can be added at any time.



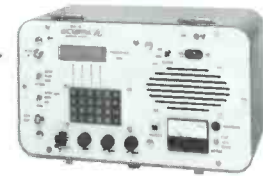
## AAM-1

**The Analog Antenna Monitor measures the parameters of directional antenna systems.** Readings are: relative current; and current ratio and current phase to a reference antenna. The AAM-1 can monitor up to 8 antennas with ratio and phase measurements displayed on front panel meters.



## AMC-1/FMC-1

**The only modulation control systems which provide a completely closed loop around the transmitter.** The Amplitude and Digital Modulation Controllers sample actual modulation levels after the PA output network assures precise adjustment for optimum modulation levels. Both the AMC-1 and FMC-1 keep count of over-modulation bursts for signal control through a linear attenuator.



## RG-4

**High output Receiver/Generator.** The Receiver/Generator combines a two-watt RF output and a correlation detector circuit that virtually eliminates interference problems. The RG-4 operates in the 100 kHz to 30 MHz range. It is designed as the ideal companion instrument for Delta's OIB-1, OIB-2, and OIB-3 Impedance bridges.



## APC-1

**Your insurance against over- and under-power operation.** The Automatic Power Controller continuously monitors the transmitter output power, making automatic power adjustments via the transmitter loading control. The APC assures proper power levels at all times.



## OIB-1/OIB-3/CPB-1

**Full power impedance measuring.** The Operating Impedance Bridges measure the impedance of radiators, networks and the like while operating under normal power. The OIB-1 measures VSWR and impedance up to  $400 \pm 1300$  ohms. The OIB-3 extends the range to  $1000 \pm 1900$  ohms, and has an RF amplifier for improved nulling. The Common Point Impedance Bridge is permanently installed for continuous monitoring of the common point during network adjustment. An optional TCA ammeter can be installed in its front panel.



## 6730E/6740B

**Fast, efficient coaxial transfer switches.** The coaxial transfer switches are designed to switch transmitters, transmission lines, antennas, dummy loads and auxiliary equipment quickly and easily. Either manually or remotely controlled, the switches are fully interlocked to prevent switching with RF power applied. The 6730E switch uses 1-5/8 inch connectors, the 6740B switch uses 3-1/8 inch connectors.



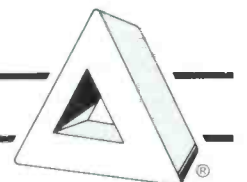
## TCA/TCT

**Simplifies antenna current and phase sampling.** TCA Ammeter Systems provide accurate, modulation-free current readings on a variety of meter types. Toroidal Current Transformers provide current and phase samples, and are available with three output voltage ranges, as well as high voltage models.

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P.O. Box 11268 • Alexandria, Virginia 22312  
Telephone: (703) 354-3350 • Telex: 90-1963

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Sony Communications Products Co.

Townsend Broadcast Systems Inc.

**RECORDERS, SLOW MOTION**

Precision Echo

Sony Communications Products Co.



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# Machine Control from a Machine Maker



SC 4008



SC 4016

STUDER SMPTE BUS CONTROLLERS



Synchronizing complex, Austrian Broadcasting Center, Vienna. Studer SC 4016 system controller, Studer mixing console, Studer tape machines.

Circle (15) on Reply Card

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Stereo echo, to be exact. There's also stereo chorus and flanging. Pitch change. Four kinds of reverb. Plus reverb and gate.

Thirteen different kinds of effects in all. In our new SPX90II, an encore performance of the most successful digital processor in audio history.

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There's an e





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 Conifer Corp.  
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 ISS-International Satellite Systems  
 Kathrein-Werke KG  
 Mark Antenna Products, Inc.  
 McCullough Satellite Equip., Inc.  
 Microdyne Corp.  
 North Hills Electronics, Inc.  
 Nurad, Inc.  
 Pinzone Communications Products Inc.  
 Radiation Systems, Inc.  
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 Dielectric Communications A Unit of General Signal  
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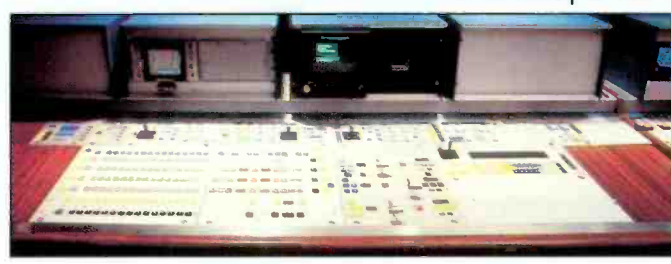
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Motorola Communications and Electronics Inc.  
North Hills Electronics, Inc.  
Nurad, Inc.  
Precision Specialties, Inc.  
RF Technology, Inc.  
Rohde & Schwarz  
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Nemal Electronics Int'l.  
Penstock, Inc.  
RMS Electronics, Inc.  
Tech Laboratories Inc.  
Trompeter Electronics, Inc.  
VIZ Test Equipment Div. of VIZ Mfg. Co.  
Weinschel Engineering

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Harris Farinon  
International Microwave Corp.  
ITAME, S.A.  
Marconi Communication Systems Ltd.  
Mark Antenna Products, Inc.  
Marti Electronics  
MERET, Inc.  
Micro Controls, Inc.  
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Townsend Broadcast Systems Inc.  
Triple Crown Electronics

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ITELCO  
Rohde & Schwarz  
Townsend Broadcast Systems Inc.

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International Microwave Corp.  
LNR Communications, Inc.  
Marti Electronics  
McCullough Satellite Equip., Inc.  
Microdyne Corp.  
Penstock, Inc.  
Pinzone Communications Products Inc.  
RF Technology, Inc.  
SatCom Technologies, Inc. An RSi Co.  
Scientific-Atlanta  
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Toshiba Corp.  
Vizcom

**MICROWAVE COMPONENTS**

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Andrew Corp.  
AVCOM of Virginia, Inc.  
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Electronics Inc.  
The Narda Microwave Corp.  
North Hills Electronics, Inc.  
Nurad, Inc.  
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Kahn Communications, Inc.  
Pioneer Electronics  
Potomac Instruments, Inc.  
Toshiba Corp.

**RECEIVERS, COMMUNICATION**

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Crown Elec. Inc.  
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McCullough Satellite Equip., Inc.  
Micro Phase Communications, Inc.  
Microdyne Corp.  
Modulation Associates Inc.  
Nexus Engineering Corp.  
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Scientific-Atlanta  
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Tectan, Inc.  
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Toshiba Corp.  
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AEG Communications Div. Transmitter  
Department  
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Bogen Communications, Inc.  
Cetec Raymer  
Emergency Alert Receiver Inc. Also  
known as EAR Inc.  
Heynen International  
International Microwave Corp.  
ITAME, S.A.  
Johnson Electronics Inc.  
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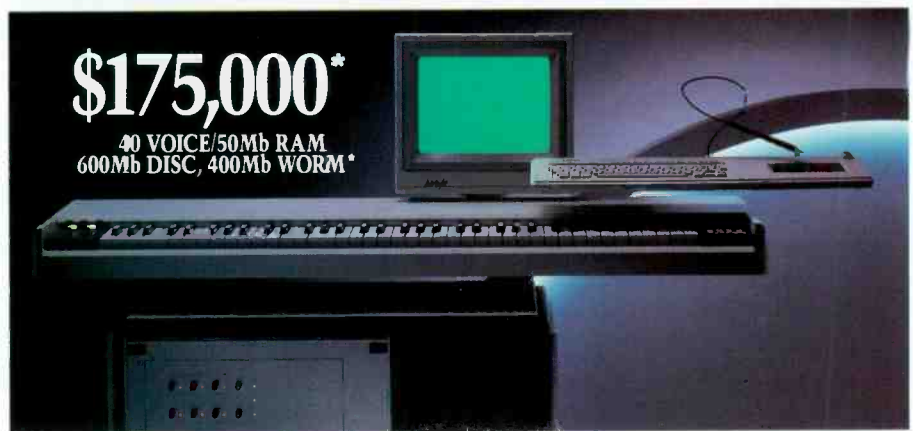
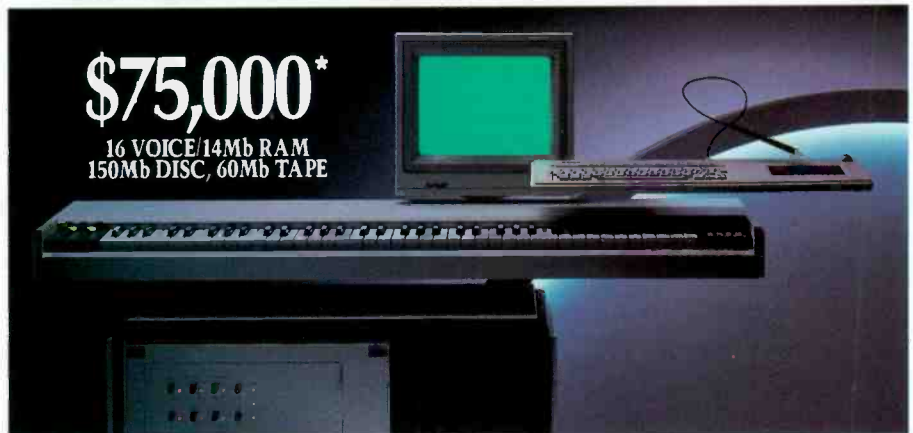
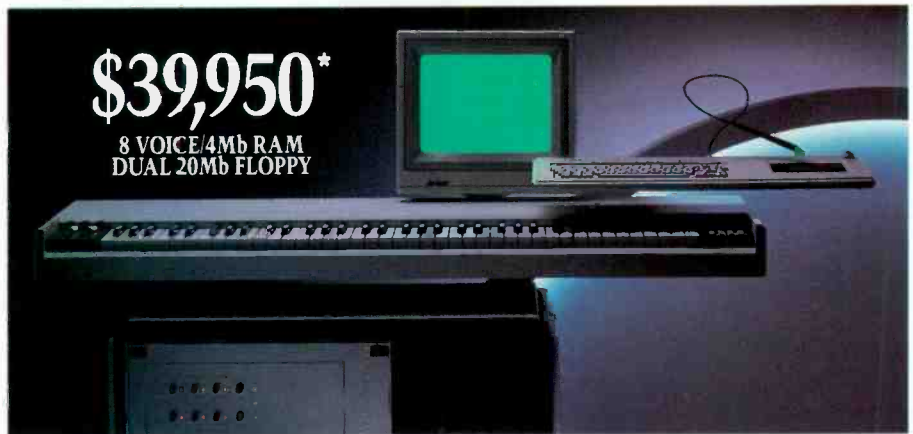
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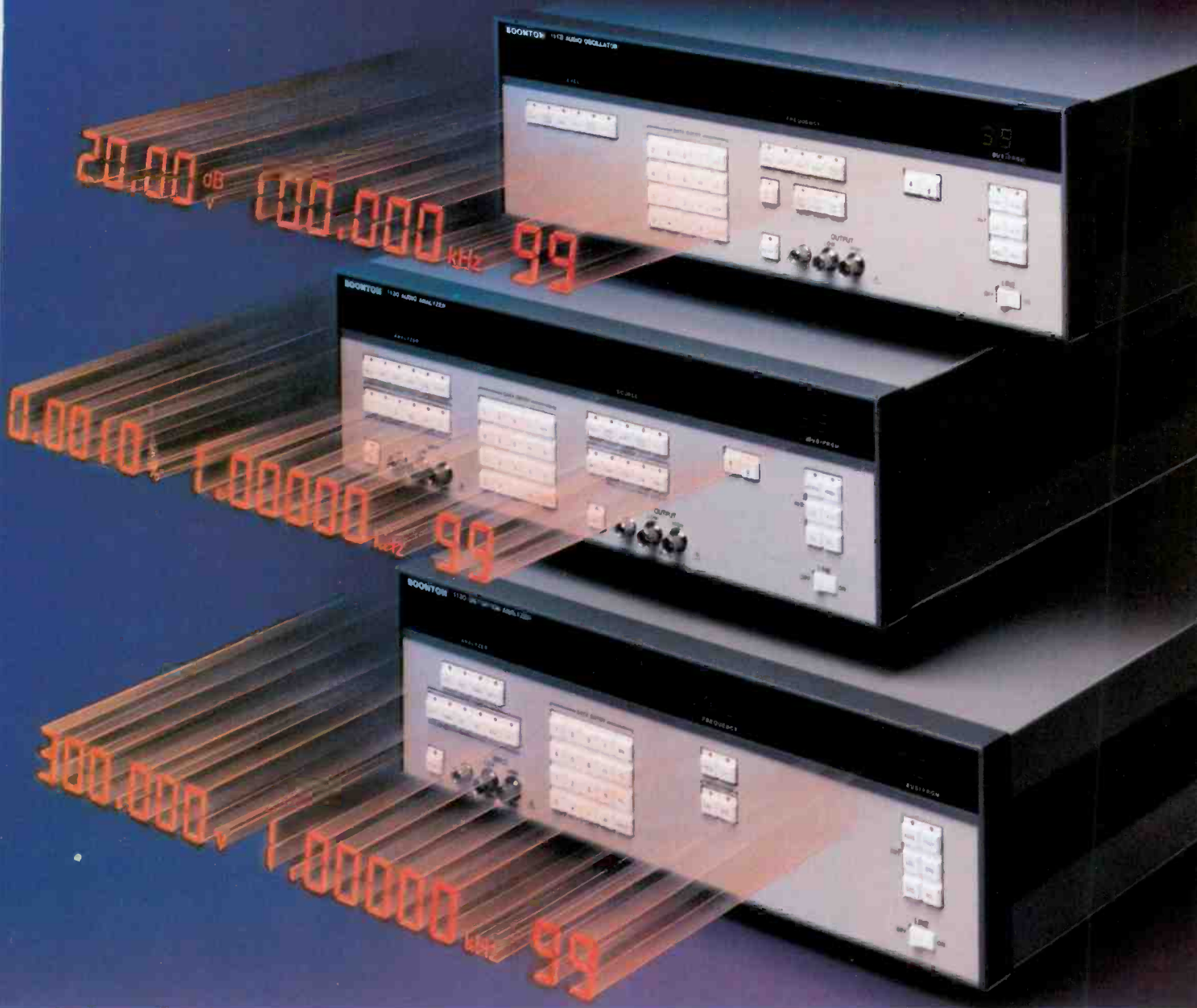
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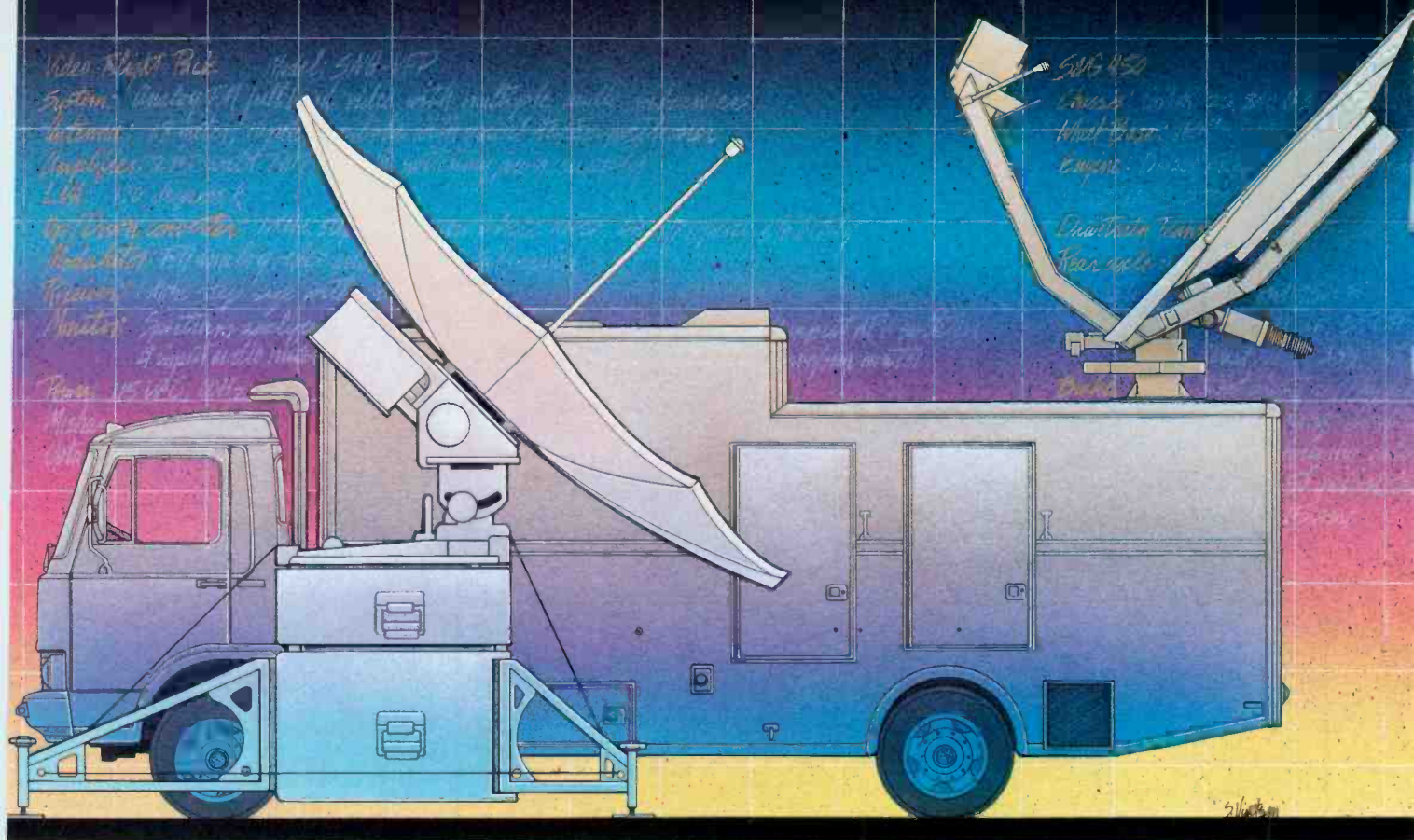
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\*formato de 25 mm



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North Hills Electronics, Inc.  
 RMS Electronics, Inc.  
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 Ram Broadcast Systems  
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 Ruslang Corp.  
 Stantron Unit of Zero Corp.  
 Wallach & Associates Inc.  
 Western Wireless Works  
 Winsted Corp.

### CABINETS, CONSOLES/RACKS (Enclosures Only)

Aarmor Case Co.  
 Amco Engineering Co.  
 Anvil Cases, Inc.  
 Atlas/Soundolier  
**AVS (Audio-Visual Systems)** .....111  
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 Nalpak Video Sales Inc.  
 Neumade Products Corp.  
 Pacific Recorders & Eng. Corp.  
 Packaged Lighting Systems, Inc.  
 Parsons Mfg. Corp.  
 Peavey Electronics Corp.  
 R.A.C. Corp.  
 Ram Broadcast Systems  
 RCI (Recording Consultants Inc.)  
 Recortec, Inc.  
 Roscor Corp.  
 Ruslang Corp.  
 Schafer World Communications Corp.  
 Scientific-Atlanta Optima Div.  
 Stantron Unit of Zero Corp.  
 Storeel Corp.  
 Thermodyne International  
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 Parsons Mfg. Corp.  
 Peirce-Phelps, Inc.  
 Ram Broadcast Systems  
 RCI (Recording Consultants Inc.)  
 Roscor Corp.  
 Ruslang Corp.  
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AMP Special Industries  
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 Bi-Tronics, Inc.  
 Blonder-Tongue Labs, Inc.  
 Canford Audio Ltd.  
 Comprehensive Video Supply Corp.  
 CSE Technologies  
 Nema Electronics Int'l.  
 Paladin Corp.  
 Penstock, Inc.  
 RMS Electronics, Inc.  
 Siecor Corp.  
 3M Electrical Products Div.  
 Trompeter Electronics, Inc.  
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 Fiberbilt Cases  
 Hardigg Industries Inc.  
 Kangaroo Video Products  
 K&H Products-Porta-Brace  
 LTM Corp. of America  
 Nalpak Video Sales Inc.  
 Nurad, Inc.  
 Parsons Mfg. Corp.  
 RCI (Recording Consultants Inc.)  
 Schuessler Case Co., Inc.  
 Star Case  
 Tekno Inc.  
 Thermodyne International  
 Viking Cases

**CASES, FILM/TAPE**

Aarmor Case Co.  
 Anvil Cases, Inc.  
 Calzone Case Co.  
 Dago Cases  
 Kangaroo Video Products  
 Nalpak Video Sales Inc.  
 Neumade Products Corp.  
 Parsons Mfg. Corp.  
 Plastic Reel Corp. of America  
 Reliance Plastics & Packaging Div.  
 RMS Electronics, Inc.  
 RTI-Research Tech. Int'l.  
 Schuessler Case Co., Inc.

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 Radio Systems Inc.  
 Torpey Controls & Eng. Ltd.  
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**CONNECTORS (All Types)**

ADC Telecommunications, Inc.  
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 Dynamote Corp.  
 Reliance Electric Co.  
 Topaz, Inc.

**GENERATORS, POWER (Engine, Motor, Solar, Thermoelectric, Wind)**

Dynamote Corp.  
 Lighting & Shadows A Div. of  
 Phoebus  
 Norac Broadcast Power Systems  
 Northern Power Systems  
 Reliance Electric Co.  
 Teledyne Energy Systems

**HEAD CLEANING PRODUCTS**

Audio-Technica U.S., Inc.  
 Caig Labs, Inc. ....210  
 Canford Audio Ltd.  
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 The Geneva Group of Companies  
 Marathon Products Corp.  
 RMS Electronics, Inc.  
 3M Magnetic Media Div.

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Selco Products Co.

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 Audico, Inc.  
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 Choice Electronics, Inc.  
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 Patch Bay Designation  
 United Ad Label Co., Inc.

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Brabury Ltd.  
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**LINE SURGE PROTECTORS**

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 Industries  
 Sola/General Signal  
 The Superior Electric Co.  
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 Transtector Systems Inc.

**MOUNTING HARDWARE, EQUIPMENT**

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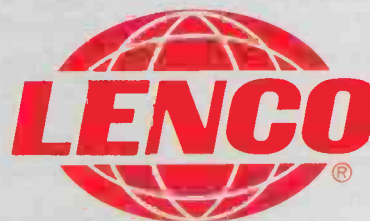
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 Trompeter Electronics, Inc.  
 Union Connector Co., Inc.  
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 Wireworks Corp.

**PHASE CONVERTERS, 1-TO-3 PHASE**

International Microwave Corp.  
 Kay Industries, Inc.

**POWER SUPPLIES, AC**

Audio Service Corp.  
**AVS (Audio-Visual Systems) .....111**  
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 Watco Inc.

**RECORDER REPLACEMENT MOTORS**

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 Kayglo Electronics  
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 Professional Sound Corp.  
 Sola/General Signal  
 Topaz, Inc.

**RFI/EMI SHIELDING**

Atlantic Research Corp.  
 Equipto Electronics Corp.  
 Industrial Acoustics Co.  
 Scientific-Atlanta Optima Div.  
 Thermodyne International  
 3M Electrical Products Div.  
 Whitmor Waveguides

**SEMICONDUCTORS**

DATEL  
 Lucas Semiconductors  
 Modular Audio Products Unit of  
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 Penstock, Inc.  
 Powerex Inc. (Joint Venture of GE,  
 Mitsubishi & Westinghouse)  
 RCA Distributor & Special Products  
 Div.  
 Toko America Inc.  
 TRW LSI Products Div.

**STATIC SUPPRESSORS/ ENVIRONMENTAL CONTROL PRODUCTS**

Cumming Corp.  
 Equipto Electronics Corp.  
 The Geneva Group of Companies  
 Nu-Concept Systems, Inc.  
 SL Waber, Inc. Subsidiary of SL  
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**STORAGE RACKS, RETRIEVE SYSTEMS REEL/CONTAINER**

**Ampex Corp. Magnetic Tape  
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 Radio Systems Inc.  
 RTI-Research Tech. Int'l.  
 Storeel Corp.  
 Thermodyne International  
 Ultimate Support Systems  
 Wallach & Associates Inc.  
 Winsted Corp.

**STUDIO SCENERY/DRAPERIES**

Arben Design  
 Automatic Devices Co.  
 The Graphic Express Corp.  
 Hoffend & Sons, Inc.  
 Lumitrol, Ltd.  
 Radio Systems Inc.  
 Theatre Service & Supply Corp.

**TAPE LOADERS, CARTRIDGE/CASSETTE**

Audico, Inc.  
 National Video Service  
 Neumade Products Corp.  
 Otari Corp.  
 Television Systems & Services

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**Ampex Corp. Magnetic Tape  
 Div. ....60**  
**AMR (Audio Media Research)  
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 Otari Corp.  
 RTI-Research Tech. Int'l.  
 Stellavox  
**Tentel .....146**  
 3M Magnetic Media Div.  
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**TOOL KITS/HAND TOOLS**

Black Audio Devices  
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**Dialight Corp. ....73**  
 Jensen Tools Inc.  
 Karl Leister Electro-Gerätebau  
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 Paladin Corp.  
 Rohde & Schwarz  
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**Western Electronic Products  
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 Brian R. White Co., Inc.

**VANS, ENG/EFP/SNV**

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 AVEC  
**AVS (Audio-Visual Systems) .....111**  
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 Brabury Ltd.  
**Calhoun Satellite  
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**Centro Corp. ....27**  
 Crow Broadcast Systems Ltd.  
 Dalsat Inc.  
**DYMA Engineering, Inc. ....214**  
 Dynamic Technology Ltd.  
 E-N-G Corp.  
 Gray Communications Consultants,  
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**Hubbard Communications, Inc. ....41**  
 Lerro Electrical Corp.  
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Peirce-Phelps, Inc.  
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 Radio Systems Inc.  
 Roscor Corp.  
 Shook Electronics USA, Inc.  
 Wolf Coach Inc.

**SERVICES**

**ANTENNA/TOWER INSTALLATION/ MAINTENANCE**

Abrody Communications Ltd.  
 Allied Tower Co., Inc.  
 American Tower & Communications  
 Andrew Corp.  
 Antenna Technology Corp.  
 Aries Antennas, Inc.  
 BAF Communications Corp.  
 Broadcast Communications  
 Cablewave Systems  
 Central Tower Inc.  
 Dalsat Inc.  
**DYMA Engineering, Inc. ....214**  
 EMCEE Broadcast Products  
 Express Tower Co.  
 Flash Technology  
 Gabriel Electronics, Inc.  
 Floyd Hall, E.E. Consulting Radio  
 Engineers  
 Horizon Tower, Inc.  
 Kline Iron & Steel Co.  
 LDL Communications, Inc.  
 Microflex Co., Inc.  
 Radio Systems Inc.  
 Rohde & Schwarz  
 ROHN  
 S.G. Communications West Inc.  
 Stainless, Inc.  
 Steiger, Hurray & Associates Inc.  
 Broadcast Tech. Consultants  
 SWR, Inc.  
 Teletech, Inc.  
 Trylon Mfg. Co. Ltd.  
 Turner Engineering Inc.  
 Western Wireless Works

**BUYING SERVICES, EQUIPMENT**

Buygroup Ltd.

**CALIBRATION, INSTRUMENT**

Anritsu America, Inc.  
 Apple Frequency Measuring Service  
 Bird Electronic Corp.  
 Dielctric Communications A Unit of  
 General Signal  
 Newman-Kees Measurements  
 Engineering & Installations  
**Tektronix Inc. ....219, 220**  
 Tracor Instruments Austin Inc.  
 Industrial Instruments Div.  
 Weinschel Engineering  
 Western Wireless Works

**EDITING/TELEPRODUCTION FACILITIES**

Allied Film & Video/DC  
 Allied Film & Video/IL  
 Arnold & Richter  
 Associated Production Music  
 AVEC  
 Bexel Corp.  
 Broadcast Systems Installations  
**The Camera Mart, Inc. ....58**  
 Center Video Industrial Co., Inc.  
**Centro Corp. ....27**  
 Comsat Video Enterprises  
 Comsat Video Enterprises  
 Conus Communications Satellite  
 Services Div.  
 Creative Video Services  
 John Crowe Productions  
 Devlin Productions, Inc.  
 Dynamic Technology Ltd.  
 Johnson-Nyquist Production Inc.



# CONSIDERING NEW HIGH QUALITY 2/3" STUDIO/FIELD CAMERAS?



## AVOID THE GENERATION GAP.

While camera manufacturers were developing new high-performance 2/3" studio cameras, Fujinon was busy designing new lenses to go with them. Not conversions, modifications or quick fixes, but totally new lenses. And they're available here and now.

Starting with the premise that the CCD is the wave of the future, Fujinon's new generation lenses are the first — and only — lenses built to be compatible with the higher registration specifications. The new A15x8ESM and A18x8ESM studio lenses and A44x9.5ESM (F1.4) field lens exhibit the industry's lowest longitudinal chromatic aberration. Which means unprecedented color and focus-tracking accuracy with all the new generation cameras.

For studio use, the new A15x8ESM zooms from 8mm out to 114mm, while the *F1.5 maximum aperture remains absolutely flat!* At 120mm, it's F1.7. That means

no changes in your present studio lighting. And you can fill the screen with an 11' x 8' subject from only 10' away.

Weight and size are reduced, reliability and serviceability are increased. Major components are modular and interchangeable. Controls and adjustments are accessible *with the shroud in position*. These include back focus adjustment and lock, servo/manual switch for the built-in 2X extender, and pattern projector color levels and chart positioning. Focal length and aperture are reported through LEDs on the side of the lenses. And options include the full array of Fujinon accessories including remote demands and shot boxes.

To learn more about Fujinon's new generation of 2/3" studio/field lenses, you'll get more information or a demonstration by calling the Fujinon location nearest you.

Circle (29) on Reply Card

**FUJINON INC.** 10 High Point Drive, Wayne, N.J. 07470  
**SOUTH** 2101 Midway, Suite 350, Carrollton, Texas 75006  
**MIDWEST** 3 N. 125 Springvale, West Chicago, Ill. 60185  
**WEST** 118 Savarona Way, Carson, Calif. 90746

(201) 633-5600 Telex 6818115  
(214) 385-8902  
(312) 231-7888  
(213) 532-2861 Telex 194978



**FUJINON**

See Adv. Page

Media Concepts, Inc.  
 METROPOST  
 Multi-Video Productions, Inc.  
 Roscor Corp.  
 3M Optical Recording  
 Turner Engineering Inc.  
 Videomedia, Inc.

**EMPLOYMENT SERVICES**

James Lloyd Group

**ENGINEERING CONSULTING,  
 DESIGN/PLANS**

John Aalto, P.E. Consulting Engineer  
 Acoustic Systems  
 John P. Allen Airspace Consultant  
 Alpha Tower Design, Inc.  
 Eric Neil Angevine, P.E.  
 Antenna Technology Corp.  
 Atlantic Research Corp.  
 AVEC  
**AVS (Audio-Visual Systems) .....111**  
 R. Barth KG  
 John H. Battison, P.E.  
 BC Engineering  
 Blair Benson Engineering Consultant  
 BFE AG  
 Brabury Ltd.  
 Walter S. Brewer Co., Inc.  
 Broadcast Systems Installations  
 Richard W. Burden Associates  
**The Camera Mart, Inc. ....58**  
**Centro Corp. ....27**  
 Chips Davis Lede Designs, Inc.  
 COMLUX  
 Component Video, Inc.  
 Comsat Video Enterprises  
 Comsearch, Inc.  
 Concept Productions  
 Cornwall Associates Inc.  
 Crow Broadcast Systems Ltd.  
 Dataworld  
 John J. Davis & Associates Consulting  
 Engineers  
 Delcom Corp.  
 DICSAs-Delay TV Ingenieurs-Conseils  
 SA  
**DYMA Engineering, Inc. ....214**  
 Dynamic Technology Ltd.  
 EDX Engineering, Inc.  
 Ethereum Scientific Corp.  
 Evans Associates Consulting Telecom,  
 Engineers  
 Express Tower Co.  
 GEE Broadcast Systems Ltd.  
 GENERIC Designs, Inc.  
 R.J. Grandmaison, P.E.  
 Gray Communications Consultants,  
 Inc.  
 Floyd Hall, E.E. Consulting Radio  
 Engineers  
 Hammett & Edison, Inc. Consulting  
 Engineers  
 Harris Corp. Broadcast Div.  
 HN Engineering Inc.  
 Hoppmann Corp.  
 Image Technology Corp.  
 J. Boyd Ingram & Associates  
 International Microwave Corp.  
 Jamieson & Associates, Inc.  
**Jem-Fab Corp. ....109**  
 Jenel Systems & Design Corp.  
 Johnson Electronics Inc.  
 Knudson-Benson Associates Inc.  
 Lakeside Associates Inc.  
 Landy Associates, Inc.  
 D. N. Latus & Co., Inc.  
 Lerro Electrical Corp.  
 Lumitrol, Ltd.  
 D. L. Markley & Associates, Inc.  
 Consulting Engineers  
 MBI Broadcast Systems  
 McCurdy Radio/Ram Broadcast  
 Kenneth R. Meades  
 Media Communications, Inc.  
 Micro Communications, Inc.  
 Microflex Co., Inc.  
 Lawrence L. Morton E.E.  
 Mycomp Technologies Corp. (MTC)  
 National TeleConsultants  
 Newman-Kees Measurements  
 Engineering & Installations  
 The Nissen Group, Inc.  
 Old Dominion Broadcast Eng. Service  
 Opamp Labs, Inc.

Pacific Recorders & Eng. Corp.  
 Peirce-Phelps, Inc.  
 Priestley & Shearman Pty Ltd.  
 R.A.C. Corp.  
 Radio Engineering Co. Consultants  
 Radio Systems Inc.  
 Radiotechniques Consulting Engineers  
 Ram Broadcast Systems  
 RCI (Recording Consultants Inc.)  
 Readdy, Begley & Martin  
 A.D. Ring & Associates  
 Rohde & Schwarz  
 Roscor Corp.  
 Rosner TV Systems, Inc.  
 RPG Difussor Systems, Inc.  
 Edward A. Schober, P.E. Radio  
 Consulting Engineer  
 Scientific-Atlanta  
 Seem Audio A.S.  
 Sellmeyer & Kramer, Inc.  
 Jack Shearer & Associates, Inc.  
 Robert Slye Electronics  
 Smith & Powstenko  
 Soll, Inc.  
 Spectrum Planning, Inc.  
 Standard Frequency Measuring  
 Service  
 Steiger, Hurray & Associates Inc.  
 Broadcast Tech. Consultants  
 SWR, Inc.  
 Teletech, Inc.  
 Tennaplex Systems Ltd.  
 Transimage International  
 Transector Systems Inc.  
 Tri-Tronics Professional Elec., Inc.  
 Turner Engineering Inc.  
 Vertex Video Systems, Inc.  
 VG Electronics Ltd.  
 Video Design Pro  
 Videomedia, Inc.  
 Vir James Consulting Engineers  
 Vistek Electronics Ltd.  
 Western Union Video Services  
 Western Wireless Works  
 The Wilke Organization  
 Wireworks Corp.  
 XIT Grounding Systems Div. of  
 Lyncole Industries, Inc.

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Accu-Weather, Inc.  
 American Laser Systems, Inc.  
 Antenna Technology Corp.  
 Audio Service Corp.  
 BAF Communications Corp.  
 Bexel Corp.  
**The Camera Mart, Inc. ....58**  
 Center Video Industrial Co., Inc.  
 Comprompter, Inc.  
 Comsat Video Enterprises  
 Concept Productions  
 Conus Communications Satellite  
 Services Div.  
 Creative Video Services  
 DICSAs-Delay TV Ingenieurs-Conseils  
 SA  
 Ethereum Scientific Corp.  
 Alan Gordon Enterprises Inc.  
 Harris Corp. Broadcast Div.  
 Harrison Systems, Inc.  
 Leasametric, Inc. Instrument Rental  
 Div.  
 Lighting & Shadows A Div. of  
 Phoebus  
 Link Electronics Ltd.  
 LTM Corp. of America  
 McCurdy Radio/Ram Broadcast  
 Media Concepts, Inc.  
**Midwest Communications Corp. .. 1**  
 Mole-Richardson Co.  
 Multi-Video Productions, Inc.  
 Musco Mobile Lighting, Ltd.  
 NETCOM  
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 RCI (Recording Consultants Inc.)  
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 Roscor Corp.  
 Rosner TV Systems, Inc.  
 Solid Electronics Labs  
 Tekno Inc.  
 Teledac Inc.  
 Turner Engineering Inc.  
 U.S. Instrument Rentals  
 W. Vinten Ltd. Broadcast Systems Div.  
 Western Wireless Works

**EQUIPMENT SALES,  
 USED/RECONDITIONED**

**Ampex Corp. Audio-Video  
 Systems Div. ....112**  
 Audio Service Corp.  
 R. Barth KG  
 Bexel Corp.  
 BFE AG  
**The Camera Mart, Inc. ....58**  
 Center Video Industrial Co., Inc.  
 Delcom Corp.  
 Alan Gordon Enterprises Inc.  
 Harris Corp. Broadcast Div.  
 J. Boyd Ingram & Associates  
 Interactive Motion Control  
 Leasametric, Inc. Instrument Rental  
 Div.  
 Lerro Electrical Corp.  
 Lighting & Shadows A Div. of  
 Phoebus  
 LTM Corp. of America  
 Maze Broadcast, Inc.  
 Media Concepts, Inc.  
 Merlin Engineering Works  
**Midwest Communications Corp. .. 1**  
 Mineroff Electronics, Inc. Uher  
 Products  
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 Roscor Corp.  
 Tekno Inc.  
**Television Technology Corp.  
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 Turner Engineering Inc.  
 U.S. Instrument Rentals  
 Videomedia, Inc.  
 Western Wireless Works

**FILM CLEANING/  
 INSPECTION/PROCESSING**

Allied Film & Video/FL  
 Allied Film & Video/IL  
 Arnold & Richter  
 The Durafilm Co.  
 Image Transform, Inc.  
 T & G Optics

**FILM-TO-TAPE TRANSFERS**

Allied Film & Video/DC  
 Allied Film & Video/FL  
 Allied Film & Video/IL  
 Arnold & Richter  
 Center Video Industrial Co., Inc.  
 Devlin Productions, Inc.  
 Image Transform, Inc.  
 Johnson-Nyquist Production Inc.  
 Media Concepts, Inc.  
 Multi-Video Productions, Inc.  
 RADMAR, Inc.  
 T & G Optics

**FREQUENCY MEASUREMENTS**

Apple Frequency Measuring Service  
 Audio Service Corp.  
**Audiolab Electronics, Inc. ....215**  
 Comsearch, Inc.  
 Data Check Corp.  
 Discrete Technology Labs, Inc.  
 Floyd Hall, E.E. Consulting Radio  
 Engineers  
 Johnson Measurement Service  
 Phil McQuatters Frequency  
 Measurement Service  
 Micro Communications, Inc.  
 Newman-Kees Measurements  
 Engineering & Installations  
 Old Dominion Broadcast Eng. Service  
 Radio Engineering Co. Consultants  
 R&D Station Service  
 Rohde & Schwarz  
 Spectrum Planning, Inc.  
 Standard Frequency Measuring  
 Service  
 Tracor Instruments Austin Inc.  
 Industrial Instruments Div.  
 Western Wireless Works  
 Ziehl Electronic Service

**HEAD  
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**Ampex Corp. Audio-Video  
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 CMC Technology  
 GEE Broadcast Systems Ltd.

JRF Magnetic Sciences Inc.  
 Mineroff Electronics, Inc. Uher  
 Products  
 Northern Magnetics, Inc.  
 Pinzone Communications Products Inc.  
 Videomagnetics, Inc.

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Canon USA, Inc.  
 Optics Div. ....44-45, 183  
 Alan Gordon Enterprises Inc.  
 T & G Optics  
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**MAINTENANCE, AM/FM RADIO**

R. Barth KG  
 Floyd Hall, E.E. Consulting Radio  
 Engineers  
 Harris Corp. Broadcast Div.  
 J. Boyd Ingram & Associates  
 D. L. Markley & Associates, Inc.  
 Consulting Engineers  
 Newman-Kees Measurements  
 Engineering & Installations  
 Old Dominion Broadcast Eng. Service  
 Radiotechniques Consulting Engineers  
 Rohde & Schwarz  
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 Steiger, Hurray & Associates Inc.  
 Broadcast Tech. Consultants  
 Teletech, Inc.  
 Tri-Tronics Professional Elec., Inc.  
 Vir James Consulting Engineers  
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**MAINTENANCE, MICROWAVE/  
 EARTH STATION**

Antenna Technology Corp.  
 BAF Communications Corp.  
 Broadcast Systems Installations  
 Comsearch, Inc.  
 Dalsat Inc.  
 Harris Corp. Broadcast Div.  
 International Microwave Corp.  
 Mark Antenna Products, Inc.  
 McCullough Satellite Equip., Inc.  
 NETCOM  
 Newman-Kees Measurements  
 Engineering & Installations  
 Rohde & Schwarz  
 Roscor Corp.  
 Teletech, Inc.  
 Western Wireless Works

**MAINTENANCE, TV**

Aries Antennas, Inc.  
 AVEC  
 BFE AG  
 Broadcast Aids, Inc.  
 Broadcast Systems Installations  
 Component Video, Inc.  
 GEE Broadcast Systems Ltd.  
 Floyd Hall, E.E. Consulting Radio  
 Engineers  
 Harris Corp. Broadcast Div.  
**Jem-Fab Corp. ....109**  
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 D. L. Markley & Associates, Inc.  
 Consulting Engineers  
 Newman-Kees Measurements  
 Engineering & Installations  
 Rohde & Schwarz  
 Roscor Corp.  
 Teletech, Inc.  
 T & G Optics  
 Townsend Broadcast Systems Inc.  
 Turner Engineering Inc.  
 VIZ Test Equipment Div. of VIZ Mfg.  
 Co.  
 VTR Associates, Inc.

**PROGRAMMING SERVICES  
 (Music, Sound Effects,  
 Syndication Radio Formats,  
 Gingles, IDs)**

Associated Production Music  
 BFE AG  
 Capitol Production Music  
 CaVox/Tape-Athon Corp.  
 CBS Special Products  
 Century 21 Programming Inc.  
 Comsat Video Enterprises  
 Concept Productions





# The good news is...



## Studio camera automation has arrived... *the HS-110P.*

The HS-110P automated pan/tilt head provides more effective utilization and distribution of production talent... *and at a surprisingly affordable price.*

- Our highly repeatable servos and stiff mechanical design provide the same feel and responsiveness of a manned camera... *absolutely essential for camera automation.*
- Four HS-110Ps, using our software driven Multi-Controller, provide a quality product on with one operator. As an alternative, *the HS-110P Heads can be controlled directly by a News Room computer via MultiController's serial input.*
- These features coupled with our Multi-Controller's "shot storage" and "motion learn" capability provide the director with complete and repeatable camera moves... *with less staff and improved communications... resulting in a more efficient production and a lower operating budget.*
- Automate for your future... now. Call us for a demo. ☎ 14-358-8820.

- HS-110P features:**
- Load capacity of 250 lbs.
  - Max. velocity of 90°/Sec
  - Preset return accuracy of 18 arc seconds (0.03141" from 30 ft.)
  - Highly responsive servo design.



**TOTAL SPECTRUM MANUFACTURING INC.**  
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KalaMusic  
The Music Director Programming Service  
The Musicworks, Inc.  
Network Production Music, Inc.  
Programming Plus  
Soper Sound Music Library Soper  
Sound Media Music  
Sound Ideas Sound Effects Library  
Systemation Corp.  
Tape-Athon Corp. Cavox Stereo Productions  
Touch Technologies Inc.  
Valentino, Inc.

**REBUILDING/RECONDITIONING EQUIPMENT**

Aries Antennas, Inc.  
Audio Service Corp.

R. Barth KG  
Center Video Industrial Co., Inc.  
**Christie Electric Corp. ....205**  
Dalsat Inc.  
Data Check Corp.  
Discrete Technology Labs, Inc.  
Econco Broadcast Service Inc.  
Harris Corp. Broadcast Div.  
J. Boyd Ingram & Associates  
ITS Corp.  
**Jem-Fab Corp. ....109**  
Lunar Video Ltd.  
Merlin Engineering Works  
**PERROTT Engineering Labs Inc. ....229**  
RCI (Recording Consultants Inc.)  
Roscor Corp.  
Schafer World Communications Corp.  
Townsend Broadcast Systems Inc.  
Tri-Tronics Professional Elec., Inc.  
Turner Engineering Inc.  
W. Vinten Ltd. Broadcast Systems Div.

VTR Associates, Inc.  
Western Wireless Works

**RELOADING, CARTRIDGE/CASSETTE**

Aristocart Div., Western Int'l. Communications, Ltd.  
Audio, Inc.  
Broadcast Cartridge Service  
COARC  
Marathon Products Corp.  
National Video Service  
Old Dominion Broadcast Eng. Service

**SATELLITE PROGRAM DISTRIBUTION**

Accu-Weather, Inc.  
**Calhoun Satellite Communications, Inc. ....212**

Comsat Video Enterprises  
Comsat Video Enterprises  
Conus Communications Satellite Services Div.  
NETCOM  
RCA American Communications  
Scientific-Atlanta  
Western Union Video Services  
Wold Communications

**SATELLITE TRANSPONDER TIME BROKERS**

BAF Communications Corp.  
Comsat Video Enterprises  
Comsat Video Enterprises  
Conus Communications Satellite Services Div.  
NETCOM  
**Northstar Satellite Systems Inc. ....214**  
RCA American Communications  
Western Union Video Services  
Wold Communications

**STANDARDS CONVERSION**

Allied Film & Video/FL  
Allied Film & Video/IL  
Antenna Technology Corp.  
Devlin Productions, Inc.  
Image Transform, Inc.  
NETCOM  
RADMAR, Inc.  
Voodoo Technology

**TAPE RECORDING/DUPLICATING**

Allied Film & Video/DC  
Allied Film & Video/FL  
Allied Film & Video/IL  
Arnold & Richter  
Black Audio Devices  
Cavox/Tape-Athon Corp.  
Center Video Industrial Co., Inc.  
Creative Video Services  
Devlin Productions, Inc.  
Image Transform, Inc.  
Media Concepts, Inc.  
METROPOST  
Mineroff Electronics, Inc. Uher Products  
The Musicworks, Inc.  
Mycorp Technologies Corp. (MTC)  
NETCOM  
RADMAR, Inc.  
Richmond Sound Design, Ltd.  
Roscor Corp.  
Schoeps/Posthorn Recordings  
Tape-Athon Corp. Cavox Stereo Productions  
The Truck-Mobile Audio  
Video Masters, Inc.  
Zonal Ltd.

**WIRING AND CABLING**

Audio Service Corp.  
**AVS (Audio-Visual Systems) .....111**  
R. Barth KG  
**Belden Wire & Cable .....125**  
Berk-Tek, Inc.  
BFE AG  
Broadcast Systems Installations  
C.A.E.  
Component Video, Inc.  
Connectronics Corp.  
Delcom Corp.  
DICSA-Delay TV Ingenieurs-Conseils SA  
**DYMA Engineering, Inc. ....214**  
Dynamic Technology Ltd.  
GEE Broadcast Systems Ltd.  
**Jem-Fab Corp. ....109**  
MBI Broadcast Systems  
Old Dominion Broadcast Eng. Service  
Professional Sound Corp.  
Siecor Corp.  
Teletech, Inc.  
Tri-Tronics Professional Elec., Inc.  
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**Western Electronic Products Co. ....132**  
Western Wireless Works  
The Wilke Organization  
Wireworks Corp.

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YOU CAN BUILD SYSTEMS BEST.**



At Camera Mart, we get the latest state-of-the-science equipment first. Because we rent and sell them first. So we get to know which components are best—so that we can design, engineer, build and install the video system that's best for you. Whether your system is a simple off-line unit or a complex broadcast studio, you get our total support and a complete "turn-key" operation. What's more, since we're not compelled to "push" any particular manufacturer, we can recommend what equipment will work for you—within your budget. Come, design a system with us. The best.

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CA 91506 (818) 843-6644

Video Systems  
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# Manufacturers' addresses

## A

**A & A Systems de Communication**  
P.B. 118, 264 Ave. Sainte-Catherine  
F-84140 Montfavet-Avignon, France  
33-90.31.10.68

**John Aalto, P.E.**  
Consulting Engineer  
4534 Van Noord Ave.  
Studio City, CA 91604  
818-784-2208

**Aarmor Case Co.**  
2100 Lapo Road  
Lake Odessa, MI 48849  
616-374-5651

**Abekas Cox Ltd.**  
Hanworth Trading Estate  
Hampton Road West  
Feltham, Middlesex  
England TW13 6DH  
01-894-5622

**Abekas Video Systems, Inc.**  
101 Galveston Drive  
Redwood City, CA 94063  
415-369-5111

**Abekas Video Systems Ltd.**  
10 Portman Road  
Reading, Berks, England RG3 1JR  
44-734-585421

**Abroyd Communications Ltd.**  
614 Colby Drive  
Waterloo, Ont., Canada N2V 1A2  
519-746-1743

**Accurate Sound Corp.**  
3515 Edison Way  
Menlo Park, CA 94025  
415-365-2843

**Accu-Weather, Inc.**  
619 W. College Ave.  
State College, PA 16801  
814-237-0309

**Acoustic Systems**  
P.O. Box 3610  
Austin, TX 78764  
512-444-1961

**Acrian Inc.**  
490 Race St.  
San Jose, CA 95126  
408-294-4200

**Acrodyne Industries Inc.**  
516 Township Line Road  
Blue Bell, PA 19422  
215-542-7000

**Acron Ltd.**  
Unit 3, Lovelace Road  
Bracknell, Berks, England RG12 4YT  
0344-55625

**Adams-Russell Co.**  
Video Info. Systems Div.  
300 Second Ave.  
Waltham, MA 02154  
617-890-5850

**Adams-Smith**  
34 Tower St.  
Hudson, MA 01749  
617-562-3801

**ADC Telecommunications, Inc.**  
4900 West 78th St.  
Minneapolis, MN 55435  
612-893-3136

**ADM Technology, Inc.**  
1626 E. Big Beaver Road  
Troy, MI 48084  
313-524-2100

*Murray A. Shields*

**REGIONAL SALES CONTACTS:**  
TX, Arlington, (817) 478-0050

**Advance Products Co.**  
P.O. Box 2178  
Wichita, KS 67201  
316-263-4231

**Advanced Designs Corp.**  
P.O. Box 1907  
Bloomington, IN 47402  
812-333-1922

**Advanced Micro-Dynamics, Inc.**  
7 Lomar Drive  
Pepperill, MA 01463  
617-433-8877

**AEA, Inc.**  
1029 N. Allen Ave.  
Pasadena, CA 91104  
818-798-9127

**AEG Bayly Inc.**  
167 Hunt St.  
Ajax, Ont., Canada L1S 1P6  
416-683-8200

**AEG Communications Div.**  
Transmitter Department  
Sickingenstrasse 20-28  
D-1000 Berlin, West Germany  
30-3483-2535

**AEG Corp.**  
P.O. Box 3800  
Somerville, NJ 08876-1269  
201-722-9800

**A. F. Associates, Inc.**  
100 Stonehurst Court  
Northvale, NJ 07647  
201-767-1000

*Marc Bressack*

**REGIONAL SALES CONTACTS:**  
CA, San Diego, (609) 530-2970

**Agfa-Gevaert Inc.**  
Magnetic Tape Div.  
100 Challenger Road  
Ridgefield Park, NJ 07660  
201-440-2500

**AHB-USA Ltd.**  
5 Connair Road  
Orange, CT 06477  
203-795-3594

**Aiphone Intercom Systems**  
1700 130th Ave. N.E.  
Bellevue, WA 98005  
206-455-0510

**AIWA Co., Ltd.**  
11-9 Ueno 1-chome, Taiko-ku  
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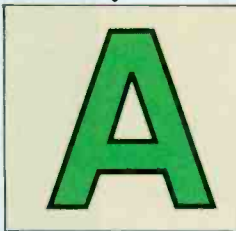
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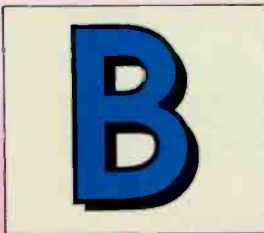
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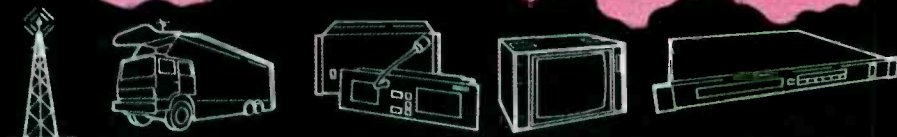
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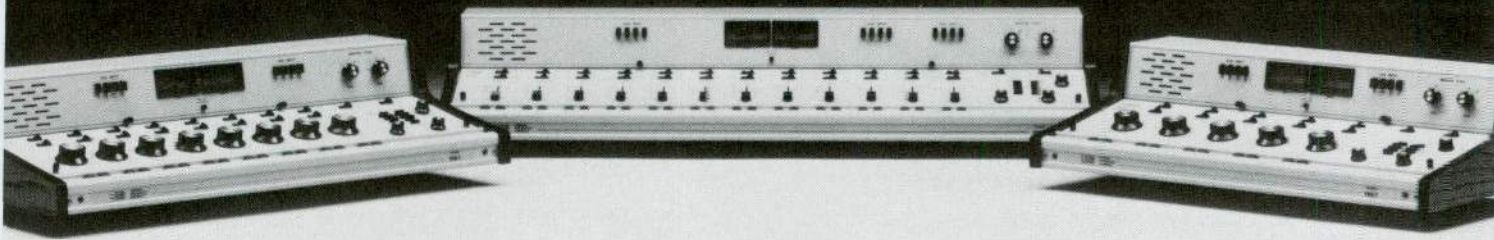
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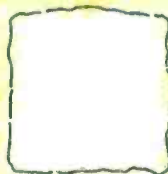


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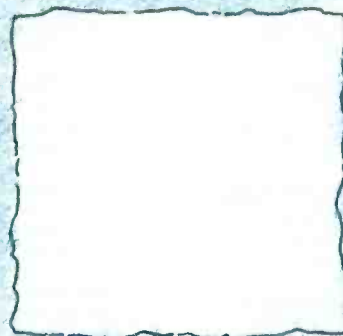
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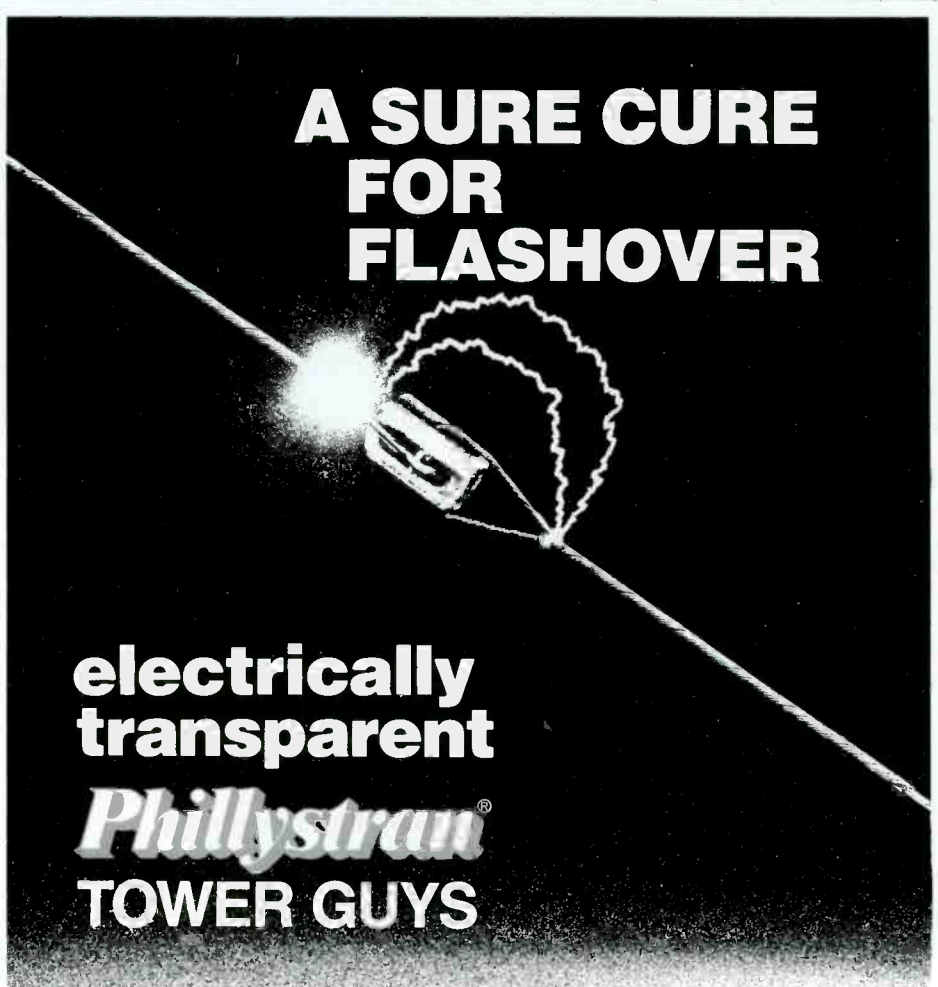
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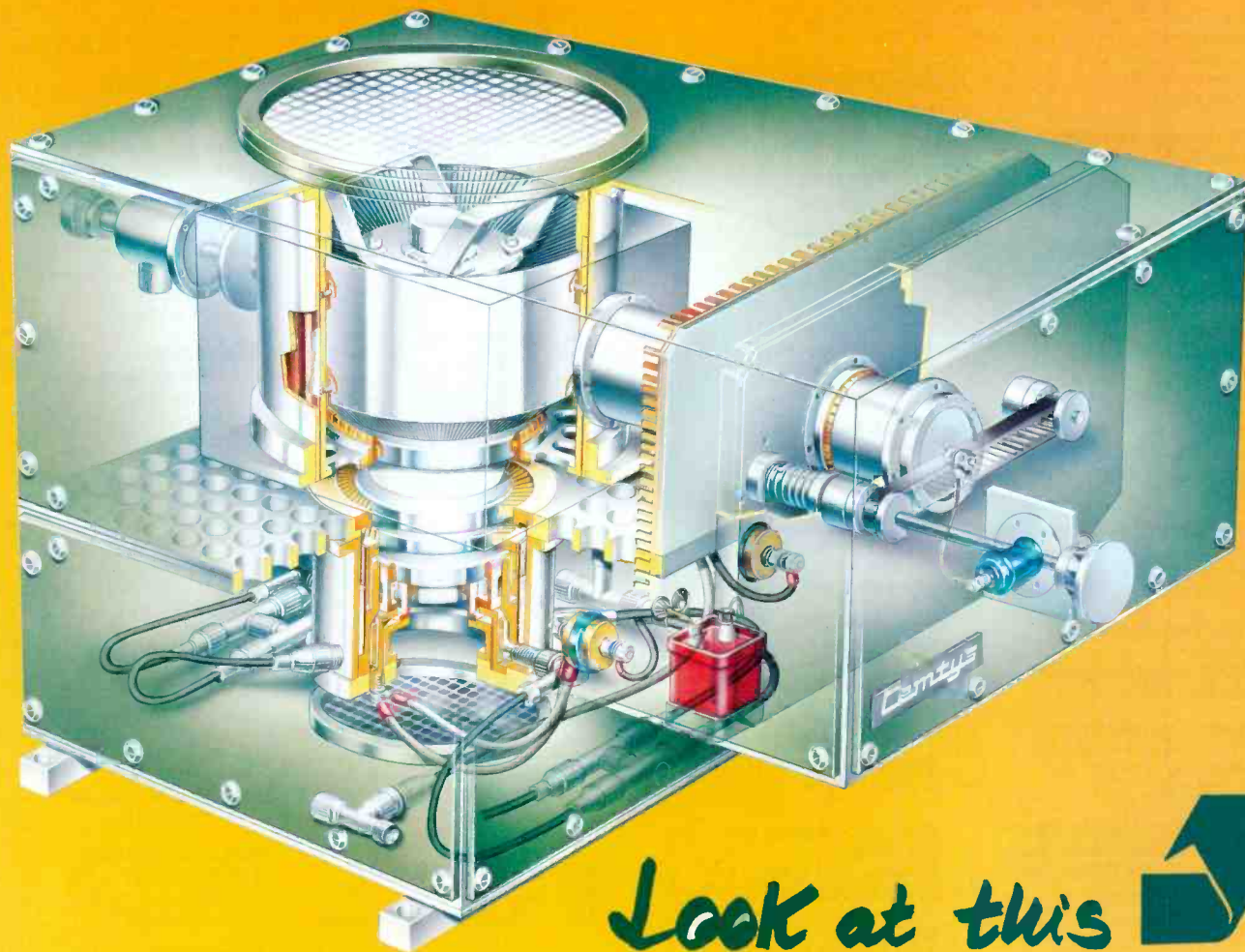
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\* Built under license (N. V. PHILIPS, pat. 8200633)

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The resonant cavity of the output stage contains the power amplifier in a grounded-grid and grounded-screen configuration. This unique design eliminates neutralization as it provides dual internal shielding between the input and output circuits of the tube stage.

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**Sigma Electronics, Inc.**  
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312-697-2260

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Port Washington, PA 11050  
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**Solid Electronics Labs**  
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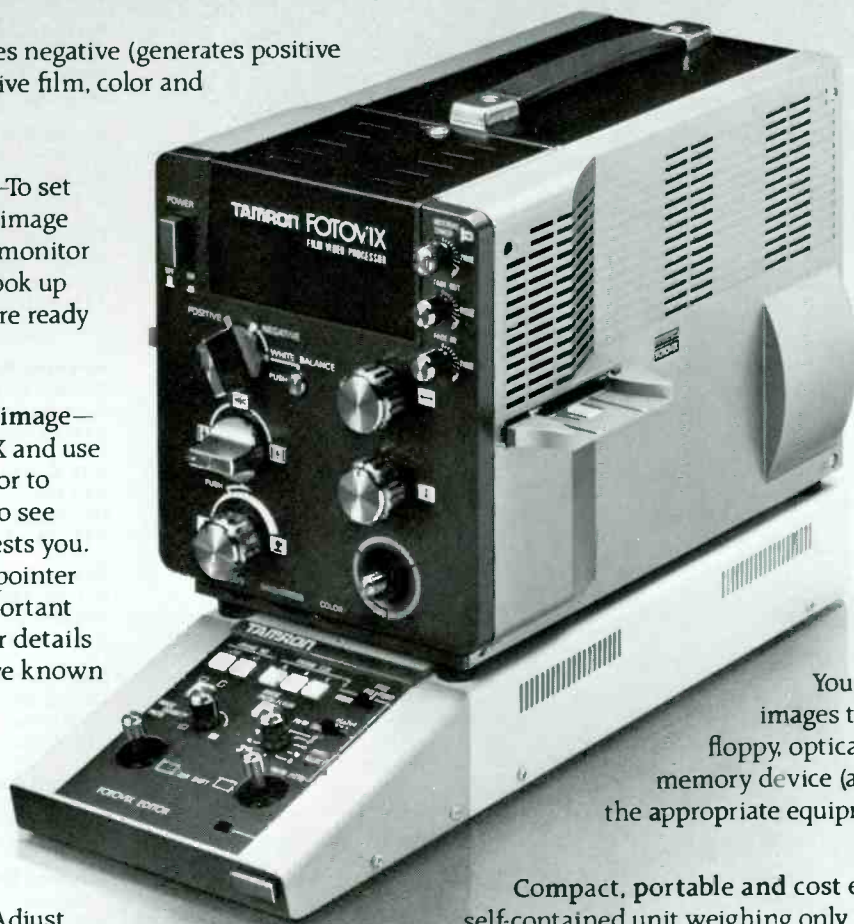
The perfect film video processor for video and broadcast production, law enforcement and security work, fire departments, laboratories, medical, publishing, newspapers, advertising and public relations, education, sales training, real estate, used car and boat sales, etc.

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**Quick and easy**—To set up and view the image all you need is a monitor or TV set. Just hook up Fotovix and you're ready to go.

**Manipulate the image**—Zoom in up to 6X and use the Fotovix Editor to crop the image to see only what interests you. Use the built-in pointer to key in on important details. Discover details you may not have known existed.

**Color correct**—Adjust color and brightness to view the image with greater clarity.



**Genlock**—Fotovix Pro's Genlock capability lets you integrate and review multiple images on a single monitor by use of an SEG (Special Effect Generator) or a switcher.

**Instant proof prints**—Just add a video printer and make color or black-and-white prints of what is on the monitor. Perfect for making on-the-spot records for review or distribution.

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**Compact, portable and cost effective**—Fotovix is a neat, self-contained unit weighing only 13 pounds that can be easily carried and installed anywhere. Nothing else available anywhere near the price offers Fotovix' level of image quality and versatility.

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201-833-5200

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**Soundcraft Electronics Ltd.**  
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**Soundcraft USA**  
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**Soundtracs PLC**  
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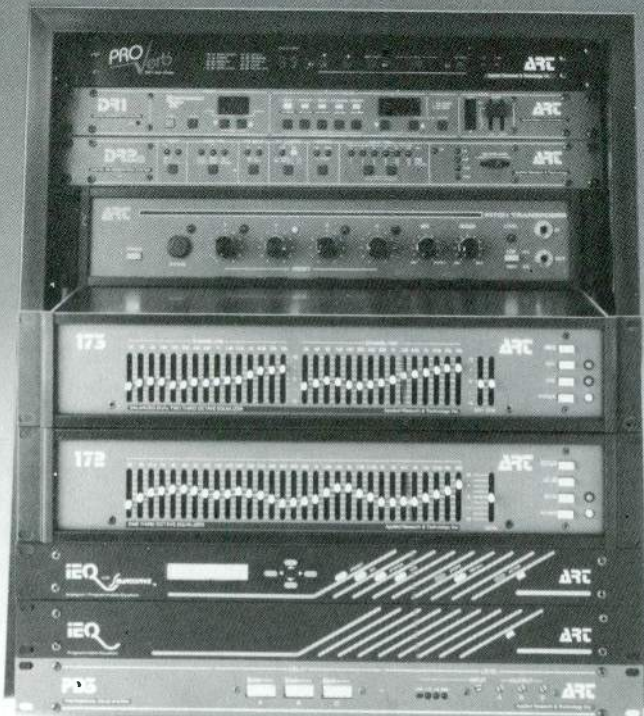
**Standard Frequency Measuring Service**  
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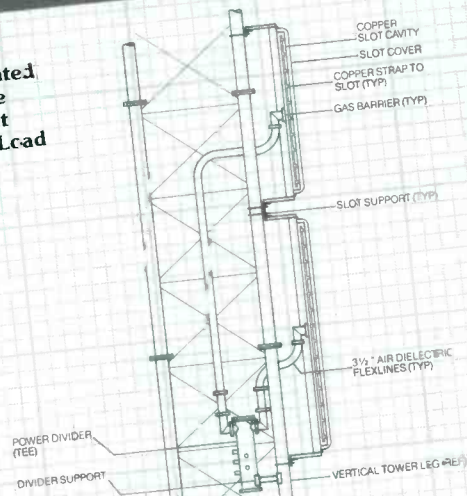
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**TDV S.A.**  
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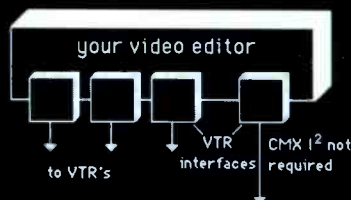
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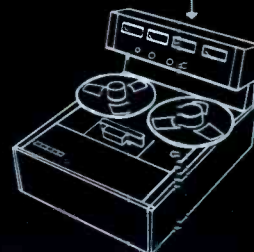
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**Cinemills Corp.**, 3500 W. Magnolia Blvd., Burbank, CA 91505 (818-843-4560) USA, Lighting Equip.; Filters

**COMWEST**, P.O. Box 420992, Sacramento, CA 95842 (916-332-8700) AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, WY, Audio Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Vacuum Tubes

**Cottonwood Communications, Inc.**, P.O. Box 526, Los Alamos, CA 93440 (805-344-3335; CA only-800-826-7025; Outside CA-800-331-8333) U.S.A., Audio & Video Equip.; Test & Measurement Equip.; Tape; Film Equip.; Service & Repair; System Design; Used Equip.

*See advertisement on page 127 and this page*

**Electro Rent Corp.**, 4209 Vanowen Place, Burbank, CA 91505 (818-843-1221) CA only-LA, San D, San Fran; GA only-Norcross; IL only-Elk Grove; MD only-Columbia; MA only-Wilmington; MI only-Livonia; NJ only-Cedar Grove; TX only-Dallas, Test & Measurement Equip.; Used Equip.

**Alan Gordon Enterprises Inc.**, 1430 Cahuenga Blvd., Hollywood, CA 90078 (213-466-3561; 818-985-5500) U.S.A., AK, HI, Canada, Central & So. America, Far East, India, Europe, Audio Equip.; Video Lighting & Camera Supports; Film Equip.; Service & Repair; Used Equip.

**JP Associates, Inc.**, 3115 Kashiwa St., Torrance, CA 90505 (213-539-8533) AK, AZ, CA, CO, GU, HI, ID, NV, NM, OR, PR, TX, WA, Video Equip.; Transmitters & Antennas & Transmission Systems; System Design

**J&R Film**, 6820 Romaine, Los Angeles, CA 90038 (213-467-3107) USA, Film Handling, Editing; Video Reels; Film-to-Tape Machines; Film & Tape Supplies & Equip.

**Magnetic Communications Systems, Inc.**, 14731 Franklin Ave., Suite C, Tustin, CA 92680 (714-730-5021) AK, AZ, CA, HI, ID, NV, OR, WA, Western-Canada, Audio & Video Cassette Products; High Speed Cassette Duplicators; Slide Mounting & Mounts; Head Cleaning Equip.; Accessories for A/V Duplication; Tape

**MARCOM**, P.O. Box 66507, Scotts Valley, CA 95066 (408-438-4273) Nationwide, Audio & Video Equip.; Transmitters, Antennas & Transmission Systems; System Design, Telephone Bandwidth Extender; 5KHZ 2-line

**Martel Electronics, Inc.**, 920 E. Orangethorpe, Suite A, Anaheim, CA 92801 (714-871-7102) U.S.A.,

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## Dealer/distributors...continued

- Audio Equip. including all types of Recorders, Microphones, Mixers, & Audio Tape
- Meyer, Ross & Fleming, Inc.**, 1485 Rollins Road, Burlingame, CA 94010 (415-348-6800) CA, HI, NV, Audio & Video Equip.; Test & Measurement Equip.
- Moseley Associates, Inc.**, 11 Castilian Drive, Santa Barbara, CA 93101 Worldwide, Transmitters, Antennas & Transmission Systems
- Pacific Coast Marketing**, 14125 Capri Drive, Los Gatos, CA 95030 (408-370-3505) CA, NV, Test & Measurement Equip.; Audio Equip.
- Penstock Inc.**, 105 Fremont Ave., Los Altos, CA 94022 (415-948-6552) AK, CA, ID, IL, IN, IA, KS, MI, MN, MO, MT, NE, NV, ND, OH, OR, PA, SD, WA, WI, WY, BC, Alta., Yuk., Electronic Active & Passive Components; Cable assemblies & Connectors; Transmission Systems; Connectors, Cable & Assemblies
- RF Specialties of California**, 3463 State St., Suite 229, Santa Barbara, CA 93105 (805-682-9429) AZ, CA, NV, Transmitters, Antennas & Transmission Systems
- RTS Systems, Inc.**, 1100 W. Chestnut St., Burbank, CA 91506 (818-840-7119) U.S.A. and Canada, Audio & Video Equip.; Test & Measurement Equip.
- Skyline, Inc.**, 6309 Eleanor Ave., Hollywood, CA 90038 (213-856-0033) CA, Audio & Video Equip.; Tape; Used Equip.; Rental, Sales, Service
- Sound Investment Enterprises, P.O. Box 4139, Thousand Oaks, CA 91359 (805-499-0539) AL, AZ, AR, CA, CC, FL, HI, IL, IA, KS, LA, MI, MS, MO, NV, NM, NC, OK, OR, SC, TN, TX, UT, WY, Audio Equip.; Systems Design; TEF Acoustical Analysis; Audio Training Classes**
- Sprague Magnetics, Inc.**, 15720 Stagg St., Van Nuys, CA 91406 (818-994-6602) Worldwide, Replacement Tape Heads; Recorder Care Products; Head Refurbishment Services
- SSL Industries Inc.**, P.O. Box 3410, Camarillo, CA 93011 (805-482-9884) AZ, CA, CO, NV, Audio & Video Equip.; Test & Measurement Equip.; Tape; Service & Repair; System Design
- Studio Film & Tape (LA) Inc.**, 6674 Santa Monica Blvd., Hollywood, CA 90038 (213-466-8101) U.S.A. and Canada, Audio & Video Tape, All Formats, Blank 2' 1' 3/4' 1/2'
- System Associates**, 5801 Uplander Way, Culver City, CA 90230 (213-641-2042) North America, Brokers of Used Broadcast TV Equip.; Video Equip.; Test & Measurement Equip.; Film Equip.; Vans & Accessories
- Televideo San Diego**, 4783 Ruffner St., San Diego, CA 92111 (619-268-1100) USA, Audio, Video & RF Products
- Television Associates, Inc.**, 2410 Charleston Road, Mountain View, CA 94040 (415-967-6040) Northern-CA, Broadcast Professional & Industrial Products; Video Equip. System Design; Video Production & Duplication Facilities
- U.S. Instrument Rentals**, 2988 Campus Drive, San Mateo, CA 94403 (800-824-2873) USA & Canada, Equip. Leasing & Rental
- Video Communications Corp.**, 2514 Ontario St., Burbank, CA 91504 (714-594-2442)
- Video Communications Corp.**, 324 Martin Ave., Santa Clara, CA 95050 (408-988-2968) AZ, CA, NV, Video Equip.
- Videomedia, Inc.**, 211 Weddell Drive, Sunnyvale, CA 94089 408-745-1700 AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA, WY, Editing Systems; Color Cameras; Monitors; Time Base Correctors; Video Tape Recorders, Projectors & Tape; Sync & Character Generators; Lighting; System Design, Fabrication & Training; Sequencing & Station Automation Products
- Videotape Products, Inc.**, 320 N. Madison Ave., Los Angeles, CA 90004 (213-664-1144; 800-422-2444) Worldwide, Video Equip.; Tape; Test & Measurement Equip.
- Western Broadcast Systems Inc.**, 3350 Scott Blvd., Building 5, Santa Clara, CA 95054 (408-727-9898) AK, CA, HI, NV, OR, WA, Audio & Video Equip.; Test & Measurement Equip.; Tape; Film Equip.; Service & Repair; System Design
- Whitehouse Audio Visual**, 11511 W. Pico Blvd., Los Angeles, CA 90064 (213-479-8313) AZ, CA, CO, KY, MI, NV, OR, WA, WY, Video Equip.; Test & Measurement Equip.; Film Equip.; Service & Repair; Used Equip.
- Telephone Radio Surge Protection Systems**

## FLORIDA

- Barbizon Delta Corp.**, 1125 N. 53rd Court, Australian Business Park, West Palm Beach, FL 33407 (305-844-5973) FL, GA, SC, PR, Lighting Equip. for Motion Picture, Television & Theatre; Lamps; Color Media; Sockets; Lighting Heads & Accessories; Complete Range of expendible supplies
- Beattie & Associates, Inc.**, 3317 Barrow Hill Trail, Tallahassee, FL 32312 (904-893-1382) AL, FL, GA, Audio & Video Equip.; Transmitters, Antennas & Transmission Systems; Sales, Service & Installation. Turnkey LPTV Systems; All Solid State FM Transmitters up to 5 KW.
- Bencisk Associates Inc.**, 3730 N.E. 42nd Ave., Ocala, FL 32670 (904-732-9775) FL, PR, Pro Audio Equip.; CCTV
- Comex Corp.**, 1645 N.W. 79th Ave., Miami, FL 33126 (305-594-0850) Worldwide, MMDS/ITFS Systems; Satellite Earth Stations & Associated Origination Equip.; Engineer, Furnish & Install
- Control Technology, Inc.**, 2950 S.W. 2nd Ave., Fort Lauderdale, FL 33315 (305-761-1106; Outside FL 800-327-4121) U.S.A., Audio Tape Recorders; Consoles, Mixers; Turntables, Preamps; Mics & Accessories; Power Amps; Speakers, Audio Processing & Loggers; Heads & Accessories; Studio Furniture; STL Systems; Transmitters, Transmission & Antennas; Automation Sys./Equip.
- Electrex Co.**, 18620 N.E. Second Ave., Miami, FL 33179 (305-651-5752) U.S.A. and Latin America, Audio Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape, Vacuum Tubes; System Design
- Gendra International Inc., Broadcast & Communications Div.**, P.O. Box 371067, Miami, FL 33137 (305-372-8845) FL, Caribbean, So. America, Audio, Video & Test Equip.; Transmissions; Microwave
- Gray Communications Consultants, Inc.**, P.O. Box 1706, Fort Walton Beach, FL 32549-1706 (904-651-8546)
- Gray Communications Consultants, Inc.**, 1031 N.W. 91st Terrace, Gainesville, FL 32601 (904-332-2435)
- Gray Communications Consultants, Inc.**, 1657 N.W. 79th Ave., Miami, FL 33126 (305-591-3637)
- Gray Communications Consultants, Inc.**, 1605 S. Bumby Ave., Orlando, FL 32806 (305-896-7414)
- Gray Communications Consultants, Inc.**, 5401 Southern Comfort Blvd., Tampa, FL 33614 (813-885-1411) FL, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Vans & Accessories; Service & Repair; System Design; Tape
- Lauderdale Electronic Labs**, 16 S.W. 13th St., Fort Lauderdale, FL 33315 (305-764-7755) U.S.A. and Canada, Audio, Test & Measurement Equip.; Tape
- Media Concepts, Inc.**, 559 49th St. S., St. Petersburg, FL 33707 (813-321-2122) Worldwide, Audio & Video Equip.; Tape; Service & Repair; System Design; VHS Tape Duplication
- Midwest Communications Corp.**, 5450 N. W. 33rd Ave., Fort Lauderdale, FL 33309 (305-735-8333)
- Midwest Communications Corp.**, 8917 Western Way, Suite 120, Jacksonville, FL 32216 (904-363-0001)
- Midwest Communications Corp.**, 8875 N.W. 23rd St., Miami, FL 33172 (305-592-5355)
- Midwest Communications Corp.**, 3305 Bartlett Blvd., Orlando, FL 32809 (305-841-0602)
- Midwest Communications Corp.**, 6302 Benjamin Road, Suite 403, Tampa, FL 33634 (813-885-9308) FL, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vans & Accessories; Service & Repair; System Design
- MPCS Video South**, 4100 North 28th Terrace, Hollywood, FL 33021 (305-923-3446; 947-3340) U.S.A., Full service distributor of industrial & broadcast video equip. Rental; Production, post-production & duplication. System Design & Installation. Specialists in network, call letter, cable stations, educational & medical institutions.
- Nemal Electronics Int'l. Inc.**, 12240 N.E. 14th Ave., North Miami, FL 33161 (305-893-3924) Worldwide, Audio & Video Wire, Cables, Connectors; Transmitters, Antennas Wire, Cables, Connectors and Accessories
- Omni Technology, Inc**, 120 S.W. 21st Terr., Suite C-104, Fort Lauderdale, FL 33312 (305-583-0626) USA, Pro Audio Products; Pro Television Products & Services
- Recording Studio Equip. Co.**, 229 Sunny Isles Blvd., North Miami, FL 33160 (305-945-9774) U.S.A.; Export to So. America, Europe, Caribbean, Professional Audio Equip.; Studio Design & Interface
- RF Specialties of Florida**, P.O. Box 397, Niceville, FL 32580 (904-678-8943) AL, FL, GA, SC, Transmitters, Antennas & Transmission Systems
- Southeast Electronics, Inc.**, 1125 Roselle St., Jacksonville, FL 32203 (904-356-3007) AL, FL, GA, Audio & Video Equip.; Transmitters; Tape; Service & Repair; System Design; Used Equip.
- Stage Equipment & Lighting, Inc.**, 124 Candace Drive, Maitland, FL 32751 (305-339-1772) AL, FL, GA, Video & Film Lighting
- Stage Equipment & Lighting, Inc.**, 12231 N.E. 13th Court; P.O. Box 61000F, Miami, FL 33161 (305-891-2010) AL, FL, GA, Caribbean, Central & South America, Video Equip.; Lamps; Ser-

## COLORADO

- Didier Broadcast Associates**, 9775 W. Cornell Place, Lakewood, CO 80227 (303-987-0256) CO, ID, KS, MT, NE, NM, UT, WY, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Equip.
- Film/Video Equipment Service Co.**, 1875 S. Pearl St., Denver, CO 80210 (303-778-8616) AK, AZ, CA, CO, DC, FL, KS, LA, MN, MS, MO, MT, NE, NV, NM, ND, SD, TN, TX, UT, WY, Audio & Video & Film Equip.; Service & Accessories
- 2001 Enterprises, Inc.**, 180 Cook St., Suite 209, Denver, CO 80206 (303-333-4477) AZ, CO, ID, MT, NM, EL Paso-TX, UT, WY, Audio & Video Equip.; Tape

## CONNECTICUT

- National Video Services**, Commerce Park, Finance Drive, Danbury, CT 06810 (203-792-3862) CT, DC, ME, MA, NH, NJ, NY, PA, RI, VT, Video Equip.; Camera Tubes; Service & Repair; System Design; Manufacture a Wide Band Video Recorder for Medical Use

## DISTRICT OF COLUMBIA

- Instrucom, Inc.**, 655 15th St. N.W., Suite 310, Washington, DC 20005 (202-223-1759) DE, DC, MD, NC, VA, WV, Customized Control; Telemetering & Alarm Systems; Telecommunications Systems & Test Equip.;



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- MOL
- SOL
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- azimuth adjustments
- phase vs frequency
- gap scatter on multi-tracks
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## Dealer/distributors...continued

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### GEORGIA

**Allied Broadcast Equipment**, 4405 Mall Blvd., Suite 125, Union City, GA 30291 (404-964-1464) Worldwide, Audio Equip.; Test & Measurement Equip.; Transmitters, Antennas, Transmission Systems; Tape; Service & Repair; System Design; Used Equip.

**Broadcasters General Store, Inc.**, 1805 Kimberly Drive, Marietta, GA 30060 (404-425-0630) U.S.A., Audio & Test & Measurement Equip.; Antennas & Transmission Systems; Tape

**Victor Duncan, Inc.-Atlanta**, 1575 Northside Drive N.W., Suite 355, Atlanta, GA 30318 (404-355-3001) U.S.A. and Canada, Audio, Film, & Video Equip.; Test & Measurement Equip.; Tape; Vans & Accessories; Service & Repair; System Design; Used Equip.; Over 300 Line of Pro Equip.

**Gray Communications Consultants, Inc. (Corporate Office)**, P.O. Box 3229, Albany, GA 31708 (912-883-2121) AL, AR, FL, GA, LA, MS, PR, SC, TN, North & South America, Caribbean, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vans & Accessories; Service & Repair; Systems Design; Transmitters, Antennas & Transmission Lines

**Midwest Communications Corp.**, 522 Armour Circle, Atlanta, GA 30324 (404-875-3753) U.S.A., GU, PR, VI, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vans & Accessories; Service & Repair; System Design

**Radford Associates**, 3203 Lanier Drive, Atlanta, GA 30319 (404-237-6097) AL, FL, GA, KY, MS, NC, SC, TN, WV, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Transmission, Antennas Systems

**Technical Industries Inc. of Georgia**, 6000 Peachtree Road, N.E., Atlanta, GA 30341 (404-455-7610; 800-554-5440) GA, SC, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vans & Accessories; Service & Repair; System Design

**Vica Associates, Inc.**, 4296-A Memorial Drive, Decatur, GA 30032 (404-292-7506) AL, FL, GA, MS, NC, SC, TN, Audio & Video Equip.; Test & Measurement Equip.

**Video Display Corp.**, 5530 E. Ponce de Leon Ave., Stone Mountain, GA 30086 (404-938-2080; 800-241-5005) U.S.A. & Europe, Replacement CRT's for broadcast quality monitors & computers.

**WJR Distributors**, 4451 N. Log Cabin Drive, Suite 132, Smyrna, GA 30080 (404-436-7605/800-423-8859) AL, GA, MS, NC, SC, TN, Audio & Video Equip.

### HAWAII

**Broadcast Services Inc.**, 2877 Kala-kaua Ave., Honolulu, HI 96815 (808-521-6311) HI and Pacific



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**Rank Cintel**

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**Coast**  
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California 91605, U.S.A.  
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Dealer/distributors...continued

Area, Towers; Microwave Links; Antennas; All types of erection & steel work; Path Alignment, Turnkey Installations; Crane Service & Sales

John J. Harding Co., Ltd., 2825 Ualena St., Honolulu, HI 96819 (808-836-0941) HI and Pacific area, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vacuum Tubes; System Design

Omega Pacific, 222 Kaelepu Drive, Kailua, HI 96734 (808-263-4212) HI, Video Equip.; Transmitters, Antennas & Transmission Systems

**IDAHO**

Hall Electronics, P.O. Box 5031, Boise, ID 83705 (208-343-3088) CO, ID, MT, UT, WY, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; System Design; Used Equip.

**ILLINOIS**

Allied Broadcast Equipment, 5215 Old Orchard Road, Suite 970, Skokie, IL 60077 (312-470-0303) IL, IA, MI, MN, MO, NE, ND, SD, WI, Audio Equip.; Test & Meas-

urement Equip.; Transmitters & Antennas; Tape; Service & Repair; System Design

Broadcasters General Store, Inc., 746 Cypress Lane, Carol Stream, IL 60188 (312-231-7120) AL, AZ, AR, CO, DC, FL, GA, IL, IN, IA, KS, KY, LA, MD, MI, MN, MS, MO, MT, NE, NY, NC, ND, OH, OK, SC, SD, TN, TX, UT, VA, WV, WI, Audio Equip.; Transmitters, Antennas & Transmission Systems; Service & Repair; System Design; Tape  
Center Video Industrial Co., Inc., 5615 W. Howard St., Chicago, IL 60648 (312-647-8700; Outside IL-800-621-4354) U.S.A., Audio

& Video Equip.; Test & Measurement Equip.; Tape; Service Repair; Used Equip.; System Design

Columbia Audio/Video, The Columbia Building, 1741 Second St., Highland Park, IL 60035-3599 (312-433-6010) IL, IN, IA, MI, WI, Video Equip.; Tape

Victor Duncan, Inc., 661 N. LaSalle St., Chicago, IL 60610-3770 (312-943-7300) U.S.A. and Canada, Audio, Film & Video Equip.; Test Equip.; Tape; Vans & Accessories; Service & Repair; System Design; Used Equip. Over 300 Lines of Pro Equip.

ESV, Inc., 525 Court St., Pekin, IL 61554 (309-347-6685; 800-423-6411) U.S.A., PR, Projection, Stage, Studio & Miniature Lamps; Studio Fixtures; Sockets & Connectors; Tape; Gels; Gaffers Tape; Batteries; Retrofits for PL, Quads & MR16 Lamps

GO Video Sales, Inc., 1195 S. Wilson Drive, Lake Forest, IL 60045 (312-295-6726) IL, Davenport-IA, MN, ND, SD, WI, Video Equip.

Joseph Electronics, 8830 N. Milwaukee Ave., Niles, IL 60648 (312-297-4200; 800-323-5925) IL, IN, WI, National by Mail Order, Test Equip.; Tools; Cases; Wire; Connectors; Batteries; Camera Tubes; Hardware; Components; Chemicals; Cabinets; Solder & Equip.; Audio & Video Products

Richardson Electronics, Ltd., 40W267 Keslinger Road, Lafox, IL 60147 (800-323-1770; 312-232-6400) Worldwide, Vacuum Tubes  
See advertisement on page 83

Roscor Corp., 1061 Feehanville Drive, Mount Prospect, IL 60056 (312-539-7700) IL, IN, IA, KY, MI, OH, WI, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vans & Accessories; Film Equip.; Service & Repair; System Design; Used Equip.


Swiderski Electronics, Inc., 1200 Greenleaf Ave., Elk Grove Village, IL 60007 (312-364-1900) IL, IN, IA, MI, MO, WI, Complete line of Audio & Video Equip.; Service & Repair; System Design; Rent & Leasing; Computerized Editing Systems; Vans & Accessories

Video Images, 890 Cambridge Drive, Elk Grove Village, IL 60007 (312-640-7111) IL, Audio, Video, Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vacuum Tubes; Vans & Accessories; System Design; Used Equip.; Service & Repair


**INDIANA**

Allied Broadcast Equipment, 3712 National Road W., Richmond, IN 47375 (317-962-8596) U.S.A., Worlds largest independent distributor of Audio & RF Broadcast & Professional Equipment

Allied International, P.O. Box 1487, Richmond, IN 47375 (317-935-1704) Worldwide, Worlds largest independent distributor of audio, RF broadcast & professional equip.



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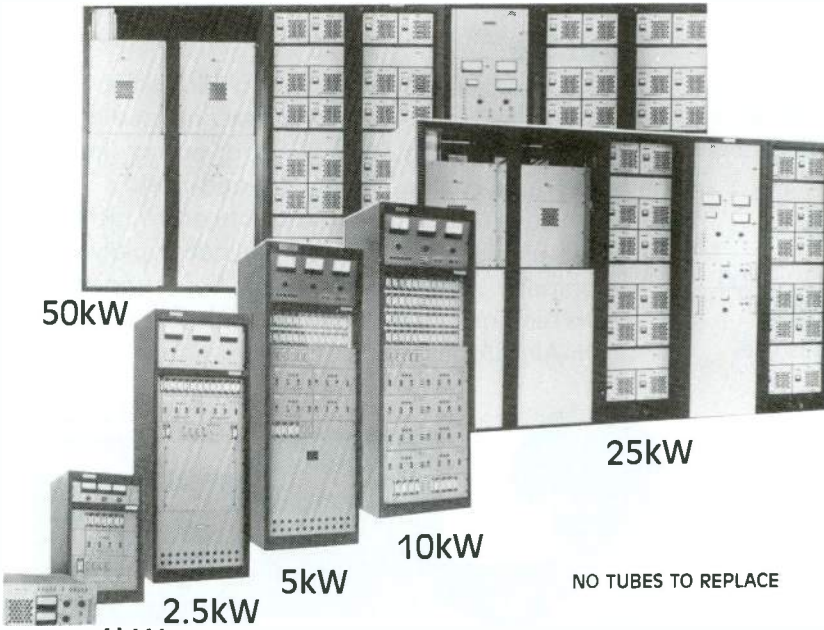
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**Allied Satellite Equipment**, P.O. Box 1487, Richmond, IN 47375 (317-962-8596) USA, Independent distributor of satellite communication equip. to broadcast industry for state-of-the-art commercial up & down link gear.

## IOWA

**Audiovisual Inc.**, 415 S.W. Eighth St., Des Moines, IA 50309 (515-278-2929) IA, Broadcast & Professional Audio & Video Equip.; Microwave Equip.; Test & Measurement Equip.; Tape; Film Equip.; Service & Repair; Systems Design; Used Equip.

**Sittler's Supplies, Inc.**, 702 E. Washington, Washington, IA 52353 (IA 800-272-6459; Outside IA 800-426-3938) U.S.A., Lamps; Batteries

**Vaughn Broadcast Rentals/Vaughn Duplication Services**, 2906 Brady St., Davenport, IA 52803 (319-322-1525) IL, IA, Audio & Video Equip.; Test & Measurement Equip.; Audio & Video Tape; Vacuum Tubes; Service & Repair; System Design; Used & Rental Equip.; Duplications

## KANSAS

**Professional Studio Distributors**, 1059 Porter, Wichita, KS 67203 (316-267-1573) AR, CO, IA, KS, MO, NE, OK, TX, Audio & Video Equip.; Video & Audio Tape; Floppy Discs; Wind Audio Cassettes

**RSC Electronics, Inc.**, 131 Laura, Wichita, KS 67201 (316-267-5213) KS, OK, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vacuum Tubes

**Smith Audio-Visual, Inc.**, 2615 S.W. 21st St., Topeka, KS 66604 (913-235-3481) KS, Western-MO including St. Joseph and K.C., Audio & Video Equip.; Transmitters, Antennas & Transmission Systems; Tape; Service & Repair; System Design; Used Equip.

## KENTUCKY

**Bruce L. Dawson & Associates**, Central American Terminal-Bowman Field, Louisville, KY 40205 (502-456-6666, 6693) IN, KY, OH, West-PA, WV, Audio & Video Equip.; Transmitters, Antennas & Transmission Systems

**Midwest Communications Corp.**, Headquarters, One Sperti Drive, Edgewood, KY 41017 (606-331-8990) U.S.A., GU, PR, VI, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vans & Accessories; Service & Repair; System Design

See advertisement on page 1

## LOUISIANA

**Audiomedia Associates**, P.O. Box 29264, New Orleans, LA 70189 (504-586-0140) AL, AR, FL, GA, LA, MS, TN, TX, Audio Equip.; Test & Measurement Equip.; Transmitters,

Antennas & Transmission Systems; Tape; Service & Repair; System Design

**Gray Communications Consultants, Inc.**, 550 Wholesalers Parkway, Suite G, New Orleans, LA 70123 (504-733-7265) AL, FL-Panhandle, LA, MS, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Film Equip.; Vans & Accessories; Service & Repair; System Design; Used Equip.; Tape

## MARYLAND

**ASR Enterprises, Ltd.**, P.O. Box 10,

Benson, MD 21018 (301-574-0550) DE, DC, MD, NJ, PA, VA, Audio & Video Equip.; Test & Measurement Equip.; Tape  
**Bradley Broadcast Sales Inc.**, 8101 Cessna Ave., Gaithersburg, MD 20879 (800-732-7665; 301-948-0650) Nationwide, Audio Equip.; Transmitters, Antennas & Transmission Systems; Tape; Test & Measurement Equip.

**David H. Brothers Co., Inc.**, 2893 Baltimore Blvd., Finksburg, MD 21048 (301-833-0920) DC, MD, VA, Audio & Video Equip.; Tape; Vacuum Tubes; Microphones  
**Midwest Communications Corp.**, 4720-D Boston Way, Lanham, MD

20706 (301-577-4903) North America, Audio & Video Equip.; Test & Measurement Equip.; Tape; Transmitters & Antennas; Vacuum Tubes; Vans & Accessories; Service & Repair; System Design; Used Equip.

**Print Products International**, 8931 Brookville Road, Silver Spring, MD 20910 (301-587-7824; 800-638-2020) U.S.A. and Canada, Equip., Tools, Supplies, Training for Electronic PC Boards Maintenance & Repair

**Radio Resources**, P.O. Box 8782, BWI Airport, MD 21240 (301-859-1500) U.S.A., Radio Broadcast Equip. & Supplies

# THERE'S A VIDEO PATCHING SYSTEM THAT'S BETTER.

## HERE IT IS.

## HERE'S WHY.

Only THE DYNATECH COAXIAL PATCH Gives You All These Features: normal-thru connection, cross-patching, non-interrupting on-line monitoring of live circuits AND Coterm's automatic termination of patched-off circuits *within the jack*.

All These DYNATECH Features Mean you get the least amount of noise pick-up, signal degradation and signal loss. This patented, shielded jack helps reduce interference due to EMI, RFI, hum, noise and cross-talk. Unbalanced line, coaxial equipment will transmit signals in excess of 400 MHz with negligible insertion loss, cross-talk or VSWR.

Normal-Thru Connection eliminates patch cords or normalling plugs for dedicated circuits — you get less signal degradation and you get a clean, uncluttered patchfield — reducing the possibility of errors when a patch must be made.

To Break The Normal-Thru Connection, you insert a patch cord that allows cross connections to be made. Sources that are patched out are automatically terminated *within the jack in the proper impedance*. Test probes may be inserted in the jack to sample a signal *without interrupting the live circuit*.

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Data Systems

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800-368-2210  
In Virginia, (703) 569-9000

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## Dealer/distributors...continued

**RCI (Recording Consultants Inc.)**, 8550 Second Ave., Silver Spring, MD 20910 (301-587-1800) DE, DC, MD, PA, VA, WV, Audio Equip.; Tape; Service & Repair; System Design; Used & Rental Equip.

**Sel-Tronics, Inc.**, 9311 Annapolis Road, Lanham, MD 20706 (301-731-8080) DC, MD, VA, Audio & Video Equip.; Test & Measurement Equip.

**Wiltronix, Inc.**, 16850 Oakmont Ave., Washington Grove, MD 20880 (301-258-7676) DE, DC, FL, GA, KY, MD, NC, PA, SC, VA, WV, Audio & Video Equip.; Test & Measurement Equip.; Transmission Systems

## MASSACHUSETTS

**BAF Communications Corp.**, 17 Everberg Road, Woburn, MA 01801 (617-932-3232) USA, Audio, Video & RF Equip.; Earth Stations; Microwave Equip.

**Barbizon Light**, 3 Draper St., Woburn, MA 01801 (617-935-3920) CT, DC, FL, GA, ME, MD, MA, NH, NY, RI, VT, Video & Film Lighting Equip. & Supplies

**Contact East**, 335 Willow St. S., P.O. Box 786, North Andover, MA 01845 (617-682-2000) U.S.A., Precision hand tools, test instruments, tool kits, soldering supplies

**Lake Systems Corp.**, 287 Grove St., Newton, MA 02166 (617-244-6881) Worldwide, Turnkey Communications Systems; TV Station Automation Featuring La-Kart; Automated Library System

**Landy Associates, Inc.**, 330 Bear Hill Road, Waltham, MA 02154 (617-890-6325) CT, DE, DC, ME, MD, MA, NH, NJ, NY, PA, RI, VT, VA, Audio & Video Equip.; Test & Measurement Equip.; Film Equip.; Tape; Vacuum Tubes; Service & Repair; System Design

**MPCS Boston**, 303 Congress St., Boston, MA 02210 (617-439-7620/7621) U.S.A., Full service distributor of industrial & broadcast video equip. Rental; Production, post-production & duplication. Systems Design & Installation. Specializers in network, call letter, cable stations, educational & medical institutions.

**QSI Systems, Inc.**, 12 Linscott Road, Woburn, MA 01801 (617-938-1403) CT, ME, MA, NH, RI, VT, Video Equip.; Tape; Service & Repair; System Design

**Townsend Broadcast Systems Inc.**, 79 Mainline Drive, Westfield, MA 01085 (413-568-9581) U.S.A. & Canada, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; System Design

## MICHIGAN

**Audio Broadcast Group, Inc.**, 2342 S. Division Ave., Grand Rapids, MI 49507 (616-452-1596) U.S.A., Studio Systems for AM-FM-TV Audio; Over 100 Equip. Lines; Studio Cabinetry - Turnkey Systems

**CM Sales**, 31700 W. 12 Mile Road, Suite 206, Farmington Hills, MI 48018 (313-553-8070) MI, Au-

dio & Video Equip.; Test & Measurement Equip.

**Cruse Communications Co.**, 4903 Dawn Ave., East Lansing, MI 48823 (517-332-3579/792-8800; 313-961-3579; 616-454-3257) IN, MI, OH, Audio, Video, Test & Measurement Equip.; Tape; Service & Repair; System Design

**Victor Duncan, Inc.**, 32380 Howard St., Detroit, MI 48071-1429 (313-589-1900) U.S.A. and Canada, Audio, Film & Video Equip.; Test Equip.; Tape; Vans & Accessories; Service & Repair; System Design; Used Equip. Over 300 Lines of Pro Equip.

**H. M. Dyer Electronics, Inc.**, 48647 Twelve Mile Road, Novi, MI 48050 (313-349-7910) IL, IN, IA, MI, MN, MO, OH, WI, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Used Equip.

**General TV Network**, 13201 Capital Ave., Oak Park, MI 48237 (313-399-2000) MI, Northwest-OH, Audio & Video Equip.; Test & Measurement Equip.; Tape; Film Equip.; Vans & Accessories; Service & Repair; System Design; Used Equip.

**Midwest Communications Corp.**, 21683 Melrose Ave., Southfield, MI 48075 (313-350-3038) U.S.A., GU, PR, VI, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Film Equip.; Vans & Accessories; Service & Repair; System Design; Satellite Up-links, Mobile & Fixed

**Sound Solutions Inc.**, 5701 Canton Center Road, Canton, MI 48187 (313-455-5557) IL, IN, MI, OH, Audio Equip.; Tape; System Design; Test & Measurement Equip.; Used Equip.

**Thalner Electronic Labs, Inc.**, 7235 Jackson Road, Ann Arbor, MI 48103 (313-761-4506; Area 313 Only 800-552-5275) MI, OH, Audio & Video Equip.; Tape; Test & Measurement Equip.; Service & Repair; System Design; Used Equip.

## MINNESOTA

**Emmons Associates, Inc.**, 1121 Riverwood Drive, Burnsville, MN 55337 (612-890-8920) IA, MN, ND, SD, WI, Audio & Video Equip.; Test & Measurement Equip.; STL Transmission Systems; Service & Repair

**Northern Magnetics, Inc.**, P.O. Box 16409, Minneapolis, MN 55416 (612-333-3071) U.S.A., Audio Equip. (Recording Heads.); Film Equip. (Film Heads. Audio); Service & Repair (Audio Heads. & Head Nest)

**T. R. Pitts Co.**, 501 W. Fifth St., Winona, MN 55987 (507-452-2629; Outside MN: 800-533-8092; MN Only: 800-642-2384) U.S.A., Complete equip. & supplies for the cable TV industry including some services. Satellite Equip.

**Vaughn Communications, Video Midwest**, 7951 Computer Ave. S., Minneapolis, MN 55435 (612-831-2248) MN, ND, SD, Audio & Video Equip.; Test & Meas-

urement Equip.; Video & Audio Tape; Vacuum Tubes; Service & Repair; System Design; Used & Rental Equip.; Duplications

## MISSISSIPPI

**Broadcast Equipment Sales & Engineering Inc.**, P.O. Box 20331, Jackson, MS 39209 (601-857-8573; 85-RADIO) AL, AR, FL, LA, MS, TN, Audio Equip.; Transmitters, Antennas & Transmission Systems; Tape; Service & Repair; System Design

## MISSOURI

**Centurian Marketing Associates, P.O. Box 1011, Ballwin, MO 63022-1011 (314-227-7229) Southern-IL, IA, KS, MO, NE, Audio Professional Products**

**Delcom Corp. of St. Louis**, 2349 Gris-som, St. Louis, MO 63146 (314-432-1164; 800-331-5461) Continental U.S., Total Video Systems, Featuring Custom System Design; Installation; Computerized Wiring & Tracing Documentation; Custom & Standardized Cabinetry

**Electronic Video Systems**, 1856 S. Stewart, Springfield, MO 65804 (417-881-4677; 800-334-6110) AR, KS, LA, MO, NE, OK, Audio, Video & Test Equip.; Tape; Transmitters including towers ATS, STL, MDS, etc.; Vacuum Tubes; Film Equip.; Service & Repair; Used Equip.; System Design, including studio installation digital effects systems, broadcast cameras, synchronizers.

**Lines Video Systems**, 219 S. Jefferson, Springfield, MO 65806 (417-862-5533; Outside MO-800-641-4674) AR, IL, IA, KS, KY, LA, MO, NE, OK, TN, TX, Audio, Video, Test & Measurement Equip.; Transmitters, Antennas & Transmissions; Tape; Vans; Service Repair; System Design; Used Equip.

**Television Engineering Corp.**, 580 Goddard Ave., Chesterfield, MO 63017 (314-532-4700) U.S.A. and Canada, Audio & Video Equip.; Test & Measurement Equip.; Tape; System Design; Used Equip.; Vans & Accessories

**Video Masters, Inc.**, P.O. Box 419963, Kansas City, MO 64141 (816-474-8530) AR, IL, IA, KS, MO, NE, Audio & Video Equip.; Test Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vacuum Tubes; Service & Repair; System Design

## MONTANA

**Audiovisual Inc.**, 1422 W. Ramshorn, Laurel, MT 59044 (406-628-2116) MT, WY, Broadcast & Professional Audio & Video Equip.; Test & Measurement Equip.; Film Equip.; Service & Repair; System Design; Used Equip.

**The Source Inc.**, 320 Sixth St. S.; P.O. Box 2487, Great Falls, MT 59403 (406/761-2420) MT, North-ern-WY, Audio & Video Equip.; Test

& Measurement Equip.; Tape; Antennas

**Video International Publishers**, 118 Sixth St. S., Great Falls, MT 59405 (406-727-7133) ID, MT, ND, SD, WA, WY, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; System Design; Used Equip.

## NEBRASKA

**Audiovisual Inc.**, 8025 Maple St., Omaha, NE 68134 (402-393-9911) KS, NE, Broadcast & Professional Video Equip.; Microwave Equip.; Audio & Video Equip.; Test & Measurement Equip.; Tape; Film Equip.; Service & Repair; System Design; Used Equip.

**RF Specialties of Nebraska**, 2003 Brewster Road, Bellevue, NE 68005 (402-734-5521) IA, KS, MO, NE, Transmitters, Antennas & Transmission Systems

## NEVADA

**Cinema Services**, 4445 S. Valley View Blvd., Suite 7, Las Vegas, NV 89103 (702-876-4667) AZ, NV, NM, UT, Video Equip.; Film Equip.; Used Equip.

## NEW HAMPSHIRE

**Associated Systems**, P.O. Box 5211, Manchester, NH 03108 (603-472-2297) CT, ME, MA, NH, RI, VT, Video & Test Equip.

## NEW JERSEY

**A.F. Associates**, 100 Stonehurst Court, Northvale, NJ 07647 (201-767-1000) Worldwide, Audio & Video Equip.; Test & Measurement Equip.; Telecine Equip.; Vans & Accessories; System Design

**Avtec Industries, Inc.**, 5 Audrey Place, Fairfield, NJ 07006 (201-882-9460) International, Audio & Video Equip.; Test Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vacuum Tubes; Film Equip.; Service & Repair; Used Equip.

**Broadcast Video Marketing Corp.**, 275 Route 18, East Brunswick, NJ 08816 (201-390-0770) CT, DE, DC, MD, NJ, NY, PA, VA, Video Equip.; Cases; Test & Measurement Equip.; Audio Time Compression; Audio Delay Synchronizer; Character generators, graphics systems; Broadcast Cameras

**Calvert Electronics Inc.**, A Richardson Co., 1 Branca Road, East Rutherford, NJ 07073 (Outside NJ 800-526-6362; NJ 201-460-8800) Worldwide, Camera Pickup Tubes & CCDs; Capacitors, Transmitting, Mica & Vacuum; Microwave Components; Semiconductors; Vacuum Tubes



CLASSIC

# AMEK Classic – Higher Standards in Broadcast Audio Production

New goals and higher standards in audio production for broadcast require new and higher standards in console technology. Using our fourteen years of manufacturing experience and technical insight, we set ourselves the objective of producing a broadcast-specific console system equal to the challenge. That system became the AMEK CLASSIC.

We call it CLASSIC because within one system we've incorporated all the facilities you would expect to find in a console of this calibre, and all the facilities you can't find in any competing product. By adding to this the unmistakable touch of AMEK build quality and sonic performance, we believe we've made an audio CLASSIC of its kind.

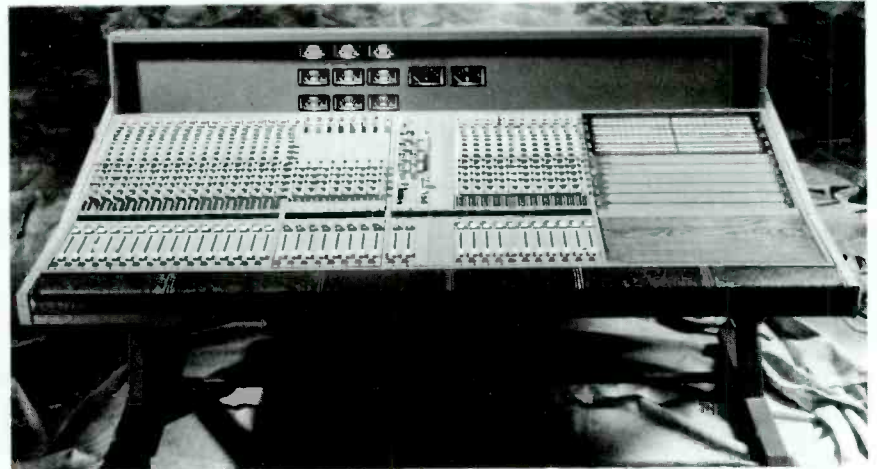
In the new world of stereo broadcast, we had to consider stereo a priority. So we gave you not only mono but also stereo inputs; eight mono or eight stereo subgroups; and two independent stereo master buss routes. And because we like things in twos, all the busses, including the eight auxiliaries, are balanced to give the necessary calibre of performance.

Because many configurations and interfaces may be needed, the CLASSIC had to be truly flexible. Thus, we've allowed for three standard chassis sizes — 32, 48 or 64 inputs, with or without Dynamics on each input; the option of monitor facilities for multitrack work; and a variety of panning options, including systems suitable for film post. The CLASSIC is balanced at all inputs and outputs, and has Penny & Giles faders and Remote Start switching as standard equipment. Because space is often at a premium, we've used a 30 mm (1.25 inch) module width.

The AFV port allows either remote muting or remote DC control, if VCAs are fitted; and there are a number of fader automation options, including Audio Kinetics Mastermix and the GML Moving Fader System.

The CLASSIC has far more to offer than can be described here. We've had to consider what you might want to do 10 years down the line. By that time, we think your CLASSIC will still be the contemporary it is now.

AMEK CLASSIC IN 32/8/2 VERSION



Head Office, Factory and Sales: AMEK Systems and Controls Ltd, Islington Mill,  
James Street, Salford M3 5HW, England. Tel: 061-834 6747.  
Telex: 668127 AMEK G E-MAIL: AMEK-UK. Fax: 061-834 0593.

In the USA: AMEK Controls Inc. 10815 Burbank Blvd, North Hollywood, CA 91601.  
Tel: 818/508 9788. Telex: 662526 AMEK USA E-MAIL: AMEK US. Fax: 818/508 8619.



# AMEK



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## Dealer/distributors...continued

**Comprehensive Video Supply Corp.**, 148 Veterans Drive, Northvale, NJ 07647 (201-767-7990) Worldwide, Audio & Video Equip.; Test & Measurement Equip.; Tape; Custom Cases & Accessories; Computer Software for Video & Film

**Holzberg Inc.**, P.O. Box 323, Sea Bright, NJ 07760 (201-530-8555; 800-242-7298) CT, DE, DC, ME, MD, MA, NH, NJ, NY, PA, RI, VT, Audio & Video Equip.; Test & Measuring Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vacuum Tubes; Film Equip.; Vans & Accessories, System Design;

Turnkey Systems Installed

**Landy Associates, Inc.**, 1890 E. Marlton Pike, Cherry Hill, NJ 08003 (609-424-4660) CT, DE, DC, ME, MD, MA, NH, NJ, NY, PA, RI, VT, VA, Cameras; Prompters; Batteries; Audio Equip.; Test & Measuring Equip.; Film Equip.; Tape; & Accessories; Service & Repair; System Design Transmitters, Antennas & Transmission Systems; VTR's

**Quality Video Supply**, 76 Frederick St., Hackensack, NJ 07602 (201-488-8336) Nationwide, Audio & Video Equip.; Test & Measurement Equip.; Tape

**Tape City Int'l. Inc.**, 300-1 Route 17 S., Lodi, NJ 07644 (800-223-1586; 201-777-4700) CT, NJ, NY, Mail Order in U.S.A., Professional Video Equip.; Tape; Service & Repair; Used Equip.

**Tele-Measurements, Inc.**, 145 Main Ave., Clifton, NJ 07014 (201-473-8822) CT, DE, DC, NJ, NY, PA, VA, Audio & Video Equip.; Test & Measurement Equip.; Satellite Communications; Tele-Conferencing; Service & Repair; System Design

**Thor Electronics Corp.**, 321 Pennsylvania Ave., Linden, NJ 07036 (201-486-3300) Worldwide,

Vacuum Tubes

**Turner Engineering**, 325 Division St., Boonton, NJ 07005 (201-263-1000) CT, FL, GA, MD, MA, NH, NJ, NY, NC, PA, RI, SC, VT, VA, Audio & Video Equip.; RF Products; Meters, Monitors & Test Equip.; Automation/Computer Products; Miscellaneous Products; Services

## NEW MEXICO

**DYMA Engineering, Inc.**, P.O. Box 1535, Los Lunas, NM 87031 (505-865-6700) AZ, CA, CO, KS, NV, NM, OK, TX, UT, Audio & Video Equip.; Test Equip.; Transmitters, Antennas & Transmission Systems; Tape; Film Equip.; Vans & Accessories; System Design; Some Used Equip. as well as documentation and installation

See advertisement on page 214

## NEW YORK

**Acoustilog, Inc.**, 19 Mercer St., New York, NY 10013 (212-925-1365) CT, NJ, NY, Audio Equip.; Test & Measurement Equip.; Service & Repair; Used Equip.; System Design

**Adcom Communications Inc.**, 555 West 57th St., New York, NY 10019 (212-265-1760) CT, NJ, NY, Video Equip.; Test & Measurement Equip.; Service & Repair; System Design; Used Equip.; Rental Equip.

**Alpha Electronics, Inc.**, 1365 39th St., Brooklyn, NY 11218 (718-633-2800; 800-221-5802) U.S.A., Camera, Transmitting & Vacuum Tubes; Vidicons

**Audiotechniques Inc.**, 1619 Broadway, 4th Floor, New York, NY 10019 (212-586-5989) CT, DE, DC, ME, MD, MA, NJ, NY, PA, RI, VT, VA, Audio Recording Equip.; Consoles Test & Measurement Equip.; Tape; MCI, Sony, Studer Service & Repair; System Design; Used Equip.

**Auteri Associates, Inc.**, 9 Henearty Drive, Miller Place, NY 11764 (516-331-5022) Worldwide, Audio & Film Equip.; Service & Repair

**Aitech Electronics Inc.**, 22-60 46th St., Astoria, NY 11105 (718-956-1200; 800-221-1300) Worldwide, Audio & Video Equip.; Tape; Vacuum Tubes

**Barbizon Electric Co., Inc.**, 426 West 55th St., New York, NY 10019 (212-586-1620) AL, CT, DE, DC, FL, GA, IL, IN, KY, ME, MD, MA, MI, MS NH, NJ, NY, NC, OH, PA, RI, SC, TN, VT, VA, WV, WI, All Types of Lamps and Sockets; Gaffer's Tape; Hot Mill Gloves; Light Control & Diffusion Media; Color Media; Dimming Equip.

**Beaveronics, Inc.**, 8 Haven Ave., Port Washington, NY 11050 (516-883-4414) USA, Video Equip.

**Bi-Tronics, Inc.**, 76 Main St., Tuckahoe, NY 10707 (914-793-3221; Outside NY: 800-522-7377) U.S.A. and Canada, Cable and Assemblies; Audio & Video Connectors For Japanese Equip.

# Introducing TELEMET'S STEREO BROADCAST DEMOMODULATOR WITH QUADRATURE OUTPUT

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Let's Compare.

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Quadrature output adjustable to exactly 90° with no plus or minus factor	✓	—
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User friendly ICPM measurement	✓	—
Built-in low pass quadrature filtered output	✓	—
Used with any oscilloscope that has an external horizontal output	✓	✓

**\$11,990.\*** ~~\$18,000~~  
total price  
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**Burlington Audio/Video Tapes, Inc.**, 106 Mott St., Oceanside, NY 11572 (516-678-4414/800-331-3191) Nationwide, Audio/Video Tapes & Related Accessories  
**The Camera Mart, Inc.**, 456 West 55th St., New York, NY 10019 (212-757-6977) AZ, CA, CT, DE, DC, MA, NH, NJ, NY, PA, VT, Audio & Video Equip.; Test & Measurement Equip.; Tape; Film Equip.; System Design; Used Equip.

See advertisement on page 58

**CeCo Communications Broadcast Div.**, 2115 Avenue X, Brooklyn, NY 11235 (718-646-6300; 800-221-0860) Worldwide, Broadcast Tubes; Electron Tubes-Semiconductors; Broadcast Types, High Power Transmitting Tubes; Receiving Tubes; Industrial Tubes; Vacuum Tubes; Video Equip. Eimac, RCA, Amperex, GE

**R F Gain, Ltd.**, 116 S. Long Beach Road, Rockville Centre, NY 11570 (516-536-8868; 800-645-2322) Worldwide, CCTV Equip.; Vacuum Tubes; RF Amplifiers & Transistors; Vacuum Capacitors

**Henry Grossman Associates**, 519 S. Fifth Ave., Mount Vernon, NY 10550 (914-664-5393) CT, DE, DC, FL, ME, MD, MA, NH, NJ, NY, PA, VT, VA, Audio & Video Equip.; Film Equip.; Tape Equip.; Optics; TV Equip.; Transmitters (AM-FM-TV-STL), Antennas (AM-FM-TV); System Design

**Hudson Audio Video Enterprises, Inc.**, 309 Power Ave., Hudson, NY 12534 (518-828-2000) Nationwide, Audio & Video Equip.; Test & Measurement Equip.; Tape; Service & Repair; System Design; Used Equip.

**Laumic Co., Inc.**, 306 East 39th St., New York, NY 10016 (212-889-3300) CT, DE, DC, ME, MD, MA, NH, NJ, NY, PA, RI, VT, VA, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vacuum Tubes; Film Equip.; Vans & Accessories; Service & Repair; System Design; Used Equip.

**LCA Sales Co.**, 76 Main St., Tuckahoe, NY 10707 (212-402-6600; 914-961-4700; 800-522-7377) DE, DC, MD, NJ, Metro-NY, East-PA, VA, Audio & Video Equip.; Transmission Systems; System Design

**Lee Dan Communications, Inc.**, 155 Adams Ave., Hauppauge, NY 11788-3699 (516-231-1414; NY: 800-231-1414; USA: 800-Lee-Dan-1) U.S.A., Intercom Systems; Speakers & Enclosures; Wire & Cable, Annunciators; Sony Video Equip. Authorized Distributor

**Lunar Video Ltd.**, 138 East 26th St., New York, NY 10010 (212-686-4802) CT, MA, NJ, NY, Service & Repair on Video & Test Equip.

**Martin Audio/Video Corp.**, 423 West 55th St., New York, NY 10019 (212-541-5900) CT, DE, DC, ME, MD, MA, NH, NJ, NY, PA, PR, RI, VT, VI, NB, NF, NS, Ont, PEI, Que, Audio & Video Equip.; Test & Measurement; Tape; System Design; Rentals; Service & Repair

**Miller Associates Ltd.**, L. Matthew, 48 West 21st St., 11th Floor, New York, NY 10010 (212-741-8011;

800-221-9328) U.S.A., PR, Audio & Video Equip.; Test & Measurement Equip.; Tape; Service & Repair; System Design; Rental; Used Equip.  
**MPCS Video Industries, Inc.**, 514 West 57th St., New York, NY 10019 (212-586-3690) U.S.A., Full service distributor of industrial & broadcast video equip. Rental; Production, post-production & duplication. Systems Design and Installation. Specializers in network, call letter, cable stations, educational & medical institutions.

**Northeast Broadcast Lab, Inc.**, 10373 Saratoga Road, South Glens Falls, NY 12801 (518-793-2181) Continental USA, Complete AM & FM systems including audio, trans-

mitting & antenna equip.  
**Richardson Electronics-East**, 116 S. Long Beach Road, Rockville Centre, NY 11570 (800-645-2322; 516-536-8868) Worldwide, Vacuum Tubes & Capacitors; Camera Tubes; Semiconductors; CC TV Equip.; RF Amplifiers; SCR's

**Sharb Electronics**, 192-08 90th Ave., Hollis, NY 11423 (718-479-3011) Worldwide, Electron Tubes; Complete line of CCTV Products; Cameras, Monitors & Accessories; Transmitters AM-FM-TV

**Stage Lighting Distributors**, Industrial Park, Route 9 W., Stony Point, NY 10980 (914-947-3034) U.S.A. and Canada, Video Equip.; Lighting & Controls; System Design

**Temtron Electronics Ltd.**, 15 Main St., East Rockaway, NY 11518-0170 (516-599-6400; 800-645-2300) U.S.A., Audio & Video Equip.; Test & Measurement Equip.; Vacuum Tubes

## NORTH CAROLINA

**Broadcast Services Co.**, Route 3 Box 45-E, Four Oaks, NC 27524 (919-934-6869; VA 703-635-1413; Service Center 919-276-1306) DC, MD, NC, PA, SC, VA, WV, Full Line of Broadcast Audio & Radio RF Equip.

See advertisement on page 106

# You can stake your reputation on the Power Siftor.<sup>®</sup>

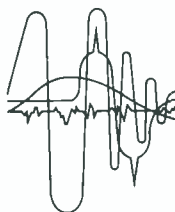
Gerald Dalton did. "We have four Power Siftors on line here at KKDA AM/FM," says Dalton, Director of Engineering for the Dallas radio station. "Since we installed one in our production room two years ago, we've had no more damage from line glitches or surges. But the real life saver has been the one on the studio mains. It's prevented damage at least twice — in a direct lightning hit to electric lines within 900 feet of the studio, and

when a downed utility pole 200 yards from the studio caused arcing between severed lines..... I recommend Power Siftor highly..... Every radio and television station should have at least one, protecting its microprocessor-based audio and video machines."

We couldn't have said it better. Write or call today for complete details on the Power Siftor — the system solution to dirty power.



## Power Systems for Today's Technology



**CURRENT**  
Technology

1400 South Sherman 202 • Richardson, Texas 75081  
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# Get It Up —

Get your sensors, antennas or illumination systems up to where they can work best with

an Allen Osborne Associates

telescopic hilomasts

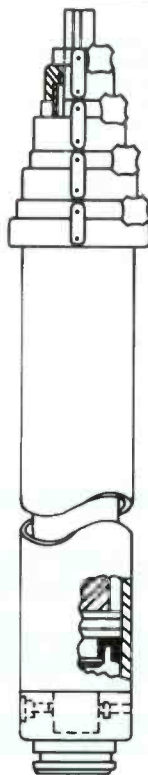
If you need to elevate your communications, jamming, or surveillance antenna or other type of sensor, the convenient, compact and portable family of Allen Osborne Associates telescopic masts is the answer. Osborne masts come in a variety of configurations with pneumatic, electric or manual drives. Adaptable for easy installation on vehicles or in fixed facilities, Osborne masts are also available as a self contained trailer system that can be towed behind your vehicles.

MIL STD 810D QUALIFIED.

**With retracted sizes from three to fifteen feet, Osborne masts can extend to over 90 feet above intervening terrain.**

*For details on how Allen Osborne Associates can help you get it up, contact*

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756 Lakefield Road,  
Building J  
Westlake Village,  
California 91361  
(805) 495-8420  
TWX: 910-494-1710



## Dealer/distributors...continued

**Electronic Merchandising Enterprises, Inc.**, 112 Buena Vista, High Point, NC 27260 (919-869-3335) East-KY, NC, SC, East-TN, VA, WV, Mixers, Mics, Amps; Video Production Switchers, Monitors, Cameras, DA's; Analyzers; Frequency Counters; Power Meters, Voltmeters; Test & Measurement Equip.; Distortion Analyzers; STL DVES, CCD Cameras

**Midwest Communications Corp.**, 2848 Interstate 85 S., Suite E, Charlotte, NC 28208 (704-399-6336) NC, SC, Audio, Video & Test Equip.; Tape; Vans, System Design; Service & Repair

**Midwest Communications Corp.**, 3033-2 Stoney Brook Drive, Raleigh, NC 27604 (919-850-9811)

**S.C.M.S., Inc.**, 10201 Rodney Blvd., Pineville, NC 28134 (704-889-4508; NC-800-221-SCMS; Outside NC-800-438-6040) National, Audio Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Service & Repair; System Design; Used Equip., Studio Design; Acoustics

**Technical Video Systems, Inc.**, 215 N. Broad St., Winston-Salem, NC 27101 (919-748-0916) NC, SC, TN, Video Equip.

**Midwest Communications Corp.**, 7500 Wall St., Cleveland, OH 44125 (216-447-9745) NY, OH, PA, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vans & Accessories; Service & Repair; System Design; Transmitters & Antennas

**Vincent Lighting Systems Co.**, 20810 Miles Parkway, Cleveland, OH 44128 (216-475-7600) IN, KY, OH, Install, Design & Service Lighting Systems & Related Equip.; Rentals are available. Expendable lighting Supplies i.e. color media, connectors, lamps, patterns

## OKLAHOMA

**Walter S. Brewer Co., Inc.**, P.O. Box 35746, Tulsa, OK 74153-0746 (918-493-7323) Worldwide, Lighting for Video; System Design

**Delcom Corp.**, 6019 S. 66th E. Ave., Tulsa, OK 74145 (918-494-9500; Outside OK 800-331-5461) Continental U.S., Total Video Systems Featuring Custom System Design; Professional & Broadcast Equip. Installation; Computerized Wiring & Tracing Documentation; Custom & Standard Cabinetry

## NORTH DAKOTA

**Audiovisual Inc.**, 1818 E. Broadway, Bismarck, ND 58502 (701-258-6360) CO, ID, IA, KS, MN, MT, NE, ND, SD, WY, Audio & Video Equip.; Test & Measuring Equip.; Transmitters; Tape; Vacuum Tubes; Film Equip.; Service & Repair; System Design; Used Equip.; Rentals

## OHIO

**Audio Marketing Association**, 9470 Whitewood Road, Brecksville, OH 44141 (216-526-2426) IN, KY, OH, PA, WV, Audio Equip.; Test & Measurement Equip.

**Cartwright Communications Co.**, 7812 Red Sky Drive, Cincinnati, OH 45249 (513-489-1755; Outside OH-800-543-8614; OH-800-582-2641) U.S.A., AK, HI, Antennas; Batteries; Duplexers; Power Suppliers; Remotes; RF Amps; Elec. Sirens & Lights; Tone Equip.; Transmission Line; Two-Way Warning Radios & Accessories; Wattmeters; Isolators; Receiver & Transmitter Multicouplers

## OREGON

**Custom Video Systems of Oregon, Inc.**, 1963 N.W. Kearney St., Portland, OR 97209 (503-295-6963) OR, Audio & Video Equip.; Test Equip.; Tape; Vans & Accessories; Service & Repair; System Design; Used Equip.

**Frontier Communications Corp.**, P.O. Box 750, Portland, OR 97207 (503-246-8080) AK, AZ, CA, CO, HI, ID, MT, NV, OR, UT, VI, WA, WY, Audio Equip.; Transmitters, Antennas & Transmission Systems; Service & Repair; Systems Design

**URS Electronics, Formerly United Radio Supply Inc.**, 123 N.E. Seventh Ave., Portland, OR 97232 (503-233-5341; 800-547-4557) AK, CA, GU, ID, MT, OR, PR, WA, Alta., BC, Sask., Cable, Connectors & Fiber Optics; Electro Mechanical Products; Motion Control & Video Systems; Power Conditioning Lab Bench/Test Equip. Products; Passive & Discrete Products

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## PENNSYLVANIA

**Alpha Video & Electronics Co.**, 28 E. Mall Plaza, Carnegie, PA 15106 (412-923-2070) MD, NY, OH, PA, WV, Audio & Video Equip.; Test & Measurement Equip.; Transmitters; Tape; Vans & Accessories; Service & Repair; System Design

**Audio Associates**, 814 W. Broad St., Bethlehem, PA 18018 (215-865-6013) U.S.A., Audio Equip.; Test & Measuring Equip.; Transmitters, Antennas & Transmission Lines; Tone Arms & Cartridges; Processing Equip.; Power Distribution & Preamps; Studio Furniture & Accessories; Used Equip. & Trade-Ins

**Comark Communications, Inc.**, P.O. Box 506, Colmar, PA 18915 (215-822-0777) Worldwide, Transmitters, Antennas and Transmission Systems

**Jerry Conn Associates, Inc.**, P.O. Box 444, Chambersburg, PA 17201 (717-263-8258) U.S.A., Regional sales rep for top quality products and national distributor for all your distribution needs from drop materials to standby 63 channel tuneable modulators.

**Lerro Electrical Corp.**, 3125 N. Broad St., Philadelphia, PA 19132 (215-223-8200) DE, DC, MD, NJ, PA, VA, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vacuum Tubes; Film Equip.; Vans & Accessories; Service & Repair; System Design; Used Equip.

**Maxima Magnetics, Inc.**, 300 Bonair Ave., Hatboro, PA 19040 (215-443-0700) AL, CT, DE, DC, FL, GA, IL, IN, IA, KS, KY, LA, ME, MD, MA, MI, MN, MS, MO, NE, NH, NJ, NY, NC, ND, OH, OK, PA, PR, RI, SC, SD, TN, TX, VT, VA, WV, WI, Audio & Video Tape; Reprocessed Tape all formats; Custom Loaded 1/2" Video Cassettes & Audio; Reloaded 3/4" Cassettes

**Northeast Broadcast Lab, Inc.**, 517 Hollyknoll Drive, Southampton, PA 12803 (213-322-2227) USA, Complete AM & FM systems including audio, transmitting & antenna equip.

**Peirce-Phelps, Inc.**, 2000 North 59th St., Philadelphia, PA 19131 (215-879-7171) U.S.A., GU, PR, VI, Audio & Video Equip.; Tape; Vans & Accessories; Service & Repair; System Design

**Performance Lighting Products Co., Inc.**, 2741 Noblestown Road, Pittsburgh, PA 15205 (412-922-0900) DE, KY, NJ, OH, WV (TV only), Studio & Remote Lighting Products & Accessories; Design, Supply & Installation of Same

**Radio Systems Inc.**, 5113 W. Chester Pike, Edgemont, PA 19028 (215-356-4700) U.S.A., Audio Equip.; Tape; Transmitters, Antennas & Transmission Systems; System Design; Service & Repair; Turnkey Installation; Studio Furniture; SCA Receivers

**RF Specialties of Pennsylvania**, 121 Conneaut Drive, Pittsburgh, PA 15239 (412-733-1994) CT, DE, DC, IL, IN, KY, ME, MD, MA, MI, MN, MO, NH, NJ, NY, NC, OH, PA, RI, TN, VT, VA, Transmitters, Antennas & Transmission Systems; Audio Equip.; System Design

**Steinberg Electronics Inc.**, 2520-22 N. Broad St., Philadelphia, PA 19132 (215-223-9400; 800-523-0894; PA Only-800-245-3105) Worldwide, Audio & Video Equip.; Tape; Vacuum Tubes

**Tape World**, 220 Spring St., Butler, PA 16001 (800-245-6000; 412-283-8621) OH, PA, WV, Tape

**Val-Tronics, Inc.**, Penn Park Building, Pittston, PA 18640 (717-655-5937) U.S.A., Cart Machines; Consoles; Transmitters; Audio Carts; Tape Recorders & Turntables; Microphones; Optimods; Antennas; Transmission Lines; Cabinets; Phono Cartridges; Replacement Heads; Amplifiers; Dummy Loads

## SOUTH DAKOTA

**Audiovisual Inc.**, 1809 Cambridge, Sioux Falls, SD 57106 (605-361-7460) IA, SD, Broadcast & Professional Audio & Video Equip.; Microwave Equip.; Test & Measurement Equip.; Tape; Film Equip.; Service & Repair; System Design; Used Equip.

## TENNESSEE

**Broadcast Equipment & Supply Co., Inc.**, P.O. Box 3141, Bristol, TN 37625 (615-878-2531) U.S.A., Audio & Video Equip.; Tape

**Gray Communications Consultants, Inc.**, 1838 Elm Hill Pike, Apcom Place Suite 101, Nashville, TN 37210 (615-883-9175) AL, AR, FL, GA, LA, MS, PR, SC, TN, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vans & Accessories; Service & Repair; System Design; Transmitters, Antennas & Transmission Systems

**Imageering Laser Disk Systems, Inc.**, 3314 Poplar Ave., Suite 1, Memphis, TN 38111 (901-323-4762; 800-922-ICMS) USA & Canada, Video equip. relating to optical disc technology

**Wilson Audio Sales**, 5972 Asberry Court, Nashville, TN 37221 (615-646-4477) AL, GA, MS, NC, SC, TN, Audio Equip.

## TEXAS

**Allied Broadcast Systems**, P.O. Box 4551, Bryan, TX 77805-4551 (409-846-8244) Worldwide, Systems engineering for clients of four Allied Divisions.

**Alpha Tower Design, Inc.**, 901 Waterfall Way, Suite 203, Richardson, TX 75080 (214-783-2578) Continental USA, Transmitters, Antennas & Transmission Systems; Tower Design & Analysis; Tower Survey & Repair

**Crouse-Kimzey Co.**, 3507 W. Vickery, Ft. Worth, TX 76107 (817-737-9911) U.S.A., Audio Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape

**Victor Duncan, Inc.**, 6305 N. O'Connor, Irving, TX 75039 (214-869-0200) U.S.A. and Canada, Audio, Film & Video Equip.; Test &

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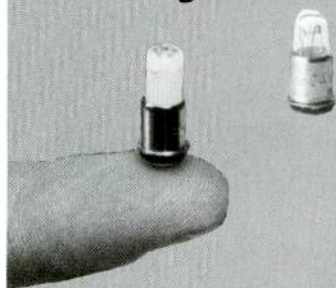
# TO \$495



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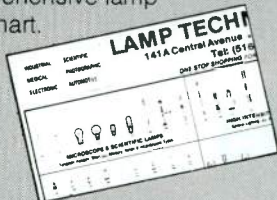
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Relamp your incandescent sockets. Our based multi LED miniature lamps are exact replacements for T 1 $\frac{3}{4}$  and T 3 $\frac{1}{4}$  incandescent miniature lamps. Shock and vibration proof, they keep your lighted panel and switches going "on" for 100,000 hours.

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  - Bright and Super Bright 4 and 6 chip based LEDs.
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  - Shock & vibration proof.
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## Dealer/distributors...continued

Measurement Equip.; Tape; Vans & Accessories; Service & Repair; System Design; Used Equip. Over 300 Lines of Pro Equip.

**Ethereum Scientific Corp.**, 7641 Clarewood, Suite 336, Houston, TX 77036 (713-784-2630) U.S.A., Service & Repair; System Design-including studio installation, etc.; Used Equip.-including leasing, rent, etc.; Vans & Accessories

**G.P. Enterprises, Inc.**, P.O. Box 912, Arlington, TX 76004-0912 (817-572-0132; 478-0050) AL, AZ, AR, CO, IA, KS, LA, MN, MS, MO, MT, NE, NM, ND, OK, SD, TN, TX, WI, WY, Audio, Video, Test & Measurement, Film & Used Equip.; Monitors; Audio Lip Sync & Time Compression/Expansion; 3D Graphics/Animation; Routing Switchers; Master Clock Systems; (SMPTE) Generators/Readers; Racks/Consoles; CCD Cameras; Digital Video Effects

**International Music Co.**, 1316 E. Lancaster, Fort Worth, TX 76102 (817-336-5114) Worldwide, AKAI Professional; Studiomaster Mixing Consoles; Ross Systems Fane Loudspeakers

**Linrose Broadcast Equipment**, 442 Breesport, San Antonio, TX 78216 (512-342-8849; TX only-800-221-3063; Outside TX-800-523-7360) Worldwide, Complete line of audio equip. & supplies

**The Management**, P.O. Box T, Aledo, TX 76008 (800-334-7823; 817-441-8532) U.S.A. & Canada, Computer Software: Music For Radio, Logging & Billing Affiliates

**MZB & Associates**, 4203 Beltway, Dallas, TX 75234 (214-233-5535) AR, KS, LA, MO, NE, NM, OK, TX, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vans & Accessories; Service & Repair; System Design; Used Equip.

**MZB & Associates**, 11231 Richmond Ave., Suite 102, Houston, TX 77082 (713-497-0611)

**MZB & Associates**, 837 Isom Road, San Antonio, TX 78216 (512-525-1628)

**Professional Audio Supply**, 5700 East Loop 820 South, Fort Worth, TX 76119-7050 (817-483-7474; 800-433-7668) Worldwide, Complete Line of Broadcast & Recording Equip. & Supplies

**RF Specialties of Texas**, P.O. Box 8316, Amarillo, TX 79114 (806-372-4518) CO, NM, OK, TX, Transmitters, Antennas & Transmission Systems; System Design; Audio Equip.; Test & Measurement RQ

**SAVCO Broadcast Equipment, Inc.**, P.O. Box 850427, Richardson, TX 75085 (214-783-1438) AL, AR, KS, LA, MI, MO, OK, TX, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; System Design

**The Gene Sudduth Co., Inc.**, P.O. Box 293, Flint, TX 75762 (214-894-6303) AR, LA, OK, TX, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems

**The Gene Sudduth Co., Inc.**, P.O. Box 518, Paris, TX 75460 (214-785-5764) AR, LA, OK, TX, Video Equip.; System Design; Service & Repair

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A good antenna is crucial to quality broadcasting. An antenna that is merely adequate will compromise the performance of even the best studio equipment and transmitter.

Shively regularly includes standard features that other companies either provide only as options or simply do not offer.

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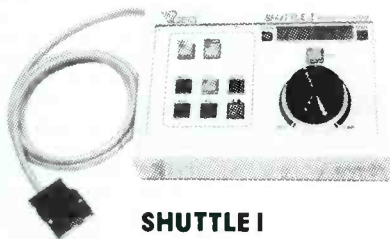
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- Update all VO-5850, VO-5800, VO-5600, VP-5000, VO-5630P, with SMPTE time code
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- Adds shuttle knob to VP-5000/VO-5600, VP-5030/VO-5630P
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- All the features of the Shuttle I *Plus*
- A/B roll editing capability with Sony RM-440
- GPI programmable switch triggers PYXIS special effects
- No additional interface cables required



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- A new interface
- Use VP-5000/5600 with: RM-440, ECS-90, ECS-204, PALTEX ABNER
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President

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In California (818) 845-1515

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## Dealer/distributors...continued

### UTAH

RIA Corp., 50 E. Malvern, Salt Lake City, UT 84115 (801-486-8822 or 484-1701) AZ, CA, CO, ID, LA, MS, MO, MT, NV, OK, TX, UT, WY, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Film Equip.; Tape; Service & Repair; System Design

### VIRGINIA

Broadcast Services Co., 408 E. Sixth St., Front Royal, VA 22630 (703-635-1413; 919-934-6869) DC, MD, NC, PA, SC, VA, WV, Full line of Broadcast Audio & Radio RF Equip.

Midwest Communications Corp., 2730 Ayliff Road, Norfolk, VA 23513 (804-262-5788) U.S.A., Audio & Video Equip.; Test & Measurement Equip.; Transmitters & Antennas; Tape; Vans & Accessories; Service & Repair; System Design

Old Dominion Broadcast Eng. Service, 1101 Front St., Richmond, VA 23222 (804-321-4506) Worldwide, Audio Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Tape; Vacuum Tubes; Service & Repair; System Design; Used Equip.

Robert Slye Electronics, 3415 N. Washington Blvd., Arlington, VA 22201 (703-525-7272) DC, MD, VA, Audio & Video Equip.; Test & Measurement Equip.; System Design

Straight Wire Audio, Inc., 4611 Columbia Pike, Arlington, VA 22204 (703-979-1990, 800-368-2081) U.S.A., Alta, BC, Ont., Que, Audio Equip.

### WASHINGTON

Bennett Engineering Associates, A Div. of Midwest Communications, 1331 118th Ave. S.E., Bellevue, WA 98005 (206-455-2331) AK, CA, ID, MT, OR, WA, Engineering Consultants-Electronic & Communication Systems; Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; System Design

Broadcast Supply West, 7012 27th St. W., Tacoma, WA 98466 (206-565-2301; 800-426-8434) Worldwide, Audio Equip.; Test & Measurement Equip.; Tape; Transmitters, Antennas & Transmission Systems

### NORTHSTAR

4030 148th Ave N.E. Bldg. N. Redmond WA 98052 U.S.A.

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The Franklyn R. Beemish & Co.'s staff is experienced in consultation, design and engineering for the foremost companies in the video post & production, broadcasting and motion picture and recording industries. Our staff is uniquely qualified to create a facility that will meet your demanding requirements. We analyze all phases of your business—budget, client needs, operational requirements, space considerations, growth potential—and design a suite or entire facility for you.

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The Jem-Fab Corporation has the necessary in-house facilities and personnel to build, install and test your turn-key facility. Our custom manufactured equipment enables your company to operate to its maximum potential and realize its greatest profits.

Whether the Jem-Fab Group designs, constructs or retrofits your studio, there are two things you can count on: A) our uncompromising commitment to quality, and B) our dedication to service for our clients in every aspect of our business.

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## Dealer/distributors...continued

**Continental Video Brokers**, 177 Telegraph Road, Suite 79, Bellingham, WA 98226 (604-858-8335; 800-663-6211) USA, Used Audio & Video Equip.

See advertisement on page 168

**Custom Video Systems, Inc.**, 17521 15th Ave. N.E., Seattle, WA 98155 (206-365-5400) AK, OR, WA, Audio & Video Equip.; Test & Measurement Equip.; Tape; Vans & Accessories; Service & Repair; System Design; Rentals

**Northshore Marketing**, 16 W. Harrison St., Suite 205, Seattle, WA 98119 (206-284-9699) AK, ID, MT, OR, WA, Audio, Test & Measurement Equip.; Projection Video Equip.

**Northstar Satellite System Inc.**, 4030 148th Ave., Building N, Redmond, WA 98052 (206-885-4730) Worldwide, Ku Band Uplinking & Downlinking; Portable Video Production Studio; Microwave Equip.

See advertisement on pages 109 and 214

**RF Specialties of Washington, Inc.**, 11721 15th Ave. N.E., Seattle, WA 98125 (206-363-7730) AK, ID, MT, OR, WA, Transmitters, Antennas & Transmission Systems; Complete line of RF & audio products.

## WISCONSIN

**Full Compass Systems, Ltd.**, 6729 Seybold Road, Madison, WI 53719 (608-271-1100; 49 states: 800-356-5844; WI: 800-362-5445) Worldwide, Audio & Video Equip.; Test & Measurement Equip.; Tape; Service & Repair; System Design; Used Equip.; Film Equip.

**Vaughn Broadcast Rentals/Vaughn Duplication Services**, 207 E. Buffalo St., Suite 200, Milwaukee, WI 53202 (414-276-6511) WI, Rental Equip.; Duplications; System Design; Audio & Video Equip.; Test & Measurement Equip.; Service & Repair; Vacuum Tubes

**Video Images**, 811 Mayfair Ave., Madison, WI 53714 (608-

241-5281) IL, WI

**Video Images**, 285 N. Janacek Road, Waukesha, WI 53186 (414-785-8998) IL, IA, MI, WI, Audio & Video Equip.; Test & Measurement; Transmitters, Antennas & Transmission Systems; Tape; Vacuum Tubes; Vans & Accessories; Service & Repair; System Design; Used Equip.

## CANADA

**Allied Broadcast Equipment, Canada Ltd.**, 10 W. Pearce St., Unit 6, Richmond Hill, Ont., Canada L4B 1B6 (416-731-3697) Canada, Independent distributor of audio, RF broadcast & professional equip.

**Comad Communications Ltd.**, 1435 Bonhill Road, Unit 34, Mississauga, Ont., Canada L5T 1M1 (416-676-9171) Canada, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Vacuum Tubes

**GERR Electro Acoustics Ltd.**, 363 Adelaide St. E., Toronto, Ont., Canada M5A 1N3 (416-868-0528) Canada, Audio & Video Equip.; Test & Measurement Equip.; Service & Repair; System Design

**Incospec Electronics, Inc.**, 4651 Boul des Grandes Prairies, St. Leonard, Que., Canada H1R 1A5 (514-322-5540) Canada, CATV, LPTV & TVRO Equip. including satellite sub-carrier low level demodulators

**Lumitrol, Ltd.**, 253 Merton St., Toronto, Ont., Canada M4S 1A7 (416-485-4817 or 4826) Canada, Video Studio; Lights, Dimmers, Drapes; Studio Grids, Power Distribution

**McCurdy Telecommunications Products Ltd.**, 70 Milner Ave., Unit 2, Scarborough, Ont., Canada M1S 3P8 (416-291-6449) Canada, Satellite SCPC Equip.

**M.S.C. Electronics Ltd.**, 147 W. Beaver Creek Road, Richmond Hill, Ont., Canada L4B 1C6 (416-731-9500) Canada, Audio & Video Equip.; Test & Measurement Equip.; Transmitters, Antennas & Transmission Systems; Vacuum Tubes; System Design

**Multi Electronic Services Ltd.**, 190 Don Park Road, Unit 5, Markham, Ont., Canada L3R 2V8 (416-475-5068) Ont., Que., Audio & Video Equip.; Service & Repair; System & Design

**Nortec West Ltd.**, 7056-B Farrell Road S.E., Calgary, Alta., Canada T2H 0T2 (403-252-8141) Alta, B.C., Man., Sask., Audio & Video Equip.; Film Equip.; Service & Repair

**Pineway Electronics Ltd.**, 1875 Leslie St., Unit 7, Don Mills, Ont., Canada M3B 2M5 (416-449-1343; Canada 800-269-7839) Canada, Audio & Video Equip.; Test & Measurement Equip.; AM-FM-TV Transmitters; Tape; Service & Repair

**Precision Camera, Inc.**, 181 Carlaw Ave., Toronto, Ont., Canada M4M 2S1 (416-461-3411) Ont., Video & Film Equip.; Service & Repair; System Design

**Tele-Tech Electronics Ltd.**, 920 Denison St., Unit 11, Markham, Ont., Canada L3R 3K5 (416-475-5646) Canada, Audio & Video Equip.; Test & Measurement Equip.; Tape; Used Equip.; SMPTE & Midi Equip.; Software

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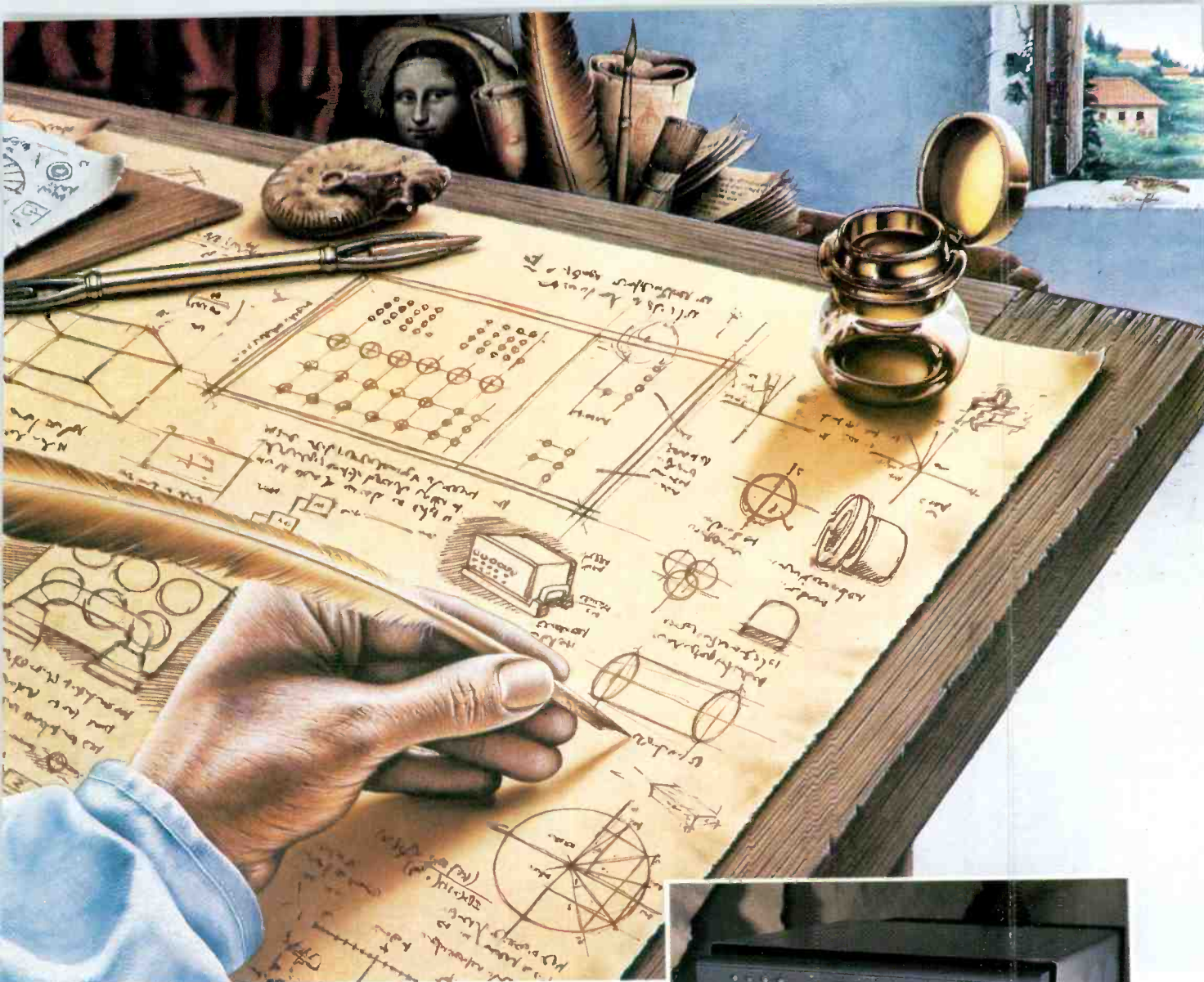
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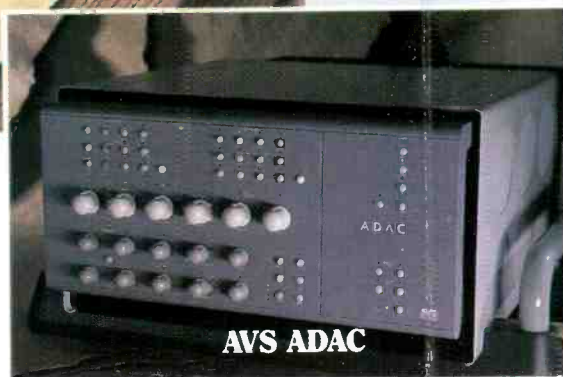
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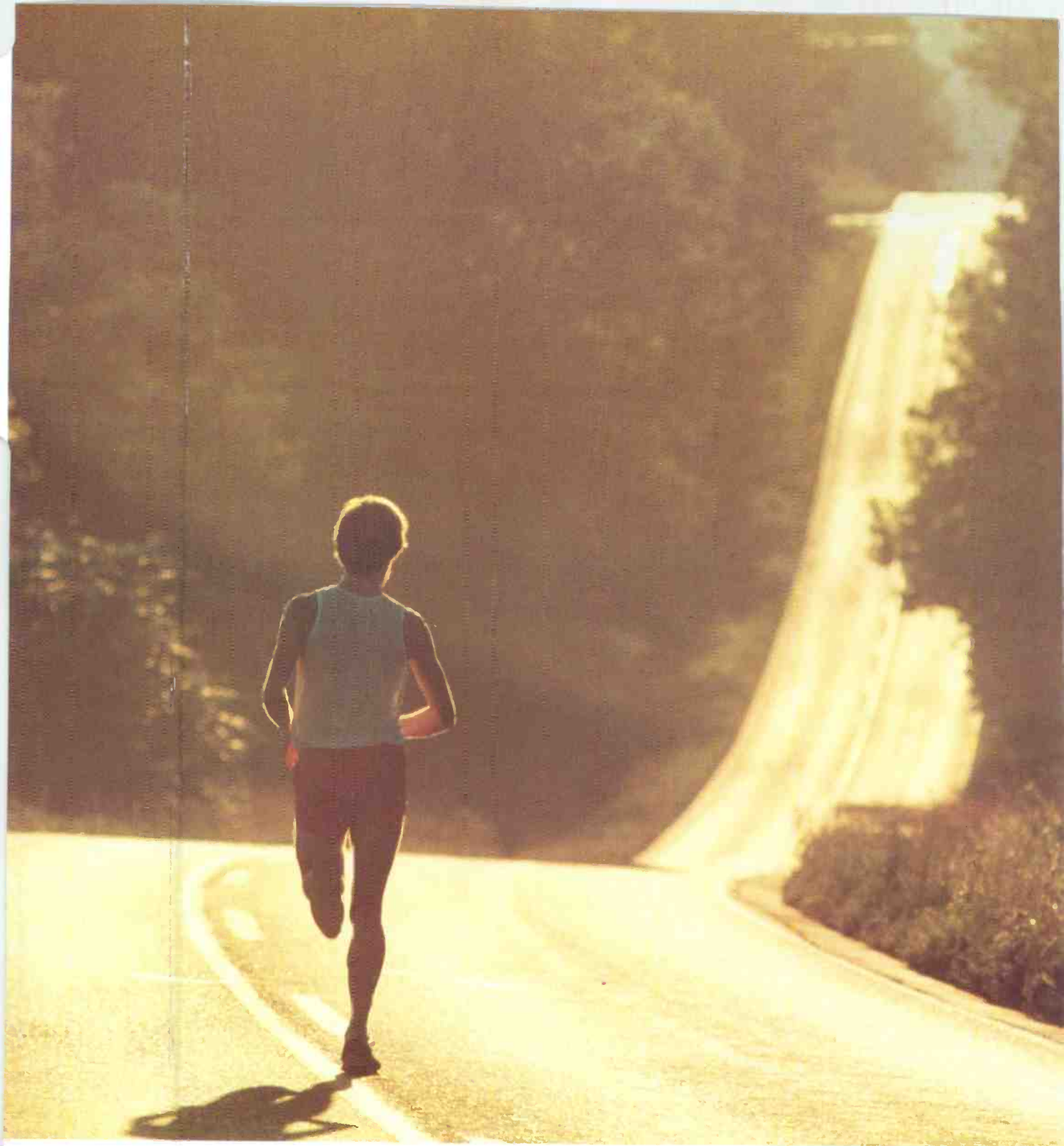
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# Video equipment specs

## Color Television Cameras

These cameras are based on a 3-pickup device design. Those marked with diamond (◆) include a shutter system. All models have noise reduction processing. All include an integral, genlocking sync generator. Enhancements are generally applied to all color channels. The optical system prisms are rated at f/1.4 aperture and that value is considered in the Maximum Sensitivity value, unless otherwise noted. All models include automatic B/W balance features. Component video systems using equi-band R-Y and B-Y differences are designated as YCrCb. Under Cable Types, multicore is designated as 'multi/c'; fiber optic material is abbreviated 'FO'.

Manufacturer	Ampex AVSD		BFE/Toshiba	BTS Broadcast TV Systems	
	Model/Series Number	CVC52	CVC3A [30]	PK-7025	◆LDK 90 [KCB590 SP]
Application	ENG, EFP	ENG, EFP	ENG	ENG	Studio, OB [ & ENG]
Pickup devices	CCD 510x492 pixel N	MF SAT [DG PbO]	LOC DG PbO	CCD Frame Transfer	PbO [LOC DP PbO]
Optical format	⅔" 500x582 pixel P/S	⅔"	½" f/1.5	610x492-pix NTSC	⅔"
Sensitivity 89.9%R	2000 lux, f/5.6	2000 lux f/4 [4.5]	2000 lux, f/4	160fc, f/4	1250 lux, f/2.8, 60%[70]
Max sensitivity	15 lux, +18dB	30[25]lux, +18dB	30 lux, +18dB	2.5fc, +18dB	40 lux, +18dB
Resolution TVL, % mod	550	650 typical	650 >40% mod	40% mod, 5MHz, RGB	45% mod, 5MHz [>750]
Registration Z1,2,3	0.05% fixed	0.1, 0.15, 0.3%	0.1, 0.15, 0.3%	<25ns [0.05%] overall	0.1/0.2% [<40/80/120ns]
S/N ratio	58dB N, 55dB P5	59dB N, 57dB P/S	56dB N, 56dB P/S	58dB N, 56dB P	52dB N, 50dB P [57/55]
Contours out of	Spatial offset/green	Green	Green dependent	Edge of band, RG	Green
ND filters	2 positions	2 positions	1/8 optic	Electronic	Optic
Color correction	4 position optic	4 position optic	3 position	Electronic	Optic [3 position]
Color standards	NTSC, PAL, SECAM	NTSC, PAL, SECAM	PAL	NTSC, PAL/M, SECAM	NTSC, PAL/M, SECAM
Output signal forms	Composite, YCrCb	Composite, YCrCb	Composite, YCrCb	RGB	Encoded, RGB [ & VTR]
CCU required/option	W/CA3 adapter opt	CCU-300 options	W/DO-7744B adapter	Opt RCU, EFP adapter	Suggested [in system]
μP control	No	Single	Single	For automatics	..... [Yes]
Setup memories	Balance, filters	Color, black, center	Color	W/menus	Color balance
Auto centering	Fixed	Yes	Yes	Fixed	Yes [Option]
Auto registration	Fixed	No	.....	Fixed	.....
Auto cable compensation	.....	No	.....	.....	Yes
Computer setup system	.....	No	No	.....	No
Diagnostic display	.....	.....	Yes	Yes	Limited, CCU & [VF]
Cable types	Coax	Per adapter	.....	19p multi/c	Multi Ka64 [multi/tri/FO]
Portable unit	Yes	Yes	Yes	Yes	No [Yes]
Camera head weight lbs	7 w/VF	9.5 w/lens, VF	6.1 [17.6]	9 [15]	50 w/o lens [<15]
Docking VCR	CVR1-A Betacam	Betacam CVR-1A adapter	VTR-1PS Betacam	Betacam [SP BCB5]	No
Reader Service Number	501	502 [503]	504	505 [506]	507 [508]

Manufacturer	BTS Broadcast TV Systems				
	Model/Series Number	LDK12	KCF-1/KCB-1	KCM-125 [KCM-318]	LDK 54A
Application	ENG, EFP	ENG	Studio, field, OB	ENG	Studio, field
Pickup devices	MF LOC DG SAT	LOC PbO	LOC DG PbO	High Stability PbO	PbO
Optical format	⅔"	½"	1" f/1.5 [⅔" HS PbO]	⅔"	1, 1¼ [⅔]"
Sensitivity 89.9%R	2000 lux, f/4	700 lux, f/2	630 lux, f/2.8 [800]	900 lux, f/3	70fc, f/2.8, 60%R, 1"
Max sensitivity	.....	85 lux, +12dB	30[25] lux, f/1.6 18dB	24 lux, +18dB	4.6fc, f/1.6, +12dB
Resolution TVL, % mod	750	40% mod, 4MHz	>700 [60% mod, 5MHz]	>650	Adj to 400, 100% mod
Registration Z1,2,3	<0.1, <0.1, <1.5%	<40, <80, <120ns	μP corrected	<30, <60, <100ns	<25, <40, <40ns
S/N ratio	55dB CCIR 625/50	54dB N, 52dB P/S	58dB N, 56dB P/S	59dB N, 57dB P	58dB N, 56dB P
Contours out of	Green	Green	Green	1b-eob, green	Green, 1b-eob [red opt]
ND filters	12% ND optic	25% ND optic	3 position optic	2 position	5 [3] position
Color correction	3 position optic	3 position optic	3 optic, electronic	#85B optic	#85B, clear, 3 blank
Color standards	CCIR 625/50 2:1	NTSC, PAL/M, SECAM	NTSC, PAL/M, SECAM	NTSC, PAL/M, SECAM	NTSC, PAL/M, SECAM
Output signal forms	Encoded, RGB	Encoded or component	Encoded, RGB	Y/U/V, encoded	RGB, composite
CCU required/option	LDK1206	CCU, RCU options	CCU suggested	Optional	Required
μP control	Yes	No	Yes	.....	4 [3] distributed
Setup memories	Color balance	Color balance	Multifunction	Color balance	2, 4 [2] lens, 6 ops
Auto centering	Yes	No	Yes	.....	Yes
Auto registration	No	No	Yes	Yes	49-point
Auto cable compensation	No	No	Yes	Yes	Yes
Computer setup system	No	No	Yes	.....	Yes
Diagnostic display	In viewfinder	No	Yes	.....	2 system & COACH
Cable types	26-pin, 14/10-pin VTR	Multi/c	Multi/c, triax	Multi/c, triax	Triax to 6,560 ft
Portable unit	Yes	Yes	No	Yes	No
Camera head weight lbs	10 w/VF	<15 w/lens, VF	73 [17.6]	9.35	94.6 [79]
Docking VCR	No	BCB-1 Betacam on KCB-1	No	BCB-1 Betacam	No
Reader Service Number	509	510	511 [512]	513	514 [515]

## Color Television Cameras

Manufacturer	Hitachi Denshi				Ikegami Electronics
Model/Series Number	FP-Z31A [FP-Z31P]	SK-970D	SK-110D	SK-97 [SK-97D]	HL-791S
Application	ENG, EFP	Studio, OB	Studio, OB	ENG, EFP	ENG, low light
Pickup devices	MS SAT [DG-LOC PbO]	DG LOC PbO	DG LOC PbO	MS DG SAT or PbO	Si intensifier
Optical format	2/3" w/bias	2/3" f/1.2 w/bias	1 1/4" f/1.8	2/3" w/bias	1"
Sensitivity 89.9%R	2000 lux, f/4[4.5]	2000 lux, f/4.5	2000 lux, f/5.6	2000 lux f/4[4.5]	.....
Max sensitivity	40[30]lux f/1.6, 18dB	2fc, f/1.2, +21dB	.....	+18dB	2 lux f/2.8 +0dB
Resolution TVL, % mod	800 [660]	650	400 60% mod	700 SAT, [650] PbO	500
Registration Z1,2,3	0.1, 0.2, 0.4%	0.05, 0.1, 0.2%	0.05% overall	0.05, 0.1, 0.2%	0.1, 0.3, 0.5%
S/N ratio	60dB N, 57dB P [57dB N]	60dB N, 57dB P-B	56dB N, 54dB P	59dB N, 56dB P	58dB
Contours out of	Green	Green	RGB	Green	RGB
ND filters	Internal 1/8ND	6.3%, 25%, 100% int	5 position filter	6.3%, 25%, 100% int	5%
Color correction	3 position optic	3 position	6 position	3 position int	3 position optic
Color standards	NTSC, PAL-B [NTSC]	NTSC, PAL-B	NTSC, PAL	NTSC, PAL (NTSC/PAL-B)	NTSC
Output signal forms	Composite	Composite, RGB	Composite, RGB, key	Composite, RGB/YIQ/YUV	Composite, RGB
CCU required/option	RCU opt	BU-97D, CCU-110D opt	CCU-110D required	BSU97[D]/CCU110[D]	MA/TA-79E, dig RCU
μP control	Yes	Multiple	Multiple	Multiple	Yes
Setup memories	Color balance	Color/lens/scene/temp	Full setup	Color balance, lens	Color balance
Auto centering	Yes	Yes	Yes	Yes	.....
Auto registration	Yes	Yes	Yes	Yes	.....
Auto cable compensation	Yes	Yes	Yes	Yes	.....
Computer setup system	From opt CCU	BU-97D to 6 cameras	SU-110D	BSU-79[D] to 6 cameras	Yes
Diagnostic display	In viewfinder	CCU and viewfinder	CCU, VF	Viewfinder, CCU	VF
Cable types	Multi/c, coax, triax	Multi/c, triax, coax	24-core	Multi/c, triax, coax	Multi/c, triax
Portable unit	Yes	No	No	Yes	Yes
Camera head weight lbs	10.8 w/o lens, vf	55	88	15	24.2
Docking VCR	No	No	No	HR-50, -100 adapter	No
Reader Service Number	516 [516]	518	519	520 [521]	522

Manufacturer	Ikegami Electronics				
Model/Series Number	HK-323 [HK-323P]	HDK-1125P	HL-79E [79PC]	HL-95B Unicam	SC-500
Application	Studio, OB, ENG, EFP	HDTV	ENG, EFP	ENG, EFP	Studio
Pickup devices	DG PbO	MS high resolution	DG/LOC PbO or SAT	PbO StaMag DG	PbO or SAT



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## Color Television Cameras

Manufacturer	Ikegami Electronics				
Model/Series Number	HK-323 [HK-323P]	HDK-1125P	HL-79E [79PC]	HL-95B Unicam	SC-500
Optical format	1" or [3/4"]	1"	2/3"	2/3"	2/3"
Sensitivity 89.9%R	2000 lux, f/5.6 [4.5]	150fc, f/2.8	2000 lux, f/5	2000 lux, f/4.5	200fc, f/4
Max sensitivity	10fc, +6dB	.....	≤20 lux, +18dB	≤15 lux, f/1.6, 24dB	8fc, f/1.6, +12dB
Resolution TVL, % mod	700 [650]	1125	650	650 center	700 center, SAT
Registration Z1,2,3	0.05, 0.1, 0.2%	.....	0.05, 0.1, 0.3%	0.05, 0.1, 0.2%	0.1, 0.2, 0.4%
S/N ratio	59dB, 4.2MHz [60dB]	44dB Y-channel	57dB, 59dB/LOC [61dB]	60dB	57dB N
Contours out of	RGB	Green	RGB	RGB	RGB
ND filters	4 [3] internal	6 position internal	3 [4] position	25%	ND8 [12.5%]
Color correction	4 [3] pos optic	6 position optic	3 [4] position optic	3 position optic	3 position optic
Color standards	NTSC	2:1 interlace, 5:3	NTSC	NTSC	NTSC
Output signal forms	Composite, RGB	Y/Cw/Cn, RGB	Composite, RGB	Composite, RGB	RGB, composite
CCU required/option	Yes [Opt]	Yes	TA/MA-79E opt	Base station opt	Yes
μP control	Multiple	Multiple, distributed	Yes	Yes	Single
Setup memories	Color bal, lens	Color, lens, others	Lens, color bal	Color balance	Color balance
Auto centering	Yes	Yes	Yes	Yes	Yes
Auto registration	Yes	Yes	Yes	Yes	Yes
Auto cable compensation	Yes	Yes	Yes	.....	Yes
Computer setup system	Yes, to 40 cameras	Yes	w/ADC-79 setup control	Base station opt	No
Diagnostic display	Yes, hardcopy opt	Yes	VF, CCU, hardcopy	Viewfinder	Viewfinder
Cable types	Triax, multi, fbr op	F-7 28-core, fbr op	Multi, triax [fbr op]	Multi/c, triax, coax	Multi/c, coax
Portable unit	HK-323P	No	Yes	Yes	No
Camera head weight lbs	57.2 -1" [15.4]	94	13.2 [11] w/VF	7 w/o lens, bat	30.9 w/o VF
Docking VCR	No	No	[w/adapters]	Adapts M-II, Bétacam	No
Reader Service Number	523 [524]	525	526 [527]	528	529

Manufacturer	Ikegami Electronics		JVC Company		
Model/Series Number	ITC-730A [730AP]	HK-322	◆CCD-770 [HL-379]	KY-950BU [900BU]	BY-110U
Application	ENG, EFP	Studio	ENG	ENG, EFP, studio	ENG
Pickup devices	SAT [PbO]	PbO ACT, LOC, DG	CCD [649x491 pixel]	PbO [SAT] LOC DG	ES focus EM defl SAT
Optical format	2/3"	30mm std or 25mm opt	2/3"	2/3"	1/2"

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## Color Television Cameras

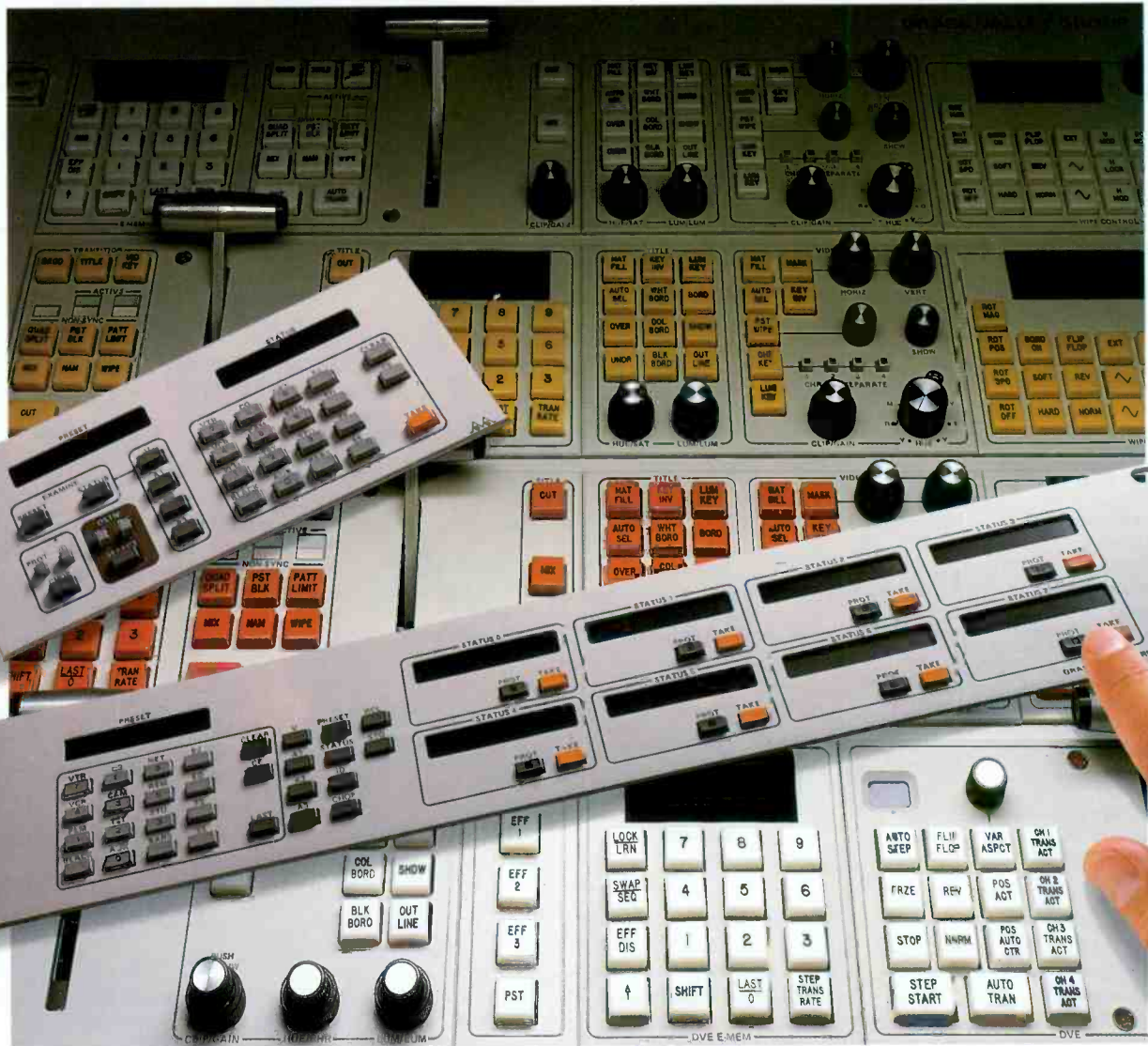
Manufacturer	Ikegami Electronics			JVC Company	
Model/Series Number	ITC-730A [730AP]	HK-322	◆CCD-770 [HL-379]	KY-950BU [900BU]	BY-110U
Sensitivity 89.9%R	2000 lux, f/4	1200 lux, f/4	2000 lux, f/4	2000 lux, f/4.5	2000 lux, f/2.8
Max sensitivity	40 lux, f/1.6, 18dB	350 lux, f/2.1 [30mm]	40 lux, f/1.6, +18dB	38 lux, f/1.7, +18dB	65 lux, +12dB
Resolution TVL, % mod	>650 [>600]	400, 60% mod 5MHz	480 [650]	700	600
Registration Z1,2,3	0.1, 0.2, 0.4%	0.05% overall	0.05%, fixed	0.05, 0.1, 0.3%	0.1, 0.4, 0.8%
S/N ratio	57dB	56dB [58dB 25mm]	53dB [>58dB]	59dB	54dB
Contours out of	RGB	RGB opt	RGB [Green]	Green	Green
ND filters	25% internal	6 position	..... [25%]	25%	25%
Color correction	3 position optic	6 pos electronic	Electronic [3 optic]	3 position optic	3 position optic
Color standards	NTSC	NTSC	NTSC	NTSC	NTSC
Output signal forms	Composite, RGB at CCU	RGB, composite	Composite [and RGB]	Composite	Composite
CCU required/option	CCU-730A	Yes	No [w/adaptor opt]	RS-500U/-T900U opts	RS-110U opt
μP control	Single	Multiple	.....	Single	Yes
Setup memories	Color balance	Lens, b/w bal	Color balance	Yes	Color balance
Auto centering	Yes	Yes	Fixed	Yes	Yes
Auto registration	No	Yes	Fixed	No	Auto-shift
Auto cable compensation	Yes	Yes	.....	No	No
Computer setup system	No	From CCU	No	No	No
Diagnostic display	No	At CCU, printer	.....	In Viewfinder	No
Cable types	Multi/c, coax	TV24[81], triax	..... (per adapter)	Multi/c, triax	14-core, triax
Portable unit	Yes	No	Yes	Yes	Yes
Camera head weight lbs	11.4 w/VF	55	8.6	10	8.2
Docking VCR	No	No	No [w/adaptor 1/2, 1/4"]	No	No
<b>Reader Service Number</b>	<b>530 [531]</b>	<b>532</b>	<b>533 [534]</b>	<b>535 [536]</b>	<b>537</b>

Manufacturer	JVC Company		NEC America	Panasonic Broadcast	Panasonic/Industrial
Model/Series Number	KY-320U	KY-210BU	◆SP-3A [SP-3AUw†]	◆AK-400 CCD	WV-555BN [N3][WV-V3]
Application	ENG, EFP, studio	ENG, EFP, studio	ENG, EFP	ENG, EFP	ENG, EFP, studio
Pickup devices	SM PbO	HR EM SAT	CCD interline f/t	Interline f/t	Newvicon [S4701]
Optical format	2/3"	2/3"	2/3" 2-G, 1-R/B	2/3"	2/3" (1/2")
Sensitivity 89.9%R	2000 lux, f/4.5	2000 lux, f/4	130fc, f/4	.....	140fc, f/4
Max sensitivity	38 lux, f/1.7, +18dB	32 lux, +18dB	<5fc, +12dB	...../0/9/+18dB	2(3)fc, +18(12)dB
Resolution TVL, % mod	650	650	550 Hor/350 Ver	580	600 (570)
Registration Z1,2,3	0.1, 0.2, 0.3%	0.1, 0.2, 0.4%	Fixed	Fixed	0.1/.2/.4% (0.1/.3/.6%)
S/N ratio	57dB	58dB	58dB	58dB	55(54)dB N, 53dB P
Contours out of	Green	Green	Green	RGB	Green
ND filters	25%	25%	Internal	4-position	Internal
Color correction	3 position optic	3 position optic	Optic	4-pos optic	Optic(4-pos)
Color standards	NTSC	NTSC	NTSC	NTSC, component	NTSC, PAL (NTSC)
Output signal forms	Composite	Composite	All component formats	Composite, YIQ, RGB	YIQ/M-format
CCU required/option	RS-500U, RS-T900U opts	FS-500U opt	Option	Option	Option
μP control	No	.....	.....	Single	Single
Setup memories	Color balance	Color balance	Color balance	B/W bal	Color balance
Auto centering	Yes	Yes	Fixed	Yes	Yes
Auto registration	Auto-shift	Auto-shift	Fixed	.....	No
Auto cable compensation	No	No	Option	.....	No
Computer setup system	No	No	None	No	No
Diagnostic display	In viewfinder	In viewfinder	.....	In viewfinder	No (in viewfinder)
Cable types	Multi/c, triax	multi/c, coax, triax	Triax, multi [26,41]	Multi/c, coax	Multi/c (& BNC)
Portable unit	Yes	Yes	Yes	Yes	Yes
Camera head weight lbs	9.2	7.8	10.2	7	7.7 (13.9/ENG)
Docking VCR	No	No	8mm/Beta/M-II adapters †4AUW underwater	AU-400 M-II	No
<b>Reader Service Number</b>	<b>538</b>	<b>539</b>	<b>540 [541]</b>	<b>542</b>	<b>543 (607)</b>

Manufacturer	Panasonic/Industrial		Sharp Electronics		
Model/Series Number	WV-888	WV-890 [P3]	XC-B10	XC-B20P	XC-1A
Application	ENG, EFP, studio	ENG, EFP, studio	ENG, EFP	ENG, EFP	ENG, EFP, Studio
Pickup devices	SAT [H4101B]	PbO [S4804]	DG, LOC/MS, SAT	DG LOC MS PbO	MF DG LOC SAT
Optical format	2/3"	2/3"	2/3"	2/3"	2/3"
Sensitivity 89.9%R	190 lux f/4	190 lux, f/4	2000 lux, f/4	2000 lux, f/4.5	2000 lux, f/4
Max sensitivity	6fc, +18dB	4 fc, f/1.6, +18dB	30 lux, +18dB	24 lux, +18dB	30 lux, +18dB
Resolution TVL, % mod	650	650	750 center	660 center	750
Registration Z1,2,3	0.1, 0.2, 0.4%	0.1, 0.2, 0.4%	0.1, 0.2, 0.4%	<0.01, 0.01, 0.02%	0.1, 0.2, 0.4%
S/N ratio	57dB N, 54dB P	59dB N, 56dB P	57dB	57dB	57dB
Contours out of	Green	Green	Green	Green	Green
ND filters	Internal	Internal	+12% internal	+12%	+12% internal



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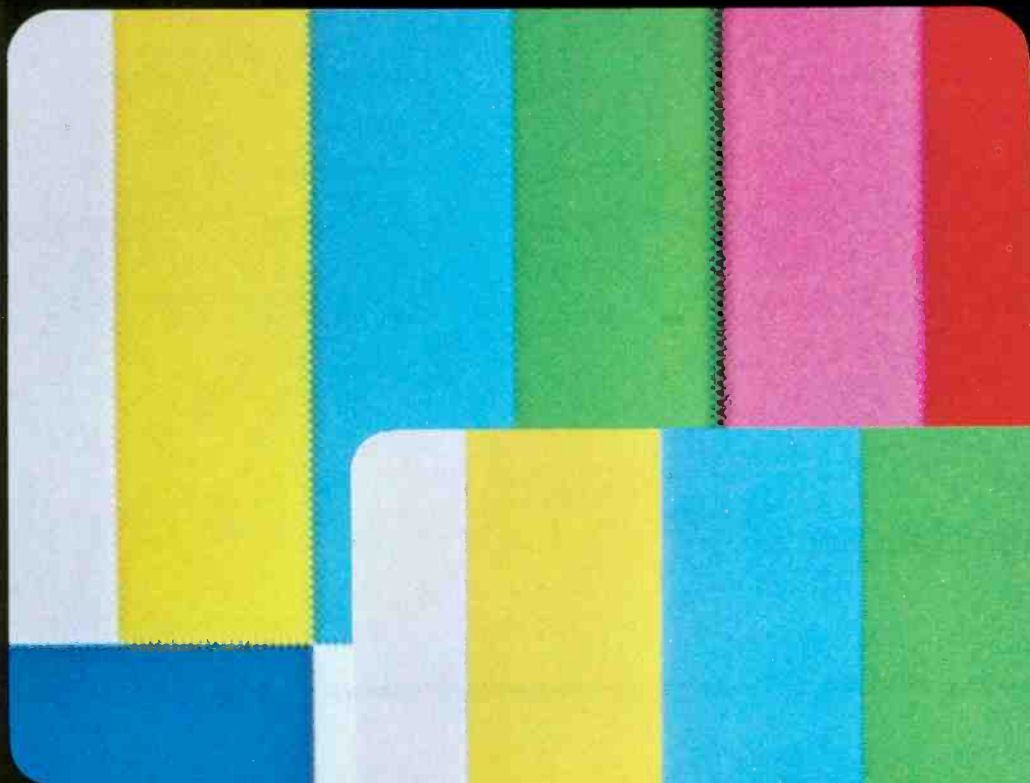
## Color Television Cameras

Manufacturer	Panasonic/Industrial			Sharp Electronics	
	Model/Series Number	WV-888	WV-890 [P3]	XC-B10	XC-B20P
Color correction	Optic	Optic	3 position optic	3 position optic	3 position optic
Color standards	NTSC, PAL	NTSC, PAL	NTSC	NTSC	NTSC
Output signal forms	YIQ/M-format	YIQ/M format	Composite, RGB	Composite, RGB	Composite, RGB
CCU required/option	Option	Option	RCU opt	RCU opt	RCU opt
μP control	Single	Single	Single	Yes	Yes
Setup memories	Color balance	Color balance	Color balance	Color balance	Color balance, clock
Auto centering	Yes	Yes	Yes	Yes	Yes
Auto registration	No	No	No	No	.....
Auto cable compensation	No	No	No	No	.....
Computer setup system	No	No	.....	No	No
Diagnostic display	None	No	VF	VF	VF
Cable types	Multi/c	Multi/c	Multi/c, coax, triax	300m triax opt	Multi/c, coax
Portable unit	Yes	Yes	Yes	Yes	Yes
Camera head weight lbs	12.1	10.3	10.8	10.5	10.5
Docking VCR	No	No	M-II/Betacam adapters	Betacam/M-II adapters	No
<b>Reader Service Number</b>	<b>544</b>	<b>545</b>	<b>546</b>	<b>547</b>	<b>548</b>

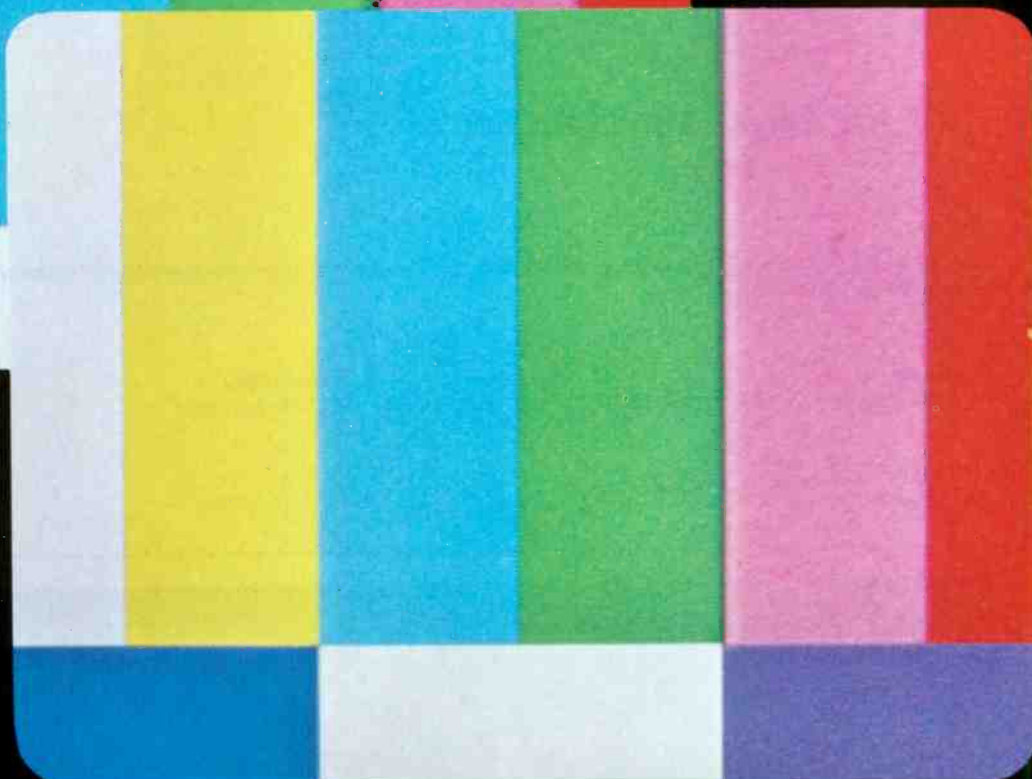
Manufacturer	Sony Broadcast					
	Model/Series Number	BVP-330A	BVP-5	BVP-150, -150P	BVP-350 [BVP-360]	BVP-3A [BVP-30]
Application	ENG, EFP, studio	ENG	ENG	ENG	ENG, EFP [& studio]	ENG, EFP
Pickup devices	DG PbO	Interline f/t CCD	MF SAT	PS PbO [DG PbO]	MF SAT [DG PbO]	MF SAT [DG PbO]
Optical format	2/3"	2/3"	2/3"	2/3", f/1.2	2/3"	2/3"
Sensitivity 89.9%R	200fc, f/4.5	200fc, f/5.6	200fc, f/4	2000 lux, f/4.5 [200fc]	200fc, f/4.5	200fc, f/4.5
Max sensitivity	2.5fc, +18dB	1.5fc, +18dB	3fc, +18dB	10 lux f/1.2 24dB [1fc]	3fc, +18dB	3fc, +18dB
Resolution TVL, % mod	650	550 (510x492 array)	650	700	650	650
Registration Z1,2,3	0.1, 0.2, 0.4%	0.05% fixed	0.1, 0.2, 0.4%	Digital [0.05/.1/.15%]	0.1, 0.15, 0.3%	0.1, 0.15, 0.3%
S/N ratio	58dB N	58dB	57dB N, 55dB P	60dB	59dB N, 57dB P	59dB N, 57dB P
Contours out of	Green	Green spatial offset	Green	RGB ob aperture	Green	Green
ND filters	Internal	.....	Internal optic	2 position internal	Internal	Internal
Color correction	Optic, electronic	4 optic	Optic	4 pos optic [& elect]	Optic, electronic	Optic, electronic
Color standards	NTSC, PAL	NTSC	NTSC, PAL	NTSC [& PAL]	NTSC, PAL/M, SECAM	NTSC, PAL/M, SECAM
Output signal forms	Encoded, Y/R-Y/B-Y	Encoded, Y/R-Y/B-Y	Encoded, Y/R-Y/B-Y	Composite [RGB/YCrCb]	Composite, YCrCb	Composite, YCrCb
CCU required/option	CCU-300 suggested	No	CCU-M3 suggested	CCU-360 triax opt[360H]	CCU-300 option	CCU-300 option
μP control	Yes	Yes	Single	Single	Single	Single
Setup memories	Color, black, center	Balance, filters	Color, black, center	Color balance [& lens]	Color, black, center	Color, black, center
Auto centering	Yes	Fixed	Yes	Yes	Yes	Yes
Auto registration	No	Fixed	Nos	Yes	No	No
Auto cable compensation	No	No	No	Yes	No	No
Computer setup system	No	No	No	w/CCU [in head/CCU]	No	No
Diagnostic display	No	.....	In viewfinder	Viewfinder [& CCU]	No	No
Cable types	Multi/c, coax, triax	Coax	Multi/c	Triax, multi [& coax]	Multi/c, coax, triax	Multi/c, coax, triax
Portable unit	Yes	Yes	Yes	Yes [No]	Yes	Yes
Camera head weight lbs	11.9	19.5 operational	9.2	> 13.5 [50 w/VF]	10.1	10.1
Docking VCR	No	BVW-105	No	No	BVW-3A [BVW-30A]	BVW-3A [BVW-30A]
<b>Reader Service Number</b>	<b>549</b>	<b>550</b>	<b>551</b>	<b>552 [553]</b>	<b>554 [555]</b>	<b>554 [555]</b>

Manufacturer	Sony Broadcast		Thomson Video Equipment		
	Model/Series Number	BVP-SuperMotion <sup>1</sup>	HDC-100 <sup>2</sup>	TTV 1530	TTV-1623 [-1624]
Application	EFP, slow motion	HDTV, 1,125/60 only	Studio, OB	ENG, EFP	ENG, EFP
Pickup devices	MS PbO or MS SAT	Mix-field SAT	LOC DG PbO	SAT [LOC PbO]	Interline f/t CCD
Optical format	2/3"	1"	2/3"	2/3"	2/3" 510x493-pix
Sensitivity 89.9%R	200fc, f/4.5	200fc, f/3	130 fc, f/4	.....	1100 lux, f/4
Max sensitivity	10fc, +6dB	25fc, f/1.6, +6dB	2 fc, +18dB	3 fc, +18dB	12 lux, +21dB
Resolution TVL, % mod	500	1200	400 @ 50% mod	650	550
Registration Z1,2,3	0.1, 0.2, 0.4%	0.025, 0.05, 0.1%	0.05, 0.1, 0.1%	0.1, 0.2, 0.4%	0.05% overall fixed
S/N ratio	51dB for system	.....	58dB N, 57dB P	57dB [58dB] N	59dB N, 57dB P/S
Contours out of	Green	Green	Green	Green	RGB
ND filters	Int optic	Int optic	Internal	Internal	Internal
Color correction	Int optic	Int optic	Optic	Optic	Electronic
Color standards	NTSC & 90fr/s	HDTV	NTSC, PAL, SECAM	NTSC, PAL, SECAM	NTSC, PAL, SECAM
Output signal forms	.....	RGB, Y/Cw/Cn	Composite, RGB	Composite, RGB, YCrCb	RGB, adapters
CCU required/option	CCU-3000/DPU-3000	HDCO-100 required	No	Opt	w/CA-83 adapter opt
μP control	Yes	Distributed	Multiple	Distributed	Ops, status
Setup memories	.....	Color, black, gamma	Color, centering	Color, centering	2 B/W bal per color set
Auto centering	Yes	Yes	Yes	Yes	Fixed





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## Color Television Cameras

Manufacturer	Sony Broadcast			Thomson Video Equipment	
Model/Series Number	BVP-SuperMotion <sup>1</sup>	HDC-100 <sup>2</sup>	TTV 1530	TTV-1623 [-1624]	TTV 1640
Auto registration	Yes	Yes	.....	Option	Fixed
Auto cable compensation	Yes	Yes	.....	No	.....
Computer setup system	In CCU	In CCU	External unit opt	From CCU, ext unit	Opt
Diagnostic display	.....	No	Yes	Viewfinder	Status, VF
Cable types	Multi/c, fiber optic	Multi/c, fiber optic	Multi/c, triax	Multi/c, coax, triax	Triax w/CA83 adapter
Portable unit	Yes	No	No	Yes	Yes
Camera head weight lbs	12	22 camera head	62	9.4	7.7
Docking VCR	No	No	No	Betacam format	Betacam adapter
Reader Service Number	556	557	558	559 [560]	561

<sup>1</sup>System requires BVH-2700 VTR & BFT-2700 TBC for implementation.

<sup>2</sup>System requires HDT-1000 TBC & HDV-1000 VTR for implementation.

## TV Camera Zoom Lenses

The following group of lenses use 1/2" optics. All lens systems include a focus zoom servo unless noted. Availability of integral diascope features is designated by a diamond (◆).

Manufacturer	Angenieux		Schneider Optics
Model/Series Number	◆40x14ERM†	◆18x12.5HP†	TV59.02 Apo-varon HM14X
Application	EFP/sports	Studio/OB	ENG/EPF
Zoom range (basic) mm	14-560	12.5-225	6.5-91, 13-182 (4.5)





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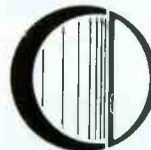
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## TV Camera Zoom Lenses

Manufacturer	Angenieux		Schneider Optics
Model/Series Number	◆40x14ERM†	◆18x12.5HP†	TV59.02 Apo-varon HM14X
Aperture (wide-tele)	f/1.9-f/32.1	f/1.5-f/1.7	f/1.4-f/3
MOD distance	0" (at front glass)	27.8"/0.6m	31.5"/0.8m
MOD image area (HxVmm)	55x41.5 (8.2'/2.5m)	80x60	53x40
Horiz. angle (wide-tele)	49.75°-1.33°	54°1.3'-5°02'	53°-4°, 27°-2.2°
Back focus distance mm	Manual, electronic	....	35.5
Clear apertures (f/r) mm	....	....	70.5, 30.5
Integral extender(s)	2.1x std, 1.45x opt	1.6x, 2.5x	2x
Macro focus feature	....	....	Yes
Zoom/iris servo	LEDs show position	Belt-drive w/LED	Yes
Weatherized housing	....	....	No
Assembly weight	43 lbs	....	3.95 lbs/1.8 kg
	†μP-control	†HEC coatings	
Reader Service Number	562	563	564

## TV Camera Zoom Lenses

The following group of lenses use  $\frac{2}{3}$ " optics. All lens systems include a focus zoom servo unless noted. Availability of integral diascope features is designated by a diamond (◆).

Manufacturer	Angenieux			Canon		
Model/Series Number	14x6	14x7	J13x9BiE-II	J40x9.5BiE	◆J45x9.5BiE	J18x9BIRS
Application	ENG/EFP w/CCD	ENG/EFP w/CCD	ENG	OB, studio	EFP, OB, sports	ENG, EFP
Zoom range (basic) mm	6-84	7-98	9-117	9.5-380	9.5-430	9-126
Aperture (wide-tele)	f/1.4-f/1.6	f/1.4-f/1.6	1.6-1.9	1.4-2	1.7-3	1.7-2.4
MOD distance	31"/0.8m	31"/0.8m non-macro	29.1"/0.8m	8.2"/2.5m	70.9"/1.8m	35"/0.9m
MOD image area (HxVmm)	61x46 non-macro	52x39	56x42	50x38	33x25	45x34

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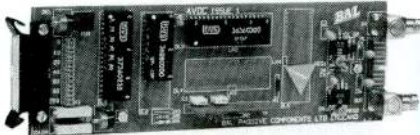
## TV Camera Zoom Lenses

Manufacturer	Angenieux				Canon	
Model/Series Number	14x6	14x7	J13x9BIE-II	J40x9.5BIE	◆J45x9.5BIE	J18x9BIRS
Horiz. angle (wide-tele)	58°-4.5°	52°-4°	52.1°-4.3°	49.7°-1.3°	49.7°-1.2°	52.1°-3.1°
Back focus distance mm	Adjustable	Adjustable	22.1-48.3*	48.9-41.7*	48.3-42*	40.6-48.6*
Clear apertures (f/r) mm	.....	.....	72.6, 31.7	200, 37	146.8, 33	82.8, 31.2
Integral extender(s)	2x†	2x†	2x available	2x	2x, 1.5x option	2x
Macro focus feature	0 (at front glass)	0	Yes	No	No	Yes
Zoom/iris servo	Yes	Yes	Yes	Yes	Yes	Yes
Weatherized housing	.....	.....	.....	No	.....	.....
Assembly weight	4.2 lbs	3.1 lbs	3.2 lbs	66 lbs	30.8 lbs	3.75 lbs
	†Wide-angle opt	†Wide-angle, retro-zoom, tele opt	•Camera dependent			
Reader Service Number	565	566	567	568	569	570

Manufacturer	Fujinon					
Model/Series Number	A12x9ERM	◆A18x8ESM (A20x7ESM)	◆A15x8ESM	A22x12.5ERM	◆A8.5x5.5ERM	A10x10RM
Application	ENG	EFP	ENG	ENG, EFP	Wide-angle	ENG
Zoom range (basic) mm	9-108	8-144 (7-140)	8-120	12.5-275	5.5-47	10-100
Aperture (wide-tele)	f/1.7-f/1.9	f/1.5-f/1.9 (f/1.4-1.6)	f/1.5-f/1.6	f/2-f/2.8	f/1.7-f/1.9	f/1.6-f/1.7
MOD distance	3'/0.95m	27.5"/0.7m (0.75m)	27.5"/0.7m	6'/1.8m	12"/0.3m	39.36"/1m
MOD image area (HxVmm)	73x55	51x38 (58x44)	61x46	54x41	57.9x43.4	80x60
Horiz. angle (wide-tele)	52°06'x4°40'	57°37'x30°30*	57°37'-4°12'	38°47'x1°50'	77°19'x10°41'	47°30'x5°02'
Back focus distance mm	.....	Adjustable	Adjustable	Adjustable	.....	.....
Clear apertures (f/r) mm	.....	.....	.....	.....	.....	.....
Integral extender(s)	2x	2x	2x	2x	1.7x	No
Macro focus feature	Yes	.....	.....	Yes	No	Yes
Zoom/iris servo	Yes	Yes	Yes	Yes	Yes	Yes
Weatherized housing	.....	No	No	Yes	No	.....
Assembly weight	4 lbs	28.6 lbs (33 lbs)	28.6 lbs	8 lbs	4.2 lbs	3 lbs
		•(64°18x3°36)				
Reader Service Number	571	572 (573)	574	575	576	577

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Manufacturer	Fujinon					Schneider Optic
Model/Series Number	◆A14x8ERM	◆A17x8.5ESM	◆A44x9.5ESM	A16x9.5RM	◆A44x9.5ESM	TV80
Application	ENG, EFP	EFP	EFP	ENG	EFP	Studio, OB
Zoom range (basic) mm	8-112	8.5-145	9.5-420	9.5-152	9.5-420	8.5-150, 17-300
Aperture (wide-tele)	f/1.7-f/2.1	f/1.2-f/1.4	f/1.4-f/2.5	f/1.8-f/2.4	f/1.2-f/2.1	f/1.4-f/4
MOD distance	27.5"/0.7m	29"/0.75m	7.2'/2.2m	37.4"/0.95m	8.2'/2.5m	27.5"/0.7m
MOD image area (HxVmm)	73x55	51x38 (58x44)	61x46	54x41	57.9x43.4	80x60
Horiz. angle (wide-tele)	57°37'-4°30'	54°44'-3°29'	49°42'-1°12'	49°42'-3°29'	49°42'-1°12'	55.5°-3.4°, 27.7°-1.7°
Back focus distance mm	Adjustable	Adjustable	Adjustable	.....	Adjustable	42.4
Clear apertures (f/r) mm	.....	.....	.....	.....	.....	133, 33
Integral extender(s)	2x	2x	2x	No	2x	2x
Macro focus feature	Yes	.....	Yes	Yes	.....	.....
Zoom/iris servo	Yes	Yes	Yes	Yes	Yes	Yes
Weatherized housing	Yes	No	No	.....	No	.....
Assembly weight	5 lbs	44 lbs	32 lbs	4 lbs	55 lbs	33 lbs, 15 kg
Reader Service Number	578	579	580	581	582	583

Manufacturer	Schneider Optics			Schwem Technology	Tamron Industries
Model/Series Number	◆TV 85 Electronic†	TV44	TV66	Gyrozoom 50/300 (FP1)	466H† (H14x9Bl)
Application	35x Tele, OB	ENG, EFP	EFP	ENG/EFP	ENG
Zoom range (basic) mm	11-385, 22-770	9-126, 18-252 (6.3-9)	8.8-130, 17.6-260	9-126, 18-252 (6.3)	60-300
Aperture (wide-tele)	f/1.4-f/2.6	f/1.7-f/4.2	f/1.4-f/3.4	f/1.7-f/4.2	f/6.2 (range to f/32)
MOD distance	9.8'/3m	31.5"/0.8m	17.7"/0.45m	31.5"/0.8m	10"/3.048m
MOD image area (HxVmm)	67.9x50.2	54x41	43x32	54x41	.....
Horiz. angle (wide-tele)	42.5°-1.4°	52°-4°, 27°-2.2°	56°-4°, 28°-2°	52°-4°, 27°-2.2°	5.24-1.05 (1/2-diagonal)
Back focus distance mm	44.12	42.5-47.6 adjustable	43.6	42.5-47.6	Adjustable
Clear apertures (f/r) mm	150, 31.8	72, 29.5	134, 35.8	72, 29.5	.....
Integral extender(s)	2x, 1.5x option	2x	2x	2x	.....
Macro focus feature	.....	.....	.....	.....	.....
Zoom/iris servo	Yes	Yes	Yes	Yes	Yes
Integral diascope	Per camera specs	No	.....	No	No

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## TV Camera Zoom Lenses

Manufacturer	Schneider Optics				Schweim Technology	Tamron Industries
Model/Series Number	◆TV 85 Electronic†	TV44	TV66	TP56 Apo-vàron	Gyrozoom 60/300	466H† (H14x9BI)
Weatherized housing	.....	No	.....	Yes	No	No
Assembly weight	50.6 lbs (23kg) †16-bit $\mu$ P control	3.3 lbs (1.7kg)	41.8 lbs, 19 kg	3.96 lbs, 1.8 kg	7.25 lbs 60/300 pan rate 6°/s FP-1 pan rate 30°/s	3.33 lbs †No focus servo
Reader Service Number	584	585	586	587	588 (607)	589

The following group of lenses use 1" optics. All lens systems include a focus zoom servo unless noted. Availability of integral diascope features is designated by a diamond (◆).

Manufacturer	Angenieux				Canon	
Model/Series Number	14x8	◆40x9.5†	14x9	14x7	PV40x13.5BIE	PV18x11BIE
Application	ENG/EFP	EFP/sports	ENG/EFP	ENG/EFP	OB, studio	OB, studio
Zoom range (basic) mm	8-112	9.5-380	9-126	7-98	13.5-540	11-200
Aperture (wide-tele)	f/1.6-f/2	f/1.3-f/2.1	f/1.6-f/2	f/1.6-f/2	1.7-2.8	1.6-2
MOD distance	31"/0.8m	0" (at front glass)	31"/0.8m	31"/0.8m	8.2'/2.5m	23.6"/0.6m
MOD image area (HxVmm)	61x46	55x41.5 @ 8.2'/2.5m	52x39	72x54	53x40	49x37
Horiz. angle (wide-tele)	58-4.5	49.75-1.3	52-4	64-5	50.7°-1.4°	60.4°-3.7°
Back focus distance mm	Adjustable	Manual, electronic	Adjustable	Adjustable	62.8	62.79
Clear apertures (f/r) mm	.....	.....	.....	.....	200, 38.7	185.2, 42.4
Integral extender(s)	2x†	2.1x std, 1.45x opt	2x†	2x	2x	1.5x or 2x
Macro focus feature	0 (to front glass)	.....	0 (to front glass)	0 (at front glass)	No	No
Zoom/iris servo	Yes	LEDs show position	Yes	Yes	Yes	Yes
Weatherized housing	.....	.....	.....	.....	.....	.....
Assembly weight	3.9 lbs †Wide-angle attachment	43 lbs † $\mu$ P-control	3.1 lbs	5.5 lb	66 lbs	59 lbs
Reader Service Number	590	591	592	593	594	595

Manufacturer	Fujinon			Schneider Optics
Model/Series Number	◆R17x12.5ESM	◆R44x13.5ESM	◆R20x10.5ESM	◆TV64
Application	BCTV, studio	BCTV	BCTV, studio	Studio, OB
Zoom range (basic) mm	12.5-215	13.5-600	10.5-210	13-190, 26-380
Aperture (wide-tele)	f/1.6-f/2	f/1.8-f/3	f/1.6-f/2.1	f/1.7-f/3.4
MOD distance	29"/0.75m	8.2'/2.5m	29"/0.75m	15.7"/0.4m
MOD image area (HxVmm)	58x44	50x37	58x44	43.3x32.5
Horiz. angle (wide-tele)	54°13'-3°25'	50°44'-1°13'	62°44'-3°29'	54°-4°, 28°-2°
Back focus distance mm	Adjustable	Adjustable	Adjustable	71.6
Clear apertures (f/r) mm	.....	.....	.....	134, 43
Integral extender(s)	1.5x, 2x	2x	1.5x, 2x	2x
Macro focus feature	.....	.....	.....	.....
Zoom/iris servo	Yes	Yes	Yes	Yes
Weatherized housing	No	No	No	.....
Assembly weight	42 lbs	55 lbs	45 lbs	41.8 lbs, 19 kg
Reader Service Number	596	597	598	599

The following group of lenses use 1¼" optics. All lens systems include a focus zoom servo unless noted. Availability of integral diascope features is designated by a diamond (◆).

Manufacturer	Angenieux	Canon		Fujinon		Schneider Optics	
Model/Series Number	◆18x16.5HP	P40x18BIE	◆P18x15BIE	◆P44x18ESM	◆P17x16.5ESM	◆P20x14ESM	◆TV65
Application	Studio/OB	OB, EFP, sports	Studio, OB	EFP, OB	Studio, OB	Studio, OB	Studio, OB
Zoom range (basic) mm	16.5-297	18-720	15-270	18-800	16.5-280	14-280	16.5-240
Aperture (wide-tele)	.....	2.3-3.8	2.1-2.7	f/2.4-f/4	f/2.1-f/2.7	f/2.1-f/2.8	f/2.2-f/6.4
MOD distance	27.8"/0.6m	8.2'/2.5m	23.6"/0.6m	8.2'/2.5m	29"/0.75m	29"/0.75m	15.7"/0.4m
MOD image area (HxVmm)	53x40	49x37	50x37	59x44	58x44	45.3x34	.....
Horiz. angle (wide-tele)	54-1.3	50.7°-1.4°	60.4°-3.7°	50°44'-1°13'	54°50'-3°30'	62°53'-3°30'	54=0-4.2=0
Back focus distance mm	.....	75	75.3	.....	Adjustable	.....	71.5
Clear apertures (f/r) mm	.....	200, 36	185.2, 39.1	.....	.....	.....	134, 37.5
Integral extender(s)	1.6x, 2.5x	2x	15x or 2x	2x	1.5x, 2x	1.5x, 2x	2x
Macro focus feature	.....	No	No	.....	.....	No	.....
Zoom/iris servo	Belt, LED readout	Yes	Yes	Yes	Yes	Yes	Yes
Weatherized housing	.....	.....	.....	No	No	No	.....
Assembly weight	.....	66 lbs	59 lbs	55 lbs	42 lbs	43 lbs	41.8 lbs, 19 kg
	HEC coatings						
Reader Service Number	600	601	602	603	604	605	606



# Technical Difficulties

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## Color Video Monitors

This equipment includes video monitors suitable for display of standard, HDTV and computer generated video signals. Under component inputs, YCrCb refers to equi-band R-Y/B-Y components, rather than unequal bandwidth I/Q, and YCwCn are HDTV format components. Models marked with a diamond (◆) include a  $\mu$ P-controlled auto setup system. Except for those models marked with a bullet (•), the image aspect ratio is 4:3. H-V delay and cross pulse display is standard except on models marked with (±). Abbreviations N (NTSC), S (SECAM), P- (PAL).

Manufacturer	ASACA/ShibaSoku				
	Model/Series Number	CM44A1 (CM43A1)	CMM7 series	CMM11 series	-CM22A6 (CM65A) CM99A
Application	Master, utility	Master, utility	Master control	Master control HDTV	Portable
CRT diagonal	14" (15")	20" (14", 26")	20" (14", 26")	20" (26")	9"
CRT type	Inline dot (flat)	Inline dot (slot-26")	Delta-dot	Inline (delta) dot	Inline dot
Dot/stripe pitch in mm	.....	0.31 (0.38)	0.31 (0.37, 0.43)	0.26 (0.37)	0.30
Beam feedback CRT	Yes	No	No	No	No
Suggested resolution (TVL)	500	600	>600	1000	500
Luma bandwidth	60Hz-7MHz	To 7MHz	>7MHz	To 30MHz	To 7MHz
Chroma bandwidth	500kHz R-Y/B-Y	1.3MHz	I-1.3, Q-0.5	To 7MHz	To 1.3MHz
Aperture correction	0-8dB @ 2.8MHz	-10, 0dB	> 10dB range	.....	-10, 0dB range
Chroma decoder	Comb filter	Comb filter	Comb filter	.....	Comb filter
Demodulation axes	R-Y, B-Y	R-Y, B-Y	I, Q	.....	R-Y, B-Y
X-Y outputs	.....	Yes	Yes	.....	No
Blue gun only test	No	No	No	.....	No
Underscan	Yes	To 95%	To 95%	To 92%	To 95%
Available for	N, RGB	N, P, S, RGB	N, P, S, RGB	RGB	N, P
Multistandard unit	No	Switch selected	Switch selected	No	No
Composite inputs	3 inputs	N, P, S	N, P, S	No	N, P
Component inputs	RGB 8-pin	RGB	RGB, YCrCb forms	RGB, YCrCb, YCwCn	RGB
VCR input/output	No	No	No	No	No
Integral AF amp/speaker	No	No	No	No	No
Reader Service Number	611	612	613	614	615

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## Color Video Monitors

Manufacturer	Barco Industries				Brabury (Grunder & Assoc)
Model/Series Number	CM22 (CM33, CM51)	CTVM 4 series	◆CVS series†	•HDTV series‡	MCM37B (MCM series)†
Application	Master, utility	Master control	Master control	.....	Utility
CRT diagonal	9" (14" 19")	14" (20", 26")	14" (20")	20", 26", 30", 40"	14" (9", 20")
CRT type	Inline dot	Delta or inline dot	Inline dot	Delta dot	In-line, black matrix dot
Dot/stripe pitch in mm	0.30 (0.43)	0.31	0.31	0.34	0.31
Beam feedback CRT	Yes	Yes	Yes	.....	No
Resolution (TVL)	320 -12dB (340)	710 (770)	550	Unspecified	>600
Luma bandwidth	To 7MHz	± 0.5dB to 10MHz	± 1dB to 8MHz	± 0.5dB, 15kHz-30MHz	± 0.5dB to 4MHz
Chroma bandwidth	.....	0.6 equiband N	0.6 equiband	-based on RGB	1.2MHz
Aperture correction	No	.....	+6dB, 3MHz, switched	No	.....
Chroma decoder	Comb filter	Comb filter	Comb filter	.....	Passive filter
Demodulation axes	R-Y, B-Y	R-Y, B-Y	R-Y, B-Y	.....	U/V, I/Q
X-Y outputs	No	Yes	No	No	No
Blue gun only test	Yes	Yes	Yes	No	No
Underscan	Yes	Yes	Corners in	.....	To 10%
Available for	N, P, RGB	N, PAL/-B/M/N, S	N, P, S, RGB	HDTV only	P, S, NTSC-M/-N
Multistandard unit	.....	Auto selection	Auto selection	No	Auto selection
Composite inputs	N, P	N, S, PAL/-B/N/M	N, P, S	No	2 encoded
Component inputs	RGB	RGB & Y/Cr/Cb forms	RGB & Y/Cr/Cb forms	RGB	Analog RGB, YUV
VCR input/output	No	No	No	No	On -A version only
Integral AF amp/speaker	Yes	No	Yes	No	No
			†Color analyzer opt		†Provides split-screen display of inputs 1, 2.
Reader Service Number	616	617	618	619	620

Manufacturer	BTS Broadcast TV Systems		Conrac/Display Products	Croma Research	Curtis & Green
Model/Series Number	LDH6200/-20‡(LDK7020‡)	MC37BA (51BA, 22BA)	◆6545/6550 Micromatch	CM137 (CM142/151)	CG23400 series‡
Application	Master, utility	Master control	Master control	Master control	Mobile monitoring
CRT diagonal	14"/20"(20")	14" (20", 9")	13" (19")	14" (16", 20")	14", 16", 22", 27"
CRT type	Inline self converging†	Inline dot EBU/US phos	PIL, dot mask	Inline, self-converged	.....

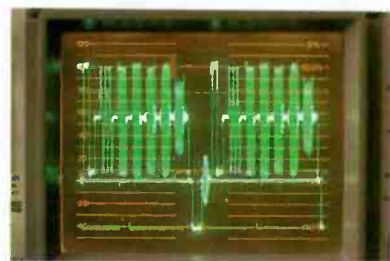
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## Color Video Monitors

Manufacturer	BTS Broadcast TV Systems		Conrac/Display Products	Croma Research	Curtis & Green
Model/Series Number	LDH6200/-20†(LDK7020‡)	MC37BA (51BA, 22BA)	◆6545/6550 Micromatch	CM137 (CM142/151)	CG23400 series‡
Dot/stripe pitch in mm	0.65(0.40)	0.31 (0.43, 0.30)	0.31 (0.44)	0.31 (0.43)	.....
Beam feedback CRT	No	.....	Yes	Yes	.....
Resolution (TVL)	> 310 (>650)	Equiv. to 5MHz	> 800	.....	.....
Luma bandwidth	To 5MHz	± 0.5dB to 6MHz	± 1dB to 8MHz Mono	± 0.5dB to 5.5MHz	.....
Chroma bandwidth	To 0.9MHz	± 1MHz	± 1dB to 12MHz RGB	± 0.3dB to 5.5MHz RGB	.....
Aperture correction	± 4dB range	Adjustable	6.5dB gain @ 2.5MHz	Yes	.....
Chroma decoder	Comb filter	Notch and comb filter	Comb filter	Comb filter	Notch
Demodulation axes	R-Y, B-Y	R-Y, B-Y	.....	R-Y, B-Y	R-Y, B-Y
X-Y outputs	No	Yes (Yes, No)	.....	Option on N, P	No
Blue gun only test	No	Yes	Yes	Yes	No
Underscan	To 10%	Yes	Adjustable range	Yes	No
Available for	N, P, S, RGB	N, PAL/M/N, S	N, PAL/B	N, PAL/B/M/N, S	N3.58/4.43, P
Multistandard unit	N or P/S	Option	Self sensing	Auto dual, triple	S, 1/3/4-standard
Composite inputs	A, B inputs	A, B inputs	A, B	Yes	Yes
Component inputs	RGB inputs	RGB	RGB	RGB	No
VCR input/output	No	No	No	No	No
Integral AF amp/speaker	No	No	No	No	No
	†LDK7020 dot mask				
Reader Service Number	621	622	623	624	625
<b>Manufacturer</b>	<b>Digivision Broadcast</b>	<b>Electrohome</b>	<b>Electronic Visuals</b>	<b>Ikegami Electronics</b>	
Model/Series Number	BCV37 (BCV51)	ECM 1311††	ECM 1900 series††	EV6151B‡	TM14-16RH (TM20-16RH)
Application	Utility	Graphics/EGA	Graphics (CGA/EGA/PGA)	Master control	Utility
CRT diagonal	14" (20")	13"	19"	20", 51cm	13" (19")
CRT type	Delta-dot	Anti-glare, dot	High resolution (TVL)	In-line, dot EBU phosphor	In-line self-converge dot
Dot/stripe pitch in mm	0.31 (0.43)	0.31	0.31	0.4	0.41 (0.55)
Beam feedback CRT	.....	.....	.....	.....	Yes
Resolution (TVL)	600	720 dot x 540 line	1024 x 800 interlaced	9MHz equivalent	500 @ 60ft-L (40ft-L)
Luma bandwidth	≤ ±3dB to 10MHz	> 30MHz RGB	-3dB @ 35MHz	-3dB to > 10MHz	-3, +1dB to 7MHz
Chroma bandwidth	To 10MHz	.....	.....	± 1.1MHz	-3, +1dB F <sub>SC</sub> ± 0.5MHz
Aperture correction	Switch selection	.....	No	.....	+ 10dB
Chroma decoder	Notch filter	None	None	Notch filter	Comb, notch switchable
Demodulation axes	R-Y, B-Y	n.a.	None	U, V	R-Y, B-Y
X-Y outputs	.....	No	No	.....	No
Blue gun only test	.....	No	No	No	Yes
Underscan	Yes	-5%, +10%	No	No	90%
Available for	N, CCIR 625/50	RGB/RS-170, IBM-TTL	Analog RGB, TTL	PAL-D std (P opt)	N
Multistandard unit	No	Auto sync sensing	Switched, sync sensing	No	No
Composite inputs	N, CCIR 625/50	No	No	A, B, C P encoded	N
Component inputs	RGB, Y/Cr/Cb	RGB, TTL	RGB, TTL	RGB	RGB
VCR input/output	No	No	No	No	No
Integral AF amp/speaker	No	No	No	No	No
		†Computer aspect ratio	†Computer aspect ratio		
Reader Service Number	626	627	628	629	630
<b>Manufacturer</b>	<b>Ikegami Electronics</b>			<b>JVC Company</b>	
Model/Series Number	TM14(TM20)[TM10]-9RH	TM14(TM20)-10RH	◆TM14(TM20)-15RH	TM-9U (-22U‡,-63U‡)	VM-R190SU
Application	Master control	Master control	Master control	Portable mastr, utility	Utility
CRT diagonal	13" (19") [8.5"]	13" (19")	13" (19")	9" (5")	19"
CRT type	In-line self-converge dot	Delta gun, delta dot	In-line, dot	In-line slot	In-line, dot
Dot/stripe pitch in mm	0.31 (0.43) [0.28]	0.31 (0.43)	0.31 (0.43)	0.47	0.4
Beam feedback CRT	No	Yes	Yes	No	No
Resolution (TVL)	700 [600]	800	700	310	>600
Luma bandwidth	-3, +1dB to 8MHz	-3, +1dB, 60Hz-10MHz	-3, +1dB, 60Hz-10MHz	To 4MHz	>8MHz
Chroma bandwidth	± 0.5dB 0.3(0.6)MHz	± 0.5dB, I-0.6, Q-0.3	≤ -2dB, 1.3MHz R-Y, B-Y	To 3.58MHz	> 1.2MHz
Aperture correction	+ 10dB	+ 10dB	10dB	No	Yes
Chroma decoder	Comb, notch filters	Comb filter	Adaptive Faroudja comb	Comb filter	Comb, notch filters
Demodulation axes	I/Q [R-Y, B-Y]	I/Q	R-Y, B-Y	R-Y, B-Y (I/Q)	R-Y, B-Y
X-Y outputs	R-Y, B-Y [No]	Yes	Yes	No	No
Blue gun only test	Yes [No]	Yes	Yes	No	No
Underscan	90%	90%	Yes	Yes (no)	Yes
Available for	N	N	N	N	N, IBM CGA/TTL
Multistandard unit	No	No	No	No	No
Composite inputs	A, B, C [A, B]	Yes	Yes	Yes	2-inputs
Component inputs	RGB option [No]	RGB, other components	RGB, Y/R-Y/B-Y opt	No	RGB, M-II, Beta, Y/C
VCR input/output	No	No	No	No (Yes)	8-pin
Integral AF amp/speaker	No	No	No	No (Yes)	No
Reader Service Number	631	632	633	634	635



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## Color Video Monitors

Manufacturer	JVC Company	Lenco		Panasonic Industrial	
Model/Series Number	TM-2048U‡ (-13U‡)	PCM 519-4	ICM-219‡	BT-S1000N (BT-S series)	CT-1030M, 1301 (1400)‡
Application	Utility	Master control	Utility	Utility	Utility (& data)
CRT diagonal	19" (13")	19" (14")	19" (14")	10" (7", 13", 19")	10", 13" (14")
CRT type	In-line	in-line do	inline slot	In-line	In-line (dot)
Dot/stripe pitch in mm	..... (0.47)	0.47	0.68	.....	..... (0.49)
Beam feedback CRT	No	No	No	No	No
Resolution (TVL)	>350	650	450	300	300, 280 (370 or 580-dot)
Luma bandwidth	.....	To 10MHz	To 5.5MHz	To 4.2MHz	To 4.2MHz
Chroma bandwidth	.....	To 3.5MHz ± 1dB	To 3.5MHz ± 1dB	To 1.5MHz	To 1.2MHz
Aperture correction	Yes (No)	± 3dB	± 6dB	No	1301 & 1400 only
Chroma decoder	Comb filter	Comb filter	No	Notch or comb filter	Comb, notch
Demodulation axes	R-Y, B-Y	I, Q	R-Y, B-Y	R-Y, B-Y	R-Y, B-Y
X-Y outputs	No	No	No	No	No
Blue gun only test	No	Yes	No	Yes	No
Underscan	No	Yes	Yes	Yes	No
Available for	N	N, RGB	N	N	N, (RGB, RGB/TTL)
Multistandard unit	No	No	No	No	No
Composite inputs	A and B (A only)	N	N	Line 1, VCR, (Line 2)	Encoded
Component inputs	No	RGB	No	No	(RGB)
VCR input/output	8-pin	No	No	Yes	8-pin connector
Integral AF amp/speaker	Yes	No	No	Yes	Yes
<b>Reader Service Number</b>	<b>636</b>	<b>637</b>	<b>638</b>	<b>639</b>	<b>640</b>

Also: BT-S1300N, 1900N, S700N, 701N, 702N

Manufacturer	Panasonic Industrial	Pesa Electronics	Philips T&M	Sharp Electronics	
Model/Series Number	BT-M1301Y (-D1910Y)	CT-1331Y (2010, 2580V)‡	BM-4300 series	PM 5625 G/L/M	XM-1900 (XM-1300)
Application	Utility	S-VHS monitor	Utility, master	GP/utility	Master, graphics
CRT diagonal	13", (19")	13", 20", 25"	9", 14", 10"	14"	19" (13")
CRT type	In-line, dot	.....	PIL, stripe	In-line self-converging	In-line dot
Dot/stripe pitch in mm	0.39 (0.55)	Medium res	0.31, 0.44, 0.31	0.65	0.44 (0.31)
Beam feedback CRT	No	No	.....	No	Yes
Resolution (TVL)	550	420, 450	>450, >600, >600	>310	600
Luma bandwidth	To 4.2MHz	To 3.9MHz	± 0.5dB 50Hz-5MHz	-3dB @ 5MHz	7MHz
Chroma bandwidth	To 1.5MHz	To 1.5MHz	.....	0.9dB to 3.58MHz	3.58MHz
Aperture correction	Yes	No	No	± 4dB	To +8dB
Chroma decoder	Notch, comb filters	.....	Comb, notch filters	Notch filter	Comb or notch filter
Demodulation axes	R-Y, B-Y	R-Y, B-Y	I/Q	R-Y, B-Y	R-Y, B-Y
X-Y outputs	No	No	No	No	No
Blue gun only test	Yes	No	No	Yes	Yes
Underscan	± 5%	.....	Yes	Yes	To 5%
Available for	N	N, S-VHS	N, P	P, S, N	N
Multistandard unit	No	.....	.....	P/S opt	No
Composite inputs	A, B composite	A, B VCR	N or P	A, B encoded	N
Component inputs	Y/C, Y/R-Y/B-Y opt	Y/C from VCR	RGB	RGB	RGB, TTL
VCR input/output	8-pin connector	8-pin connector	No	No	No
Integral AF amp/speaker	No	Yes	No	No	No
<b>Reader Service Number</b>	<b>641</b>	<b>642</b>	<b>643</b>	<b>644</b>	<b>645</b>

Manufacturer	Sharp Electronics	Sony Broadcast		Tektronix	
Model/Series Number	XM-900	◆BVM1900/2000	BVM1201/1301	BVM 8021/9021	650HR series
Application	Utility	Master control	Master control	Utility	Master & graphics
CRT diagonal	9"	19"	12"	8"	12"
CRT type	In-line stripe	Trinitron	Trinitron	Trinitron	Trinitron
Dot/stripe pitch in mm	0.47 stripe pitch	0.30	0.25	0.25	0.25
Beam feedback CRT	Yes	Yes	No	No	No
Resolution (TVL)	310	900	600	400	480
Luma bandwidth	To 5MHz	10MHz	8MHz	-3dB at 4MHz	6MHz
Chroma bandwidth	To 3.58MHz	1.5	1.5	1.5	1.3
Aperture correction	.....	± 8dB (4.5-9MHz)	+8dBm at 4.5MHz	0, +8dBm range, 4.5MHz	+10dB
Chroma decoder	Comb filter	Comb filter	Precision	Comb filter	Notch filter
Demodulation axes	R-Y, B-Y	R-Y, B-Y	.....	.....	UV or R-Y, B-Y
X-Y outputs	No	Yes	Yes	No	Yes
Blue gun only test	Yes	Yes	Yes	Yes	B/W display of blue
Underscan	To 5%	Yes 5%	Yes	-5%/+10%	To 20%10%
Available for	N	N, P	N	N	N, P, S, RGB
Multistandard unit	No	Switch selected	No	No	Switch selected
Composite inputs	Yes	N, P	N	Yes	Yes
Component inputs	No	RGB or Y/Cr/Cb	RGB, Y/Cr/Cb	No	RGB
VCR input/output	No	No	No	Yes	No
Integral AF amp/speaker	No	No	No	Yes	No
<b>Reader Service Number</b>	<b>646</b>	<b>647</b>	<b>648</b>	<b>649</b>	<b>650</b>



# THE FIRST INTELLIGENT BROADCAST COLOR MONITOR



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The CVS is available in both 14 inch and 20 inch versions, and provides outstanding picture quality in any TV standard.

For complete specifications, contact your local BARCO INDUSTRIES Dealer or BARCO INDUSTRIES, 170 Knowles Drive, Suite 212, Los Gatos, CA 95030. Phone: (408) 370-3721.

BARCO INDUSTRIES is a member of the ACEC-group.

Circle (76) on Reply Card

## Color Video Monitors

Manufacturer	Videotek		
Model/Series Number	HR-130 (HR-190)	VM-13PRO (Studio-13)	AVM-13 (AVM-19)
Application	Master control, graphics	Master control	Utility
CRT diagonal	13" (19")	13", 8" (13")	13" (19")
CRT type	PIL, delta self-converge	Trinitron Plus	Slot mask, in-line
Dot/stripe pitch in mm	0.31	0.25	.....
Beam feedback CRT	No	No	No
Resolution (TVL)	>600 (>750) center	380	280/-13" (350/-19" comb)
Luma bandwidth	±0.3dB to 8MHz	2dB to 3.2MHz	To 3MHz
Chroma bandwidth	±1dB to 1MHz	To 1.5MHz	To 1MHz
Aperture correction	6dB boost, 4.2MHz	Yes	±3dB
Chroma decoder	Comb or notch	(Comb or notch)	Switched comb or notch
Demodulation axes	R-Y, B-Y	R-Y, B-Y	R-Y, B-Y
X-Y outputs	No	No	No
Blue gun only test	Yes	Yes	Yes
Underscan	Yes	To 10%	90% of full screen
Available for	N, RGB	N	N only
Multistandard unit	Switch-selected	No	No
Composite inputs	Yes	A, B, C	Yes
Component inputs	RGB	No	No
VCR input/output	No	No	8-conductor
Integral AF amp/speaker	No	No	1.2W/8Ω (1.5W/8Ω)
Reader Service Number	651	652	653

## Digital Video Effects Systems

Manufacturer	Abekas Video Systems		Alta Group	Ampex AVSD
Model Series	A52	A53 (warp opt)	Pyxis w/audio	ADO/1000/2000/3000
Output channels	1 or 2	1 or 2	1	1, expands to 4
No. of image planes	1	1	1	1
System control	Dedicated, soft keys	Dedicated, soft keys	Dedicated keys	Dedicated, soft keys
Instruction memory	DataKey device	Floppy disk	ROM (Still-store)	Floppy disk

"The ultimate"

# ULTIMATTE®-5

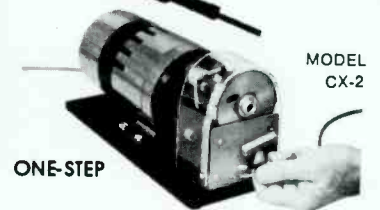
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### WESTERN ELECTRONIC PRODUCTS CO.

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Circle (78) on Reply Card



## Digital Video Effects Systems


Manufacturer	Abekas Video Systems			Alta Group	Ampex AVSD
Model Series	A52	A53 (warp opt)	Centaurus	Pyxis w/audio	ADO/1000/2000/3000
Parameter display	Control panel display	Control panel	Control panel	On control panel	Control panel, CRT
VCR connection	No	No	Inc S-VHS out	Yes	No
TBC functions	No	No	Dual, frame sync	Dual, frame sync	No
Remote control port	Switcher/editor/GPI	Switcher/editor/GPI	Switcher/editor/GPI	Editor/GPI	Switcher/editor/GPI
System S/N ratio	52dB	52dB	70dB	53dB	.....
Diff phase, gain	2°, 2%	2°, 2%	3°, 3%	3°, 3%	.....
Sampling rate, bits	14.2MHz, 8-bit	14.2MHz, 8-bit	8-bit, full bandwidth	8-bit luma, chroma	Y-13.5, C-6.75 8-bit
Image size variation	Continuous	Continuous	.....	.....	Continuous
Compression/expansion	Variable	Variable	.....	.....	Infinite
Rotations around	.....	X, Y, Z simultaneous	.....	.....	X, Y, Z simultaneous
Perspective effects	.....	Cube/cyl/page turn	.....	.....	Page turn/cyl/3D/cube
Image freeze	Fld/frm/storyboard(1)	Fld/frm/strobe	Fld/frm/update	Frm/fld each TBC	Fld/frm/trail/update
Picture splits	Yes	.....	H/V, 4-way	Yes	.....
Mirror effects	.....	.....	.....	No	.....
Push-on/off	Yes	Yes	Yes	No	Yes
Posterization (levels)	8, Y & C	8, Y & C	Yes	Yes	Inf. w/false colors
Mosaic tiling	Variable	.....	No	No	Infinite tile sizes
Programmable sequences	Yes	Yes	No	Yes	Yes
Reader Service Number	866	867	868	869	870

Manufacturer	CEL (Grunder Assoc)		Convergence	DSC/Digital Services	
Model Series	EFX-2	MS-101	CDS-2000	Eclipse	Illusion
Output channels	1	1	1	1	1, expands to 9
No. of image planes	1	1	1	1	1
System control	Touchscreen (Maurice)	Dedicated keys	Knobs on chassis	Dedicated keys	Dedicated keys
Instruction memory	Non-volatile RAM, disk	Non-volatile RAM	.....	Floppy disk	Bubble memory
Parameter display	Control panel	Control panel	.....	Control panel, CRT	Control panel, CRT
VCR connection	Yes	Yes	Yes	No	No
TBC functions	TBC, frame store	TBC, frame store	2-channel TBC w/audio	No	No
Remote control port	GPI	GPI	Switcher/editor	GPI	Editor/GPI
System S/N ratio	56dB	56dB	>50dB	52dB	.....


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Circle (79) on Reply Card

Circle (80) on Reply Card

## Digital Video Effects Systems

Manufacturer	CEL (Grunder Assoc)		Convergence CDS-2000	DSC/Digital Services	
	Model Series	EFX-2		MS-101	Eclipse
Diff phase, gain	.....	.....	3°, 3%	1°, 1%	3°, 3%
Sampling rate, bits	Y-12.9MHz, 7-bit	Y-12.9MHz, 7-bit	.....	14.38MHz, 8-bit	Y-13.5MHz 8-bit
Image size variation	Variable	Stepped	.....	Continuous	Continuous
Compression/expansion	Continuous	1:4	.....	Variable	Variable
Rotations around	.....	.....	.....	X, Y, Z	Z
Perspective effects	Yes	Yes	.....	Page turn, cube, geo.	Yes
Image freeze	Frm/flid, multi, strobe	Frm/flid, multi, strobe	.....	Fld/frm, strobe	Fld/frm, strobe
Picture splits	Yes	Yes, x4/x9/x16	Yes	No	H/V, field
Mirror effects	.....	.....	No	H & V	H/V, diagonal
Push-on/off	Yes	Yes	Yes	Yes	Yes
Posterization (levels)	6 w/false color	6 w/false color	No	2 w/false color	2 w/false color
Mosaic tiling	H pixelization	H pixelization	No	10 steps H, V	10 levels
Programmable sequences	Yes	Yes	No	Yes	Yes
Other	Component/composite	Composite/component	.....	.....	.....
Reader Service Number	871	872	873	874	875

Manufacturer	.DSC/Digital Services	For-A Corporation	GML/Gunnerfield Marketing		Grass Valley Group
	Model Series	FA-440	Proteus	X-calibre	Kaleidoscope DPM-1
Output channels	1	1	1	1, expands to 2	1, expands to 5
No. of image planes	1	1	1	1	2 per channel
System control	Dedicated keys	Dedicated keys	Dedicated keys	Dedicated, soft keys	Dedicated, soft keys
Instruction memory	RAM, bubble memory	ROM	RAM	ROM, floppy disk opt.	Floppy disk
Parameter display	Control panel	On control panel	Control settings	Control panel	On control panel
VCR connection	No	Yes	Multiple VCRs	Yes	No
TBC functions	No	Yes	Yes	Dual, frame store	No
Remote control port	Editor/GPI	.....	Switcher/editor/GPI	GPI	Switcher/editor
System S/N ratio	.....	55dB	58dB	58dB	.....
Diff phase, gain	3°, 3%	2°, 2%	2°, 2%	2°, 2%	.....
Sampling rate, bits	Y-13.5MHz, 8-bit	Y-9MHz, C-2.2MHz	7.2MHz 8-bit	8-bit	.....
Image size variation	Continuous	Stepped	Stepped	Continuous	Continuous
Compression/expansion	Variable	1:4, 1:2	1:4, 1:2	Variable	Variable
Rotations around	Z	.....	No	No	X, Y, Z
Perspective effects	H/V	.....	.....	No	Yes
Image freeze	Fld/frm, strobe	Fld/frm, update	Fld/frm, update, 2-pic	Fld/frm, strobe	Update/multi/trail/decay
Picture splits	Yes	H/V	H/V	Yes	Yes
Mirror effects	H/V, diagonal	H	H/V	H/V	Yes
Push-on/off	Yes	.....	Yes	Yes	Yes
Posterization (levels)	2 w/false color	7 levels	10 w/false color	Yes	Yes
Mosaic tiling	10 levels	H, V	7 tile sizes	Yes	Yes
Programmable sequences	Yes	Yes	Yes	Yes	Yes
Reader Service Number	876	877	878	879	880

Manufacturer	Harris Video Systems		Microtime		NEC
	Model Series	HDE-100 (HDE-150D)	HDE-200 (HDE-200D)	Genesis 1 (Act 1 ctl)	RP-1
Output channels	1 (expands to 2)	1 (expands to 2)	1	1, expands to 2	1
No. of image planes	1	1	1	1	1
System control	Dedicated keys	Dedicated keys	Dedicated, soft keys	Dedicated, soft keys	Dedicated, soft keys
Instruction memory	None (bubble memory)	No (bubble cartridge)	RAM, DataKey device	Floppy disk	Floppy disk
Parameter display	Control panel	Control panel	Control panel	Control panel, CRT	Control panel, CRT
VCR connection	No	No	No	.....	.....
TBC functions	No	No	No	.....	.....
Remote control port	Switcher/editor	Switcher/editor	GPI	GPI	GPI
System S/N ratio	50dB	50dB	58dB	58dB	56dB
Diff phase, gain	2°, 2%	2°, 2%	2°, 2%	2°, 2%	2°, 2%
Sampling rate, bits	14.3MHz, 8-bit	14.3MHz, 8-bit	8-bit	13.5MHz, 8-bit	14.2MHz, 8-bit
Image size variation	Continuous	Continuous	Continuous	Continuous	Variable
Compression/expansion	Variable	Variable	Variable	Variable	Continuous
Rotations around	.....	.....	H, V	X, Y, Z	X, Y, Z simultaneous
Perspective effects	.....	.....	.....	Page turn/cube	Page turn/cube/waves
Image freeze	Update, multi x4/x9/x16	Update, multi x4/x9/x16	Field, strobe	Frm/flid, strobe, trail	Frm/flid, multi, strobe
Picture splits	Yes	Yes	No	Yes	Yes
Mirror effects	No (Option)	Yes	Yes	Yes	Yes
Push-on/off	Yes	Yes	Yes	Yes	Yes
Posterization (levels)	Yes	Yes	9 w/false color	w/false colors	Variable
Mosaic tiling	Yes (Option)	Yes	Variable	Yes	Variable H, V
Programmable sequences	Yes	Yes	Yes	Yes	Yes
Other	.....	.....	.....	Composite, component	.....
Reader Service Number	881	882	883	884	885



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## AE61

### TIME BASE CORRECTOR



Time base correction for Heterodyne VTFs, standalone with 3.58 sub-carrier feedback



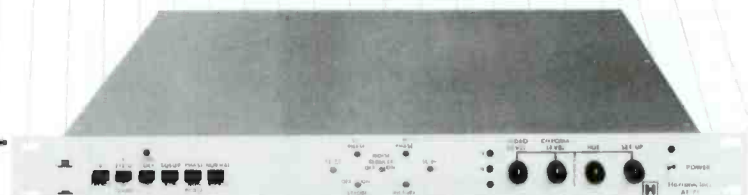
Time base correction for Heterodyne VTRs, standalone without 3.58 sub-carrier feedback

## AE61B

### TIME BASE CORRECTOR

## AF71

### TBC/FRAME SYNCHRONIZER



Time base correction & frame synchronization for Heterodyne VTRs with more than two frame memory; full bandwidth freeze field/freeze frame

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Circle (81) on Reply Card

## Digital Video Effects Systems

<b>Manufacturer</b> . . . . .	<b>.NEC</b>
<b>Model Series</b> . . . . .	<b>DVE System 100</b>
Output channels . . . . .	1, expands to 2
No. of image planes . . . . .	1
System control . . . . .	Dedicated keys
Instruction memory . . . . .	Floppy disk
Parameter display . . . . .	Control panel
VCR connection . . . . .	.....
TBC functions . . . . .	.....
Remote control port . . . . .	GPI
System S/N ratio . . . . .	50dB
Diff phase, gain . . . . .	2°, 2%
Sampling rate, bits . . . . .	14.2MHz, 8-bit
Image size variation . . . . .	Continuous
Compression/expansion . . . . .	Variable
Rotations around . . . . .	No
Perspective effects . . . . .	No
Image freeze . . . . .	Fld/frm, update, multi
Picture splits . . . . .	H/V
Mirror effects . . . . .	Yes
Push-on/off . . . . .	Yes
Posterization (levels) . . . . .	Variable
Mosaic tiling . . . . .	Variable
Programmable sequences . . . . .	Yes
Other . . . . .	
<b>Reader Service Number</b> . . . . .	<b>886</b>

<b>Manufacturer</b> . . . . .	<b>Shintron</b>
<b>Model Series</b> . . . . .	<b>Chromafex 770</b>

Output channels . . . . .	1
No. of image planes . . . . .	1
System control . . . . .	Dedicated keys
Instruction memory . . . . .	ROM
Parameter display . . . . .	Control panel
VCR connection . . . . .	Yes
TBC functions . . . . .	TBC, frame store
Remote control port . . . . .	Editor
System S/N ratio . . . . .	52dB
Diff phase, gain . . . . .	3°, 3%
Sampling rate, bits . . . . .	14.3 Y, 4.78 R-Y/B-Y
Image size variation . . . . .	Continuous
Compression/expansion . . . . .	Variable
Rotations around . . . . .	Z
Perspective effects . . . . .	Yes
Image freeze . . . . .	Frm/fld, strobe
Picture splits . . . . .	H/V, fld from fld
Mirror effects . . . . .	H/V, diagonal
Push-on/off . . . . .	No
Posterization (levels) . . . . .	9 w/false color
Mosaic tiling . . . . .	9 sizes
Programmable sequences . . . . .	No
<b>Reader Service Number</b> . . . . .	<b>891</b>

<b>Pinnacle Systems</b>
<b>System 2010</b>

Multiple
Multiple
Dedicated keyboard
3.5" disk, RAM
Menu CRT
Possible
Frame buffer
RS232/422
54dB inc quantizing
<2°, <2%
CCIR 601 4:2:2
Continuously variable
Variable axis
X, Y, Z
.....
Multi-freeze
Yes
Yes
Yes
Multiple
Variable aspect
6,000 keyframe memory
Component processing
<b>887</b>

<b>Thomson Video</b>
<b>TTV-5305</b>

2 composite, YCrCb
.....
Dedicated, soft keys
EEROM, floppy disk
Control panel
Yes
No
Switcher
55dB
3°
13.5MHz, 8-bit
Continuous
Variable
X, Y, Z
Page turn/3D
Fld/frm
H/V, diagonal
No
Yes
Yes
Yes
<b>892</b>

<b>Quantel</b>	<b>QuasTech</b>	
<b>DPE5800 Encore</b>	<b>DVM8000 Mirage</b>	<b>Charisma</b>
1, expands to 15	1, expandable	Multiple
.....	.....	.....
Dedicated, soft keys	Dedicated, soft keys	Control panel
Floppy/hard disk, RAM	Floppy/hard disk, RAM	Floppy disk, RAM
Keyboard, CRT	External CRT	CRT, keyboard
No	No	Yes
No	No	Yes
Switcher/editor	Switcher/editor	ESbus
.....	.....	51dB
.....	.....	1.5°, 2.5%
13.5MHz	13.5MHz	Per CCIR 601
Continuous	Continuous	Yes
Infinite	Infinite	Infinite
X, Y, Z	X, Y, Z	X, Y, Z
Floating viewpoint	Page turn/3D/cyl/cube	w/Z-axis effects
Fld/frm, multi	Fld/frm	Multi, trail, sparkle
H/V	H/V, diagonal	Yes
H, V	No	Yes
Yes	Yes	Yes
256, false color	.....	16, false color
Yes	.....	Yes
Yes	Yes	Yes
<b>888</b>	<b>889</b>	<b>890</b>

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**John Hoffman  
Net Administrator  
76703, 1036**

## Editor Controllers

Edit command entries for these audio and video editing control systems are typically entered on the system keyboard. Those offering other command entry means (touchscreen or mouse) are noted with a diamond (◆). All video editing units provide assemble, insert and split edit modes unless noted with a bullet (•). If edit decision list (EDL) management is provided, EDL backup is typically included. Models not providing A/B roll mode are noted with a dagger (†).

<b>Manufacturer</b> . . . . .	<b>.Adams-Smith</b>	<b>Albrecht Electronik</b>	<b>Alpha Audio</b>	<b>Ampex AVSD</b>	
<b>Model Series</b> . . . . .	<b>2600 A-V (CC)†◆</b>	<b>ESP-M series</b>	<b>The Boss 8400†</b>	<b>◆Ace Micro</b>	<b>◆Ace 200</b>
Suggested for . . . . .	On, off-line	On-line	On, off-line audio	On-line	On, off line
VTRs/ATRs record/play . . . . .	2-R, 16P (1R, 4P)	1 record, 4 source	Various	1R, 3P	2R, 14P
Videodisc interface . . . . .	Yes	.....	No	Yes	Yes
Microprocessor . . . . .	Multiple 8-/16-bit	Multiple 8-bit	Multiple 8-bit	Distributed 16-bit	Distributed 16-bit
Internal storage . . . . .	>1,000 (100)	3 event	1,000 event	300	6000
Ext storage type . . . . .	Disk (None)	Paper tape	Floppy disk	F.disk, tape	F.disk, tape
Edit decision list . . . . .	Yes (no)	No	Yes	Yes	Yes



## Editor Controllers

Manufacturer	Adams-Smith	Albrecht Elektronik	Alpha Audio	Ampex AVSD	
Model Series	2600 A-V (CC)†	ESP-M series	The Boss 8400†	◆Ace Micro	◆Ace 200
Edit data display	LED displays	LED displays	CRT, printout	CRT	CRT
Printer interface	RS-232C	TTY	RS-232 Centronics	RS-232	RS-232
Animation mode	No	No	No	Yes	Yes
Time code reader	Yes (No)	Interface option	External	Yes	Yes
Time code generator	Yes (Yes)	In interface	External	Yes	No
Time code types	SMPTE, EBU	EBU, LTC/VITC	SMPTE, EBU	LTC, VITC	LTC, VITC
Color framing per	NTSC, PAL (None)	PAL	No color framing	NTSC, PAL	NTSC, PAL
Edit accuracy	± 1 (± 0.01) frame	± 0 frame	± 0.03 frame	± 0 frames	± 0 frames
Transport control	Keyboard	Fader, k.board	Keyboard	J.stick, k.board	J.stick, k.board
Device interfaces	Switcher, title, Effects & (mixer)	Switcher, mixer, Effects	.....	Switcher, mixer, effects	Switcher, mixer, stills graphics, effects
Control structure	232/422, ESbus	Coaxial serial	232/422, ESbus	422, GPI	422, GPI
†A/V model for standard editing; CC in audio-for-video.					
<b>Reader Service Number</b>	<b>796</b>	<b>797</b>	<b>798</b>	<b>799</b>	<b>800</b>

Manufacturer	Audio Kinetics	BHP	BTS	Calaway Eng/Quanta	Cipher Digital
Model Series	Master Mix†	◆TouchVision	BBE 900	CED, CED+ (MK III)	SOFTOUCH
Suggested for	Audio mixdown	Off-line, non-linear	On, off-line	On, off-line	Audio editing
VTRs/ATRs record/play	Multitrack ATR	To 24 sources	1R, 3P	1R, 3P (1R, 5P)	4 transports
Videodisc interface	No	.....	No	No	.....
Microprocessor	Centralized 8-bit	Multiple	Centralized 8-bit	Centralized 8(16)bit	Distributed
Internal storage	A/B	.....	128	1,000	Multiple
Ext storage type	Disk	.....	None	Floppy disk	Ext memory cartridges
Edit decision list	No	Yes	Yes	Yes	.....
Edit data display	LED displays	CRT	CRT	CRT	LED displays
Printer interface	No	.....	None	RS-232	No
Animation mode	No	Possible	No	Yes	Dialog replacement
Time code reader	Yes	Yes	Yes	In interface	Yes
Time code generator	Yes	.....	No	In interface	Yes
Time code types	LTC	SMPTE VITC	LTC/VITC/ctl-trk/sync	LTC/VITC/ctl-trk/sync	LTC, VITC
Color framing per	No	NTSC	NTSC, PAL	NTSC, PAL	NTSC, EBY
Edit accuracy	± 0	± 0 frame	± 0	± 0 frame	± 0
Transport control	No	Knob	J.stick, K.board	Keyboard, knob	Keyboard
Device interfaces	Mixer, fader opt	.....	Switcher, mixer GPI equipment	Switcher, mixer, graphic, titles	5 com ports
Control structure	.....	422/232	422, ESbus, GPI	422/232, GPI	422/232
<b>Reader Service Number</b>	<b>801</b>	<b>802</b>	<b>803</b>	<b>804</b>	<b>805</b>

Manufacturer	CMX Systems				
Model Series	330XL	3100 (3400/3600)	CMX-6000	CASS 1 (CASS 1E)	CMX-100‡
Suggested for	On, off-line	On, off-line	Off-line	Audio for video	on-line
VTRs/ATRs record/play	1R, 4P	1R, 6P	.....	1R, 5P	1R, 2P
Videodisc interface	Yes	Yes	4 to 24 disk	.....	.....
Microprocessor	Distributed 16-bit	Distributed 16-bit	Distributed 16-bit	PC-AT	Distributed
Internal storage	500	700 (3,000)	Yes	Yes	50
Ext storage type	Floppy disk	Floppy disk	Floppy disk	Floppy disk	.....
Edit decision list	Yes	Yes	Yes	Yes	Yes
Edit data display	CRT	CRT	CRT	CRT	CRT
Printer interface	RS-232	RS-232	RS-232	RS-232	Yes
Animation mode	Yes	Yes	Yes	.....	.....
Time code reader	In interface	Option	Yes	Yes	Available
Time code generator	In interface	Option	.....	.....	Available
Time code types	LTC, VITC, ctl-trk	LTC, VITC	LTC, VITC	LTC	LTC
Color framing per	NTSC, PAL	NTSC, PAL	Yes	.....	NTSC, PAL
Edit accuracy	± 0 frames	± 0 frames	± 0 frames	± 0	± 0 frame TC
Transport control	K.board, Gizmo knob	K.board, Gizmo knob	Keyboard	Keyboard	Keyboard knob
Device interfaces	Switcher, mixer	Switcher, mixer	Switcher opt, mixer VTRs	Mixer, TimeLine Lynx Adams-Smith, others	4 GPI, ROM VTR software
Control structure	422/232, GPI	422/232, GPI	422, GPI	422, GPI	422
‡Integral 5-in video, 6-in audio switcher.					
<b>Reader Service Number</b>	<b>806</b>	<b>807</b>	<b>808</b>	<b>809</b>	<b>810</b>

Manufacturer	Convergence				Editron
Model Series	ECS-204x (205)	Super 90†	ECS-195 (ECS-195+)	ECS-900+	Model -250† (500V)
Suggested for	On, off-line	On, off-line	On, off-line	On, off-line	Off (& on-line)
VTRs/ATRs record/play	1R, 3P (1R, 7P)	1R, 1P	1R, 2P	1R, 5P	2R/4P (1R/6P)
Videodisc interface	No	No	No	No	Yes
Microprocessor	Centralized 8-bit	Centralized 8-bit	Centralized 8-bit	Centralized 8-bit	Distributed 8-bit
Internal storage	1,000	Single	50 (500)	1,000	999

## Editor Controllers

Manufacturer	Convergence				Editron	
	Model Series	ECS-204x (205)	Super 90†	ECS-195 (ECS-195 +)		ECS-900 +
Ext storage type	F.disk, tape, PC	F.disk, tape, PC	F.disk, tape, PC	F.disk, tape, PC	F.disk, tape, PC	Tape (F-disk)
Edit decision list	Yes	Yes	Yes	Yes	Yes	Yes
Edit data display	CRT	CRT	CRT	CRT	CRT	LCD flat panel (CRT)
Printer interface	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232
Edit modes	Assemble, insert	Assemble, insert	Assemble, insert	Assemble, insert	Assemble, insert	Assemble, insert
Split modes	Audio	Audio	Audio	Audio	Audio	No (Yes)
Animation mode	Yes	Yes	Yes	Yes	Yes	No
Time code reader	Yes	Yes	Yes	Yes	Yes	Yes
Time code generator	No	Option	Option	Option	Yes	Yes
Time code types	LTC, ctl-trk	LTC, ctl-trk	LTC, ctl-trk	LTC, ctl-trk	LTC, ctl-trk	LTC
Color framing per	NTSC	No	Yes	Yes	Yes	NTSC, PAL
Edit accuracy	±0 frames	±1 frame ctl-trk	±0 frames	±0 TC, ±2 ctl-trk	±0 frames	±0 frames
Transport control	J.stick, k.board	J.stick, k.board	J.stick, k.board	J.stick, k.board	J.stick, k.board	J.stick, k.board
Device interfaces	Switcher, GPI, mixer	.....	Switcher, mixer	Switcher, mixer	Switcher, mixer	Switcher, GPI, mixer (& effects, graphics)
Control structure	422/232, GPI	422	422, GPI	422, GPI	422, GPI	422, EBus, parallel
Reader Service Number	811	812	813	814	815	815

Manufacturer	Editron		EECD		Generic Designs DeskTop
	Model Series	Model 500A	EMME	Ives II (Ives II Pro)	
Suggested for	Audio sweetening	Audio sync, sweetening	On, off-line	On, off-line	On, off-line
VTRs/ATRs record/play	1R, 4P	1R, 14P	9, any function	1R, 1-2P	Multiple
Videodisc interface	No	.....	No	No	.....
Microprocessor	Distributed 8-bit	Distributed 8-bit	Distributed 16-bit	Centralized 8-bit	PC MS-DOS system
Internal storage	99	999	750	Single	.....
Ext storage type	Tape	Floppy disk	F.disk, tape, PC	F.disk, tape, PC	Per PC system
Edit decision list	Yes	Yes	Yes	Yes	Yes
Edit data display	LED display	CRT, LCD flat panel	CRT	CRT	CRT
Printer interface	RS-232	RS-232	RS-232	RS-232	Centronics parallel
Animation mode	No	.....	No	Yes	.....
Time code reader	Yes	Yes	Yes	Yes	Yes
Time code generator	Yes	Yes	Option	No	.....
Time code types	LTC	LTC	LTC, ctl-trk	LTC, ctl-trk	SMPTE
Color framing per	NTSC, PAL	NTSC, PAL	NTSC	NTSC	NTSC
Edit accuracy	±0 frame	±0 frames	±0 frames	±0 frames	.....
Transport control	Keyboard	J.stick, keyboard	J.stick, k.board	J.stick, k.board	Keyboard
Device interfaces	GPI	16-channel GPI	Switcher	.....	Parallel switcher
Control structure	422, EBus, parallel	422, EBus, parallel	422/232, GPI	422/232, GPI	422
Reader Service Number	816	817	818	819	820

Manufacturer	Grass Valley Group			JVC Company	JVC/Paltex
	Model Series	Model 51Em	Model 31 (41m)	RM-G850U† (-86U†)	Abner
Suggested for	On/off-line, flyaway	On, off-line	On, off-line	On, off-line	On, off-line
VTRs/ATRs record/play	4, assignable	7 total	7 total	1R, 1P, 2P opt (1/1)	1 record, 2 play
Videodisc interface	No	Option	Option	No	No
Microprocessor	Centralized 16-bit	Distributed 16-bit	Distributed 16-bit	Centralized 8-bit	Centralized 8-bit
Internal storage	1,000	16,000	250 (2,000)	Single event	20 event
Ext storage type	Floppy disk	F.disk, tape	F.disk, tape	No	F-disk, P-tape
Edit decision list	Yes	Yes	Yes	No	Yes
Edit data display	CRT	CRT	CRT	LED display	CRT
Printer interface	RS-232	RS-232	RS-232	No	RS-232C
Animation mode	Yes	Yes	Yes	No	Yes
Time code reader	In interface	Yes	Yes	No	Yes
Time code generator	In interface	No	No	No	.....
Time code types	LTC, VITC	LTC, VITC	LTC, VITC	Control track	SMPTE, EBU, ctl-trk
Color framing per	NTSC, PAL	NTSC, PAL	NTSC, PAL	525/60, 625/50	NTSC, PAL
Edit accuracy	±0 frames	±0 frames	±0 frames	±2 frames	±1 frame
Transport control	K.board, Jog-pad	K.board, jogger pot	K.board, jogger pot	Keyboard knobs	Knob
Device interfaces	Switcher, mixer, GPI titler (integral)	Switcher, effects, Stills, title, mixer	Switcher, effects, GPI Still store, titler	None	Switcher, mixer, still graphics, effects
Control structure	422	422/232, GPI	422/232, GPI	No bus	.....
Reader Service Number	821	822	823	824	825

Manufacturer	Paltex			Director (Producer)	
	Model Series	Esprit (Esprit Plus)	EDDi		EXCEL
Suggested for	On-line	On & off-line	Off-line, non-linear	On, off-line	On, off-line
VTRs/ATRs record/play	1 R/3 P	5-transport (6)	To 8 VHS sources	3, assignable record	4-transport
Videodisc interface	.....	Yes	To 4 laser disc	Yes	Yes



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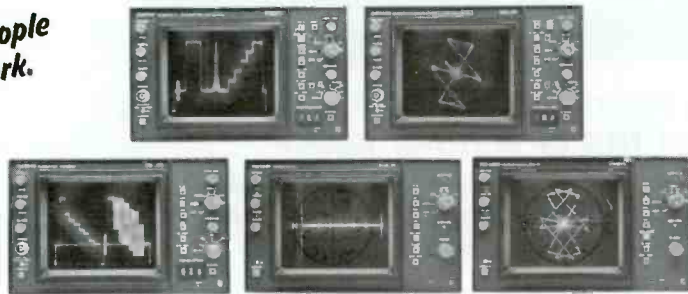
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# PHILIPS

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## Editor Controllers

Manufacturer	Dmicron Video	Esprit (Esprit Plus)	EDDi	Paltex	Director (Producer)
Model Series	Elecon EM7100 series			EXCEL	
Microprocessor	Z80 based	Multiple 16-bit	Proprietary	Distributed 16-bit	Multiple 16-bit
Internal storage	192 event	700 event	4,000 event/project	326	500 (998) event
Ext storage type	Disk, tape	F-disk/P-tape (H-disk)	Floppy disk	F-disk, P-tape	F-disk/P-tape (H-disk)
Edit decision list	Yes	Yes	Dual log	Yes	Yes
Edit data display	CRT	CRT	CRT	CRT	CRT
Printer interface	Serial	RS-232C	.....	RS-232C	RS-232C
Animation mode	Yes	Yes	Possible	Yes	Yes
Time code reader	Yes	Yes	Yes	Yes	Yes
Time code generator	Yes	.....	.....	.....	.....
Time code types	All timing formats	SMPTE, EBU	SMPTE, EBU	SMPTE, EBU	SMPTE, EBU
Color framing per	NTSC	NTSC, PAL	NTSC, PAL	NTSC, PAL	NTSC, PAL
Edit accuracy	±0 frame	±0	±0 frame	±0 frames	±0
Transport control	Keyboard, knob	Keyboard, knob	Knob	Keyboard, knob	Keyboard, knob
Device interfaces	For various switchers	Keyboard, knob Switcher, effects Mixer	Various	Keyboard, knob Switcher, mixer Effects	Keyboard, knob Switcher, effects Mixer
Control structure	.....	232/422, parallel	.....	332/422 parallel	232/422 parallel
Reader Service Number	826	827	828	829	830

Manufacturer	Panasonic Broadcast	Sony Broadcast	Spectra Image	United Media	Videomedia
Model Series	AU-A65	BVE-9000	Spectra system	Commander series	Magnum system
Suggested for	On, off-line	On, off-line	On, off-line	On, off-line	Any
VTRs/ATRs record/play	3 VTRs, 1 ext device	8R, 6P	5 VTRs or	8-machine	5 source, 1 record
Videodisc interface	.....	No	5 2-head disks	Yes	.....
Microprocessor	Yes	Centralized 16-bit	Centralized 16-bit	Distributed 16-bit	Z80As distributed
Internal storage	128	512, expand to 999	1,000	500 event	250 event
Ext storage type	Floppy disk	Floppy disk	Floppy disk	F-disk, P-tape	Floppy disk
Edit decision list	Yes	Yes	Yes	Yes	Yes
Edit data display	LED displays	CRT	CRT	CRT	CRT
Printer interface	.....	RS-232	RS-232	RS-232	RS-232C/serial
Animation mode	Possible	No	Yes	Yes	Possible
Time code reader	.....	Yes	No	Yes	In interfacing
Time code generator	.....	No	Option	Yes	In interfacing
Time code types	LTC, cti-trk	LTC/VITC/cti-trk/sync	LTC, VITC	SMPTE, EBU, cti-trk	SMPTE, EBU, cti-trk



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## Editor Controllers

Manufacturer	Panasonic Broadcast	Sony Broadcast	Spectra Image	United Media	Videomedia
Model Series	AU-A65	BVE-9000	Spectra system	Commander series	Magnum system
Color framing per	NTSC	NTSC, PAL	NTSC, PAL	NTSC, PAL	Yes
Edit accuracy	±0 frames TC	±0 frames TC	±0 frames	0-frame	±0, or per machine
Transport control	Keyboard knob	K.board, shuttle pot	Keyboard	Keyboard	Shuttle arms
Device interfaces	GPI	Switcher, GPI mixer	Switcher, mixer, self-contains	Switcher, mixer, title Effects, still, graphics	Switcher, transports printer
Control structure	Host PC port	422	422	232/422, UMI-bus	232C, ser/parallel
Reader Service Number	831	832	833	834	835

Manufacturer	Videomedia	
Model Series	◆Mickey 1 (Mickey 2)	Eagle I/II/III series
Suggested for	Any	Any
VTRs/ATRs record/play	1 record, 2 source	6 transports total
Videodisc interface	.....	.....
Microprocessor	Z80A distributed	Z80A distributed
Internal storage	50 event	250 event
Ext storage type	.....	Floppy disk
Edit decision list	Yes	Management on II/III
Edit data display	CRT	CRT
Printer interface	Yes	RS-232 serial
Animation mode	.....	Yes
Time code reader	In interfacing	In interfacing
Time code generator	In interfacing	.....
Time code types	SMPTE, EBU, ctl-trk	SMPTE, EBU, ctl-trk
Color framing per	Yes	Yes
Edit accuracy	±0 or per machine	±0 or per machine
Transport control	Opto-mechanic mouse	Shuttle arm
Device interfaces	Video/audio fader	Switcher
Control structure	232C/ser, LAN	Serial, parallel
Reader Service Number	836	837

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Circle (84) on Reply Card

# Electronic Graphic Art Systems

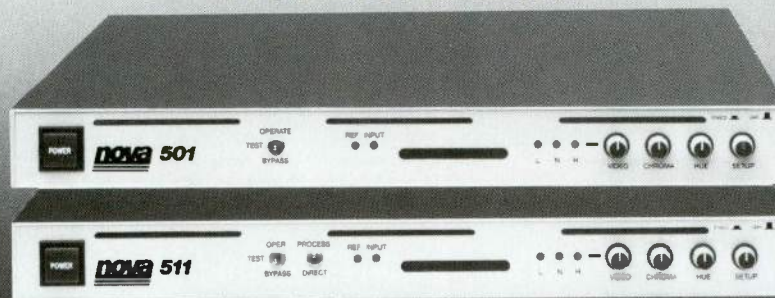
These video graphic generator systems incorporate full-color memory unless marked with a diamond (♦). Anti-aliasing is provided through software; those including hardware anti-aliasing are indicated by a bullet (•). The artist-tablet interface is with a stylus, except those supporting a mouse marked with a double dagger (‡). All include some integral image storage system, multiple on-line type faces and provide air/definable brushes. If a system is limited by the number of colors available on the screen, the number possible is indicated parenthetically after the palette. A face/font compose feature is standard unless indicated by a dagger (†). Abbreviations include: F.disk (floppy), H.disk (hard/Winchester), S.tape (streaming), R.pack (removable hard disk), F.buffer (frame), pers (perspective), str (stretch), ref (reflection), rot (rotation), geo (geometric), brdr (border), mag (magnify), F.color (full), pww (preview), pstr (posterization), stncl (stencil), DigVid indicates to digitized video.

Manufacturer	Alias Research	Ampex AVSD	Aurora Systems	Aurora Systems (Harris)	Barco Ind (Wavefront)
Model/Series	Alias/1	AVA-3	System/280	System/220	Producer‡
Base computer	68020/S.G. Iris	68000	68020	IBM PC/AT	68020/S.G. Iris
Internal memory	8MB RAM/16MB virtual	.....	4MB Ram	512KB	8MB RAM, 16MB virtual
Memory architecture	32-bit	24-bit	32-bit	32-bit	32-bit
Off-line storage	F/H.disk, S.tape	Tape cartridge	R.pack/H disk/S.tape	F/H.disk, S.tape	F/H.disk, S.tape
Image resolution	1024x768 pixels	768x484 pixel	720x486 13.5MHz 74ns/px	512x486 pixel	1024x768 pixel
Palette	16.7 million	16.7 million	16.7 million	16.7 million	16.7 million
Image sources	NTSC, tablet	Any source	RGB, modem, tablet	RGB, tablet, modem	NTSC/RGB, tablet
	Eikonix hi-res camera	Camera, tablet	Ethernet		
Output drivers	NTSC, Betacam, DigVid	Video F.buffer	RGB F.buffer, modem	RGB F.buffer, modem	RGB F.buffer/Scitex
	Film recorder	ESS-3 R.pack	Film recorder, Ethernet	Film recorders	Dicomed, Film recorder
Encoder/decoder/sync	Int/not req/int	Internal	External	External	External
VTR controller	Lyon-Lamp VAS-5	Internal	Internal	Internal	Diaquest
Image manipulations	Standard	Pers/distort/flip	Skew/Pers/str/copy	Pers/str/copy	All standard types
		Comp/exp/rot	Rot/ref/move/scale	Rot/ref/move/scale	
Artist's tools	All standard	Geom/grid/zooms	Geom/curve trace/mag	Geo/curve trace/mag	All standard types
		Cut-paste	Fill/brdr/write-on	Fill/brdr/write-on	
Texture mapping	Animated/bump/natural	.....	.....	.....	Texture/bump/ref
Shading	Lambert, Phong, Blinn	.....	Reflectance	Reflectance	Gouraud, Phong
Animation features	Obj/light/camera	Objs/lights/camera	Color/reveal/motion	Color/reveal/motion	Obj/light/camera
3D render features	Wireframe pww/F.color	Wireframe pww/F.color	Wireframe pww/F.color	Wireframe pww/F.color	Wireframe pww/F.color
CRTs used for	Canvas	Canvas	Menu, canvas, system	Menu, canvas, system	Canvas-system, RGB
Multiple user	.....	.....	.....	.....	Yes
Remote/data input by	IGES//RS-232/Ethernet	RS-232/422	RS-232 net/Ethernet	RS-232 net, Ethernet	RS-232, Ethernet
	Pixar render engine		Opt Wx, 3D modeling	Opt Wx, 3D modeling pkg	Opt render engine
	Opt 3D modeling package				
Reader Service Number	954	955	956	957	958

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## Electronic Graphic Art Systems

Manufacturer	BTS Broadcast Television Systems	CGL/Computer Graphic Laboratories	ColorGraphics Systems		
Model/Series	FGS-4500	Vidifont Graphics	Images II+		
Base computer	68000 series $\mu$ P	Opt to Viditext II	PC/AT or equiv	DEC 11/73	68010
Internal memory	.....	70/260MB, 2000 pic ext	Host memory 4MB	.....	4-image
Memory architecture	16-bit	16-bit	24-bit	24-bit	32-bit
Off-line storage	R.pack/F.disk/S.tape	40/140MB H.disk	Floppy disk	F.disk/H.disk pack	Yes
Image resolution	4kx4k internal	.....	506x486 pixel	.....	768x483-pixel
Palette	16.7 million	16.7 million(>2000)	32,780	16.7 million	16.7 million
Image sources	RGB, tablet, library	NTSC/RGB, library	RGB, tablet, camera	RGB, tablet, camera	Tablet, Library
Output drivers	RGB F.buffer, Scitex	Tablet	F.buffer	F.buffer, film printer	Camera, Wx data
	Film recorder, DigVid	RGB/NTSC F.buffer	.....	Film recorder	Encoder
Encoder/decoder/sync	External	Int/int/ext	Ext/int-ext/ext	External	.....
VTR controller	Ext, BTS	.....	Internal	Internal	.....
Image manipulations	Standard types	Standard types, stencils	Scale/rot/mirror	Std 2D manipulations	Cut-paste, wash
	.....	Crop/geo/mosaic/montage	Copy/move	Pers/transforms	Overlay, pix repeat
Artist's tools	Geo/retouch	Standard types	Color correction	Geo/grids/std tools/ mosaic/pstr	Standard tools
	.....	.....	Enhance, crop	.....	GEOS images
Texture mapping	Texture/bump	.....	No	.....	.....
Shading	Gouraud, Phong, others	.....	No	.....	.....
Animation features	Objs/lights/camera	Color, 2D	50 ind 2D objects	2D motion, color	Yes
3D render features	Wireframe pvw/F.color	No	None	.....	Yes
CRTs used for	Canvas, status	Canvas, edit	Menu, canvas	Menu, canvas	Canvas-menu
Multiple user	.....	Yes	No	Yes	Yes
Remote/data input by	Ethernet	RS-232/422	Ethernet from Images II+	Ethernet	RS-232/422
	Opt Pixelator	.....	.....	.....	.....
Reader Service Number	959	960	961	962	963

Manufacturer	Cubicomp	Cubicomp (Vertigo)	Digital Arts	Dubner Computer	Harris
Model/Series	PictureMaker	V-2000	DGS 1.0/DGS 2.0†	DPS-1†	◆Aurora System/75
Base computer	IBM PC/AT	68020/68881	PC-AT (80386 opt)	68000 series	IBM PC/AT enhanced
Internal memory	.....	4MB RAM	.....	2-image	512kB
Memory architecture	16-bit	32-bit	16-bit	8-bit	16-bit

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## Electronic Graphic Art Systems

Manufacturer	Cubicomp	Cubicomp (Vertigo)	Digital Arts	Dubner Computer	Harris
Model/Series	PictureMaker	V-2000	DGS 1.0/DGS 2.0‡	DPS-1†	◆Aurora System/75
Off-line storage	F.disk/40-140MB H.disk	H.disk, S.tape	F.disk	Yes	F/H.disk
Image resolution	.....	720x486 pixel	.....	768x525-pixel	512x486 pixel
Palette	16.7 million	16.7 million	16.7 million	16.7 million	16.7 million (128)
Image sources	RGB, tablet, library	RGB, tablet	RGB/composite video Tablet, ASCII files	Camera, video Tablet	NTSC, modem, tablet
Output drivers	RGB F.buffer	Frame buffer, DigVid Film recorder	RGB F.buffer Film recorder	Encoder	RGB F.buffer, modem Film recorder
Encoder/decoder/sync	External	External	External	.....	Ext/not req/ext
VTR controller	Diaquest	Internal	Lyon-Lamb MiniVAS	.....	Lyon-Lamb VAS
Image manipulations	Std/stencil/crop geo/mosaic	Standard types	Per/translation scaling	Standard types	Move/copy/scale/ref Rot/str/align
Artist's tools	Standard types	Standard types	Digital matte Transparency	Standard types	Geo/curve trace/mag Fill/brdr/write-on
Texture mapping	Yes	Texture/bump	Texture/ref/bump/shadow	.....	.....
Shading	Gouraud, Phong	Gouraud, Phong, others	Gouraud, Phong, flat wf	.....	.....
Animation features	Objs/lights/camera	Obj/lights/camera	Obj/lights/camera	.....	Color/reveal/motion
3D render features	Wireframe pvw/F.color	Wireframe pvw/F.color	8-bit pvw, real-time	.....	.....
CRTs used for	Canvas, system	Canvas	Menu, RGB	Canvas	Menu, canvas, system
Multiple user	Yes	.....	No	No	Extra display only
Remote/data input by	RS-232/422	RS-232 Pixar render engine	.....	RS-232	RS-232 net, opt WX
<b>Reader Service Number</b>	<b>964</b>	<b>965</b>	<b>966</b>	<b>967</b>	<b>968</b>

Manufacturer	.Imageering	3M Company	Microtime	Pinnacle Systems
Model/Series	ICMS Paintstore	Silver	ANI-MAKER‡	Image Maker‡
Base computer	M-68000	Proprietary	PC-AT (80386 opt)	PC-AT (80386 opt)
Internal memory	2MB op sys/2MB picture	.....	2 images	2 images
Memory architecture	16-bit	.....	16-bit	16-bit
Off-line storage	.....	F.disk	Floppy disk	Floppy disk
Image resolution	5.5MHz flat equiv	.....	8kx8k pixel	8kx8k internal
Palette	16.7 million	65,000	16.7 million	16.7 million
Image sources	Library disk, camera	RGB/NTSC, tablet	RGB source, tablet	RGB source, tablet
Output drivers	RGB/NTSC, SLR still NTSC F.buffer	Component scan-in Video F.buffer	RGB F.buffer, film recorder, Bernoulli box	RGB F.buffer, film recorder, Bernoulli box
Encoder/decoder/sync	External	Internal	External	External
VTR controller	Lyon Lamb	.....	Internal	Internal
Image manipulations	3-axis tilt, scale Perspective	Standard, flips Multi-freeze, DigVid	Perspective	Perspective
Artist's tools	Color ramp/poster/mosaic Geo/stncl/cut-paste/wsh	Grid, std tools Mosaic/pstr	Cut-paste, move Transparency	Cut-paste, move Transparency
Texture mapping	.....	.....	Texture, reflectance	Texture, reflectance
Shading	(Color correction)	.....	Gouraud, Phong, metallic	Gouraud, Phong, metallic
Brush types	Various, antialiased	Air, user defined	Size, density adj.	Size, density adj.
Tablet type	Pressure sensitive	Mouse	Mouse	Mouse
Animation features	Real-time trajectories	2D, Digvid	Wireframe, render pvw	Obj/light/camera/3D
3D render features	.....	.....	Yes	Wireframe, render pvw
CRTs used for	Menu, NTSC	Menu-canvas	Menu, RGB	Menu, RGB
Multiple user	No	.....	Yes	Yes
Remote/data input by	Modem	.....	Modem, LAN, renderer	Modem, LAN, renderer
<b>Reader Service Number</b>	<b>969</b>	<b>970</b>	<b>971</b>	<b>972</b>

Manufacturer	.Pinnacle Systems	Quanta	Quantel	Rank Cintel
Model/Series	Model 3000	◆QUANTAPAIN	Dimension 32	◆Paintbox
Base computer	Proprietary	Proprietary	32000 series w/math	68000 µP
Internal memory	.....	.....	8MByte	.....
Memory architecture	32-bit	16-bit	32-bit	16-bit
Off-line storage	F.disk	F.disk/20-40MB H.disk	Floppy disk	.....
Image resolution	4.2MHz NTSC equiv	640x485 pixel	640x485 pixel	.....
Palette	16.7 million	16.7 million (256)	16.7 million	16.7 million
Image sources	RGB/NTSC, tablet	Camera, RGB/NTSC,	4:2:2	RGB, Tablet
Output drivers	Component video opt F.buffer	Tablet, other RGB F.buffer	Tablet, other RGB F.buffer, encoder	Library RGB F.buffer
Encoder/decoder/sync	Internal	Encoder	Network	Film recorder
VTR controller	.....	Internal	Internal	External
Image manipulations	Standard/flips/DigVid Multifreeze	Move/pers/resize/mosaic rot/flip/fractal	Move/pers/resize/copy Mosaic/rot/flip	.....
Artist's tools	Geo/grids/std tools Mosaic/pstr	Geo/rubberbanding Fill/mag	Geo/paint/fixative mag/graph/mix	Standard types
				Ref/copy/move/paste Expand, reduce Geo/color/mirror rot/defocus/flip/stncl



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Circle (94) on Reply Card

## Electronic Graphic Art Systems

**Manufacturer** . . . . . **Pinnacle Systems**  
**Model/Series** . . . . . **Model 3000**

Texture mapping . . . . . Yes  
 Shading . . . . .  
 Animation features . . . . . Obj/lights/camera  
 3D render features . . . . . Wireframe pww/F.color  
 CRTs used for . . . . . Menu-canvas  
 Multiple user . . . . .  
 Remote/data input by . . . . .

**Reader Service Number** . . . . . **974**

**Quanta**  
**♦QUANTAPAIN**

Color/motion  
 Menu, canvas  
 No  
 To Quanta CGs,  
 Opt business graphics  
**975**

**Dimension 32**

Phong, gamma correction  
 Color/motion/pan  
 Eireframe/F.color  
 System, canvas  
 Yes  
 Yes  
 Opt render engine  
**976**

**Quantel**  
**♦Paintbox**

w/Harry system  
 Canvas  
 Yes  
 RS-232  
**977**

**Rank Cintel**  
**Art-File**

Canvas  
 5 work stations  
 RS-422  
**978**

**Manufacturer** . . . . . **Symbolics**  
**Model Series** . . . . . **Symbolics**

Base computer . . . . . Proprietary/LISP-AI  
 Internal memory . . . . . Virtual memory  
 Memory architecture . . . . . 32-bit  
 Off-line storage . . . . . Tape cartridge  
 Image resolution . . . . . to 1280x1024  
 Palette . . . . . 16.7 million  
 Image sources . . . . . RGB, tablet  
 Camera  
 Output drivers . . . . . F.buffer  
 Film recorders  
 Encoder/decoder/syncExternalExternal  
 VTR controller . . . . . Internal  
 Image manipulations . . . . . All std, user defined

Artist's tools . . . . . Geo/3D geo/std tools  
 Texture mapping . . . . . Textures/bump/ref  
 Shading . . . . . Gouraud, Phong  
 Animation features . . . . . Obj/lights/camera  
 3D render features . . . . . Wire/solid pww  
 CRTs used for . . . . . Menu-canvas, RGB  
 Multiple user . . . . . Yes  
 Remote-data input by . . . . . Yes  
**Reader Service Number** . . . . . **979**

**Transformations**  
**EFX‡**

MicroVAX  
 5MB RAM, 4GB virtual  
 32-bit  
 H.disk, tape cartridge  
 16.7 million  
 RGB, tablet  
 RGB F.buffer

Lyon-Lamb VAS  
 Perspective

Transparency, script  
 projections  
 Texture/bump/ref/shadow  
 Gouraud, Phong, flat  
 Obj/lights/camera  
 Real-time/wire/F.color  
 Menu, RGB  
 .....  
 .....  
**980**

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Circle (95) on Reply Card



# Graphic Titlers

For the production titler systems in this category, the following type style abbreviations have been used: A - serif, B - sans serif, C - italic, D - script.

Manufacturer	Aston Electronics	BTS	Chyron
Model/Series	Aston 3	Aston 4	Chyron IV (4200)
Subtitle control	Manual/timed/TC opt	Manual, timed	Manual, time code
Page format	40 char/21 line	56 char/14 line	64 char/24 line
Resolution	31.25ns	10ns	27ns
Anti-aliasing	.....	Hardware/software	Hardware
On-line type faces	4	8	12
Type styles	A/B/C/D	A/B/C/D	A/B/C/D
Type face storage	Disk	Disk	Disk
Face/font compose	Option	Logo compose opt	Option
Display flash	Yes	Yes	By character
Edging effects	Full edging control	Full edging control	Full edge control
Auto centering	Yes	Yes	Horizontal
Roll/crawl control	8 speeds	8 speeds	Variable
Keyer/colorizer	External keyer	External keyer	Integral
Color palette	4,096	4,096	16.7 million
Colors per screen	8 text, 8 bknd	40/screen	256/screen
Internal memory	2 pages	2 pages	2 pages
Memory architecture	16-bit	24-bit	32-bit
Integral still-store	No	No	No
Off-line storage	150 pages	Floppy/Winchester	Floppy/Winchester
Access time (page)	<1s	<1s	0.5s
Effective planes	1 plane	3	2
Remote control	RS-232	RS-232/422	RS-232/422
Image sources	.....	.....	Camera
Multiple user system	No	2-station	2 stations
Automation interface	Various	Various	No
		2D animation std, 3D opt	
		Sports, election pkgs.	
Reader Service Number	435	436	438
		437	439

**Want  More information on advertised products?**

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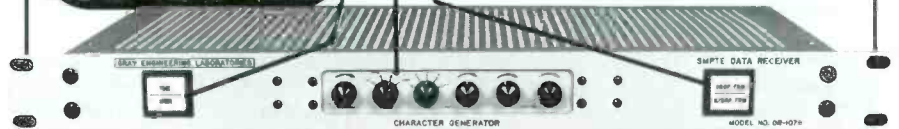
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Circle (96) on Reply Card

## Graphic Titlers

Manufacturer	Chyron			Dubner Computer Systems	
Model/Series	RGU-2	VP-2	Texta	CBG-2	20-K
Subtitle control	Manual, time code	Manual, remote ctl	Manual	Manual	Manual
Page format	62 char/ 20 line	.....	100 char/30 lines	100 char/16 lines	100 char/16 line
Resolution	27ns	35ns	37ns	525x1024 pixel	37ns/485x1384-pixel
Anti-aliasing	.....	.....	Hardware/software	Hardware/software	Software
On-line type faces	4	6	255	255	8
Type styles	A/B/C/D	A/B/C/D	A/B/C/D	A/B/C/D	A/B/C/D
Type face storage	Disk	ROM	Disk	Disk	Disk
Face/font compose	Option	No	Yes	No	Yes
Display flash	Full flash control	Yes	By character	By character	By character
Edging effects	Surround/shadow	Full edge control	Full edging control	Full edging control	Full edging control
Auto centering	Horizontal	Yes	Yes	Yes	Yes
Roll/crawl control	Variable	Variable	9 speeds	Variable speeds	9 speeds
Keyer/colorizer	Integral	Integral	Integral	Integral	Integral
Color palette	64	512	.....	4,096	16.7 million
Colors per screen	8/screen	16/screen	.....	128	256
Internal memory	2 page	1 page/4000 lines	.....	2 pages	1,000 pages
Memory architecture	16-bit	8-bit	.....	Encoded frame buffer	8-bit frame buffer
Integral still-store	No	No	Yes	Yes	No
Off-line storage	Floppy	Floppy	Floppy/Winchester	Floppy/Winchester	Winchester disk
Access time (page)	1s page/frame	.....	<0.5s/page	0.25s/page	0.25s/page
Effective planes	2	Infinite	.....	3	1
Remote control	RS-232	RS-232	RS-232/422/IEEE	RS-232/422/IEEE	RS-232/422
Image sources	Camera	None	Bit-pad/camera/Wx	Bitpad/camera/Wx	Weather
Multiple user system	2 stations	Yes	.....	2 stations	.....
Automation interface	No	No	Yes	Yes	Yes
<b>Reader Service Number</b>	<b>440</b>	<b>441</b>	<b>442</b>	<b>443</b>	<b>444</b>

Manufacturer	For-A Corporation		ICM Video	JVC Company	
Model/Series	VTW-220	VTW-400	CG-7000P	M-1000 (M-1500)	Mindset M-3000
Subtitle control	.....	Manual	Manual, clocked	.....	.....
Page format	32 char/8 line	32 char/8 line	38 char/16 line	.....	.....
Resolution	16x20 pixel	24x24 pixels	48x64 dot character	640x240 pixel	640x400 pixel
Anti-aliasing	.....	.....	Hardware	(Glyph software)	.....
On-line type faces	1, 4 sizes	2, 4 sizes	8	1, 4 sizes (3 sizes)	5, 3 sizes
Type styles	1	1	A/B/D	San serif, options	A/B/C/D
Type face storage	ROM	ROM	ROM	ROM cartridge	Disk
Face/font compose	No	No	Yes	No	Yes
Display flash	Character	Character	Character	Yes	Yes
Edging effects	Yes	Yes	Surround edge	Yes	Yes
Auto centering	Yes	Page, H, V	.....	Yes	Yes
Roll/crawl control	9 speed	4, w/transitions	Variable	Yes	Yes
Keyer/colorizer	Integral	Integral	Integral	Integral	Integral
Color palette	512	64	Unlimited	512	512
Colors per screen	14	64	.....	4	4
Internal memory	32 pages	8 pages (600 opt)	80 pages	20 (40) pages	.....
Memory architecture	8-bit	8-bit	8-bit	8-bit	8-bit
Integral still-store	No	No	No	No	No
Off-line storage	32K RAM card	Floppy disk	.....	Cartridge, f.disk	Disk
Access time (page)	0.5s	0.5s	2s/page	.....	.....
Effective planes	1	1	1	Background, title	Background, title
Remote control	RS-232	RS-232	.....	(RS-232)	RS-232, parallel
Image sources	Background video	.....	.....	Bknd video, tablet	Bknd video, tablet
Multiple user system	No	No	No	No	No
Automation interface	No	No	No	No	No
<b>Reader Service Number</b>	<b>445</b>	<b>446</b>	<b>447</b>	<b>448</b>	<b>449</b>

Manufacturer	Knox Video	Laird Telemedia		PESA
Model/Series	K-200 Chromafont II	7200 (1450)	D-3600 (D-2200)	D-6000 CG-4722
Subtitle control	Manual	Manual	Manual, clocked	Manual/clocked
Page format	32C/17L, 32TVL font	60c/24l 12TVL (....)	32 char/10 lines	768x483 pixels
Resolution	.....	35ns	35ns (70ns)	35ns
Anti-aliasing	None	.....	.....	.....
On-line type faces	8, 2 sizes	4 (6)resident	5, 16 sizes, reverse	Unlimited (15 std)
Type styles	A/B/C	.....	A/B/C/D	A/B/C/D
Type face storage	ROM	Disk	ROM & (disk)	ROM, Disk
Face/font compose	No	Yes (No)	No	Yes
Display flash	Character, page	Yes	Yes	Yes
Edging effects	Yes	Full edging control	Yes	Yes
Auto centering	Yes	Horizontal	Yes	Yes
Roll/crawl control	10 speeds	Variable (9r/6c)	Multiple speeds	Variable speeds
Keyer/colorizer	Integral	External units	Integral	Integral



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## Graphic Titlers

Manufacturer	Knox Video	Laird Telemedia	3M Company		PESA
Model/Series	K-200 Chromafont II	7200 (1450)	D-3600 (D-2200)	D-6000	CG-4722
Color palette	512	32k (65k)	4,096 (512)	128 char/1024 bknd	112
Colors per screen	16 combinations	32 screen (....)	16 char/16 bknd (8/8)	16 char/256 bknd	....
Internal memory	64 pages	100 lines (pages)	1 page	1 page	15 pages
Memory architecture	8-bit	8-bit	8-bit	8-bit	8-bit
Integral still-store	No	No	No	No	No
Off-line storage	No	Floppy disk	1,000 pages/disk	100 pages/disk	128 pages/disk
Access time (page)	....	0.5s	1/50s	1/50s	<1s
Effective planes	Background, title	1	Background, title	Background, title	1
Remote control	....	....	RS-232	RS-232	RS-232
Image sources	Input video	None	Background video	Digitizer, tablet	Camera
Multiple user system	No	4 kboard (...)	No	Multiple keyboards	....
Automation interface	No	....	Closure switch	....	Yes
<b>Reader Service Number</b>	<b>450</b>	<b>451</b>	<b>452</b>	<b>453</b>	<b>454</b>

Manufacturer	Quanta		Quantel	Ryley Communications
Model/Series	QCG-38	QCG-5000	Cypher	CapGen Series 2
Subtitle control	Manual, auto	Manual, auto	Manual, programmed	....
Page format	40 char/13 lines	64 char/24 lines	....	32 char/12 lines
Resolution	18ns	29ns	....	11.1ns
Anti-aliasing	....	....	Hardware/software	Hardware
On-line type faces	8, 8 sizes	2, 52 sizes	Numerous	2, 4 sizes
Type styles	A/B/C	A/B/C/D	90 available	A/B/C
Type face storage	ROM	ROM, disk	Disk	Disk
Face/font compose	No	Yes	Yes	No
Display flash	Yes	Yes	[Numerous effects	By word
Edging effects	Yes	Yes	[manipulations on	Yes
Auto centering	Yes	Yes	[generated titles	Yes
Roll/crawl control	10 speeds	10 speeds	Variable	9 speeds
Keyer/colorizer	Integral	Integral	Within system	Integral
Color palette	512	16.7 million	16.7 million	64
Colors per screen	13 ch/13 bknd/8 edge	16 ch/16 bknd/16 edge	16.7 million	64
Internal memory	20 pages	400/disk	....	400 pages
Memory architecture	8-bit	8-bit	16-bit	8-bit
Integral still-store	No	No	Limited	No
Off-line storage	Disk	Disk	Floppy/Winchester	Floppy disk
Access time (page)	0.5s	0.5s	<1s	<1s
Effective planes	Background, title	Background, title	Multiple	1
Remote control	RS-232	RS-232	RS-422	....
Image sources	Input video	Camera, tablet	CCIR 601 eqpt	....
Multiple user system	No	No	....	4 keyboards
Automation interface	No	Various	Yes	Scorepad option
<b>Reader Service Number</b>	<b>455</b>	<b>456</b>	<b>457</b>	<b>458</b>

## Video Signal Processors

These systems include analog component translator equipment, standards conversion units and signal correction products. N, P, S denote NTSC, PAL and SECAM, respectively. YCrCb is used to denote equiband color different components.

Manufacturer	AVS Broadcast	BTS	CEL/Grunder	Cox Electronics <sup>1</sup>
Model/Series	ADAC	AVS-6500	XCC 6016 corrector	P156-2
Enhancement	H aperture, detail	H aperture	....	Digital sampling
Noise reduction	9dB Y, 12dB C	6dB Y, 9dB C	....	Motion interpolation
Color correction	RGB gains, pedestals	Chroma retiming	RGB/YUV decode adapter	TBC/freeze functions
Contrast correction	Manual adjustment	Manual control	Gamma control	With setup
Sync regeneration	Yes	TBC, freeze modes	Yes	Yes
Standards conversion	NTSC, PAL/M/N, SECAM	NTSC, PAL (SECAM opt)	W/decoders, encoders	P/S to N, N to P
Dubbing application	Yes	Yes	Yes	Yes
Production application	Yes	....	Yes	Yes
On-air application	Yes	Yes	Yes	Possible
Format conversions	Encoded, 601, YCrCb	Composite, RGB	Yes	No
Video response	-3dB to 5.5MHz	-3dB to 3.5MHz	± 0.5dB to 5MHz Y	-3dB 2.5MHz N/3.5 P
S/N ratio	>55dB	....	>70dB Y	53dB
Envelop delay	± 5ns chr/<1% K-factor	....	....	....
Diff phase, gain	1.5°/1.5%	....	....	....
Video level adjust	0.5V-2V	-300, +100 IRE	± 40% white	± 50%
Chroma level adjust	+3dB	....	....	± 50%
Pedestal level adjust	± 60mV	± 8.5 IRE	± 30% black	± 150mV
Chroma phase adjust	± 180°	± 180°	....	....
				* RGB-Betacam/MII
				* - Betacam/MII-RGB
				No
				No
				No
				Yes
				No
				RGB-component analog
				± 0.1dB, to 5.5MHz
				>46dB unwt'd
				....
				time δ <5ns
				None
				None
				None
				None



# 3D Digital Video Effects RP-1 From Microtime

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## Video Signal Processors

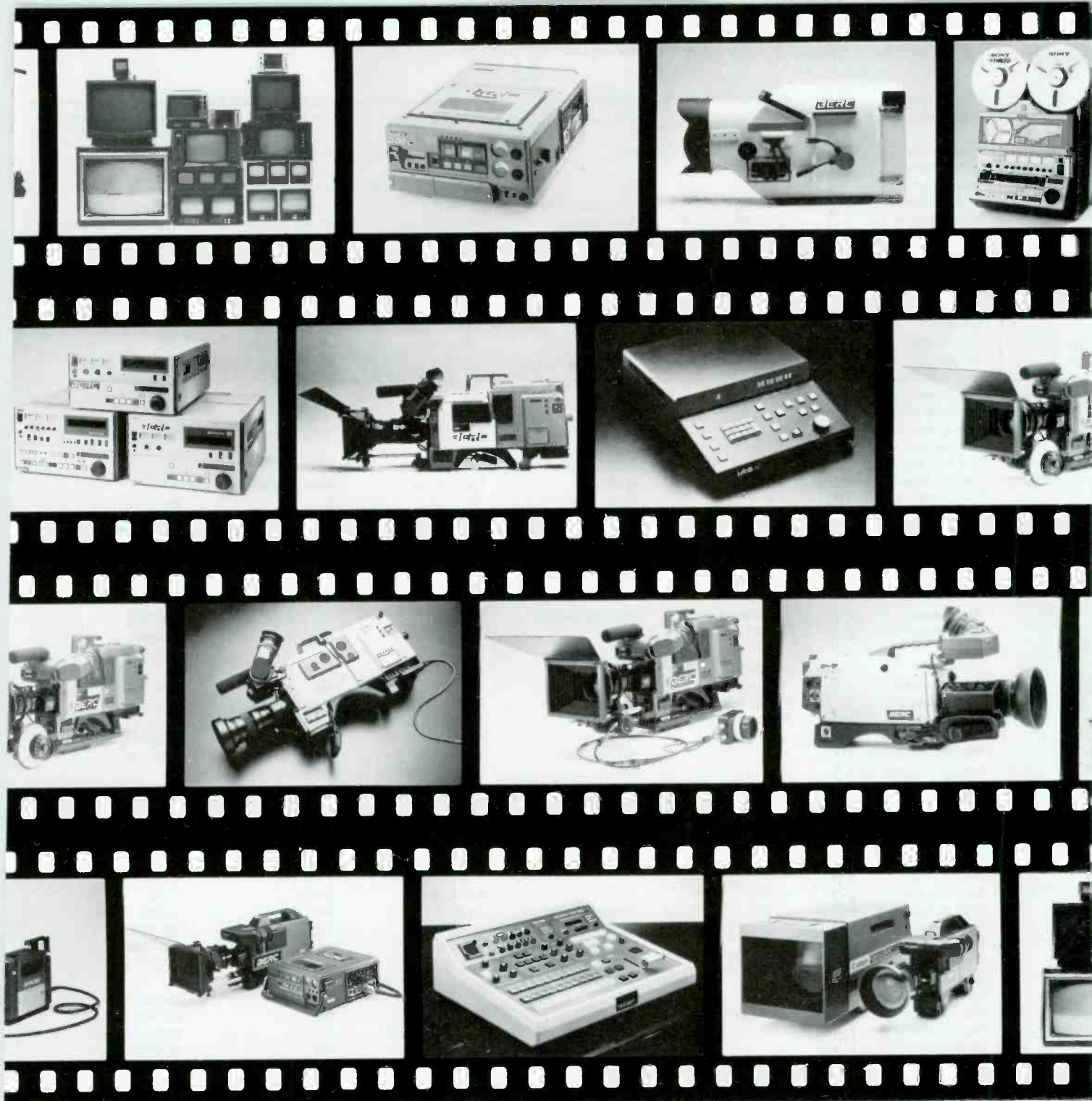
Manufacturer	Model/Series	AVS Broadcast	BTS	CEL/Grunder	Cox Electronics <sup>1</sup>
	ADAC	AVS-6500	XCC 6016 corrector	P156-2	ACC 200 translator
Subcarrier phase range	360°	± 180°	.....	360°	None
Sync level adjust	Fixed	.....	With output encoders	No	None
RGB gain/pedestal adjust	Yes	None	Yes	No	None
Programmable system	Yes	No	Yes	No	None
Component formats	Yes	RGB	RGB, YUV	No	None
Remote control type	RS-232, other	Manual only	Proprietary	None	None
<sup>1</sup> US representative, BVS/Broadcast Video Systems.					
Reader Service Number	725	726	727	728	729

Manufacturer	Model/Series	Electrocraft	CTC-N transcoder	Faroudja Laboratories	Flesh tone corrector
	.Cox Electronics 600, 660 series	CPS-84 (PAL)		VHP detail processor	
Enhancement	No	H crispening	No	Small detail, H & V	No
Noise reduction	No	>6dB chroma	No	Effective	No
Color correction	RGB gain/ped/gamma	RGB gain, lift, gamma	Color balance	No	Flesh tone only
Contrast correction	Manual control	Yes	From setup/gain	Effective	No
Sync regeneration	No	Yes	Yes	No	.....
Standards conversion	No	No	No	No	No
Dubbing application	Yes	Yes	Yes	Yes	Yes
Production application	Yes	Yes	Yes	Yes	Yes
On-air application	Yes	Yes	.....	Yes	Yes
Format conversions	RGB-YCrCb	Y-C/YUV/RGB/PAL	YCrCb, RGB, bidir.	No	.....
Video response	± 0.1dB 5.5MHz	To 3.5MHz luma	± 0.3dB 8MHz	± 1dB 4.2MHz	± 0.5dB 4.2MHz
S/N ratio	65dB	.....	60dB	60dB	>65dB
Envelop delay	± 10ns	480ns adjustable	<5ns relative	<20ns	.....
Diff phase, gain	0.5°, 0.5%	.....	.....	2.5°, 2.5%	1.5°, 1.5%
Video level adjust	± 30 IRE	± 6dB	± 2dB	[Boosts detail by	± 3dB
Chroma level adjust	-90, +30 IRE	± 6dB	± 5 IRE balance	[200% under 10 IRE	± 3dB
Pedestal level adjust	± 30 IRE	150mV range	± 15 IRE	[100% to 20 IRE	No
Chroma phase adjust	± 40°	None	No	[5% at 100 IRE	± 30°
Subcarrier phase range	± 40°	None	± 2µs genlock	.....	.....
Sync level adjust	Not ops control	0-180°	± 10 IRE	.....	.....
RGB gain/pedestal adjust	Both gain & pedestal	To 200mV p-p gamma	Pedestal black bal	No	Color balance
Programmable system	600/660TC(J) timecode	No	No	No	No
Component formats	660/660TC	Yes	Yes	No	R-Y, B-Y processing
Remote control type	RS-232/422	None	.....	.....	No
Reader Service Number	730	731	732	733	734

Manufacturer	Model/Series	Fortel	Leitch Video	PCD-473	Lenco
	.For-A CCS-4300/4350 (-4400)	CC-1 (CC-2)	VPA-330N (VPA-331N)		PRC-465 (PRC-365)
Enhancement	No	Color only	No	No	In white clip
Noise reduction	No	Yes	No	Inherent	No
Color correction	RGB gain/ped/gamma	Gamma/ped/level	Chroma AGC	Hue, gain	Gain, phase
Contrast correction	Yes	Via setup	Luminance AGC	.....	With setup
Sync regeneration	Yes	CC-1	RS-170A phasing	No	Yes
Standards conversion	No	(For 525, 625)	No	No	No
Dubbing application	Yes	Yes	Yes	Yes	Yes
Production application	Yes	Yes	Yes	Yes	Yes
On-air application	Yes	Yes	Yes	No	Yes
Format conversions	4400 YCrCb-encoded	Encoded-RGB (No)	Yes	Enc.-RGB/YCrCb/YIQ	No
Video response	± 0.1dB 4.2(± 0.5 8MHz)	± 1dB 4.2/ ± 0.25 5.5	± 0.1dB 5MHz luma	± 0.5dB 5MHz Y	± 0.5dB 10MHz
S/N ratio	60dB random, 50dB hum	60dB	>60dB	>55dB non-coherent	>50dB
Envelop delay	YC delay 40ns/K(2T) 0.5	.....	.....	.....	<10ns
Diff phase, gain	<0.5°/ <0.5	1.5° 1.5%	<0.2°, <0.5%	.....	<0.5%, <0.5%
Video level adjust	± 3dB (± 3dB YCrCb)	± 20IRE RGB ± 3dB	± 2.5dB	± 6dB	-40dB, +6dB
Chroma level adjust	± 3dB (± 3dB CrCb)	± 5dB RGB ± 3dB mstr	± 2.5dB	+6dB saturation	-30dB, +6dB
Pedestal level adjust	± 20IRE (± 10% Y)	± 20IRE	± 10 IRE	.....	± 20 IRE
Chroma phase adjust	± 15°	.....	± 20°	± 22°	.....
Subcarrier phase range	± 1° on 4350	.....	.....	.....	± 20°
Sync level adjust	Fixed	.....	± 10 IRE	.....	20-80IRE
RGB gain/pedestal adjust	± 30%Gain/ ± 15%Ped	Also B/W gamma	No	No	No
Programmable system	No	No	No	No	No
Component formats	4400 only	YCrCb/M-II/Beta/RGB	No	Component outputs	No
Remote control type	Proprietary	.....	Conductor/function	No	No
Reader Service Number	735	736	737	738	739

Manufacturer	Model/Series	Shintron	DIP 9800	Snell & Wilcox/Merlin Engineering	DIP 9710 (DIP 9720)
	.Quantel SATIN	MC-1 intermatrix		DIP 9700A	
Enhancement	Yes	No	H/V aperture	H/V detail	H/V detail





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## Video Switchers, Master & Production

Manufacturer	Model/Series	Quantel SATIN	Shintron MC-1 intermatrix	Snell & Wilcox/Merlin Engineering		
				DIP 9800	DIP 9700A	DIP 9710 (DIP 9720)
Noise reduction	Yes	No	Temporal recursive fltr	0/6/9dB Y, 0/6/9/12dB C	4-level Y/C NRS	
Color correction	.....	No	Color balance	Color balance correction	YC delay only	
Contrast correction	.....	No	Inherent/Y-C delay adj	Yes	Inherent	
Sync regeneration	TBC functions	Sync replacement	Inherent	Yes	Inherent	
Standards conversion	NTSC, PAL, SECAM	Intercomponent	All conversions	All stds available	NTSC-PAL(& SECAM)	
Dubbing application	Yes	Yes	Yes	Yes	Yes	
Production application	Yes	Yes	Yes	Yes	Yes	
On-air application	Yes	.....	Yes	Yes	Yes	
Format conversions	RGB to composite	RGB-YIQ-YCrCb-M-Beta	Composite, RGB, YCrCb	YUV out to SECAM enc.	Composite only	
Video response	>4.2MHz NTSC	±0.5dB 10MHz	±1dB 3.3MHz NTSC	±0.5dB 3.3MHz, NTSC	±1dB 3.3MHz	
S/N ratio	.....	.....	52dB wtd flatfield	52dB CCIR wtd	52dB CCIR wtd	
Envelop delay	.....	.....	-100, +600ns adj	-100, +600ns adj	-100, +600ns adj	
Diff phase, gain	.....	.....	.....	.....	.....	
Video level adjust	.....	None	±6dB continuous	1V ±6dB	±6dB continuous	
Chroma level adjust	.....	None	Yes	Yes	.....	
Pedestal level adjust	.....	None	±150mV continuous	±150mV	.....	
Chroma phase adjust	.....	None	NTSC only	NTSC only	NTSC output only	
Subcarrier phase range	.....	None	Yes	.....	.....	
Sync level adjust	.....	None	Fixed	.....	.....	
RGB gain/pedestal adjust	No	None	Color balance	Color balance	.....	
Programmable system	Yes	None	No	.....	No	
Component formats	CCIR 601 compatible	Yes	RGB, YVU	YUV out SECAM	(YUV out 9720)	
Remote control type	RS-422	None	Duplicate ctl panel	Duplicate ctl panel	None	
<b>Reader Service Number</b>	<b>740</b>	<b>741</b>	<b>742</b>	<b>743</b>	<b>744</b>	

Manufacturer	Model/Series	Sony Broadcast BVX-30 system	Tamron Industries Fotovix	Tektronix Model 1440	Video International DTC3602 (DTC32602)	VTA Tech. da Vinci
Noise reduction	15dB luma	No	No	No	Yes	Grain reduction
Color correction	RGB gain/ped/gamma	Balance alteration	No	Level/phase/YCrCb	Inherent	16-vector system
Contrast correction	No	Inherent	Automatic	Inherent	Inherent, TBC	Yes
Sync regeneration	Yes	Adds sync	Yes	Inherent, TBC	Replaces sync	Replaces sync
Standards conversion	No	Slide to video	None	PAL/N/M, NTSC, SECAM,	NTSC, PAL	Yes
Dubbing application	Yes	No	No	Y/C inputs	Yes	Yes
Production application	Yes	Yes	No	Yes (3602 w/effects)	Yes	Yes
On-air application	Yes	No	Yes	Yes	Possible	Possible
Format conversions	No	No	No	YCrCb-RGB-composite	Any component type	Any component type
Video response	±0.5dB 5MHz	To 4.2MHz	.....	>5.5MHz (13.5/8-bit)	±0.3dB 8MHz	±0.3dB 8MHz
S/N ratio	>51dB	.....	>60dB to 5MHz	54dB	55dB 5.5MHz	55dB 5.5MHz
Envelop delay	<1%	.....	±3dB correction	2% K-factor	<1%	<1%
Diff phase, gain	2°, 3%	.....	0.5°, 0.5%	2°/2%	1°/1%	1°/1%
Video level adjust	±3dB	Creates video	±6dB	Yes	±100%	±100%
Chroma level adjust	±3dB	from film positive or	±3dB	Yes	-90, +100%	-90, +100%
Pedestal level adjust	±20 IRE	negative transparency.	±10 IRE	Yes	-40, +100 IRE	-40, +100 IRE
Chroma phase adjust	90°	Some manipulations	±25°	Yes	±60°	±60°
Subcarrier phase range	360°	are available.	.....	Yes	.....	.....
Sync level adjust	.....	.....	±3dB	Yes	Standard fixed	Standard fixed
RGB gain/pedestal adjust	±30% gain, ±15% ped	.....	No	Yes	Yes, also gamma	Yes, also gamma
Programmable system	Yes	.....	Per VIRS reference	.....	1000 color events	1000 color events
Component formats	.....	.....	No	Yes	All formats	All formats
Remote control type	BVR-10, BVR-30	.....	Function/conductor	.....	RS-232/422, GPI	RS-232/422, GPI
<b>Reader Service Number</b>	<b>745</b>	<b>746</b>	<b>747</b>	<b>748</b>	<b>749</b>	<b>749</b>

## Video Switchers, Master & Production

Master control and studio production switching systems include an integral black source, unless marked with a bullet (\*). Non-synchronous signal detection is available unless marked with a dagger (†). Production units without re-entry facilities are noted with a star (★). All production systems include effects manipulation as standard features.

Manufacturer	Model Series	4100 MC-4 (4100 H)	Ampex AVSD AVC 330 Century	AVC Vista	AVC-33S (AVC series)	Beaveronics Model BI-154 (-156)
# of inputs	28V/26-5A(26V/24A)	32 video	10-18	32V, 16A opt	15 video	
Integral matte source	Yes	1/keyer, fills	5 generators	Yes	Yes	
Key sources	26 int, 4(6) ext	Any int, 30 ext	Int/ext/masks	32 int, 6 ext	4 int, 2 ext	
Chroma keyers	1(7)enc/4(6) RGB	Spectrakey/enc/RGB	RGB/enc/Spectrakey	10 enc, 6 RGB	RGB or enc.	
Downstream keyer	All sources	Linear/chroma/luma/ext	Unikey linear	All sources	(4-source, BI-156)	
Switching buses	2(8), 3(4 aux) opt	Multiple	4 aux, 2 with reentry	8, 16 aux opt	4 (6, 2 aux opt)	
Mix Effects amps	None (3)	3 w/3-level keyer	Dual multilevel keyers	3	1-2 (2-3)	
Pattern generator	None (64+36 opt)	Yes	32 inc/pixel dissolve	164 patterns	32 patterns	



## Video Switchers, Master & Production

Manufacturer	Ampex AVSD				Beaveronics Model BI-154 (-156)
	Model Series	4100 MC-4 (4100 H)	AVC 330 Century	AVC Vista	
Wipe effects	No (rotary/soft-edge)	164 hard, soft	Rotary, hard, soft	Rotary, soft, user pgm'd	Soft-edge
Border effects	No (integral)	Hard, soft, combined	Hard, soft, halo	Integral	Integral
Shadow effects	Options	Yes	Yes	Options	Option
Quad split feature	(Options)	Yes	.....	Options	Option
Automation interface	Parallel options	SuperStar integral	RS-232/422, GPI ports	SMPTE serial opt	No
Programmable functions	X-fade/fade-black	Multiple event setups	User configurable	x-fade, fade-black	No
Digital effects port	No	For ADO system	ADO options	Yes	No
Path length or deviation	300 $\mu$ s (700 $\mu$ s)	.....	Differential 1.5°	650 $\mu$ s	220 $\mu$ s (350 $\mu$ s)
Crosstalk at subcarrier	< -60dB (55dB)	< -55dB	$\leq$ -55dB	60dB	53dB
Audio preview, follow	Yes (No)	No	AVC audio system opt	Option	No
Audio level control	w/metering(No)	No	[Electroluminescent	Option	No
Audio mixer interface	No	No	[display, extended	Yes	No
Edit control interface	3-telecine, 9-VTR(...)	Yes	[memory options.	.....	No
<b>Reader Service Number</b>	<b>751</b>	<b>752</b>	<b>753</b>	<b>754</b>	<b>755</b>

Manufacturer	Beaveronics Model 712	BTS Broadcast TV Systems		Cox Electronics T24-2 (T24-PO)†	Cox/Abekas Model T8
		MCS-2000	R102ME (RME series)		
Control application	Production	Master	Production	Production (master)	Production
# of inputs	12 video	250V, 250A	16 or 24	23V (& 23A)	8 video
Integral matte source	Yes	Yes	Yes	Yes	Yes
Key sources	3 int, 1 ext	Int, ext	Various	4 external	8 int, 2 ext
Chroma keyers	RGB integral	No	RGB std, enc.	Enc/RGB (opt)	Enc., RGB opt
Downstream keyer	4-source opt	250 sources	Yes	4 source opt (std)	2 sources opt
Switching buses	4	150, 150 aux	10 prime	10/4 aux (2/2 aux)	3 prime, 1 aux
Mix Effects amps	1 efx-key, 1 mix	No	2	3 (1)	1, multilayer
Pattern generator	10 patterns	120 patterns	60 patterns	100 (9) patterns	80 patterns
Wipe effects	Soft-edge	User program	Rotary, soft-edge	Rotary & (soft-edge)	Rotary, soft-edge
Border effects	Integral	No	Yes	Integral	Integral
Shadow effects	Options	Integral	.....	Integral	Option
Quad split feature	No	No	No	Integral (No)	No
Automation interface	No	RS-232/422	Option	Editor/memory/SMPTE	Serial, relay
Programmable functions	.....	X-face, face-black	Option	X-fade, fade-black	X-fade, fade-black
Digital effects port	No	No	Yes	Yes (No)	No
Path length or deviation	140ns	100°	.....	1.2 $\mu$ s	2 $\mu$ s
Crosstalk at subcarrier	53dB	60dB	.....	56dB	58dB
Audio preview, follow	No	Yes	No	No (Yes)	Option
Audio level control	No	w/metering	No	No (w/meters)	No, meter opt
Audio mixer interface	No	No	No	No (Yes)	Yes
Edit control interface	No	.....	RS-422 port	Yes (No)	Yes
<b>Reader Service Number</b>	<b>756</b>	<b>757</b>	<b>758</b>	<b>759</b>	<b>760</b>

Manufacturer	Crosspoint Latch				Echolab SE-3
	Model Series	6109 (6119)†	6129AHK (6139)†	6112(AK) [6124A]	
Control application	Production	Production	Production	Master	Production
# of inputs	8 (5)	8 (8/16/24)	8 [12]	16V, 16A	10V
Integral matte source	Yes	Yes	Yes	Yes	Yes
Key sources	7 int/1 ext (5 int/1 ext)	Int/2 ext per M/E	Multi int, 2 ext	4 ext	2 int, 3 ext
Chroma keyers	RGB std (opt)	RGB, 2nd opt (dual)	Options	No	Enc., RGB opt
Downstream keyer	..... (Yes)	Dual, 4-input	Yes	No	2 sources
Switching buses	3 primary	3 primary (6 primary)	4 primary	2	3
Mix Effects amps	1	2 (3)	Independent dual	1	2½
Pattern generator	32 (12) patterns	32 patterns (12, 32/ME)	12 per ME	Patterns optional	40 patterns
Wipe effects	Soft edge	Soft-edge	Soft-edge	No	Soft, programmed
Border effects	Integral	Integral	Yes	Optional	Integral
Shadow effects	Integral	Integral	.....	No	Optional
Quad split feature	No	(on 6139)	No	No	Integral
Automation interface	Serial, parallel	7203/7239 AutoDrive	RS-232/422	Serial	No
Programmable functions	X-fade, fade-black	Auto-trans/sequences	Yes (AK $\mu$ P controlled)	Fade-black, X fade	Yes
Digital effects port	Yes	No	.....[6124A]	No	Optional
Path length or deviation	...( $\pm$ 1.5° differential)	$\pm$ 1° differential	$\pm$ 1.5° differential	.....	12 $\mu$ s
Crosstalk at subcarrier	50dB	50dB (55 $\mu$ B 4.43MHz)	50dB 3.58MHz [4.43]	50dB	52dB
Audio preview, follow	Yes	Yes (No)	No	Yes	No
Audio level control	No	No	No	w/metering	No
Audio mixer interface	No	No	No	Yes	Yes
Edit control interface	No (yes)	Yes (6403 interface)	6403 editor module	.....	.....
<b>Reader Service Number</b>	<b>761</b>	<b>762</b>	<b>763</b>	<b>764</b>	<b>765</b>

## Video Switchers, Master & Production

Manufacturer	Echolab	Electrocraft	ERCA	For-A
Model Series	SE-6	DV-5	VM-8548	TM2/6C†
Control application	Production	Production	Production	Production, ENG
# of inputs	10V	10V	8	6 component or PAL
Integral matte source	Yes	Yes	Yes	External source
Key sources	2 int, 5 ext	4 ext	Various int, 1 ext	Title only
Chroma keyers	Enc. or RGB opt	Enc. or RGB opt	RGB	Yes
Downstream keyer	2 sources	2 sources	Yes	Possible
Switching buses	5	4 prime, 3 aux	4 primary	3
Mix Effects amps	2½	1½	Yes	2
Pattern generator	40 patterns	Programmable	23 programmable	Programmable
Wipe effects	Soft, programmable	Soft, rotary options	Soft edge	Limited geometrics
Border effects	Integral	Integral	Yes	Yes
Shadow effects	Optional	Optional	.....	.....
Quad split feature	Integral	Optional	No	No
Automation interface	RS-422	RS-422	Yes	No
Programmable functions	.....	x-fade, fade-black	Yes	Limited features
Digital effects port	Optional	Yes	No	No
Path length or deviation	12µs	0.3µs	.....	.....
Crosstalk at subcarrier	52dB	52dB	.....	.....
Audio preview, follow	No	No	No	No
Audio level control	No	No	No	No
Audio mixer interface	Yes	Yes	No	No
Edit control interface	.....	.....	No	No
†Component analog model accommodates RGB, Y/R-Y/B-Y formats.				
Reader Service Number	766	767	768	769
				770

Manufacturer	For-A	Grass Valley Group			
Model Series	PVM-600	Model 300-3A (series)	1600-1L (1600-1X)	Model 1680 (series)	Model 100 (100CV2)†
Control application	Production, editing	Production	Production	Video production	Production
# of inputs	12	24 video	10 primary	10-24V, audio opt	8 video (8 component)
Integral matte source	Internal	Yes	Yes	Yes	Yes
Key sources	2	26 int, 6-32 ext	Int, ext	10-24 int, 10-22 ext	8 int, 2 ext, 1 DSK
Chroma keyers	CCK-500 EXKEY	Enc. or RGB	RGB or enc.	Enc., RGB	RGB
Downstream keyer	Yes	26 sources std	Std on -1X	4-source standard	8 sources
Switching buses	4 prime, key select	12	4 output	4-8, 1 aux on -16F	3
Mix Effects amps	1	3	1	1 to 3	1
Pattern generator	24 patterns	44 patterns	Yes	54 patterns	10 patterns
Wipe effects	Hard, soft-edge	Rot, soft, programmed	Soft-edge, rotary	Soft-edge, rotary	Soft-edged
Border effects	Hard, soft, modulated	Integral	Option	Option	Optional
Shadow effects	.....	Integral	Yes	Option	Option
Quad split feature	No	Option	.....	Option	.....
Automation interface	GPI, 422-serial opt	.....	Yes	Serial std	Serial opt
Programmable functions	Yes	Yes	(4 auto transitions)	Via E-MEM	Auto transitions
Digital effects port	FXM-500 EXTROL	Yes	.....	Yes, w/E-Disk	Key-MEM
Path length or deviation	.....	0.7µs	<1.5° deviation	<1.5° deviation	206ns
Crosstalk at subcarrier	<-54dB 4.43MHz	-54dB	<-55dB	<-54dB	<-54dB
Audio preview, follow	No	.....	Option	[Series includes:	.....
Audio level control	No	.....	.....	[-16K/-24F/-24K	.....
Audio mixer interface	No	.....	Parallel option	.....	AMX-100 mixer
Edit control interface	Yes	.....	Parallel option	Serial	RS-232/422, GPI
‡Component model accommodates RGB, Y/R-Y/B-Y, YIQ analog types.					
Reader Service Number	771	772	773	774	775

Manufacturer	Grass Valley Group		Ikegami Electronics	Image Video	Intergroup Video
Model Series	1600-4S	Model 200-2	DSS-5108C 4:2:2	★8200 series (custom)	Series 9600
Control application	Master	Production	Component, production	Master	Production
# of inputs	To 24V, 24A +6A stereo	20 primary	8 RGB, Y/R-Y/B-Y, YIQ	30V, 30A +12A	16, 24
Integral matte source	Yes	Yes	Yes	Yes	Yes
Key sources	Int, ext	Int, ext Key, fill	3 Super, 1 key	All int, 5 ext	12 input
Chroma keyers	.....	Multi-format component	Option	RGB for PAL	RGB w/ shadow
Downstream keyer	.....	Full feature	Standard	5-input	Yes
Switching buses	2 prime	12	A, B, Key	4 primary	8 primary, 2 aux
Mix Effects amps	Key/matte only	2	1	.....	1 or 2
Pattern generator	.....	32, programmable	>64 patterns	12 patterns/PAL	42 patterns
Wipe effects	.....	Soft-edge, rotary	Yes	No	Rotation, soft
Border effects	Analog, digital opt	Yes	Yes	For keys	Yes
Shadow effects	No	Yes	.....	For keys	Yes
Quad split feature	No	.....	.....	No	.....
Automation interface	For M-200 series	For E-MEM	Editor control opt	Option	RS-232/422
Programmable functions	Yes	Auto transitions	Cut, fade, wipe	Yes	REFEX memory
Digital effects port	No	Kaleidoscope DPM-1	No	Yes	.....
Path length or deviation	<1° deviation	<1.5° deviation	.....	Design dependent	.....



## Video Switchers, Master & Production

Manufacturer	Grass Valley Group		Ikegami Electronics	Image Video	Intergroup Video
Model Series	1600-4S	Model 200-2	DSS-5108C 4:2:2	★8200 series (custom)	Series 9600
Crosstalk at subcarrier	<-60dB V, <-80dB A	<-54dB	.....	56dB	.....
Audio preview, follow	Yes	.....	No	Yes	Option
Audio level control	w/L/R/SAP meters	.....	No	w/metering	Option
Audio mixer interface	Integral	.....	No	No	Option
Edit control interface	No	Serial, GPI	Option	No	RS-232/422
Reader Service Number	776	777	778	779	780

Manufacturer	JVC Company	Kaitronics	Omicron Video	Polar Video	Ross Video
Model Series	KM-2000U (1200U)†	•CMS-12†	Model 507†	PVM-1 portable†	210/216
Control application	Production	Master	Master	Production	Production
# of inputs	8 (5)	12, expand to 20	.....	4 video	10 (16)V, 10A
Integral matte source	Yes	No	Yes	Yes	Yes
Key sources	1 int, 1 ext	N/A	Ext	Int, ext	Int,ext
Chroma keyers	RGB	No	Optional	No	RGB (& enc.)
Downstream keyer	1 source	No	1 source	No	3 sources
Switching buses	2, 1 aux (2 primary)	Prgm, prvw	2 V, 2+2 A	3	3
Mix Effects amps	2	0	1	2	1 multilayer
Pattern generator	13 (6) patterns	No	None	22+ patterns	12-24 patterns
Wipe effects	Soft-edge -2000U	No	No	No	Soft-edge
Border effects	No	No	No	No	Analog key border
Shadow effects	No	No	Integral	No	No
Quad split feature	No	No	No	No	No
Automation interface	No	RS-232C	Optional	PAF-1 opt	RS-422 optional
Programmable functions	Fade-black 2000U	Possible	Fade-black	X-fade, fade-black	X-fade, fade-black
Digital effects port	No	No	No	No	Yes
Path length or deviation	.....	.....	.....	.....	250µs
Crosstalk at subcarrier	50dB	55dB	50dB 4.5MHz	50dB 4.5MHz	>53dB
Audio preview, follow	.....	Possible	No	No	No
Audio level control	No	w/R-L metering	No	No	No
Audio mixer interface	No	Yes	No	No	No
Edit control interface	No	RS-232C	.....	No	.....
Reader Service Number	781	782	783	784	785

Manufacturer	Ross Video			Shintron	
Model Series	RVS-508 (514) [517]	RVS-524	RVS 210A (RVS 216A)	Empress 2000 (EC2000)†	★Model 372
Control application	Production	Production	Production	Production (component)	Production
# of inputs	16,20,24 ([12,20])	12 or 20 NTSC, PAL/-M	10 (16) NTSC, PAL	10 + key + spare	8
Integral matte source	Yes	Yes	Yes	Yes	Yes
Key sources	Int, ext	Any int, ext, titler	Int, ext	Int, ext	Int, ext
Chroma keyers	RGB, enc. available	Opt enc., RGB	RGB (& enc.)	RGB	No
Downstream keyer	Yes ([...])	Yes	3-source	Option	Yes
Switching buses	8(4)[7] prime, to 10 aux	4 primary	3 primary	4 primary	3
Mix Effects amps	Single ([dual])	1 MLE	1 multilevel	1	1
Pattern generator	62 per ME	27 patterns	12 patterns	16 pattern	8-pattern
Wipe effects	Rotary, soft-wipe	9 rotary, hard, soft edge	Hard, soft	Soft-edge	Soft-edge
Border effects	Yes	Yes	Analog key border	Yes	Yes
Shadow effects	Yes	Yes	No	No	No
Quad split feature	Integral options	No	No	No	No
Automation interface	Encore memory system	Scene store memory	RS-422 option	RS-422 & Empress	No
Programmable functions	Auto transitions	Yes	x-fade, fade-black	Yes	Auto take PV-PGM
Digital effects port	Option	Yes	Yes	No	No
Path length or deviation	± 1/5° NTSC, PAL/-M	± 1.5° differential	≤ 1.5° NTSC/PAL	50ns	2°/length 258ns
Crosstalk at subcarrier	>53dB 3.58/4.43MHz	53dB 3.58/4.43MHz	≤-53dB 4.43MHz	<-50dB	<-50dB
Audio preview, follow	No	No	Opt mixer	No	No
Audio level control	No	No	No	No	No
Audio mixer interface	No	No	For 12-input mixer	No	No
Edit control interface	RS-422	Option	Yes	RS-422, SMPTE	No
Reader Service Number	786	787	788	789	790

Manufacturer	Shintron	Thomson Video Equipment		Utah Scientific
Model Series	★390 YUV/YIQ/YCrCb†	TTV 5630S (SECAM)	TTV 5650 Digital	MC-501 (MC-502?)
Control application	Production	Production	Production/CCIR 601	Master
# of inputs	4 sets	16 (24, 32 options)	16	30-150 V/A. 8 audio only
Integral matte source	Yes	Yes	Yes	Yes
Key sources	External	Int, 4 ext	Yes	3 ext, preview
Chroma keyers	No	2-6 RGB possible	3 inputs	No
Downstream keyer	Option	Yes	.....	.....
Switching buses	4 primary	7 primary	7 primary	Preset/Pgrn/8x3A(Prvw/Key)
Mix Effects amps	1	1 w/4 effects buses	1 w/4 effects buses	No

## Video Switchers, Master & Production

Manufacturer	Shintron	Thomson Video Equipment		Ulah Scientific
Model Series	★390 YUV/YIQ/YCrCb†	TTV 5630S (SECAM)	TTV 5650 Digital	MC-501 (MC-502*)
Pattern generator	16	4 to 5	4 generators	Option
Wipe effects	Soft-edge	Soft edges	Various types	Option
Border effects	Yes	Yes	Yes	Edges for key
Shadow effects	.....	.....	Yes	Yes for key
Quad split feature	No	.....	YES	No
Automation interface	RS-422 & GPI	Edit controller	Edit controller	SAS-1 system
Programmable functions	30-event memory	MemBox storage	MemBox storage	Yes
Digital effects port	.....	.....	Yes	.....
Path length or deviation	50ns, <40ns deviation	1.5µs	.....	Differential ≤ ±1.0°
Crosstalk at subcarrier	.....	< -50dB 4.43MHz	.....	≤ -60dB
Audio preview, follow	(Inputs include:	No	No	Yes
Audio level control	.....	No	No	L/R, Over/under
Audio mixer interface	.....	No	No	.....
Edit control interface	Integral	Yes	Yes	.....
*Preview and key buses in addition to those for 501 system.				
Reader Service Number	791	792	793	794

## Routing Switcher Systems

These distribution routing switchers are generally larger format, matrix type systems, not stacked, looped-input systems.

Manufacturer	BSM	BTS	CEL/Grunder Assoc	Datatek	
Model Series	Modula/Mini Modula	TVS/TAS-2000	P169V/P169A	D-2400	D-2000 AV
Crosspoint matrix	8x8 (8x8)	10x10	8x4	20x10 (4-8 level)	25x1/50x1
Typical system size	256x256 (24x32)	450x150	8x4x3	40/60/80/160x20	256x256 8-level
Audio response	±0.1dB 10-50k	±0.1dB 20-20k	-3dB 10-100k	±0.5dB 20-20k	-0.1dB 20-20k
Harmonic distortion	<0.1%	<0.005% 20-20k 10dBv	.....	<0.005% 16dBu 600Ω	0.05% 30dBm
S/N ratio	-80dBm noise floor	85dBm hum & noise	<-90dBm	-116dB 20kHz ba	-75dBm
Audio crosstalk worst	-90dB max	<-90dB worst	-70dB	-82dB 20kHz 30dBu	<-85dB to 20kHz
Video response	±0.1dB 15MHz	±1.5dB to 15MHz	0.1dB 6MHz	±0.05dB 10MHz	±0.25dB 10MHz
Diff phase/gain	<0.1°, <0.1%	<±1°, <0.1%	±0.2°, ±0.2%	0.05°, 0.05%	0.15°, 0.15%
Video S/N ratio	>65dB noise floor	>75dB	>80dB	75dB 5MHz	60dB 6MHz bw
Video crosstalk worst	-65dB max	>60dB worst	<-55dB to 4.43MHz	<-63dB 5MHz	<-60dB 4.43MHz
Control format	RS-232 & others	SMPTE-422 bus	RS-423/422	RS-232/422	RS-232C
Applicable to CAV	Possible	Yes	Yes	Possible	Possible
Reader Service Number	401	402	403	404	405

Manufacturer	Di-Tech	Dynair Electronics	Dynamic Technology		
Model/Series	5861-V/5862-A	5800 (5850) series	DYNASTY 100	Series 21 (25)	Routemaster
Crosspoint matrix	32x2	20x1 (40x1)	.....	10x10	16x4, 16x8, 32x4
Typical system size	64x32 A/V 10-level	100x15 AFV (>200x200)	50x80-V/ 100x80-A	100x50 AV (20x20 AV)	16/32 in, 1/4/8 out
Audio response	±0.1dB 20-20k	±0.25dB 20-20k	±0.2dB 30-20k	±0.2dB 30-20k	12dBm in, 20dBm out
Harmonic distortion	<0.1% 24dBu	<0.5% >18dBm	0.1% 8dBm 15kHz	0.1% 8dBm 15kHz	0.1%, 20Hz-20kHz
S/N ratio	>104dB below 24dBu	<-70dBm (<-80dBm)	-75dBm	-75dBm	-80dBm 20Hz-20kHz
Audio crosstalk worst	<-70dB to 20k	<-70dB to 20kHz	<-80dB 15kHz worst	<-80dB	-70dB, 10kHz, 600Ω
Video response	±0.5dB 12MHz	±0.25dB to 10MHz	±0.1dB to 20MHz	±0.3dB 8MHz	±0.1dB, 5.5MHz
Diff phase/gain	<0.25°, <0.25%	<0.25°, 0.25%	0.2°, 0.2%	<0.15°, <0.15%	0.1°, 0.1%
Video S/N ratio	>70dB	<-65dBV	100dB 100MHz bw	65dB hum+noise	80dB wtd
Video crosstalk worst	<-60dB 4.5MHz	<-60dB 4.5MHz	<-50dB 5MHz (-25/100)	<-60dB 5MHz	-60dB, 4.43MHz
Control format	Serial coax/tw pair	Serial, parallel	Various forms	RS-232C/423, others	8-bit binary code
Applicable to CAV	Possible	[multilevel audio	Yes	.....	.....
Reader Service Number	406	407	408	409	410

Manufacturer	Dynamic Technology	Editron Australia	Grass Valley Group	Intergroup Video	
Model/Series	3900 series	S1500 Audio	Horizon systems	Horizon HX-series	Series 1100
Crosspoint matrix	16s in, 8s out	32x24	16x16	16x16 to 64x64	10x10 AFV, 20x10 A/V
Typical system size	128x128 max	64x96 stereo	128x128	128x128	80x80
Audio response	12dBm in, 20dBm out	±0.25dB 25-20k	±0.1dB 20-20k	24dBu, 12.28V	±0.1dB 30-15k
Harmonic distortion	0.1%, 40Hz-20kHz	<0.05% 24dBm	<0.5% 24dBu	<0.5%, 20Hz-20kHz	<0.025%
S/N ratio	-80dB hum+noise	>90dB	>100dB 24dBu	>100dB ref +24dBu	>78dB
Audio crosstalk worst	-70dB, 10kHz, 600Ω	<-70dB overall	<-90dB overall	<-80dB overall	±-70dB
Video response	±0.1dB, 5.5MHz	.....	-0.5, +0.1dB 8MHz	±0.15dB, 5MHz	±0.25dB to 8MHz
Diff phase/gain	0.1°, 0.1%	[Each output has	<0.1°, <0.1%	<0.1°, <0.1%	<0.25°, <0.25%
Video S/N ratio	80dB wtd	[3-out DA	>75dB	>75dB	≥65dB
Video crosstalk worst	-60dB, 4.43MHz	.....	-60dB 5MHz worst	-60dB, 5MHz	≤62dB
Control format	RS-422	Various types	RS-422/232C	RS-232/422	Various types
Applicable to CAV	.....	.....	Yes	.....	Yes
Reader Service Number	411	412	413	414	415



## Routing Switcher Systems

Manufacturer	ITC/3M	McCurdy Radio Ind	NEC America	Omicron Video	PESA
Model/Series	Audio Switcher	ACP-1 (ACP-24)	TKA-500B/AKA-500B	553-20/10-4V/A	SIM-4032
Crosspoint matrix	32x32	200x2 (24x2)	8x16	10x1	16x2
Typical system size	32x64, 64x32, 256x256	200x>200 (24x24)	512x512 A/V 6-level	20x10 4V/1A	32x32
Audio response	±0.1dB 20-20k OdBm	±0.2dB 20-20k	±0.2dB 20-20k	±1dB 50-15k	0.5dB 100-10k
Harmonic distortion	<0.01% OdBm	<0.1% -10, +24dBu	<0.01% 8dBu	0.25% 6dBm 1kHz	≤0.1%
S/N ratio	<90dB OdBm	>95dB wideband	-85dBu	-80dBm A-wtd	≥65dB
Audio crosstalk worst	<-90dB 1kHz 20cBm	<-80dB worst case	-85dB 20-20k worst	.....	<-75dB
Video response	[Includes memory	[Unit for audio	-0.5, +0.2dB 10MHz	±0.1dB 5MHz	[Design intent is
Diff phase/gain	[backup, system	[only.	±0.2°, ±0.2%	<0.25°	[for intercom use.
Video S/N ratio	[alerts operator	.....	64dB unwtld 10MHz	>65dB	.....
Video crosstalk worst	[of failures.	.....	<-50dB 10MHz worst	<-60dB 3.58MHz	.....
Control format	To 31 remote controls	X-Y, DTMF, other	BSNET LAN, RS-422	RS-232/422	RS-232C
Applicable to CAV	.....	.....	Yes	Yes	.....
Reader Service Number	416	417	418	419	420

Manufacturer	pro-bel	Shintron	Sierra Video Systems	Utah Scientific	
Model/Series	Analog systems	ADAM mixed A/D	12X-Q4 [12xC4-12xV4]	Series 8/16	
Crosspoint matrix	8x1/8x8	4-in, 4-out buffers	4-RGB/pulsex4	8x8, 16x4	10x10
Typical system size	256x64/144x256	128x128, 256x256	12x4	16x24 V/SA/TC	320x80x8-level
Audio response	<±0.2dB 15-20k	±0.25dB 20-20k	.....	±0.1dB 20-20k	±0.5dB 30-20k
Harmonic distortion	<0.05% 8dBu	<0.1% 30-20k 8dBu	[For analog video	0.1% 24dBm	0.05% 24dBm
S/N ratio	>90dB true RMS DIN	>80dB wtd	[component use	100dB 24dBm	-85dBm 15kHz bw
Audio crosstalk worst	<-90dB worst	<-96dB 20kHz	.....	-80dB	-90dB 30dBm
Video response	-0.5, +0.25dB 8MHz	[Mixed analog &	-3dB to 30MHz	-0.5, +0.1dB 8MHz	±0.5dB 20MHz
Diff phase/gain	<0.2°, <0.2% 4.43MHz	[digital in/out,	<0.25°, <0.25%	≤0.25°, 0.25%	0.05°, 0.05%
Video S/N ratio	>73dB wtd luminance	[per CCIR, AES, EBU	63dB typical	.....	-80dB hum+ noise wtd
Video crosstalk worst	<-60dB adjacent	.....	<-60dB, 5MHz	≥50dB 3.58MHz	-60dB 4.43MHz worst
Control format	RS-232C/422/485	RS-422/485/232	RS-422 bus	RS-232	RS-422/232/DYNABUS
Applicable to CAV	Possible	.....	Yes	Yes	Yes
Reader Service Number	421	422	423	424	425

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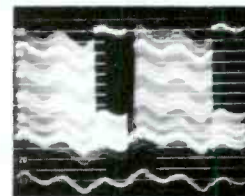
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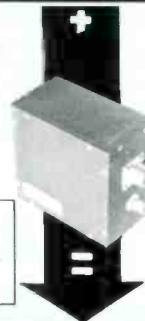
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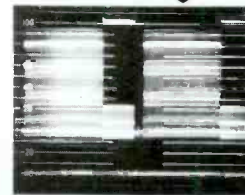
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# Still-Store Image Library Systems

Manufacturer	Abekas Video Systems		Ampex AVSD	ASACA/ShibaSoku	
Model/Series	A42 video slide proj	A62 (A64) recorder <sup>1</sup>	ESS-3	ADS-2000	ADR-5000 <sup>2</sup>
Disk medium	Winchester	Winchester	Winchester, floppy	Winchester	Magneto-optical
# of work stations	1	1	To 10	1	1
Output channels	2-pgm, 1-prvw	1-pgm, 1-prvw	10-pgm, 15-prvw	Dual pgm, prvw	1-prg, 1 prvw
Color standards	NTSC	NTSC-RGB(CCI601-PAL)	NTSC, PAL	NTSC	CCIR 601, NTSC
Directory.catalog	Data list, proof sheet	Parameter display	List, proof sheet	16-pix proof sheet	Data list
Integral effects	Yes	Key, matte (& layering)	Yes	No	.....
Editing control port	GPIB	RS-232/422/GPIB/SMPTE	GPI	.....	RS-422
Portable system	Yes	No	No	No	No
Video response	±0.25dB to 4.2MHz	±0.25dB 4.2MHz (5.5)	±0.5dB to 5MHz	±0.5dB to 6MHz	[Specifications in
S/N ratio	52dB	52dB (56dB)	.....	>50dB	[conformance with
Diff. phase, gain	2°, 2%	2°, 2%	1°, 1%	<2°, <2%	[CCIR 601 for use
K factor	1%	1%	.....	.....	[in digital
Chroma luma delay	5ns	.....	.....	.....	[television
Time base stability	.....	.....	.....	.....	.....
TBC requirement	.....	.....	External required	.....	.....
Composite digital	Yes	.....	Yes	Composite coded	Yes
Component digital	No	RGB, YCrCb (YUV)	4:2:2 encoded	.....	Yes
# of drives max	3	1 (2)	25 possible	8	2-disk system
Streaming tape	Yes	No	No	Option	.....
Frames per disk	350	.....(30s/disk)	100 on 80MByte drive	700	10 minutes or 18,000
Frames per systems	1050 (2100 fields)	3000, 100s time (60s)	25,000	5,600	stills, 6.5GByte
Worst case access	0.8s	Instantaneous	3s	6-55ms, 27ms nom	30-500ms, jump dep
Programmed sequences	Yes	Loops, sequence editor	Yes	Yes	Yes
<sup>1</sup> Allows real-time record with simultaneous play <sup>2</sup> Includes 2-channel 16-bit audio recording.					
<b>Reader Service Number</b>	<b>893</b>	<b>894</b>	<b>895</b>	<b>896</b>	<b>897</b>

Manufacturer	.BTS	Harris Video Systems		Leitch Video	Logica
Model/Series	Vidifont GraphicStore	ESP series	Iris C (Iris-II)	DSF-3100N still file	Gallery 2000 library
Disk medium	Winchester, floppy	Winchester	Winchester	Winchester	Optical/disk
# of work stations	1	Multiple	2 (6)	LAN possible	Multiple
Output channels	1 pgm, 1 prvw	2-pgm, 1-prvw	4-pgm, 4 prvw (12, 12)	Single, dual	Multiple
Color standards	NTSC, PAL	NTSC	NTSC, PAL, SECAM	NTSC	CCIR 601/525 & 625
Directory.catalog	Data list, proof sheet	Pack review mode	Data list	Still review mode	Proofsheet
Integral effects	w/Vidifex 3-D	No	Yes	Limited options	w/Art File graphics
Editing control port	RS-232/422	RS-232	RS-232	PC SCSI interface	Yes
Portable system	No	No	Yes (No)	.....	No
Video response	1088x483 pixel	±0.5dB to 5MHz	±0.2dB to 4.2MHz	±0.15dB to 4.5MHz	±0.5dB 5.5MHz
S/N ratio	.....	56dB	57dB (56dB)	>70dB	[per CCIR 601
Diff. phase, gain	.....	<2°, <2%	1°, 1%	<1°, <2%	[recommendation
K factor	.....	1%	1%	.....	[for digital
Chroma luma delay	.....	.....	17ns	±10ns	[TV use.
Time base stability	.....	±1ns	.....	.....	.....
TBC requirement	Integral unit	Integral unit	Integral	Inc 2 frame buffers	No
Composite digital	.....	Yes	.....	Yes	A/D conversion
Component digital	RGB analog	No	4:1:1 sampling	.....	YUV 4:2:2 encoded
# of drives max	8	4	2 (8)	Multiple	Multiple
Streaming tape	No	No	No	.....	No
Frames per disk	70-250, 40-140MByte	100, 200, 750 drives	1,066	600	2,800 525-line
Frames per systems	2,000 max	400, 800, 3,000	2,132 (8,528)	Expand to 10,000	56,000
Worst case access	5s	<450ms	600ms	<0.6s	1s
Programmed sequences	Yes	Yes	Yes	10 seq of 99	Yes
<b>Reader Service Number</b>	<b>898</b>	<b>899</b>	<b>900</b>	<b>901</b>	<b>902</b>

Manufacturer	.Oktel	Optical Disc Corp	Quantel	Rank Cintel	TEAC
Model/Series	DR6000	#610A	Library Systems	Slide File	LV-200A/200 <sup>3</sup>
Disk medium	Winchester	Optical DRAW system	Winchester	Winchester	Optical, WORM
# of work stations	1	1	1 or multiple (1)	5	1
Output channels	1	1	multiple pgm, 1-prvw	3-pgm, 3-prvw	Pgm
Color standards	NTSC, PAL	NTSC, PAL	NTSC, PAL, SECAM	NTSC, RGB, PAL, SECAM	NTSC
Directory.catalog	.....	.....	Data list, proof sheet	Proof sheet	None
Integral effects	No	No	Yes	Yes	No
Editing control port	RS-232, IEEE-488	No	RS-422	RS-232/422/QIC02	RS-232C
Portable system	.....	No	If desired	Yes	Yes
Video response	4.2MHz bandwidth	[For preparation of	[Meets requirements	±0.5dB to 5.5MHz	330TVL equivalent
S/N ratio	50dB	[recordable Laser	[for digital TV	[Per CCIR 601	45dB
Diff. phase, gain	.....	[Videodiscs only,	[integrated studios.	[recommendation	.....
K factor	.....	[not for on-air	[CLL6000 accesses	[for digital	.....
Chroma luma delay	.....	[broadcast use.	[40 drives for	[television use.	.....
Time base stability	.....	.....	[100,000 frames	.....	.....
TBC requirement	.....	.....	[from 25 stations	Integral	TBC suggested



## Still-Store Image Library Systems

Manufacturer	Oktel	Optical Disc Corp	Quantel	Rank Cintel	TEAC
Model/Series	DR6000	#610A	Library Systems	Slide File	LV-200A/200 <sup>3</sup>
Composite digital	Yes	Yes	Yes	Yes	No
Component digital	.....	No	YCrCb	YUV 4-2-2 encoding	RS-170A analog, FM
# of drives max	Multiple option	1	8 (2)	2	1
Streaming tape	.....	No	No	Yes	No
Frames per disk	1,800 (60s)	n.a.	800	390	54,000/side
Frames per systems	.....	n.a.	6,400 (1,600)	500,000	108,000
Worst case access	1.5s, 500ms average	n.a.	0.5s	1s	1s across disk
Programmed sequences	Loops, random access	No	Yes	Yes	w/RAM pack
<sup>3</sup> Includes FM-based audio; 200 is play only unit.					
Reader Service Number	903	904	905	906	907

## Video TBCs/Frame Synchronizers

Equipment for use in stabilizing playback images from VTR/VCR systems or in synchronizing imported video signals from satellite, ENG microwave or other out-of-house sources. Models marked with a diamond (◆) do not include a coherent 3.58MHz output signal. A single dagger (†) indicates image enhancement features, while a double dagger (‡) includes color correction.

Manufacturer	ALTA Group	Ampex AVSD			Apert-Herzog
Model Series	◆Cygnus†‡	TBC-40 <sup>1</sup> (TBC-80)	Zeus 1	TBC-6	Model H (Model H2)
Function	TBC, synchronizer	TBC only	TBC, framestore	TBC only	TBC, synchronizer
Sample freq.bits	.....	14.3MHz/8-bit	14.3MHz/9-bit <sup>2</sup>	14.3MHz/8-bit	15.4MHz/8-bit
Correction window	1 field	15 TVL	60 TVL, 1-frame	28 TVL	2-field
Video bandwidth	290 TVL	±0.2dB to 4.2MHz NTSC	±0.2dB to 5MHz	±0.2dB to 4.2MHz	To 4.2MHz
S/N ratio	> 55dB	56dB	≥58dB	56dB	54dB
Differential phase/gain	<3°/ <3	2°/2	<2°/ <2	2°/2	3°/3%
Residual error	.....	± 2.5ns C/ ± 10ns L	< 2.5ns C/ < 10ns L	± 2.5ns C	± 12ns
Advanced sync out	.....	Yes	Yes	Yes	Yes
Component in/out	No	Composite only	Composite	Composite	No
Velocity compensation	.....	Yes	Digital	Yes	No
Heterodyne processing	Yes	No (for 1/2", U)	Yes	Yes	Model H
Non-servo capstan	Yes	No	Yes	No	Model H
Dropout compensation	Yes	Yes	Spatial	Yes	No
Dynamic tracking	Yes	No (0-1.5x play)	-1, +3x play, full color	Yes	No
Noise reduction	Yes	No	Adaptive comb filter	No	No
Production effects	w/4-in A/V switcher	No	No	No	No
<sup>1</sup> TBC-40 upgrades to TBC-80, TBC-6					
<sup>2</sup> In PAL/SECAM, sampling is at 17.7MHz, video bandwidth extends to 6MHz.					
Reader Service Number	656	657	658	659	660

Manufacturer	DVS/Scientific Atlanta			For-A	
Model Series	◆DPS-165	DPS-170	DPS-17J	F-800 Autocor	FA-410 (FA-430†‡)
Function	Synchronizer	TBC	TBC, synchronizer	TBC, synchronizer	TBC
Sample freq.bits	4xFsc/8-bit	4xFsc	4xFsc/8-bit	14.3MHz/8-bit	14.3MHz/8-bit
Correction window	> 525 TVL	16 TVL	> 525 TVL	2-field memory	16 TVL
Video bandwidth	± 0.25dB, 0-4.2MHz	± 0.25dB, 0-4.2MHz	± 0.25dB, 0-4.2MHz	± 0.3dB to 5MHz	-0.5dB to 4.2MHz
S/N ratio	> 57dB	> 57dB	> 57dB luma wtd	58dB	58dB color, 56dB VTR-358
Differential phase/gain	<2°/ <2	<2°/ <2	<2°/ <2	2°/2	2°/2
Residual error	.....	.....	.....	± 25ns	2° color, 15ns VTR-358
Advanced sync out	No	8-line advance	8-line advance	Yes	Yes
Component in/out	No	Composite only	Composite only	Composite	Composite (Y-688)
Velocity compensation	.....	Yes	Yes	Yes	No
Heterodyne processing	No	Yes	Yes	Yes	Yes
Non-servo capstan	Yes	.....	Yes	Yes	Yes
Dropout compensation	.....	RF/TTL	Yes	Yes	Yes
Dynamic tracking	.....	-1, +3x	-1, +3x	Yes	No
Noise reduction	No	No	No	No	No (6dB)
Production effects	No	No	No	No	No
Reader Service Number	661	662	663	664	665

Manufacturer	For-A			Fortel	
Model Series	FA-740	◆FA-400 (TBC-420)	TA-450N, TA-450P	◆Turbo 2†	Y-688 <sup>3</sup> TEC†
Function	Dual TBC w/effects	TBC, frame store	TBC, framestore	TBC	Total error corrector
Sample freq.bits	8.95-Y/2.2-C/8-bit	14.3MHz/8-bit	13.5-Y/6.75-C/8-bit	13.5MHz 4:1:1 CCIR-601	14.3/8 Y; 7.2/8 CrCb
Correction window	1-frame	1-frame	2-field	Infinite window	32 lines
Video bandwidth	3.5MHz Y, 0.9MHz C	± 0.5dB to 4.2MHz	3.5-N, 4.43-P, 5.5-Y	4.2MHz NTSC dub mode	-3dB to 5MHz
S/N ratio	55dB	58dB	58dB	57dB	57dB w/o comb encoded
Differential phase/gain	2°/2	2°/2	2°/2	1°/1%	0.5°/0.5% dub in/out

## Video TBCs/Frame Synchronizers

Manufacturer	For-A				Fortel
Model Series	FA-740	◆FA-400 (TBC-420)	TA-450N, TA-450P	◆Turbo 2†	Y-688 <sup>32</sup> TEC†
Residual error	.....	± 2° (± 10ns)	± 2° C, ± 15ns Y	± 15ns L, ± 2° C	.....
Advanced sync out	.....	Yes	Yes	Yes	Yes
Component in/out	Yes	Composite	Composite	Y/688, VTR direct, YCrCb	Y/688
Velocity compensation	.....	No	Yes	No	Yes
Heterodyne processing	Yes	Yes	Yes	No	Yes
Non-servo capstan	.....	Yes	Yes	No	Yes
Dropout compensation	Yes	No (Yes)	Yes	Yes	Yes
Dynamic tracking	.....	No	Yes	Yes	Yes
Noise reduction	Comb filtering	No	No	Luminance only	To 6dB
Production effects	Yes	No	No	Frame, field freeze	No
Reader Service Number	666	667	668	669	670

Manufacturer	Fortel	Fougerolle SA	GML America/Gunnerfield Marketing Ltd	
Model Series	DHP525†	◆MPV 1000	◆GML8000 PAL/SECAM†‡ SYSTEM	GML4004S PAL/SECAM†‡
Function	TBC	Dual TBC synchronizer	TBC, synchronizer	Dual TBC w/effects
Sample freq.bits	13.5MHz 4:1:1 CCIR-601	13.5MHz/8-bit	13.5MHz/8-bit	13.5MHz/8-bit
Correction window	Infinite	2-fields/channel	1-field	16 TVL
Video bandwidth	-3dB to 2.2MHz	5MHz RGB or YCrCb	5.5MHz lum, 3mHz chr	To 3MHz w/color under
S/N ratio	57dB	.....	55dB	55dB
Differential phase/gain	1°/1%	.....	4°/4%	4°/4%
Residual error	± 15ns L, 2° C	.....	± 25ns	± 25ns
Advanced sync out	Yes	No	No	Yes
Component in/out	Composite only	RGB, YCrCb	Y/C, RGB opt	No
Velocity compensation	.....	.....	Yes	No
Heterodyne processing	.....	.....	Yes	Yes
Non-servo capstan	Yes	.....	Yes	Yes
Dropout compensation	Yes	RF or TTL	Yes	Yes
Dynamic tracking	.....	No	Yes	Channel A only
Noise reduction	Luminance	No	Yes	Noise coring
Production effects	Field/frame freeze	No	Yes	Yes
Reader Service Number	671	672	673	675

Manufacturer	Harris Video				
Model Series	HVS 690	AC20AS 1 or 2-channel	540, 550 (560)	Model 642	VW-3
Function	TBC, synchronizer	TBC, synchronizer	TBC	TBC, synchronizer	TBC, synchronizer
Sample freq.bits	14.3MHz/9-bit	14.3MHz/8-bit	14.3MHz/8-bit	14.3MHz/8-bit	14.3MHz/8-bit
Correction window	1 frame	1 field, 1 frame opt	16 TVL	2 field	1 frame
Video bandwidth	± 0.5dB to 4.2MHz	4.2MHz	± 0.5dB 4.2MHz #540	± 0.5dB to 4.2MHz	± 0.5dB to 5MHz
S/N ratio	59dB	55dB, > 56dB sync mode	> 59dB (56dB)	58dB unwt'd	56dB
Differential phase/gain	± 2°/± 2%	2°/2%	2°/2% (3°/3%)	< 2°/2%	< 2°/2%
Residual error	± 20ns L/± 2ns C	± 10ns	± 20(15)ns L/± 2ns C	± 2ns sync, ± 20ns TBC	± 20ns
Advanced sync out	Standard sync	Yes	Yes	16 line advance	Yes
Component in/out	No	No	No	No	No
Velocity compensation	Look-ahead, by-line	No	Not 560	No	Direct, hetero mode
Heterodyne processing	Yes	Yes	550, 560	No	Yes
Non-servo capstan	Yes	No	No	No	.....
Dropout compensation	RF, TTL	Yes	RF, TTL	Yes	TTL, RF
Dynamic tracking	No	± 40x play	540, 550 option	-1, +3x play	No
Noise reduction	No	No	No	12dB frame recursive	No
Production effects	Freeze frame, field	Yes w/20PRC	No	No	Field, frame freeze
Reader Service Number	676	677	678	679	680

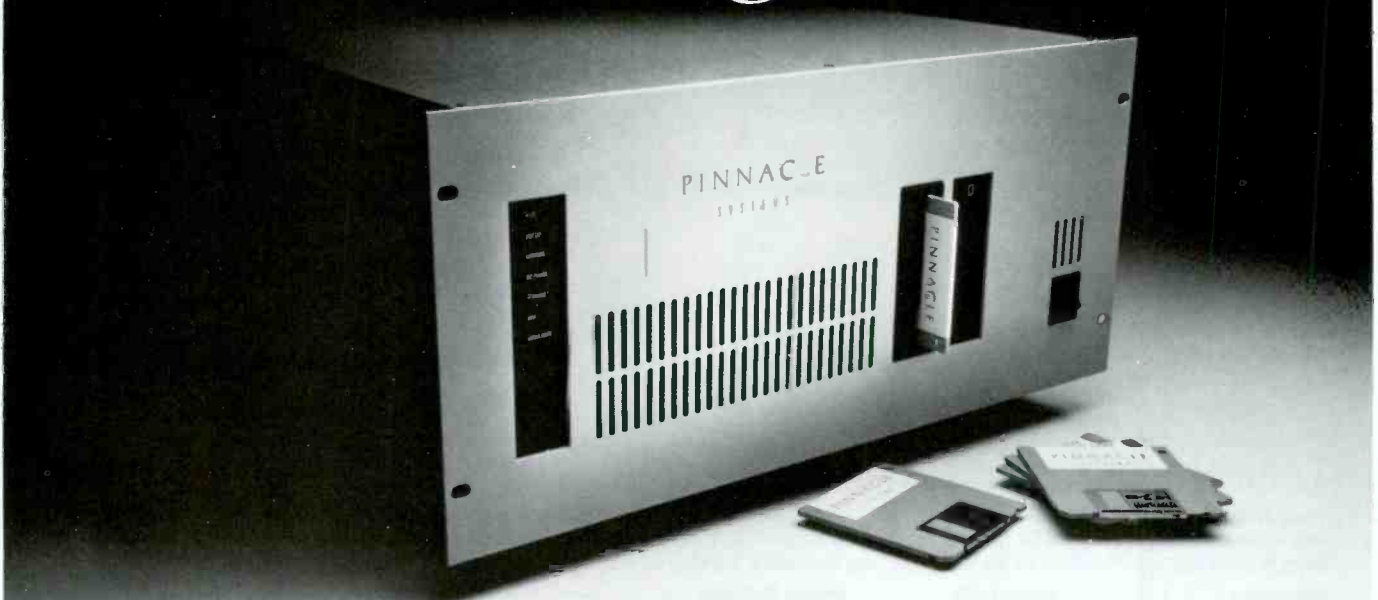
Manufacturer	Harris Video	Hotronic		JVC Company	
Model Series	◆632 NTSC (631 PAL)‡	AE61 (◆AE61B)	AF71	SA-T3000U component	SA-T100U
Function	Synchronizer	TBC	TBC, synchronizer	TBC	TBC
Sample freq.bits	14.3MHz/8-bit	14.3MHz/8-bit	14.3MHz/8-bit	858H, 8-bit	4xFsc/8-bit
Correction window	2-field	16 TVL	4-field	± 16 lines	525 lines
Video bandwidth	0.5dB 5MHz(5dB 4.2)	± 0.5dB to 4.2MHz	± 0.5dB to 4.2MHz	-3dB 4.5MHz Y, 1.5MHz C	± 0.5dB to 4.2MHz
S/N ratio	57dB (56dB)	58dB	58dB	> 56dB	> 58dB
Differential phase/gain	2°/2% (1°/1%)	< 2°/ < 2	< 1.5°/ < 1.5	< 2°/ < 2%	± 2°/ ± 2%
Residual error	± 10nsL/ ± 2° C (± 20nsL)	± 20ns L	± 20ns	.....	Y ± 15ns
Advanced sync out	Sync out	Yes	Yes	.....	Yes
Component in/out	RGB	No	Composite	YCrCb	No
Velocity compensation	Yes	No	No	.....	No
Heterodyne processing	Yes	Yes	Yes	.....	Yes
Non-servo capstan	Yes	.....	No	.....	Yes
Dropout compensation	Yes	Option	Yes	Yes	Yes



## Video TBCs/Frame Synchronizers

Manufacturer	Harris Video	Holtronic		JVC Company	
Model Series	◆632 NTSC (631 PAL)‡	AE61 (◆AE61B)	AF71	SA-T3000U component	SA-T100U
Dynamic tracking	No	No	No	No	No
Noise reduction	12dB range L, C	Option	3dB C	No	No
Production effects	630 compress/position	No	No	.....	Field, frame freeze
Reader Service Number	681	682	683	684	685
Manufacturer	Leitch Video	Lenco	Microtime		
Model Series	◆DFS-3000N	TBC-450	T-300 (T-320)	T-220 FIT	Tx2‡
Function	Synchronizer	TBC	TBC	TBC, format interchange	Single, dual TBC
Sample freq.bits	14.3MHz/8 or 9-bit	14.3MHz/8-bit	14.3MHz/8-bit	13.5MHz/8-bit	13.5MHz
Correction window	Infinite	16-line	35 TVL	1-field	1-frame, infinite
Video bandwidth	±0.15dB to 4.5MHz	±0.5dB to 4.2MHz	±0.5dB to 4.2MHz	-3dB 5MHz NTSC, PAL	2.6MHz NTSC, 5MHz Y/C
S/N ratio	>70dB	58dB	58dB	58dB	58dB
Differential phase/gain	<1°/≤%	2°/2	2°/2	2°/2	2°/2
Residual error	.....	±20ns	±10ns	±10ns	.....
Advanced sync out	H&V adjustable	Yes	Yes	No	Yes
Component in/out	Composite only	No	Composite	Composite/YIQ/YCrCb/YC	Composite/YC/YCrCb
Velocity compensation	.....	.....	Averaging (.....)	No	.....
Heterodyne processing	No	Yes	Yes	Yes	Yes
Non-servo capstan	Yes	.....	Yes	Yes	.....
Dropout compensation	Inherent	By pixel, RF, TTL	Yes	Yes	Yes
Dynamic tracking	No	.....	No	-1, 3x play	-1, 3x
Noise reduction	Adaptive processing	No	No	No	To 5dB
Production effects	Field, frame freeze	No	No	No	No
	Auto SC/H				
Reader Service Number	686	687	688	689	690
Manufacturer	Microtime		NEC America	Nova Systems	
Model Series	◆S-130 (S-230/230D)	T-320D	◆FS-18 (FS-19)	Model 620	Model 501 (511)
Function	TBC, synchronizer	TBC	Synchronizer, TBC opt	TBC, framestore	TBC
Sample freq.bits	4xFsc/8-bit	14.3MHz/8-bit	14.3MHz/8-bit (10-bit)	14.3MHz/8-bit	14.3MHz/8-bit
Correction window	1-frame, NTSC, PAL/-B	1-field	Infinite	2-field	32 TVL
Video bandwidth	±0.3dB to 5MHz	±0.5dB to 4.2MHz	Y 5MHz (2.4MHz hetero)	±0.5dB to 4.2MHz	±0.5dB to 4.2MHz

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## Video TBCs/Frame Synchronizers

Manufacturer	Microtime	NEC America	Nova Systems	
<b>Model Series</b>	◆S-130 (S-230/230D)	T-320D	◆FS-18 (FS-19)	Model 620 Model 501 (511)
S/N ratio	>58dB	58dB	53dB (60dB)	58dB
Differential phase/gain	2°/2	2°/2	2°/2 (1°/1)	<2°/<2
Residual error	.....	±10ns L	.....	±2°, ±10ns
Advanced sync out	No (Yes)	Yes	Yes	Yes
Component in/out	Composite	Composite	No	Composite
Velocity compensation	.....	.....	Yes	No
Heterodyne processing	Yes	Yes	Card option	Yes
Non-servo capstan	Yes	.....	Yes	No (Yes)
Dropout compensation	Yes	Yes	RF & TTL	Yes
Dynamic tracking	No	Yes	No	Opt (Yes)
Noise reduction	No	.....	4-field option	No
Production effects	No	No	Diagnostics	No
			Audio sync interface	
<b>Reader Service Number</b>	691	692	693	694 695

Manufacturer	Nova Systems	Panasonic Broadcast	Prime Image	Sony Broadcast
<b>Model Series</b>	◆Model 700	Nova Sync	◆AU-TB50	TBC+ series <sup>3</sup> BKH-3010 (BKH-3050)
Function	TBC	Synchronizer	TBC	TBC, synchronizer
Sample freq./bits	14.3MHz/8-bit	14.3MHz/8-bit	13.5MHz/8-bit	8-bit, luma, chroma
Correction window	32-line	1-frame	32-line	16 line/1-frame
Video bandwidth	2.5MHz-Y, 1.1MHz-C	4.2MHz	Y 4.5MHz, C 1.5MHz	4.2MHz
S/N ratio	58dB	58dB	>54dB component	58dB
Differential phase/gain	<2°/<2	2°/2	1°/1	1.5°/1.5°
Residual error	±10ns	.....	.....	±15ns
Advanced sync out	Yes	.....	10H-21H	Yes
Component in/out	Composite	Composite	CTCM Y-C	Y/688, NTSC, YCrCb
Velocity compensation	No	Yes	.....	.....
Heterodyne processing	Yes	Direct	.....	Yes
Non-servo capstan	.....	Yes	.....	No
Dropout compensation	Yes	Yes	1-line Y & C	TTL, RF
Dynamic tracking	No	Yes	-1x, +2x	Yes
Noise reduction	No	No	No	.....
Production effects	No	No	No	Poster, sepia, mosaic
<b>Reader Service Number</b>	696	697	698	699 700

<sup>3</sup>Various configurations - Dub-TBC+, TBC+, TBC+SYNC, TBC+ w/wo effects.

Manufacturer	Tektronix	Video International	
<b>Model Series</b>	◆110-S	TBC 3000 NTSC/PAL-M††	DTC 2502 Auto Std††
Function	TBC, synchronizer	TBC, synchronizer	TBC, format converter
Sample freq./bits	14.3MHz/10-bit	13.5-Y/6.75-C 8-bit	13.5-Y/6.75-C/8-bit
Correction window	2-field, 4-field	1-frame	1-frame
Video bandwidth	To 4.2MHz	>5.5MHz	>5.5MHz
S/N ratio	60dB unwt'd	54dB	54dB
Differential phase/gain	1°/1%	2°/2	2°/2
Residual error	±ns	.....	.....
Advanced sync out	No	Yes	Yes
Component in/out	No	Composite/RGB/YC/YCrCb	Composite/RGB/YC/YCrCb
Velocity compensation	No	.....	Yes
Heterodyne processing	Yes	.....	Yes
Non-servo capstan	Yes	.....	.....
Dropout compensation	No	TTL	TTL-RF
Dynamic tracking	No	Yes	Yes
Noise reduction	Linkable to	4-level to 15dB	4-level selectable
Production effects	AF synchronizer	No	No
<b>Reader Service Number</b>	701	702	703

## Time Code Equipment

These systems are based on SMPTE/EBU timing code specifications for use in editing facilities. The following abbreviations are used for operating modes: DF drop frame, NDF non-drop frame, CF color frame and JS jam sync. LTC (longitudinal time code) is the 80-bit code system, while VITC (vertical interval time code) is the 90-bit system written by the video head into the vertical blanking interval of the video signal.

Manufacturer	Adams-Smith	Albrecht Electronics	Audio Kinetics	Cipher Digital
<b>Model Series</b>	System 2600	TCU-E	Striper {High speed}	GEARBOX TC converter CDI-716A generator
Portable unit	No	Yes	No	Rack-mount
Operating modes	DF/NDF/CF/JS	NDF/CF/JS	DF/NDF/JS	DF/NDF
Standards supported	SMPTE, EBU	EBU	SMPTE, EBU	SMPTE, EBU
Time reference	Video, 60Hz, xtal	Video	Xtal, video, slave	Input code
Data entry for	Time, user bits	Time, user bits	Time	No



## Time Code Equipment

Manufacturer	Adams-Smith	Albrecht Electronics	Audio Kinetics	Cipher Digital
Model Series	System 2600	TCU-E	Striper [High speed]	GEARBOX TC converter CDI-716A generator
Data display of	Time, user bits	Time, user bits	Time, user bits	None
Reading speed range	Still-100x play	1/10x-30x play	.....	Play speed
Editor interface	Yes	No	.....	.....
VITC code output	SMPTE, EBU	EBU standard	No	No
LTC output signal	0dBm, 1Vp-p 600Ω	0-4Vss	0-17Vp-p bal	Std levels
Synchronizer function	Yes	Yes	No	No
Power requirement	110/220Vac	220Vac	110Vac	110/220Vac
LTC-VITC translation	Yes	Yes	No	[Reshapes TC signal
User bit recognition	Yes	No	.....	[and converts from
Time code comparator	Yes	Yes	No	[one time reference
Video display keyer	16-char/10-100TVL	8-16 char/16TVL	No	[to another.
Display window	2-line	2-line	n.a.	No
Reader Service Number	914	915	916	917 918

Manufacturer	Cipher Digital			Convergence	
Model Series	CDI700A, 710A reader	CDI735CD/V/L	CDI750 master	VCG76/77 series	EECO VIG850 master
Portable unit	Rack-mount	Rack-mount	Rack-mount	VCG76 only	Rack-mount
Operating modes	DF/NDF/CF	DF/NDF/CF	DF/NDF/CF/JS	DF/NDF	DF/NDF/CF/JS
Standards supported	SMPTE, EBU	SMPTE, EBU	SMPTE, EBU	SMPTE	SMPTE, EBU
Time reference	Video	Video	Video, tach, xtal	Video	Video, slave to TC
Data entry for	.....	Time -735CD	Time, user bits	No	Time, user bits
Data display of	Time, user bits	Time, user bit -CD/L	Time, user bits	Time, user bits VCG-77	Time, user bits
Reading speed range	1/20x-80x	1/20x-80x	1/20x-80x	1/20x-20x (-77), 1/10x-30x	± 45x play
Editor interface	Data output options	RS-422/232	RS-232/422	.....	RS-422
VITC code output	No	No	No	No	Yes
LTC output signal	Restored +4dBmΩ	Restored +4dBm	+4dBm (0.5-2Vp-p)	.....	1Vp-p, 30Ω source
Synchronizer function	No	-CD/8 control channels	Event controller	No	No
Power requirement	110/220Vac	110/220Vac	110/220Vac	10-18Vdc(76), 110Vac	110/220Vac
LTC VITC translation	No	No	No	No	Yes
User bit recognition	No	-CD	Yes	.....	Yes
Time code comparator	No	-CD	Yes	No	No
Video display keyer	Variable format	-V	Variable format	Yes	8-char
Display window	Variable	Variable	Variable	Variable	.....
Reader Service Number	919	920	921	922	923

Manufacturer	Convergence		Datum		
Model Series	TCR65/66/67	PTG56 (MTG55/57)	5303 time processor	5350TC generator	5360 reader (5370 VCG)
Portable unit	TCR66 only	PTG56 only	Rack-mount	Rack-mount	Rack-mount
Operating modes	DF/NDF	DF/NDF/CF(55/57 JS)	DF/NDF/CF/JS	DF/NDF/CF	DF/NDF/CF
Standards supported	SMPTE	SMPTE	SMPTE, CBU	SMPTE, EBU	SMPTE, EBU
Time reference	Video	Video	Video	Video, 60Hz	Video
Data entry for	None	Time	Time, user bits	Time	None
Data display of	Time, user bits	Time (56/57)	Time, user bits	Time, user bits	Time, user bits
Reading speed range	1/20x-20x(65), 1/16x-30x	1/30x-30x -56/-57	1/30x-80x	.....	1/30x-90x
Editor interface	.....	.....	Yes	Yes	Yes
VITC code output	No	No	Yes	No	No
LTC output signal	.....	0dBm	2Vp-p, 600Ω	2Vp-p, 600Ω	2Vp-p, 600Ω
Synchronizer function	No	No	No	No	No
Power requirement	7-16Vdc(66), 110Vac	9V(56), 110Vac(55/57)	110/220Vac	110/220Vac	110/220Vac
LTC VITC translation	No	No	Yes	No	No
User bit recognition	Yes	No	Yes	No	No
Time code comparator	No	.....	No	No	No
Video display keyer	No	No	8-char/variable	No	(8-char/variable)
Display window	No	No	1-line	No	(1-line)
Reader Service Number	924	925	926	927	928

Manufacturer	Denecke	ESE		Evertz Microsystems	
Model Series	Dcode TC-1 reader	727 (257) [258] readers	ES 256 (255VCG) readers	ES261 generator	3700D LTC master
Portable unit	Yes	Rack mount	Rack-mount	Rack mount	Rack-mount
Operating modes	DF/NDF/CF	DF/NDF	.....	DF/NDF/CF(JS opt)	DF/NDF/CF/JS
Standards supported	SMPTE, EBU	SMPTE	SMPTE	SMPTE, EBU	SMPTE, EBU
Time reference	Video	Video	Video	Video, 60Hz, xtal	Video, xtal
Data entry for	No	Time	No	Time (User bit opt)	Time, user bits
Data display of	Time or user bits†	Time	Time	No	Time, user bits‡
Reading speed range	± 1/20x-50x	.....	1/20x-20x	.....	± 1/30x, 70x L, 0-20x V
Editor interface	parallel port opt	.....	.....	No	RS-232C, 1200 baud
VITC code output	No	n.a.	No	No	No
LTC output signal	1V 2kΩ reshaped	n.a.	.....	0dBm: 600Ω	± 6dBm
Synchronizer function	No	No	No	No	.....

## Time Code Equipment

Manufacturer . . . . .		ESE			Evertz Microsystems	
Model Series . . . . .		727 (257) [258] readers	ES 256 (255VCG) readers	ES261 generator	3700D LTC master	
Power requirement . . . . .	7024Vac/dc, 110Vac	110Vac	110Vac	110Vac	110/220Vac	
LTC VITC translation . . . . .	No	No	No	No	No	
User bit recognition . . . . .	No	No	No	No	Yes	
Time code comparator . . . . .	No	Yes	No	No	.....	
Video display keyer . . . . .	No	No	8-char/5-175TVL	No	24-char/16-32TVL	
Display window . . . . .	No	No	.....	No	1, 2-line ‡#3600D reader	
	†TS1, TS1/2 slates Grande concert slate					
<b>Reader Service Number . . . . .</b>	<b>929</b>	<b>930</b>	<b>931</b>	<b>932</b>	<b>933</b>	
Manufacturer . . . . .		Evertz Microsystems			For-A	
Model Series . . . . .		4900 reader/translator	EV-Bloc system†	ECM 4010 master	TCR-3500 reader/timer	TGR-3300 reader/generator
Portable unit . . . . .	No	Rack, modular	No	Rack-mount	Rack-mount	Rack-mount
Operating modes . . . . .	DF/NDF/CF/JS	DF/NDF/CF/JS	DN/NDF/CF/JS	DF/NDF/CF/JS	DF/NDF/CF/JS	DF/NDF/CF/JS
Standards supported . . . . .	SMPTE, EBU	SMPTE, EBU, NTSC/PAL	SMPTE, EBU	EBU, SMPTE	EBU, SMPTE	SMPTE, EBU (PAL or NTSC)
Time reference . . . . .	Video, xtal	Video, other	Video, xtal	Video, xtal	Video, xtal	Video, xtal
Data entry for . . . . .	None	Time, user bits	Time, user bits	Time, user bits	Time, user bits	Time, user bits
Data display of . . . . .	Time, user bits	Time, user bits	Time, user bits	Time, user bits	Time, user bits	Time, user bits
Reading speed range . . . . .	1/80x-70x (#611/622)	± 1/80x-70x	1/80x-70xVITC; 0-40xLTC	.....	1/80x-110x L, 0-10x V	.....
Editor interface . . . . .	Yes	Via RS-232C/422	RS-232/422	Yes	No	No
VITC code output . . . . .	49V option	Yes	Yes	No	Yes	Yes
LTC output signal . . . . .	+ 12dBm	+ 12dBm, 1/4" phone jack	-20, + 12dBm	2.2Vp-p 600Ω	0dB, 600Ω bal	0dB, 600Ω bal
Synchronizer function . . . . .	No	w/machine controller	.....	No	No	No
Power requirement . . . . .	110/220Vac	115/230Vac	115/230Vac	110 or 220Vac	110 or 220Vac	110 or 220Vac
LTC VITC translation . . . . .	Yes	Yes	Yes	No	Yes	Yes
User bit recognition . . . . .	Yes	Yes	Yes	Yes	Yes	Yes
Time code comparator . . . . .	No	Yes	.....	Yes	Yes	Yes
Video display keyer . . . . .	24-char/8-16TVL	#613 video cg/keyer	Yes	8-char, 8-16TVL	8-char, 18-36TVL	8-char, 18-36TVL
Display window . . . . .	1-line	2-sizes, positioning	Variable	1-line	Position control	Position control
		†#612/621 generators				
<b>Reader Service Number . . . . .</b>	<b>934</b>	<b>935</b>	<b>936</b>	<b>937</b>	<b>938</b>	<b>938</b>
Manufacturer . . . . .		Gray Engineering Labs			JVC Company	
Model Series . . . . .		VID225 (VIE224)	DT113/104F/213	DR115/107B/109B	TGP47U	
Portable unit . . . . .	No	Rack-mount	Rack-mount	Rack-mount	Yes	
Operating modes . . . . .	DF/NDF/CF	DF/NDF	DF/NDF/CF	DF/NDF/CF readers	DF/NDF/CF	
Standards supported . . . . .	SMPTE/EBU	SMPTE	SMPTE/EBU	EBU, SMPTE	SMPTE	
Time reference . . . . .	Crystal clock	Video	Video, 60Hz, BCD in	Video	Video, crystal	
Data entry for . . . . .	Time	(Incoming LTC only)	Time, user bits external	None	Time/user bits	
Data display of . . . . .	9-digit clock	Time, user bits	Time, user bits	109B time, user bits	Time/user bits	
Reading speed range . . . . .	.....	1/100x-100x L, ≤ 4x V	Real time	1/100x-100x	.....	
Editor interface . . . . .	Yes	Yes	Yes	Yes	No	
VITC code output . . . . .	No	Yes	w/FCM-227	No	No	
LTC output signal . . . . .	w/level control	Yes (No)	+ 8dBm 600Ω	Reshaped	.....	
Synchronizer function . . . . .	4030/4035	No	No	No	No	
Power requirement . . . . .	110Vac	110/220Vac	110/220Vac	110/220Vac	12Vdc	
LTC VITC translation . . . . .	No	Yes	No (FCM-227)	No	No	
User bit recognition . . . . .	No	Yes	Yes	Yes	No	
Time code comparator . . . . .	Yes	No	No	(115 4-channel)	No	
Video display keyer . . . . .	No	No	DT213, variable	Variable format	No	
Display window . . . . .	No	No	DT213, variable	Variable	No	
<b>Reader Service Number . . . . .</b>	<b>939</b>	<b>940</b>	<b>941</b>	<b>942</b>	<b>943</b>	
Manufacturer . . . . .		Shintron			Skotel	
Model Series . . . . .		#647 gen (646 reader)	#640 (641) readers	#690 ET master	TCR-111 (-111C)	
Portable unit . . . . .	Yes	Rack-mount	Yes	Rack-mount	1/2-wide rack	
Operating modes . . . . .	DF/NDF/CF/JS	DF/NDF	DF/NDF/CF (NDF/CF)	DF/NDF/CF/JS	DF/NDF/CF	
Standards supported . . . . .	SMPTE/EBU	SMPTE, EBU	SMPTE/EBU (EBU only)	SMPTE, EBU	EBU/SMPTE	
Time reference . . . . .	Video, crystal	Video	Video	Video, xtal	Video	
Data entry for . . . . .	Time	Time, user bits (None)	Time, user bits	Time, user bits	Time, user bits	
Data display of . . . . .	8 LCD time	Time, user bits	Time, user bits	Time, user bits	LEDs, time, user bits	
Reading speed range . . . . .	1/10x-50x	(1/16x-40x)	n.a.	± 1/60x-80x	1/60x-40x play	
Editor interface . . . . .	No	No	No	RS-422 interface	RS-232/422 on 111C	
VITC code output . . . . .	No	No	No	Yes	No	
LTC output signal . . . . .	2.5Vp-p 10kΩ	0dB 30Ω	0dB ± 2dB 2kΩ	0dBm, <10Ω source	Reshaped	
Synchronizer function . . . . .	No	No	No	Yes	No	
Power requirement . . . . .	9Vdc	110/220Vac	3-AA 4.5Vdc	110/220Vac	110Vac	
LTC VITC translation . . . . .	No	No	No	Yes	No	
User bit recognition . . . . .	No	No	No	Yes	Yes	



## Time Code Equipment

Manufacturer	Model Series	Shintron			Skotel
		#647 gen (646 reader)	#640 (641) readers	#690 ET master	TCR-111 (-111C)
Time code comparator	No	No	No	Yes	Yes
Video display keyer	No	(646 only variable)	No	Yes	No
Display window	No	(Variable)	No	15-char/5-line	No
Reader Service Number	944	945	946	947	948

Manufacturer	Model Series	Sony Broadcast		TimeLine	United Media
		BVG-1600 G(1500 R)	BVG-100 gen/reader	Lynx/VSI module	205 generator
Portable unit	1/2-wide rack	No	Yes	No	No
Operating modes	DF/NDF/CF	DF/NDF/CF/JS	DF/NDF/CF/JS	DR/NDF/CF/JS	DF/NDF/CF
Standards supported	EBU/SMPTE	SMPTE/EBU	SMPTE/EBU	SMPTE, EBU	SMPTE/EBU
Time reference	Video	Video	Video	Video, 60Hz, xtal	Video
Data entry for	Time, user bits	Time/user bits	Time/user bits	Time, user bits	Timer, user bits
Data display of	Time, user bits	8-digit time/user	8-digit time/user	Time, user bits	Dual 8-digit
Reading speed range	1/20x-40x play	1/20x-110x	Normal play	± 1/20x-60x	(310 reader)
Editor interface	.....	BVG-1500 only	No	RS-422/232C	Yes
VITC code output	TCR-132 only	SMPTE/EBU	SMPTE/EBU	No	No
LTC output signal	Reshaped	0-8dBm	2.5Vp-p 10kΩ	-10, +8dBm	+8dBm
Synchronizer function	No	No	No	Yes	No
Power requirement	110Vac	110-220Vac	9-18Vdc	110/220Vac	100-240Vac
LTC VITC translation	TCR-132 only	BVG-1500 only	No	No	No
User bit recognition	Yes	BVG-1500	No	Yes	.....
Time code comparator	Yes	BVG-1500	No	No	.....
Video display keyer	Yes	BVG-1500	No	No	Yes
Display window	Var size/position	8 (9) 1-line	No	No	Variable format
Reader Service Number	949	950	951	952	953

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Circle (104) on Reply Card

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Circle (105) on Reply Card

# Automated Cassette Players

These automation playback systems are based on 1", 19mm and 1/2" in cassette type media. They are integrated deck/control computer systems, not controllers that may be interfaced to an assortment of playback transports.

Manufacturer	Ampex AVSD	ASACA/ShibaSoku	BTS	Odetics	Panasonic Broadcast	Sony Broadcast
Model/Series	ACR225	ACL-6000C	BCN-100	TCS-2000	MARC II (MARC I)	BVC-10 Betacart
Recording format	Composite digital	Betacam/M-II	1" B	Betacam/M-II	M-II	Betacam
No. play decks	3-4	2-5	2-3	4-6	5 max	4 max
Specific play deck	Ampex	.....	...	per format	Std M-II unit	
Output channels	2 simultaneous	5 simultaneous	Single channel	1, 6 optional	2 + monitor	3 simultaneous
No. record decks	3-4	1-4	1-3	2	1-2	0
Edit features	.....	per VCR	Full feature	.....	Full feature	No
Control computer	Ampex proprietary	Universe 6853	Integral	IBM PC/AT	IBM PC/AT	Integral
RS- Control interface	232/422/ESbus	.....	423	232	422	422
Master automation port	Yes	Yes	...	Yes	Interface opt	Yes
Record/delayed play	.....	Yes	Yes	Yes	Yes	No
As-run log feature	Yes	Yes	Yes	Yes	Yes	Yes
Event verification	Yes	Yes	Yes	Yes	.....	Yes
Cassette ID type	Bar-code/time-code	Bar-code	LTC data	Bar-code/time-code	Bar-code/time-code	Bar-code
TC reader/generator	LTC type	..	LTC type	LTC	Reader	LTC
Auto cueing	Yes	Yes	Yes	Yes	Multicut cassette	Yes
Storage magazine	256 D-2 cassettes	600 cassettes	32 1" cassettes	280 max	1,179 max (123)	40 max
Shortest segment	1s	.....	2-frame + 22s	1 video frame	10-15s (10s)	1s/4-event seq.
System TBC	Yes	Integral/deck	Integral	TBC/deck	AU-TB50	Per deck
Manual override	.....	All functions	Yes	All functions	Yes	Yes
Reader Service Number	908	909	910	911	912	913

## Video Recorders – Begins on page 240



**Two new  
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Circle (106) on Reply Card

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Circle (207) on Reply Card

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The ATR-80 is built for speed. The kind of speed that makes post production a lot more productive.

For example, it shuttles at 380 IPS. Which means you'll never have to wait for the audiotape to catch up with the videotape.

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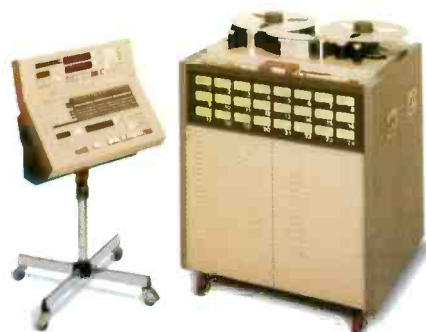
It also accelerates the overdubbing process. Tascam's unique heads are so uniformly responsive, you can make final EQing decisions right in the Sync Mode. Without ever having to rewind and check the sound from the Repro head.

The ATR-80 even accepts 14 inch reels—a complete, uninterrupted one hour show's worth of tape.

The fact is, no other post production recorder keeps you competitive in so many ways.

So take a look at an ATR-80 and put it through its paces.

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# TASCAM

A 32-Track version of the ATR-80 will be available soon. © 1986 TEAC Corporation, Tokyo.  
Harman (Audio) UK, LTD. Mill St. Slough Berks. SL2 5DD.

Circle (208) on Reply Card



# Audio equipment specs

## Audio Mixers, On-Air

These control consoles are primarily designed for use in master control locations of radio and TV facilities, although they may also allow production and post production applications. All provide mic/line input capabilities. Those with automation preparation are marked with a diamond (♦). In audio frequency ranges Hz is understood. Transformer balanced and active balanced input and output connections are abbreviated TB and AB, respectively.

Manufacturer	ADM Technology	Arrakis Systems	ATI/Audio Technologies	Auditronics	
Model/Series	ST-240 series II	250SC	Model 5000	Vanguard series	200 series
Modular construction	Yes	No	Yes	Yes	Yes
# of mixing positions	24	6-ch rack-mount	16 (32 input)	8	24
Output channels	Pgm/aud/aux/cue/mono	Pgm/aux/mono	Pgm/aud/mono/mix	Pgm/aud/cue/mono	Pgm/aud/mono/cue
Channel fader types	Slider, VCA	Rotary/VCA	P&G slider/VCA	Slider, rotary	Slider, VCA
Bus switching by	Push button	Push button	Push button	Membrane	Push button
Input patch points	Yes	No	Prefader	No	Yes
Internal switching by	Electronic	Solid-state	Solid-state	Solid-state	Mechanical, VCA
Machine starts/stops	Relay	Relay	Yes	Yes	Yes
Talkback circuits	Yes	No	.....	No	Yes
Cue circuits	On fader, bus switch	On fader	On fader	On fader	On fader
Metering types	VU, PPM	VU meters	VU meters	VU, VFD opt	VU
Speaker muting	Yes	Programmable	Yes	Yes	Yes
Int cue amp speaker	Yes	Amp only	2W/channel	Yes	Yes
Input connections	TB 600Ω	AB 1k/100kΩ	Bal 1k/100kΩ	AB 20kΩ	AB 150/10kΩ
Output connections	TB 600Ω	Bal 600Ω	Bal 600Ω	AB 600Ω	TB/AB ±50Ω
Output level	8dBm	27dBm max	27dBm	4dBm, 26dBm max	4dBm, 30dBm max
AF response	±1dB	±0.5dB 20-20k	±0.5dB 20-20k	±0.25dB	0,-1dB 8dBm
Distortion	0.07% 1kHz 24dBm	0.02% 8dBm	0.02% 8dBm	0.15% 18dBm	<0.01% 1kHz 24dBm
S/N ratio, mic/line	-125dBm EIN/72dB	72dB mic/82dB line	62dB mic/82dB line	-124dBm EIN/92dB	-128.5dBm EIN/>82dB
Crosstalk (worst)	-72dB 8dBm 100-10kH	-90dB 2kHz	Below noise	-74dB 10kHz	<-83dB 20kHz
Reader Service Number	1240	1241	1242	1243	1244

Manufacturer	Auditronics	Autogram	B.F.E.	Broadcast Audio
Model/Series	400 series	♦R/TV-20	BC-20	System 6
Modular construction	Yes	Yes	Yes	Yes
# of mixing positions	24	20	16 auto/12 fader	6
Output channels	Pgm/aux/cue	Pgm/aud/cue/mono	Pgm/aud/aux/cue/mono	Pgm/aud/util/mono/cue
Channel fader types	Slider, VCA	Slider	Slider	Slider
Bus switching by	n.a.	Push button	Push button	Push button
Input patch points	Yes	Yes	Yes	Yes
Internal switching by	n.a.	Solid-state	Solid-state	Mech, electronic
Machine starts/stops	Yes	Solid-state, relay	Solid-state, relay	Push buttons
Talkback circuits	Yes	No	No	No
Cue circuits	Yes	On fader	On fader	On fader
Metering types	VU, LED opt	VU	VU	VU, peak LED
Speaker muting	Yes	Yes	Yes	Yes
Int cue amp speaker	Yes	Amp only	Yes	Amp only
Input connections	AB bridging	AB 600/20kΩ	TB/AB 1k/5.7kΩ	TB/AB 1.5k/20kΩ
Output connections	n.a.	AB 600Ω	TB 600Ω	TB 150Ω
Output level	n.a.	8dBm	8dBu	28dBm max
AF response	n.a.	±0.1dB	±0.5dB 18dBu	±0.5dBm
Distortion	n.a.	0.05% 15kHz 18dBm	0.5% 15kHz 18dBu	<0.02% 28dBm 1kHz
S/N ratio, mic/line	n.a.	-124dBm EIN/92dB	-120dBm EIN/82dB	-125dBm EIN/90dB
Crosstalk (worst)	n.a.	-68dB 15kHz 18dBm	-65dB 15kHz 18dBm	-80dB 15kHz
Reader Service Number	1245	1246	1247	1249

## Audio Mixers, On-Air

Manufacturer	Broadcast Audio			Broadcast Electronics		Dorrough Electronics Model 700
	System V	System 16 series IV	10S350A	10S250A (8S250A)		
Modular construction	No	Yes	No	No	No	No
# of mixing positions	5	16, 6-module ext	10	10 (8)	7	7
Output channels	Pgm/aud	Pgm/aud/aux/cue/mono	Pgm/aud/cue/mono	Pgm/aud/cue/mono	Pgm/aud/cue	Pgm/aud/cue
Channel fader types	Rotary	Slider	Slider	Rotary	Rotary	Rotary
Bus switching by	Push button	Push button	Push button	Keypad	Keypad	Keypad
Input patch points	No	Yes	No	No	No	No
Internal switching by	Mechanical	Solid-state	Solid-state	Solid-state	Mechanical	Mechanical
Machine starts/stops	4 switches	Solid-state, relay	No	No	No	No
Talkback circuits	No	No	No	Yes (no)	No	No
Cue circuits	Yes	On fader, keyswitch	On fader, keyswitch	On fader	On fader	On fader
Metering types	VU	VU, LED peak	VU	VU	VU, LED opt	VU, LED opt
Speaker muting	Yes	Yes	Yes	Yes	Yes	Yes
Int cue amp speaker	Yes	Amp only	Yes	Yes	Yes	Yes
Input connections	TB/AB 150/10k/20k $\Omega$	TB/AB 1.5k $\Omega$	AB 54k $\Omega$	AB 54k $\Omega$	AB 150/10k $\Omega$	AB 150/10k $\Omega$
Output connections	TB/unbal 600 $\Omega$	Xfmr 150 $\Omega$	Xfmr 600 $\Omega$	Xfmr 600 $\Omega$	AB 600 $\Omega$	AB 600 $\Omega$
Output level	30dB max	8dBm, 28dBm max	8dBm	8dBm	26dBm max	26dBm max
AF response	$\pm 1$ dB 20-20k	-0.5dB 8dBm	-0.5dB 8dBm	-0.5dB 8dBm	n.a.	n.a.
Distortion	0.02% 20-20k	<0.02% 1kHz 28dBm	0.05% 1kHz 18dBm	0.075% 1kHz 18dBm	n.a.	n.a.
S/N ratio, mic/line	72dB ref 8dBm	-125dBm EIN/90dB	70dB	70dB 18dBm	n.a.	n.a.
Crosstalk (worst)	Below noise	<-80dB 15kHz	n.a.	n.a.	n.a.	n.a.
Reader Service Number	1250	1251	1252	1253	1254	1254

Manufacturer	EELA Audio		Hallikainen & Friends		Harris Broadcast		Harrison Systems AIR-7
	Model/Series	SBM series	TVA 142/TVA 132	Medalist-AU	Medalist series		
Modular construction	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of mixing positions	16	36 max	36 max	12 max	8, 10, 12	36	36
Output channels	Pgm/aud/cue/mono	Pgm/aud/cue	Pgm/aud/cue	Pgm/aud/mono	Pgm/aud/mono opt	Pgm/aud/aux/cue	Pgm/aud/aux/cue
Channel fader types	Slider, VCA	Rotary	Rotary	Slider, VCA	Slider or rotary	Slider	Slider
Bus switching by	Push button	Keyswitch	Keyswitch	Push button	Push button	Push button	Push button
Input patch points	No	No	No	No	No	No	No
Internal switching by	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state
Machine starts/stops	Yes	No	No	Yes	Yes	2 circuits	2 circuits
Talkback circuits	Yes	No	No	No	No	Yes	Yes
Cue circuits	PFL bus switch	On fader	On fader	On-fader, push button	On-fader, push button	On-fader	On-fader
Metering types	LED, other	VU w/peak LED	VU w/peak LED	VU	VU	VU, PPM, LED	VU, PPM, LED
Speaker muting	Yes	No	No	Yes	Programmable	Yes	Yes
Int cue amp speaker	Yes	No	No	Yes	Yes	Speaker	Speaker
Int headphone amp	Yes	No	No	Yes	Yes	.....	.....
Input connections	AB/TB 5k/40k $\Omega$	TB 150/15k $\Omega$	TB 150/15k $\Omega$	AB 5k/8k $\Omega$	AB 150/600 $\Omega$	AB 1.2k/10k $\Omega$	AB 1.2k/10k $\Omega$
Output connections	TB/unbal 600 $\Omega$	Bal 600 $\Omega$	Bal 600 $\Omega$	AB 200 $\Omega$	AB 20 $\Omega$	AB 600 $\Omega$	AB 600 $\Omega$
Output level	6dBm nom	8dBm, 22dBm max	8dBm, 22dBm max	24dBm max	24dBm max	24dBm max	24dBm max
AF response	-1dB 6dBm	$\pm$ dB 8dBu	$\pm$ dB 8dBu	$\pm$ 0.5dB	-0.5dB 8dBm	$\pm$ 0.2dB	$\pm$ 0.2dB
Distortion	0.05%	0.05%	0.05%	0.05% 8dBm	0.05% 8dBm	0.1% 7kHz 18dBm	0.1% 7kHz 18dBm
S/N ratio, mic/line	<-126dBm EIN	-115dBm EIN/74dB	-115dBm EIN/74dB	-127dBv EIN	-127dBv EIN/>95dB	-128dBm EIN	-128dBm EIN
Crosstalk (worst)	<-66dB 16kHz 6dBm	-82dB 1kHz 8dBm	-82dB 1kHz 8dBm	-85dB 15kHz 18dBm	-85dB 15kHz 18dBm	-65dB 15kHz 4dBm	-65dB 15kHz 4dBm
Reader Service Number	1255	1256	1256	1257	1258	1259	1259

Manufacturer	Howe Technologies			Logitek		
	Model/Series	8000 (9000)	Model 10000	7512A	Stereorack (Audiorack)	Perfectionist-8 (12)
Modular construction	Yes	Yes	Yes	No	No	No
# of mixing positions	22	32	32	12	6	8 (12)
Output channels	Pgm/aud/cue/mono	Pgm/aud/mono	Pgm/aud/mono	Pgm/aud/cue/mono	Pgm/preview	4-pgm/aud/mono/cue
Channel fader types	Rotary (slider)	Slider, VCA	Slider, VCA	Slider	Rotary, VCA	Slider or rotary opt
Bus switching by	Push button	Push button	Push button	Push button	Push button	Push button
Input patch points	Yes	Yes	Yes	No	No	Yes
Internal switching by	Solid-state	Solid-state	Solid-state	Solid-state	Electronic	Solid-state
Machine starts/stops	Yes	Optical isolators	Optical isolators	Yes	Yes	Yes
Talkback circuits	No	Yes	Yes	Yes	Yes	No
Cue circuits	On-fader, bus switch	n.a.	n.a.	Push button	On-fader	On-rader
Metering types	VU, PPM, LED	VU	VU	VU, PPM	VU	VU, peak flasher
Speaker muting	Yes	Yes	Yes	Yes	No	Yes
Int cue amp speaker	Yes	n.a.	n.a.	Yes	Amp only	Yes
Input connections	AB 600/10k $\Omega$	AB 10k $\Omega$	AB 10k $\Omega$	AB 600/10k $\Omega$	AB 1k/600 $\Omega$	AB 1k/600 $\Omega$
Output connections	AB 150 $\Omega$	AB 150 $\Omega$	AB 150 $\Omega$	AB 150 $\Omega$	AB 600 $\Omega$	AB 600 $\Omega$
Output level	4dBm nom	4dBm	4dBm	4dBm	0dBm, 23dBm max	4dBm
AF response	$\pm 0.1$ dB 4dBm ref	$\pm 0.1$ dB 4dBm	$\pm 0.1$ dB 4dBm	$\pm 0.1$ dB 4dBm	$\pm 0.3$ dB	$\pm 0.25$ dB 4dBm
Distortion	0.03% 1kHz 4dBm	0.025% 1kHz 4dBm	0.025% 1kHz 4dBm	0.025% 1kHz 4dBm	0.04% (0.1%)	0.008% 1kHz 4dBm
S/N ratio, mic/line	-124dBm EIN	-124dBv EIN	-124dBv EIN	-124dBm EIN	72dB (64dB)	-125dBm EIN/88dB
Crosstalk (worst)	-70dB 10kHz 4dBm	-70dB 10kHz 4dBm	-70dB 10kHz 4dBm	-70dB 10kHz 4dBm	-75dB	-80dB
Reader Service Number	1260	1261	1261	1262	1263	1264



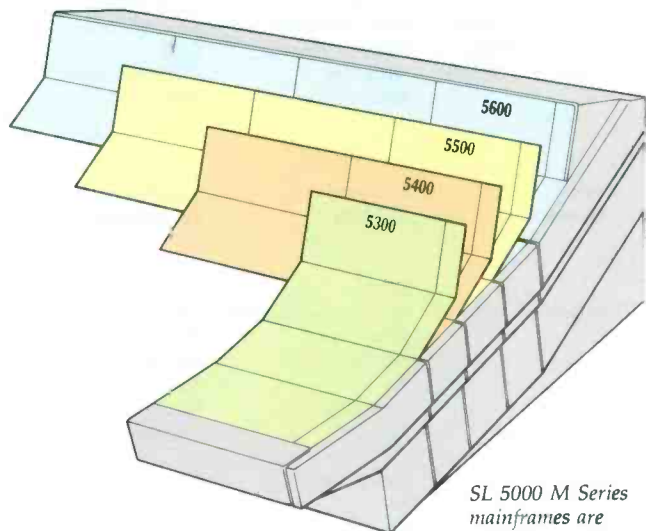
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## Audio Mixers, On-Air

Manufacturer	LPB	McCurdy Radio	Neve Electronics/Siemens
Model/Series	Signature III	Alpha A-8S	Series "S"
Modular construction	No	No	Yes
# of mixing positions	6, 8, 10 models	8	26
Output channels	Pgm/aud/cue/mono	Pgm/mono	Pgm/aud/mono/cue
Channel fader types	Rotary	Rotary	Slider, VCA
Bus switching by	Key switch	Push button	Push button
Input patch points	No	No	Yes
Internal switching by	Mechanical	Solid-state	Electronic
Machine starts/stops	9 circuits	10 circuits	Yes
Talkback circuits	No	No	Yes
Cue circuits	On-fader	Bus switch	On-fader
Metering types	VU	LED	VU, PPM
Speaker muting	Yes	Programmable	Yes
Int cue amp speaker	Amp, speaker	Amp, speaker	No
Input connections	TB 150/600Ω	AB 150/600Ω	AB 10k/20kΩ
Output connections	TB 600Ω	TB/AB 600Ω	AB 600Ω
Output level	24dBm max	24dBm max	28dBm max
AF response	± 0.5dB 8dBm	± 0.3dB 8dBm	± 0.5dB
Distortion	0.06% 18dBm	0.5% 20-20k 8dBm	0.1% mic/0.01% line
S/N ratio, mic/line	75dB mic/78dB line	76dB mic/80dB line	<-125dBv EIN/>90dB
Crosstalk (worst)	-61dB 1kHz 8dBm	-65dB 1kHz 8dBm	-80dB typical
<b>Reader Service Number</b>	<b>1265</b>	<b>1266</b>	<b>1267</b>

Manufacturer	Pacific Recorders & Eng	Radio Systems	Russco Electronics
Model/Series	BMX Series III	AMX	BMX Series II
Modular construction	Yes	Yes	Yes
# of mixing positions	34 max	34	26 max
Output channels	Pgm/aud/aux/cue/mono	Pgm/aud/util/mon/cue	Pgm/aud/cue/mono
Channel fader types	Slider	Slider	Slider
Bus switching by	Push button	Push button	Push button
Input patch points	Yes	Yes	Yes
Internal switching by	Solid-state, mech	Relay, electronic	Mechanical
Machine starts/stops	Yes	Yes	Yes
Talkback circuits	Yes	Yes	Yes
Cue circuits	Push button	Push button	Push button
Metering types	VU, PPM, NTP	VU, PPM	VU, PPM
Speaker muting	Yes	Yes	Yes
Int cue amp speaker	Amp only	Stereo line out	Yes
Input connections	TB/AB 1k/40kΩ	TB/AB 1k/40kΩ	TB/AB 1.5k/10kΩ
Output connections	TB/AB 30Ω	AB/TB 30Ω	TB/AB 95Ω
Output level	28dBm max	8dBm, 28dBm max	28dBm max
AF response	-0.9dB 8dBm	-0.9dB	-1.5dB 8dBm
Distortion	<0.01% 1kHz 28dBm	<0.008% 8dBm	<0.03% 1kHz 28dBm
S/N ratio, mic/line	-127dBm EIN/88dBu	-127dBu EIN	-127dBu EIN/82dBu
Crosstalk (worst)	-85dB 1kHz 28dBm	<-75dB 20kHz	<-85dB 1kHz 28dBm
<b>Reader Service Number</b>	<b>1270</b>	<b>1271</b>	<b>1272</b>

Manufacturer	SATT Communications	Solid State Logic	Sonosax	Soundcraft	Soundtracs/AGK
Model/Series	SAM-83	◆SL 5000 M	◆SX series	SAC-2000	FM Broadcast
Modular construction	No	Yes	Yes	Yes	Yes
# of mixing positions	8	64	32	24 max	.....
Output channels	Pgm/aux/cue/mono	Pgm/aud/aux/mono/cue	Pgm/aud/aux	Pgm/aud/aux/mono/cue	Pgm/aud/aux/cue/mono
Channel fader types	Slider	Slider	Slider	Slider	Slider
Bus switching by	Key switch	Centrally assigned	Push button	Push button	Push button
Input patch points	No	Yes	Yes	Yes	No
Internal switching by	Mechanical	Solid-state	Solid-state	Solid-state	Mechanical
Machine starts/stops	2 relay contacts	Relay contacts	Solid-state, relay	Yes	8 circuits
Talkback circuits	Yes	Yes	Yes	Yes	Yes
Cue circuits	On-fader	On-fader	On-fader	Push button	Bus switching
Metering types	PPM, VU opt	VU, PPM, LCD	LED	VU	LED
Speaker muting	No	Yes	Yes	Yes	Yes
Int cue amp speaker	None	Amp only	Amp only	Speaker	Amp only
Input connections	TB 600/1kΩ	AB/TB 600Ω	AB/TB 600Ω	Active bal	Xfmr
Output connections	TB 600Ω	TB/AB 35Ω	TB/AB 25Ω	AB 600Ω	Xfmr
Output level	6dBm at OVU	28dBm max	26dBm max	26dBm max	4dBm/-10dBv
AF response	-1.0.5dB 6dBm	± 0.5dB 8dBm	± 0.1dB 6dBm	-1dB 8dBm	.....
Distortion	0.015% 1kHz 6dBm	0.05% 1kHz 20dBm	0.02% 1kHz 6dBm	0.01% 20-20k 8dBm	0.015% 1kHz
S/N ratio, mic/line	-128dBm EIN/85dB	-127.5dBm EIN	-128dBm/-115dBm	80dB	.....
Crosstalk (worst)	-95dB 15kHz 6dBm	-80dB 20kHz 8dBm	-80dB 1kHz 6dBm	-65dB 1kHz 8dBm	.....
<b>Reader Service Number</b>	<b>1275</b>	<b>1276</b>	<b>1277</b>	<b>1278</b>	<b>1279</b>





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capsules, elastic-mounted for low noise and pre-configured to give you a smooth, one-handed XY-stereo field. It's a workhorse mic, with the little extras a working pro needs, like a built-in rechargeable battery, low-power warning LED, integrated on/off switch and boom mount shock suspension.

Get it live in stereo with the **AKG C 522**.

## Audio Mixers, On-Air

Manufacturer	Southern Broadcasting	Studer	Tore Seem Audio	UREI	Ward-Beck Systems
Model/Series	◆Alldesign console	970	SEECON	1690	R2200
Modular construction	Yes	Yes	Yes	No	Yes
# of mixing positions	16	18, expands by 9s	16-40	12	22
Output channels	Pgm/aud	Pgm/aud	Pgm/aux/sub/mono	Pgm/aud/mono opt	Pgm/aux/cue/mono
Channel fader types	Slider, VCA control	Slider	Slider	Slider	Slider
Bus switching by	Push button	Push button	Push button	Push button	Push button
Input patch points	.....	Yes	Yes	No	No
Internal switching by	CMOS devices	n.a.	n.a.	Solid-state	Mechanical
Machine starts/stops	With sequencing	Yes	Fader switches	Switch contacts	22 relay contacts
Talkback circuits	Yes	Yes	Yes	No	Yes
Cue circuits	Hall effect switching	PFL, push button	PFL	On-fader	On-fader
Metering types	VU, LED	PPM, VU	PPM, bar graph, LED	VU	VU, PPM opt
Speaker muting	Yes	Yes	n.a.	Yes	Programmable
Int cue amp speaker	Yes	Yes	Yes	Yes	Amp, speaker
Input connections	AB 40kΩ	1.6k/10kΩ	AB > 1k/10kΩ	AB/TB opt 1.5k/10kΩ	Xfmr 750/24kΩ
Output connections	AB 600Ω	Bal <200Ω	AB 20Ω	Xfmr 600Ω	Bal 600Ω
Output level	8dBu, 16dBu max	6,15dBu	6dBu, 20dBu max	4dBm, 24dBm max	8dBm for 0VU
AF response	-0.3dB 16-16k	-1, +0.5dB	±0.5dB	0.02% 4dBm	±1dB 8dBm
Distortion	0.007% 1kHz 8dBu	<0.03% 6dBm	<0.1% 20dBu	0.02% 4dBm	0.25% 15kHz 18dBm
S/N ratio, mic/line	-92dBu ref 8dBu	<-125dBu EIN/93dB	-124dBu EIN/80dBu	-124dBm EIN	-125dBm EIN/78dB
Crosstalk (worst)	-83dB 1kHz	<-80dB	n.a.	n.a.	-75dB 15kHz 8dBm
Reader Service Number	1280	1281	1282	1283	1284

Manufacturer	Ward-Beck Systems	Wheatstone Group
Model/Series	Series ST - M500	A-500a
Modular construction	Yes	Yes
# of mixing positions	24(12m-12st)/36(12-24)	22
Output channels	Pgm/aud/aux/cue/mono	Pgm/aud/aux/mono opt
Channel fader types	Slider	Slider
Bus switching by	Push button	Push button
Input patch points	Yes	Yes
Internal switching by	Solid-state, mech	Solid-state, relay
Machine starts/stops	6 circuits	Yes
Talkback circuits	Yes	Yes
Cue circuits	On-fader, bus switch	On-fader, push button
Metering types	VU, PPM opt	VU, Yes
Speaker muting	Programmable	Yes
Int cue amp speaker	Amp, speaker	Speaker opt
Input connections	TB 1.5k/20kΩ	AB/TB opt 150/20kΩ
Output connections	Bal <100Ω	AB 600Ω
Output level	8dBm nom	26dBm max
AF response	±0.5dB 8dBm	±0.5dB 0dBm
Distortion	0.2% 20kHz 24dBm	<0.005% 1kHz 18dBm
S/N ratio, mic/line	-125dBm EIN/80dB	-128dBm EIN/90dB
Crosstalk (worst)	-75dB 15kHz 8dBm	-90dB 1kHz
Reader Service Number	1285	1286

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## Audio Mixers, Portable

This equipment includes ENG mic mixing systems to smaller production consoles, most easily carried by one person. Input impedance generally represents the load presented by the system to an audio source. The output impedance value, if <100Ω, indicates the impedance of the unit as a source, while values >125W typically indicate an acceptable loading value.

Manufacturer	a&a Systemes de Communications	ADM Technology	Allen/Heath Brenell	AMEK Consoles
Model Series	CORA series (CORA-229)	Report'2 (Report'4)	RM 1083	BC-II series
Modular system	Yes	No	Yes	3-chassis sizes
# of inputs	17	2 M/1 L (4 M/L)	16	28
# of mixing buses	2	1 (2)	3	6 to 4 subs to 2 out
Stereo output	No	No	Yes	Yes
Output provisions	Line, telco,	Pgm, Telco, phone	Line, aux, phones	Line, aux, phones
Channel fader type	Rotary, sliders	Rotary	Rotary	Slider
EQ, filtering	Yes	Yes	Prefader	Pre & post
Test oscillator	Yes	Yes	None	Variable
Metering types	VU meters	LED VU ladder (VU)	VU	VU, PPM, LED
Compression limiting	Yes	Limiter	None	Option
Telco interface	Yes	2/4-wire w/touchpad	No	No
Power requirements	220Vac	2 9Vdc or external dc	110Vac	120Vac





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**RM-765/780**

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## Audio Mixers, Portable

Manufacturer	a&a Systemes de Communications		ADM Technology	Allen/Heath Brenell	AMEK Consoles
Model Series	CORA series (CORA-229)	Report'2 (Report'4)	RM 1083	SR series	BC-II series
Operating weight	78 lbs	4.5 (22) lbs	.....	.....	.....
AF input connections	Xfmr bal, unbal	Xfmr bal (unbal)	Xfmr bal	Active	Xfmr & active bal
Input impedance (load)	200/600/10kΩ	500/10kΩ	600Ω	.....	150Ω
Input levels	-40, +40dB	-65dB, +12dB	+8dBm	.....	Mic/line switched
Output connections	Active bal	Balanced	Xvmf bal	Unbalanced	Active bal
Output impedance	600/1kΩ	600Ω	600Ω	.....	150Ω
Output level	+12dB max	+12dBm	+8dBm	.....	+22dBm, 25dBv 6kΩ
AF response	±3dB	40-15k	±1dB +24dB ref	±1dB, 20Hz-20kHz	±0.5dB +20dBm ref
Distortion	.....	.....	0.07%, 1kHz, +24dBm	<0.05%, +4dBm out	0.02%, 1kHz 0dBm
Signal noise ratio	.....	.....	-125.5dBm EIN	-125dBv EIN	-128dBm EIN
Crosstalk (worst)	.....	.....	-72dB 100Hz-10kHz	<-60dB 4dBm	-88dB 1kHz +20dBm
Reader Service Number	1001	1002	1003	1004	1005

Manufacturer	Audio Developments			Audio + Design/SWA	Audio-Technica
Model Series	AD160 (-260) ENG	AD062 (062-M)	AD145 (145-E)	M series	AT4462 Modu-Comm
Modular system	Yes	Yes	Yes	Yes	No
# of inputs	3 (4)	4-16	4/6/8, phantom power	16	6
# of mixing buses	1 (2)	5	2	2	L/R
Stereo output	No (Yes)	Yes	1 pair	Yes	Yes
Output provisions	Line mic, phones	Line, mic, phones	Mic, line, phones (2 mon)	Aux, phones, line	Line, Modu-Comm phones
Channel fader type	Rotary	Slider	Slider (VCA)	Slider	Rotary
EQ, filtering	Prefader filters	Prefader (3-band EQ)	Prefader, hi-pass	Pre, post	No
Test oscillator	Fixed frequency	Fixed, variable	1kHz	Variable	1kHz, 400Hz, 4.5kHz
Metering types	VU, PPM	VU, PPM (on bridge)	VU/PPM (LED for PFL)	VU & PPM	Dual VU
Compression limiting	Limiting	2-channel limiter (no)	No	Yes	Limiter
Telco interface	No	No	No	No	No
Power requirements	9-48Vdc	9-48Vdc	9-48Vdc	110-220Vac	12-18Vdc, 2 9V cells
Operating weight	3 (5) lbs	20 lbs (32 lbs, 10-in)	14 lbs	.....	4.7 lbs
AF input connections	Xfmr bal	Xfmr(m), active(l) bal	Xfmr bal(mic/line,line)	Xfmr bal	Xfmr bal
Input impedance (load)	1k(3k)Ω	1k/100kΩ	1k/10kΩ	600Ω	1.5k/47kΩ
Input levels	Mic/line (switched)	Switched mic/line	-35, +20dBm, switched	Switched mic/line	Switched mic/line
Output connections	Active (xfmr) bal	Xfmr bal	Xfmr bal	Xfmr bal	Xfmr bal
Output impedance	20(75)Ω	75Ω	<75Ω source	600Ω	1Ω source
Output level	+24dBm	+24dBm maximum	+24dBm	+24dBm	+22dBm maximum
AF response	±dB 0dBm	±1dB, 0dBm	±1dB	±0.5dB at +12dBm ref	-1, +1dB 40-20k
Distortion	0.35%, 1kHz, 0dBm	<0.05%, 0dBm	0.05%, 1kHz +0dBm	0.05% +12dBm	<0.1% +4dBm
Signal noise ratio	-125dBm EIN	-126dBm EIN	-126dB EIN	80dBm	-127 dBv EIN 150Ω
Crosstalk (worst)	-60dB 40Hz-15kHz	<-70dB 40Hz-15kHz	<-70dB 40Hz-15kHz	-70dB 10kHz	-65dB R to L
Reader Service Number	1006	1007	1008	1009	1010

Manufacturer	Audio	Bandive/Connectronics		Broadcast Electronics	Calrec
Model Series	MXT500	SECK 1882	SECK62 (SECK112)	4S50AP (4M50AP/4R50A)	Mini Mixer
Modular system	Yes	No	No	No	Yes
# of inputs	14	72 mic/line/tape/ins	6M/6L, 4 aux, (12M/12L)	12 (8/10)	To 18
# of mixing buses	2 main, 2 aux	L/R+8 subgroup	L/R, solo	1 stereo (1 mono)	2 + aux
Stereo output	Yes	Yes	Yes	Yes (no)	Yes
Output provisions	Line, aux, phone, mono	Line, mon, group, solo	Line, phones, 4 aux	Line, aux, phones	Line, aux, link, mono
Channel fader type	Slider, rotary	Slider, rotary pan	Slider	Rotary	Slider
EQ, filtering	Yes	Shelving, peak-dip	HF, LF, mid-sweep	None	3-band, HF, LF
Test oscillator	1kHz fixed	30Hz slate tone	.....	Fixed tone on 4R50A	Yes
Metering types	Dual VU or PPM	LED bar graph, peak	LED bar graph	VU	Dual VU
Compression limiting	No	No	No	No	Stereo linkable
Telco interface	No	No	No	No	No
Power requirements	110-220Vac/24Vdc	340Vac, ±48Vdc	220-240Vac(50Hz)	110Vac	120/240Vac or ±12Vdc
Operating weight	35 lbs	42 lbs	11(17.6) lbs ps 2.2 lb	20 (20/10) lbs w/o bat	26 lbs
AF input connections	Xfmr bal	Active bal	Balanced	Act bal (act/xfmr)	Xfmr bal
Input impedance (load)	1.2k/10kΩ	>1k/10k/20k/50kΩ	1k/50kΩ	20kΩ	1.2k/10kΩ
Input levels	Switchable, mic/line	-55, +10dBm, +20dB	-60,-30,-15dBu	Switchable mic/line	+28dBu(l) max
Output connections	Xfmr bal, floating	Active bal	Balanced	Xfmr bal	Xfmr bal
Output impedance	75Ω nominal	<50Ω	600/1kΩ aux	600Ω	600/10kΩ
Output level	+24dBu max into 600Ω	+21dBu 20-20k	+21dBm max	+8dBm	+24dBm to 600Ω max
AF response	±0.5dB, +24dBm	-1dB, 20-20k	-2dB, 20-20k	-1(-2)dB +8dBm	±0.5dB, 30Hz-15
Distortion	<0.1%, 40-20k, +18dBm	<0.0056%, 1kHz	0.03% 1kHz, 0.04% 10kHz	0.1(0.5/0.3)% 1kHz	<0.05%, 40-16k, +12dBu
Signal noise ratio	-125dBm EIN	-124dBu EIN, 77dB	-127.5dBm EIN, 74dB	65(60/70)dB	-127dBu EIN, 80dB
Crosstalk (worst)	<-70dB 30Hz-15kHz	-55dB 1kHz	.....	.....	.....
Reader Service Number	1011	1012	1013	1014	1015



## Audio Mixers, Portable

Manufacturer	Comprehensive Video	Comrex Corporation	D&R Electronica b.v.		DDA/Klark-Teknik
Model Series	MX1001 (MX1002)	SLX Sports Mixer	300 Mark II	700 Mark 3	Series S PA
Modular system	No	No	No	Yes	Yes
# of inputs	3 max	7 max	20	2/channel + aux	16, 24, 32
# of mixing buses	3	1	L/R, 2 aux send	L/R line, 3 aux	8
Stereo output	No	No	Yes	Yes	Yes
Output provisions	Line, mic, aux, phones	Line, aux, phone	Line, mono, aux	Line, phones	L/R, mono, mon, phone
Channel fader type	Rotary	Slider	ALPS or plastic slider	ALPS, P&G sliders	Slider
EQ, filtering	No	Yes	3-band	4-band	4-band
Test oscillator	Fixed (none)	Fixed	1kHz	.....	Yes
Metering types	VU	VU	Bargraph	LED bargraph	VU
Compression limiting	No	w/bandwidth extender	No	No	Sidechain opt
Telco interface	No	Yes	No	No	No
Power requirements	12Vdc (3-9V batteries)	110Vac, external dc	50/60Hz ac	ac	110 or 220 Vac
Operating weight	3 lbs (38 oz)	15 lbs	.....	.....	.....
AF input connections	Xfmr bal	Active bal	Balanced	Bal, unbal	Bal, unbal
Input impedance (load)	50-600Ω autosense	150Ω	2k/10kΩ	2k/10kΩ	>2k/10kΩ
Input levels	Switchable mic/line	Switchable mic/line	Mic, line switched	Mic, line switched	Mic, line switched
Output connections	Xfmr bal	Xfmr bal	Balanced	Balanced	Active bal
Output impedance	50-600Ω autosense	600Ω	100Ω	100Ω	<75Ω
Output level	-20, +4dBm	-9, +6dBm	0dBu	+4dBu	+26dBu max
AF response	.....	±0.5dB	±0.025dB, 20Hz-20kHz	0.025dB, 20Hz-20kHz	<0.75dB, 20Hz-20kHz
Distortion	.....	0.5%, 50-15k	0.039%	<0.01% any level	<0.05%
Signal noise ratio	60dB EIN	-127dB EIN	-126.5dBu EIN >80dB	-126.5dB EIN, 83dB	-127dBu, 84dB
Crosstalk (worst)	.....	<-60dB 1kHz	.....	.....	<-80dB 1kHz
Reader Service Number	1016	1017	1018	1019	1020

Manufacturer	Digitec	EELA/ESL	Electro-Voice	EMT/Gotham Audio	Harrison Systems
Model Series	UPS 6166 (6000 series)	S20 (S22) Reportophone	ELX-1	EMT multioutput mixer	MX-8 (Pro-7)
Modular system	Yes	No	No	Yes	Yes
# of inputs	16	2	5	30 max	8 (24)
# of mixing buses	6	1	1	4	2-st/2-mono (4-group)
Stereo output	Yes	No	No	Yes	Yes
Output provisions	4 pgm, 2 aux	Telco line	Line, mic, phones	Line, aux, phones	Line, phones, (aux)
Channel fader type	Slider	Rotary	Rotary	Slider	Slider
EQ, filtering	3-band peak, high-pass	No	Yes	Post-fader	No (prefader)

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## Audio Mixers, Portable

Manufacturer	Digitec	EELA/ESL	Electro-Voice	EMT/Gotham Audio	Harrison Systems
Model Series	UPS 6166 (6000 series)	S20 (S22) Reportophone	ELX-1	EMT multioutput mixer	MX-8 (Pro-7)
Test oscillator	60Hz, 1kHz, 12kHz	No	Lo-freq 100Hz	Variable	Fixed (variable)
Metering types	VU, PPM	LED	LED VU, PPM display	VU, PPM, LED	VU (PPM, LED)
Compression limiting	Yes	Yes	Yes	Yes	No
Telco interface	Option	Tone (pulse) dial	Yes	No	No
Power requirements	120/240Vac, int/ext 12Vdc	9Vdc	120Vac, 24-45Vdc	120Vac	±15Vdc
Operating weight	55 lbs	2.5 (3) lbs	5.5 lbs w/batteries	60 lbs	25 (125) lbs
AF input connections	Xfmr bal	Xfmr bal	Active bal	Xfmr bal	Active bal
Input impedance (load)	>1k/>5kΩ	1.2k/40kΩ	6kΩ for low Z mics	600Ω	150Ω
Input levels	-70, +20dBu	Mic, line	Switched mic/line	Switchable mic/line	Mic (& line)
Output connections	Balanced	Hybrid bal	Xfmr bal	Xfmr bal	Active al
Output impedance	<50Ω	600Ω	10/60Ω	600Ω	600Ω
Output level	+21dB max	-3dB 600Ω	.....	+6dBm	-24dBm max
AF response	-1, +0.5dB	-3dB	-125dB, +4dBm	-1, 0.5dB, +6dBm	±0.2dB, +4dBm=0VU
Distortion	<0.2%, +12dBu	<0.1%, 200-7k	<-.15%, 50-20k, +18dBu	0.1%, 1kHz, 6dBm	.....
Signal noise ratio	-125dBu EIN	-122dBm EIN	-128dBu EIN, 150Ω in	>54dB	-129dBm EIN
Crosstalk (worst)	<-70dB overall	.....	.....	<-70dB 1kHz	-65dB 15kHz
Reader Service Number	1021	1022	1023	1024	1025

Manufacturer	Jkegami Electronics	JVC Company	Klark Teknik	Logitek
Model Series	ABX-160A	SS-M208E portable	MI-2000U	PCM402
Modular system	Yes	No	No	No
# of inputs	16	8 +2 aux + echo	16	6
# of mixing buses	6, 4 groups, mono	2	4	1
Stereo output	Yes	Yes	Yes	Per setup
Output provisions	Line, aux, mon	Pgm, mon/echo	Pgm, aux, mon, send	A/B, monitor
Channel fader type	Slider	Slider	Slider, rotary pan	Rotary and pan
EQ, filtering	Yes	2-band peaking	3-band	80Hz, 160Hz high pass
Test oscillator	Variable	.....	1kHz	1kHz tone
Metering types	VU, 3 pair L&R	Fluorescent	12-LED bar graphs	Single VU movement
Compression limiting	No	.....	No	5:1 slope limiting
Telco interface	No	No	No	No
Power requirements	110-220Vac	120Vac	110Vac or 12Vdc	11 AA cells
Operating weight	.....	18.7 lbs	18 lbs	6 lbs
AF input connections	Balanced	Active bal & unbal	Bal, XLR, unbal RCA	Xfmr bal
Input impedance (load)	600Ω	50-600/10k/25k/50kΩ	10kΩ	>1k/>5kΩ
Input levels	Mic, line switchable	-60dBs mic, -20dBs	-70,-10dB	Mic, line
Output connections	Balanced	Xfmr bal & unbal	Bal XLR, unbal RCA	Xfmr bal w/50dB atten.
Output impedance	600Ω	600/10kΩ	600Ω/10kΩ recorder	<33Ω
Output level	+4dBm	+4dBm pgm	0dB	+16dB into 600Ω
AF response	±0.3dB, 30Hz-20kHz	-2,0dB, 20Hz-20kHz	-2,0dB, 20Hz-20kHz	.....
Distortion	0.1%	<0.2%, +10dBs out	<0.1% +20dB output	.....
Signal noise ratio	>56dB mic, 75dB line	-120dBs EIN	-128dB EIN IHF-Awtd 150Ω	.....
Crosstalk (worst)	<-50dB	<-60dB 1kHz	<-70dB 1kHz Pgm-Aux	.....
Reader Service Number	1026	1027	1028	1029

Manufacturer	Logitek	Micro-Trak	Pacific Recorders & Eng	Precision Design
Model Series	Audiorack	Sport mixers	NewsMixer	ROAM-8
Modular system	No	No	Yes	No
# of inputs	6	5 max	2 per channel	16 (2 per mix channel)
# of mixing buses	2	1	Mix 1, 2	2
Stereo output	No	No	No	Yes
Output provisions	Line, aux, mic, phones	Line, phones	Mix 1,2, tape 1,2	Pgm, mon, aux
Channel fader type	Rotary	Rotary	Rotary	Rotary
EQ, filtering	No	No	Available	Available
Test oscillator	Fixed	None	Yes	30Hz slate tone
Metering types	VU	VU	Dual ANSI VU	Dual ANSI VU
Compression limiting	No	No	Available	Available
Telco interface	No	Yes	Yes	Mix-minus module
Power requirements	120Vac, 12Vdc	110/220Vac, dc	117Vac	117Vac
Operating weight	20 lbs	8 lbs	.....	.....
AF input connections	Active bal	Xfmr bal	Balanced	Balanced
Input impedance (load)	150/600Ω	600/150Ω	30k/40kΩ	>30k/>40kΩ
Input levels	Switchable mic/line	Switchable mic/line	-70,-35dBu; -30,+9dBu	-70,-35dBu; -30,+9dBu
Output connections	Xfmr bal	Xfmr bal/telco	Balanced	Balanced
Output impedance	600Ω	600Ω	30Ω	<40Ω
Output level	0dBm	+8dBm	+24 max	+24dB max
AF response	±0.3dB, 0dBm	Per telco regs	-0.7,0dB, 20Hz-20kHz	-0.7,+0dB, 20Hz-20kHz
Distortion	0.1%, 1kHz, +4dBm	0.5%, 1kHz, +8dBm	<0.01% +24dBm out	<0.01% +24dBm out



# AMBER

## Your TOTAL SOLUTION for Automated Audio Testing



Amber offers the only GPIB based total automated test system package for audio, broadcast and communications testing. The package includes the Amber model 5500, a GPIB Programmable Audio Measurement System with state-of-the-art performance, comprehensive measurement capability, fast operation and modular expansion. Amber AudioCheck™ software runs on any IBM XT/AT compatible computer and can program complete sequences of tests including sweeps, testing against limits, control of other GPIB instruments, storage and retrieval of tests and data and output of hard copy on printers and plotters.

A fully professional system, the Amber 5500 has stereo balanced inputs and outputs and "16-bit digital" performance (distortion to below 0.001% / -100dB, noise below -120dBm/1μV). The 5500 is comprehensive — it can measure THD + N, two kinds of IMD, quantizing distortion, wide band and narrow band level with four selectable bandwidths, crosstalk, frequency and phase. Other options add even more capability. An easy to use smart front panel and non-volatile memory for instrument setups facilitate bench-top operation. A wide selection of noise weighting filters and detectors allows measurement to virtu-

ally any standard including ANSI, DIN, CCIR, IEEE and others.

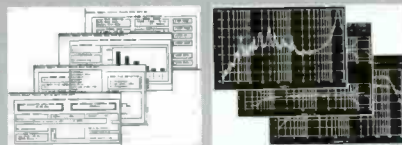
The Amber system is fast. Fast to set up and fast to run. Complex test sequences can be programmed in just minutes using the easy to use AudioCheck™ software program. Intuitive pop-up menus with simple keyboard or mouse selection, resident sample files and context sensitive help screens take the expense and risk out of custom programming. Whether it's a sophisticated family of curves for R & D purposes, a complex product test procedure or a simple Go/No-Go acceptance test, technicians not familiar with programming can be in business just hours after installation.

AudioCheck™ offers unparalleled flexibility in screen and hard copy output. Text, user prompts, bar graphs,



*Amber also makes one of the most popular portable high performance audio measurement systems — the 3501. Half the weight and size of comparable instruments, the 3501 has one of the best reliability records in the industry and was the recent winner of a US Navy requirement for over 400 instruments.*

**DEMO DISK AVAILABLE** An AudioCheck™ demonstration disk and manual with all features except GPIB commands are available for your evaluation. System requirements: MS-DOS computer with 640k RAM and CGA monitor card. Send \$10 for your copy.



XY graphs and messages can be inter-mixed. Hard copy reports on dot matrix printers or multi-color pen plotters can incorporate all of these attributes. Linear and log sweeps with easy selection of range and parameters, even sophisticated asynchronous, reciprocal and adaptive sweeps with complex settling algorithms are just a few keystrokes.

The Amber system uses universal standards such as IEEE-488 and MS-DOS. You can easily integrate other GPIB instruments into the system like RF generators, programmable power supplies, switch matrices, digital multimeters and function generators (although you'll find the modular and expandable 5500 remarkably complete by itself). Your test data is saved on disk in industry standard formats for easy export to your data base, spread sheet, statistical analysis and scientific analysis programs.

Let us show you how easy and powerful the Amber Total Solution is. Call or write for our brochure.

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**amber**

## Audio Mixers, Portable

Manufacturer	Model Series	Logitek Audiotrack	Micro-Trak Sport mixers	Pacific Recorders & Eng		Precision Design ROAM-8
				NewsMixer	StereoMixer	
Signal noise ratio		-114dBm EIN	-120dBm EIN	-126dBu EIN 150Ω source	-126dBu EIN, -88dBu line	.....
Crosstalk (worst)		-70dB 1kHz	.....	<-80dB 1kHz	<-70dB 1kHz	.....
Reader Service Number		1031	1032	1033	1034	1035
Manufacturer	Model Series	Primus Sidekick	Ramko Research P-4MS (P-5MX)	RAMSA/Panasonic Audio		
				WR-M10	WR-133	WR-500
Modular system		No	No	No	No	No
# of inputs		2-line, 2-mic/line	4 (5)	4 mono, 6 stereo	18	8/12
# of mixing buses		1	2 (1)	2	3	3
Stereo output		No	Yes (mono)	Yes	Yes	3
Output provisions		Line, phones	Phones & (line)	Main, record, monitor	Mono, main, record	1 pair
Channel fader type		Rotary	Rotary	Rotary, slider	Proprietary slider	Proprietary slider
EQ, filtering		No	Yes (no)	2-band peaking EQ	2-band peaking	2-band peaking
Test oscillator		Yes	No	No	No	No
Metering types		Vu	LED ladder (no)	Signal, Peak, Clip LEDs	Dual VU movement	Dual VU movements
Compression limiting		Yes	No	Compressor for mono	No	No
Telco interface		No	No	No	No	No
Power requirements		9Vdc	120-240Vac	120Vac, 10W	120Vac	110Vac or 12Vdc
Operating weight		2.5 lbs	.....	13.2 lbs	22 lbs	21.8 lbs
AF input connections		Balanced	Active bal	Active bal, unbal	Bal XLR, unbal RCA/phone	Bal mic/unbal line/phone
Input impedance (load)		Balanced	.....	> 5k/>20k/>50kΩ	10k/20kΩ	600Ω/10kΩ
Input levels		Switchable mic/line	Switchable, mic/line	-60, -6dBu; line, phono	-80, +20dB	-70, +4dB
Output connections		Balanced	Active bal	Xfmr floating, isolated	Bal XLR, unbal phone/RCA	Bal, unbal
Output impedance		Low Z source	600Ω	600Ω	600/10kΩ	600/10kΩ
Output level		+16dBm, 0dBm=0VU	+26dBm max	+4dBu, -10dBu recorder	+4dBm, -10dB record	+4dBm
AF response		<+1.5dB, 20-20k	-1.5,0dB	-1, +0.5dB, 20Hz-20kHz	-2, +0.5dB, 20H-20kHz	-2, +0.05dB, 20Hz-20kHz
Distortion		0.08%, +8dBm	0.008%, 1kHz, +8dBm	0.1% THD, 0.1% IMD	<0.1% THD +18dBm	<0.3% 18dBm output
Signal noise ratio		72dB(m)/90dB(l)	70dB(m), 90dB(l)	-125dBm EIN IHF A-wtd	-129dBm EIN	-128dBm EIN
Crosstalk (worst)		.....	<-65dB 1kHz	-65dB 1kHz	<-65dB 1kHz	.....
Reader Service Number		1036	1037	1038	1039	1040
Manufacturer	Model Series	Rupert Neve 5422 (542 series)	SATT Communications SAM-42	SEEM Audio A/S		Shure Brothers M-267 mix mixer
				SEESAM 2	Pluto 3/1 mini mixer	
Modular system		Yes	No	Yes, multiunit possible	No	No
# of inputs		10	6	8 (to 24)	1 mic/line, 2 mic	4 max
# of mixing buses		2 + 2 aux	2	10	1	1
Stereo output		Yes	Yes	Yes	No	No
Output provisions		Line, 2-aux, phones	Line, phones	line, aux, subgroups	Line, phones	Line, mic, phone
Channel fader type		P&G slider	Slider	P&G sliders	Rotary	Rotary
EQ, filtering		3-band, high-pass	No	Yes	Low-cut	Prefader
Test oscillator		Variable	Fixed tone	.....	1kHz tone	1kHz
Metering types		VU, PPM	PPM, VU opt	Dual LED PPMs	VU	VU, LED
Compression limiting		No	Optional	Output limiters	Yes	Peak limiter
Telco interface		No	Yes	Option	.....	No
Power requirements		120Vac or int Vdc	110-220Vac, ±15Vdc	115-220Vac, +12,24Vdc	6 1.5V cells, ext 9Vdc	120/240Vac, 27Vdc
Operating weight		42 lbs w/batteries	8.5 lbs	.....	6 lbs	5 lbs
AF input connections		Xfmr bal	Xfmr bal	Active, xfmr bal	Balanced	Xfmr bal
Input impedance (load)		1.2k/10kΩ	1k/600Ω	> 1k/600/>10kΩ	1k/10kΩ	150/600Ω
Input levels		Switchable mic/line	Switched mic/line	+6dBm	Switched mic/mic/line	Switchable mic/line
Output connections		Xfmr bal	Xfmr bal	Xfmr bal	Balanced	Xfmr bal
Output impedance		50Ω	600Ω	<40Ω	<40Ω	150/600Ω
Output level		+4, +8, +20dBu, 600Ω	+20dBm, +21dB 5kΩ	+20dBu into 600Ω	+9dB limiting level	+18dBm, -34dBu 150Ω
AF response		±0.5dB	-1, +0.5dB	±0.5dB	±0.5dB, 40-15k	±2dB, +4dBm
Distortion		<0.05%, 30-15k	0.01%, 1kHz, +6dBm	<0.1% 20-20k	0.15% 40-15k, +9dB	0.35% 20kHz, +15dBm
Signal noise ratio		-125dBm EIN	-125dBm EIN	-125dBu EIN, 80dBu	5dB, CCIR 468	-128.5dBm EIN
Crosstalk (worst)		<-60dB 15kHz	-90dB 15kHz	.....	.....	.....
Reader Service Number		1041	1042	1043	1044	1045
Manufacturer	Model Series	Shure Brothers FP42 (FP51) mic	Shure Brothers FP32 (FP31) ENG	Sonosax		Sony/Pro Audio MX-P61
				SX-PR6 (-PR2, -PR4)	SX-S series (SX-V)	
Modular system		No	No	Yes	Yes	Yes
# of inputs		4 max	3 max	6 (2, 4)	6, 8, 10 (10)	17
# of mixing buses		2 (1)	2 (1)	3	5	7
Stereo output		Yes (No)	Yes (no)	Yes	Yes	Yes
Output provisions		Line, phones, mic	Line, aux, mic, phones	R/L line, phone	Line, aux, phones	Line, aux, phones



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## MC-200/MC-300 PEDESTALS



Featuring Canon's sophisticated Modular Cassette Counterbalance (MCC) system that makes them far lighter and more mobile, Canon pedestals also feature a very short mounting height, making them ideal for low-angle shooting.

**MC-200**  
Maximum Mounting Weight: 286 lbs.  
Elevation: 24-49 inches  
**MC-300**  
Maximum Mounting Weight: 242 lbs.  
Elevation: 23-60 inches

## TR-60/TR-90 TRIPODS



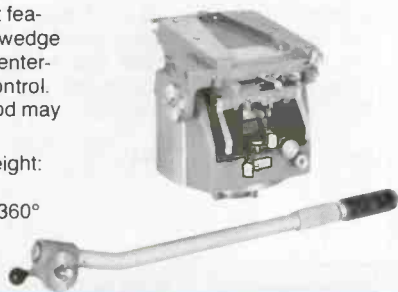
Featuring collapsible tubular leg construction, integral spreaders, flip-tip legs with spikes and rubber padding.  
**TR-60**  
Maximum Mounting Weight: 132 lbs.  
Elevation: 20-45 inches

**TR-90**  
Maximum Mounting Weight: 198 lbs.  
Elevation: 26-48 inches

## SC-15 CAM HEAD

Designed for use with all pedestals and tripods, it features a convenient "V" wedge mounting system and center-of-gravity adjustment control. The modular panning rod may be used on both sides.

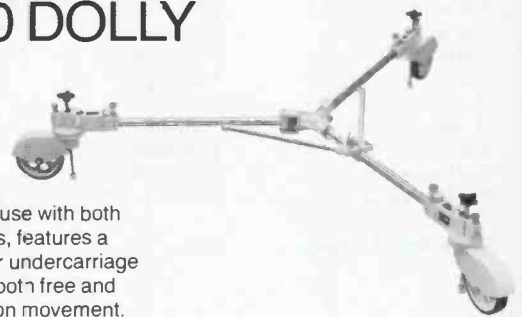
Maximum Mounting Weight: 330 lbs.  
Tilting:  $\pm 50^\circ$  Panning:  $360^\circ$



## CD-10 DOLLY

Designed for use with both Canon tripods, features a tricycle caster undercarriage that enables both free and single-direction movement.

Maximum Mounting Weight: 198 lbs.



For years, broadcasters have made Canon lenses a top choice for studio, field and news production because they know and trust Canon's proven commitment to quality and value.

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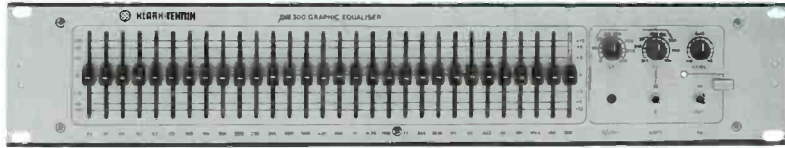
## Audio Mixers, Portable

Manufacturer	Shure Brothers	Sonosax	Sony/Pro Audio		
<b>Model Series</b>	<b>FP42 (FP51) mic</b>	<b>FP32 (FP31) ENG</b>	<b>SX-PR6 (-PR2, -PR4)</b>	<b>SX-S series (SX-V)</b>	<b>MX-P61</b>
Channel fader type	Rotary	Rotary	Rotary	Slider	Slider
EQ, filtering	Low cut	Prefader	Low cut	Yes	Prefader
Test oscillator	Yes	Fixed	1kHz	Fixed	1kHz fixed
Metering types	Dual VU	VU, LED	LED VU ladder	PPM, LED	VU, PPM, LED
Compression limiting	Limiting (40dB compress)	Limiting	Yes	Yes	Limiting
Telco interface	No	No	.....	No	No
Power requirements	120-240Vac, 27Vdc	18Vdc	3 C cells, ext 6-12Vdc	9-18Vdc (D cells)	12Vdc, 110-220Vac
Operating weight	6.5 lbs	2.5 lbs	5 (3, 4) lbs	15 lbs	40.3 lbs
AF input connections	Xfmr bal	Xfmr bal	Active bal	Xfmr & (active bal)	Active bal
Input impedance (load)	1k/66k $\Omega$	150/600 $\Omega$	10k $\Omega$	600 $\Omega$ (5k/10k $\Omega$ )	10k $\Omega$
Input levels	Switched, mic/line	Switchable, mic/line	Mic, line switched	Switchable mic/line	Mic, line
Output connections	Xfmr bal	Xfmr bal	Floating bal	Xfmr, active bal	Active bal
Output impedance	$\leq 1\Omega$ , 185 $\Omega$ source	150/600 $\Omega$	2k/10k $\Omega$	50 $\Omega$	150 $\Omega$
Output level	+18dBm, -34dBv 150 $\Omega$	+18dBm, -34dBv 150 $\Omega$	+18dBu, +21dBu max	+18dBm	+24dBm
AF response	$\pm 0.2$ dB, +4dBm	$\pm 2$ dB, +4dBm	$\pm 0.5$ dB, 30-20k	$\pm 0.5$ dB, +6dBm	$\pm 0.5$ dB, 30Hz-20kHz
Distortion	0.4%, 20kHz, +15dBm	0.25%, 20kHz, +4dBm	0.03%	0.01%, 1kHz, +6dBm	<0.1% 1kHz +4dBm
Signal noise ratio	-129dBm EIN	-129dBm EIN	-129dBm EIN 150 $\Omega$ source	-129dBm EIN	-125dBm DIN
Crosstalk (worst)	<-40dB 10kHz	<-40dB 10kHz	.....	-80dB 1kHz	-70dB 15kHz
<b>Reader Service Number</b>	<b>1046</b>	<b>1047</b>	<b>1048</b>	<b>1049</b>	<b>1050</b>
<b>Manufacturer</b>	<b>Sony/Pro Audio</b>	<b>Soundtracs/AKG</b>	<b>SON Electronics</b>	<b>Stellavox</b>	<b>Studer ReVox</b>
<b>Model Series</b>	<b>MX-P42 (-P21)</b>	<b>PC MIDI series</b>	<b>SON-4S (SON-3 type M)</b>	<b>AMI-48</b>	<b>C279 (expander opt)</b>
Modular system	No	Yes	No	.....	No
# of inputs	6 (22)	32 or 48	4	10 max	6 mic/line/phone
# of mixing buses	2 (4)	25	2 (1)	1	Pgm, aux
Stereo output	Yes	Yes	Yes (no)	Yes	Yes
Output provisions	Line/mic/phones	Line, aux, mon	Line, aux, mic, phones	Line, aux, phone	Pgm, aux send, channel
Channel fader type	Rotary (slider)	Slider†	Rotary	Slider	Slider/VCA, rotary pan
EQ, filtering	Prefader	4-band param/shelving	Bass cut	Yes	LF, HF shelving
Test oscillator	None (fixed)	4-tone	Variable (fixed)	Fixed	IN expander
Metering types	VU (& LED)	Bargraph	VU or (PPM)	PPM	LED ladder PPM
Compression limiting	Compression (No)	Sidechain opt	Peak limiting	Yes	Ext opt
Telco interface	No	No	No	No	No
Power requirements	9Vdc (12Vdc/120Vac)	Ext ac	$\pm 6-24$ Vdc ( $\pm 5-18$ Vdc)	18Vdc	110-240Vac
Operating weight	8.6 lbs (28 lbs)	90 or 121	4.75 (2.75) lbs	9 lbs	24.2 lbs
AF input connections	Xfmr (active bal)	Active bal, unbal	Xfmr bal	Bal	Bal mono, unbal stereo
Input impedance (load)	600 $\Omega$	2k/10k $\Omega$	2k $\Omega$	600 $\Omega$	>1.2k/4.7k $\Omega$
Input levels	Mic, line	Mic, line switched	4 mic/line (3/1)	Switched mic/line	-66,-6dBv; -26, +10dBv
Output connections	Xfmr (active bal)	Unbalanced	Xfmr bal	Balanced	Bal, unbal
Output impedance	600 $\Omega$ loading	50 $\Omega$ source	150 $\Omega$	200/600 $\Omega$	<1k $\Omega$ unbal, <50 $\Omega$ bal
Output level	+4dBm	+22dBm max	+18dBm	+6 or +15dBm	+6, +10, +14dBu bal
AF response	$\pm 1(0.5)$ dB, +4dBm	-2dB, 25Hz-20kHz	-1dB, +4dBm	-1dB at +6dBm	$\pm 1$ dB, 20Hz-20kHz
Distortion	0.1% (0.03%) +4dBm	<0.015% THD/IMD	<0.1%, 20-20k, +15dBm	0.03%, 1kHz, +6dBm	<0.03%
Signal noise ratio	-125dBm EIN	-127dBm EIN, 80dB	-125dBm EIN	-125dBm EIN	-125dBv EIN, 86dB line
Crosstalk (worst)	<-70dB (-60dB)	-80dB 1kHz	-60dB 15kHz	-80dB 1kHz	.....
<b>Reader Service Number</b>	<b>1051</b>	<b>1052</b>	<b>1053</b>	<b>1054</b>	<b>1055</b>
<b>Manufacturer</b>	<b>Studer ReVox</b>	<b>TASCAM</b>	<b>Telfax Communications</b>		
<b>Model Series</b>	<b>Model 069</b>	<b>Model 961/962</b>	<b>246 Portastudio</b>	<b>M-208 (M-216)</b>	<b>TFX-131B (TFX-31C)</b>
Modular system	Yes	Yes	No	No	No
# of inputs	3 max	.....	6 mic/line + buses	32 (58)	4 M/2 L (3/1)
# of mixing buses	2	6	4	4 + 2	1
Stereo output	No	Yes	4-channel	Yes	No
Output provisions	Line, aux, phones	Line, aux, phones	Line/direct to tape	Line, aux, phones	Telco line, phones
Channel fader type	Slider	Slider	Slider	Slider	Rotary
EQ, filtering	Prefader	Yes	Yes	Prefader, 3-band	No
Test oscillator	Fixed tones	Variable	None	None	No
Metering types	VU or PPM	VU or PPM	VU, peak LED	VU	VU
Compression limiting	Yes	Limit & compress	dbx NRS	No	No
Telco interface	Yes	.....	No	No	DTMF or (dial pulse)
Power requirements	110Vac, 12Vdc	110Vac or dc	110Vac	ac	20Vac, 24Vdc
Operating weight	19 lbs	35 lbs with batteries	22.7 lbs	18.75 (26.5)	5 (4) lbs
AF input connections	Xfmr bal	Balanced	Unbal	Active bal, unbal	Unbal & bal
Input impedance (load)	>5k $\Omega$	.....	10k $\Omega$	2.8k/22k $\Omega$	150/600 $\Omega$
Input levels	Switchable mic, line	-70,-10dBu; -10,+20dBu	Switchable mic/line	-70dBV, +24dBV range	Mic or line
Output connections	Xfmr bal	Balanced	Unbal	Unbalanced	Unbal, bal
Output impedance	600 $\Omega$ loading	<50 $\Omega$	100 $\Omega$	<100 $\Omega$	600/10k $\Omega$



30 band 1/3 octave graphic equaliser - Frequency response  $\pm 0.5\text{dB}$  (20Hz - 20kHz), Distortion (+4dBm) $<0.01\%$  at 1kHz, Equivalent input noise  $<-90\text{dBm}$ , Auto-bypass failsafe, Low and High pass variable filters, Balanced XLR input and output.

Also available for stereo applications DN360 Dual Channel 30 band 1/3 octave graphic equaliser.



# DN300

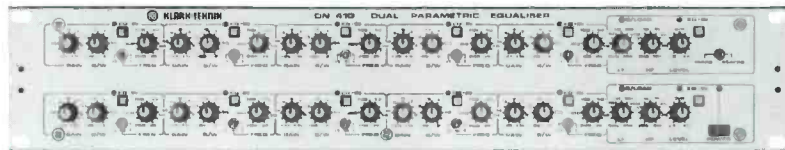
## GRAPHIC EQUALISER



Why the world's leading broadcast system designers confidently specify Klark-Teknik

Dual channel 5 band parametric equaliser - Frequency response  $\pm 0.5\text{dB}$  (20Hz - 20kHz), Distortion (+4dBm) $<0.01\%$  at 1kHz, Equivalent input noise  $<-90\text{dBm}$ , 100% Frequency overlap for each filter + variable bandwidth, Bypass, XLR inputs and outputs.

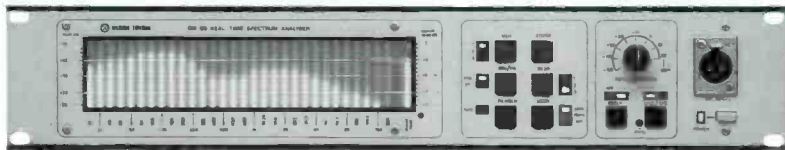
Also available DN405 Single Channel 5 band parametric equaliser.



# DN410

## PARAMETRIC EQUALISER

Real time audio spectrum analyser - 30 band 1/3 octave + overall level, LED display, Pink noise source, Mic/line XLR input, AT1 measuring microphone, X-Y plotter output, Add-on reverbation analyser available.



# DN60

## SPECTRUM ANALYSER

They rely on .....

■ Klark-Teknik's proven ability to consistently manufacture products which meet or exceed the most stringent system specifications

One input-three outputs digital delay line - Frequency response  $\pm 1\text{dB}$  (20Hz-20kHz), Distortion $<0.01\%$  at 1kHz, Dynamic range $>90\text{dB}$ , Minimum increment 20 micro sec, Delay range 0-1.311 sec, Digital conversion 16 Bit Linear, XLR terminated input and outputs.

Also available DN773 Stereo 10 sec. digital delay line.



# DN716

## DIGITAL DELAY LINE

■ Engineering integrity that guarantees the most durable and outstanding product quality in the industry

■ Klark-Teknik's renowned "reliability control" - assuring dependable system performance

Digital reverbation system - Bandwidth (reverb mode) 20Hz-12kHz, Distortion  $<0.03\%$  at 1kHz, Dynamic range 85dB, Digital conversion 16 Bit Linear, Arithmetic processor 32 Bit, Stereo processing, Balanced XLR input and outputs, 7 parameter control, 28 programme library, 50 user memories, Midi interface, Updatable programming, Remote control.



# DN780

## DIGITAL REVERB

■ The sonic excellence of Klark-Teknik audio engineering

■ Consistent ability to satisfy supply schedules

■ Unparalleled international technical support

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Tel: (516) 249-3660 Fax No: (516) 420-1863

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## Audio Mixers, Portable

Manufacturer	Studer ReVox		TASCAM		Telfax Communications TFX-131B (TFX-31C)
	Model Series	Model 069	Model 961/962	246 Portastudio	
Output level	+6, +15dBu to 600Ω	24dBm, 2.4dBu 300Ω	10dBV	+20dBu max	+4dBm = 0VU
AF response	-1, +0.5dB, 40Hz-15kHz	-1, +0.5dB +4dBm	±1dB	-2, +1dB, 20Hz-25kHz	±3dB, 90-15k
Distortion	0.1%, 1kHz, +15dBm	0.03%, 30Hz-15kHz	0.05%, 1kHz	<0.03%, -10dBV input	<1%, +14dBm clipping
Signal noise ratio	-93dB	-125dBm EIN	>65dB THF A-wtd	-128dB IHF A-wtd	.....
Crosstalk (worst)	-78dB 40Hz-15kHz	<-80dB 15kHz	-65dB 1kHz	<-60dB 1kHz	.....
Reader Service Number	1056	1057	1058	1059	1060

Manufacturer	Ward-Beck Systems		Yamaha International		M508/M512
	Model Series	T-1202A	EMX200/EMX300	MC1204/-1604/-2404	
Modular system	No	Yes	Yes	Yes	Yes
# of inputs	11	24	8/12	12/16/24 + sub inputs	8/12
# of mixing buses	1	3	L-R, FB, echo	4 + 2 + 2 + cue	L-R, FB, echo
Stereo output	Yes	No	Yes	Yes	Yes
Output provisions	Tape, PA, phones	Line, phones	Line, EQ, phone, FB	Line/phone/grp/FB/echo	Line/FB/phones/echo
Channel fader type	Rotary	Slider	Slider	Slider	Slider
EQ, filtering	R/L tone controls	Yes	3-band EQ	3-band	3-band EQ
Test oscillator	No	1kHz fixed	.....	.....	No
Metering types	None	VU or PPM opt	VU, peak LED	VU, peak LED	VU
Compression limiting	No	No	Internal delay	.....	No
Telco interface	No	Yes	No	No	No
Power requirements	110, 220Vac	115-230Vac	110Vac	120Vac	110Vac
Operating weight	13 lbs, rack-mount	120 lbs	68/77 lbs	48/57/74 lbs	34/44 lbs
AF input connections	Bal, unbal	Xfmr	Bal, unbal	Bal & unbal	Bal & unbal
Input impedance (load)	150/10k/47kΩ	1.5k/30kΩ	1k/10kΩ	4k/10kΩ	600/1k/2k/4k/10kΩ
Input levels	Mic, line, phono	Mic, line	Mic, line	Mic, line	Mic, line
Output connections	Bal, unbal	Balanced	Unbal	Bal & unbal	Balanced
Output impedance	<50Ω	.....	370KOC5W	150Ω	150Ω source
Output level	+20dB max in 200 Ω	+8dBm=0VU	+20dB (7.75V)	+20dB max	+24dB max
AF response	±1dB, 20Hz-20kHz	±1dB ref +8dBm	-3, +3dB 20Hz-20kHz	-3, +1dB 20Hz-20kHz	-3, +1dB 20Hz-20kHz
Distortion	<0.1% +4dB	0.25% 20kHz +18dBm	<0.2%	<0.1%	<0.5% 20Hz-20kHz
Signal noise ratio	<-126dB EIN	-125dBm EIN, 75dB	-126dB EIN (66dB)	-128dB EIN	-127dB EIN
Crosstalk (worst)	.....	-70dB 15kHz	-60dB	-60dB 1kHz	-60dB
Reader Service Number	1061	1062	1063	1064	1065

## Audio Mixers, Studio/Production

The stereo production mixers in this category include direct out, multitrack recording outputs unless marked with a diamond (◆). Input and output connections are abbreviated AB (active balanced) and TB (transformer balanced). A dagger (†) indicates no remote machine start/stop switching. Systems not specifically stating automation preparation are noted with a double dagger (‡). In audio frequency ranges, Hz is understood.

Manufacturer	ADM Technology		AMEK Systems & Controls		
	Model/Series	Post-Pro 12†	VP series†	APC-1000	Angela M65†
Modular construction	Yes	Yes	Yes	Yes	Yes
Mixing positions	12	16 max	150	65	48 (64)
Mixing buses	2	3	64	24	24 (24)‡ux
Patch points	No	No	Routing keyboard	Yes	Yes
Fader types	Slider	Slider	P&G moving fader/VCA	Slider	P&G slider w/VCA's
Equalizer	3-band	4-band	4-band	4-band	4-band
Filtering	High, low-pass	.....	High, low-pass	High, low-pass	High, low-pass
Panpots	No	Yes	Yes	Yes	Yes
Grouping	2 groups	3 groups	10 subs	4 stereo subs	Multiple
Sends-returns	None	1-pre, 1-post	8 send pre/post	6 each pre/post	Multiple
Solo bus	None	PFL	AFL/PFL/in-place	AFL/PFL/in-place	AFL/in-place
Compression/limiting	No	Yes	Compress, expand	No	Option
Talkback/muting	Yes	Yes/No	With routing	Yes	W/routing
Lineup oscillator	Fixed frequency	Variable	Yes	Variable	Variable
Metering types	VU	VU/PPM	Plasma	VU/LED	200-seg plasma
Input connections	Bal 600Ω	TB 600Ω	AB 150Ω	AB 150Ω	AB 1k(m)/10k(L)Ω
Output connection	Bal 600Ω	Xfmr 600Ω	Bal 150Ω	Unbal 150Ω	Unbal 150Ω
Output levels	8dBm	8dBm = 0VU	22dBv	21dBm	22dBm
AF response	±0.4dB	±1dB 24dBm	±1dB 4dBm	±1dB 4dBm	±1dB 4dBm ref
Distortion	0.05% 1kHz 24dBm	0.07% 1kHz 24dBm	0.02% 1kHz 10dBm	0.02% 1kHz 10dBm	<0.2% 1kHz 10dBm
S/N ratio	75dB line	-125.5dBm EIN/72dB	-128dBm EIN mic	-128dBm EIN mic	-127dBm EIN mic
Crosstalk (worst)	-85dB 1kHz 8dBm	-72dB 100-10k 8dBm	-80dB 1kHz	-80dB 1kHz	-78dB 1kHz
Reader Service Number	1287	1288	1289	1290	1291



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## Audio Mixers, Studio/Production

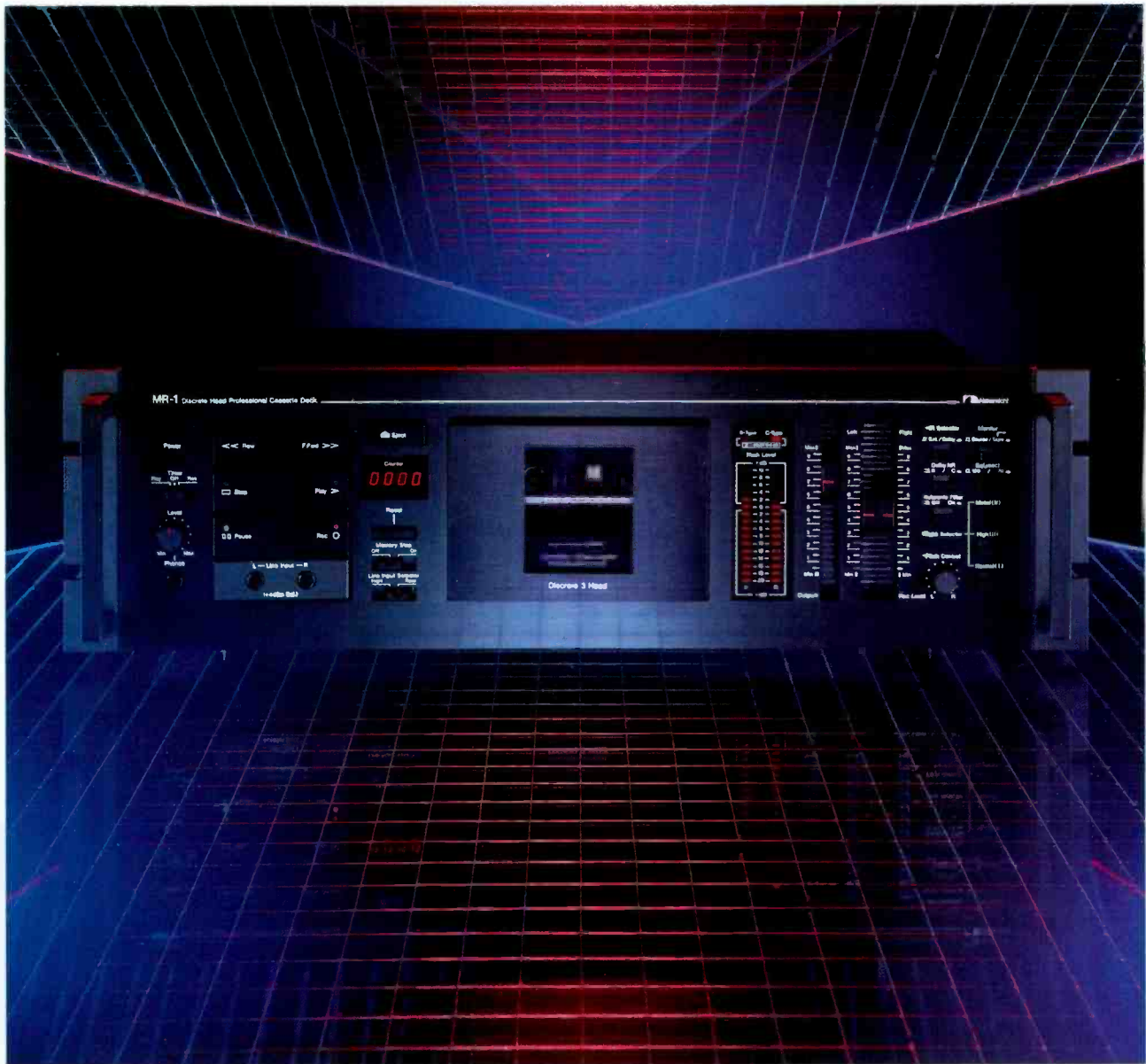
Manufacturer	Arrakis Systems	Auditronics	Audix Ltd	Calrec by AMS
Model/Series	Model 10000†	Series 310	MXT 1200 series‡	AAT3000 assignable Assignable console
Modular construction	Yes	Yes	Yes	Yes
Mixing positions	18, 24, 30	32	48	24-100
Mixing buses	Pgm/aud/util/mono	4-8 + 2 + 1	8	24 + 8 + 2
Patch points	Yes	Yes	Yes	Computer control
Fader types	P&G slider	Slider	Slider	Slider (VCA opt)
Equalizer	3-band	Peak/shelf/swept	4-band	4-band
Filtering	High, low-pass	High, low-pass	High-pass	.....
Panpots	Yes	Yes	Yes	Yes
Grouping	4 or 8	4 or 8	8 each	24, 8 aux
Sends-returns	2 aux send	2-4 pre & post	4 pre, post	Various
Solo bus	Yes	In-place	AFL/PRL	In-place
Compression/limiting	No	Accessory	Yes	.....
Talkback/muting	Yes	Accessory/No	Yes	Yes
Lineup oscillator	Multi-tone	11-frequency	Variable	Yes
Metering types	VU	VU (PPM opt)	VU, LED PPM	VU, bargraph
Input connections	AB low/high-Z	AB > 1.5k/50kΩ	TB 1.2k/10kΩ	Bal/unbal 1.2k/10kΩ
Output connection	AB 600Ω	AB < 60Ω	TB 150Ω	Bal/unbal 150Ω
Output levels	27dB	4dBv ref 0.775Vrms	24dBm max	24dBm max
AF response	± 1dB 20-20k	0, -0.5dB 20-20k	± 0.5dB 24dBm	± 0.5dB 24dBm
Distortion	0.1%	< 0.05% THD 20-20k	0.1% 18dBm	0.05% 18dBm
S/N ratio	-100dB line	< -129dB EIN/> 84dB	-125dBm EIN/80dB	< -125dBm EIN
Crosstalk (worst)	-80dB 20kHz	< -65dB 20-20k	-70dB 18dBm	< -70dB 18dBm
Reader Service Number	1292	1293	1294	1295

Manufacturer	Calrec by AMS	D&R Electronica	DDA/Klark-Teknik	Digitec
Model/Series	UA8000 M studio (M OB)	8000 series III	AMR-24	UPS6500
Modular construction	Yes	Yes	Yes	P control
Mixing positions	64 max	To 64	24	24-48
Mixing buses	32	24grp/8sub/4main/aux	8 groups	8-16
Patch points	Yes	Yes	96 points	P controlled
Fader types	Slider	Slider	ALPS slider (P&G opt)	Slider/VCA control
Equalizer	4-band	3/4-band	4-band	3-band
Filtering	High, low-pass	High, low-pass	High-pass	High, low-pass
Panpots	Yes	Yes	Yes	Yes
Grouping	32 S/9 R	32 total	8 groups	8-16 groups
Sends-returns	Pre & post	Pre & post	8 aux send, pre/post	6/in monitor system
Solo bus	AFL/PFL/in-place	PFL/AFL/in-place	PFL/in-place	Yes
Compression/limiting	Yes	Option	Accessory	.....
Talkback/muting	Yes	Available	Yes	Yes
Lineup oscillator	Variable	6-tone/slate/pink	9-tone, slate	6-frequency
Metering types	Bargraph	Bargraph	LED bargraph	VU (PPM/bar graph)
Input connections	TB/AB 20kΩ	TB/AB 1.2k/10k/20kΩ	AB > 4kΩ	TB > 1k/5kΩ
Output connection	AB < 22Ω	TB 600Ω	100Ω	TB < 20Ω
Output levels	26dBm max	22dBu max	26dB, 1kΩ	12dB nom, 22dB max
AF response	± 0.25dB 4dBm	± 0.5dB 30-15k	-0.5dB 20-20k	-1, +0.5dB 30-20k
Distortion	0.007% 1kHz 20dBm	< 0.01% 40-16k	0.009% 1kHz	< 0.2% typical
S/N ratio	80dB	< -127dBm/-80dBu	-128dB EIN/-96.5dB	< -125dBm EIN
Crosstalk (worst)	-80dB 100-10k 4dBm	.....	< -79dB 100-10k	< -80dB 20kHz
Reader Service Number	1297	1298	1299	610

Manufacturer	EELA Audio	Fostex	Graham-Patten Systems	Grass Valley Group	Harrison Systems
Model/Series	S-3000† (S-300‡)	450†‡ (450-16)	ESAM† 608, 612, 616	AMX-90	TV-4 (TV-3)
Modular construction	Yes	No	No	Yes	Yes
Mixing positions	.....	8 (16)	8, 12, 16 channel	.....	60
Mixing buses	30 (13)	7	Stereo pgm, pw	3	10 (8) stereo
Patch points	Yes	.....	No	No	Yes
Fader types	Slider	Slider	Slider w/VCA	.....	Slider
Equalizer	Shelving, swept	3-band	Sidechain	None	3-band
Filtering	High, low-pass	No	.....	.....	High (& low) pass
Panpots	Yes	Yes	No	No	Yes
Grouping	9 grps (variable)	4x2	No	.....	8
Sends-returns	4 each	2 pre/3 post	No	.....	6 each (6 pre)
Solo bus	AFL (PFL)	AFL	No	PFL	AFL/PFL/in-place
Compression/limiting	No (Yes)	No	Sidechain accessory	No	No
Talkback/muting	Yes/No	None	No	Yes	Yes
Lineup oscillator	Yes	No	No	Fixed	Variable
Metering types	VU, PPM	VU/PPM/LED	VU, PPM	VU, PPM	VU, PPM, LED
Input connections	AB (& TB) 1.2k/10kΩ	AB/unbal 1.2k/10kΩ	AB > 20kΩ	Bal > 1kΩ	AB 150Ω



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## Audio Mixers, Studio/Production

Manufacturer	EELA Audio	Fostex	Graham-Patten Systems	Grass Valley Group	Harrison Systems
Model/Series	S-3000† (S-3000‡)	450†‡ (450-16)	ESAM† 60B, 612, 616	AMX-90	TV-4 (TV-3)
Output connection	AB (& TB <40Ω)	Unbal 600Ω	AB <30Ω	Bal <20Ω	AB 600Ω
Output levels	..... (20dBm max)	10dBv into 10Ω	30dBm max	12dBm	24dBm
AF response	± 1dB	-2, +1dB ref -10dBv	± 0.5dB	± 0.5dB 30-20k	± 0.2dB 4dBm
Distortion	0.01% (0.06%)	0.05% 1kHz -10dBv	<0.1% for 16dBm	0.2%	.....
S/N ratio	-127dBm EIN (-126dBm)	-126dBm EIN	100dB per input	-125dBm EIN	-129dBm EIN mic
Crosstalk (worst)	-76dB 1k/(-61 15k)	-60dB 1kHz -10dBv	< -82dB 15kHz	-70dB 10k-20k	-65dB 15kHz
Reader Service Number	463	464	465	466	467
Manufacturer	JVC	Logitek	McCurdy Radio	Mitsubishi Pro Audio	Neve Electronics
Model/Series	◆MI-2000U†‡	◆Custom Audio Series	SS8900E‡	Westar 8000 (8200†)	Digital transfer
Modular construction	No	Yes	Yes	Yes	.....
Mixing positions	8	12	32 std	.....	.....
Mixing buses	Pgm, aux, mon	2	8 sub, 2 mstr	24	1 digital, 1 analog
Patch points	No	No	Yes	Yes	No
Fader types	Slider	Slider	Slider	Slider	Slider
Equalizer	3-band	3-band	3/4-band	4-band	Formant Spectrum EQ
Filtering	None	..	High pass	High, low-pass	High, low-pass
Panpots	Yes	Yes	Yes	Yes	.....
Grouping	.....	No	8 sub, 2 mstr	8 groups	No
Sends-returns	Through aux	No	4 switch selected	8 pre, 8 post	Yes
Solo bus	PFL	..	In-place	In-place, AFL, PFL	.....
Compression/limiting	No	No	No	Option (No)	Limit/compress/expand
Talkback/muting	Yes	Yes	Option	Yes/No	No
Lineup oscillator	1kHz	No	No	Variable	.....
Metering types	None, peak LED	Vu	VU, PPM	VU, PPM, LED	Bar graph
Input connections	Low-Z, 10k/50kΩ	AB 150/600Ω	AB/TB 150/600Ω	TB/AB 10kΩ	Bal digital 75/50kΩ
Output connection	Bal/unbal 600/10kΩ	AB 600Ω	AB 150/600Ω	TB/AB 30Ω(75Ω)	AB 50Ω analog
Output levels	0dBm	4dBm nominal	24dBm max	28dBm max (26dBm)	12dBu
AF response	-2dB 20-20k mic	± 0.5dB 4dBm	± 1dB 30-20k	± 0.5dB (-0.7dB)	.....
Distortion	<0.3% 30-20k 20dB	0.04% 1kHz 4dBm	0.01% 18dBm	0.05%	.....
S/N ratio	-128dB EIN 150Ω	-126dBm EIN mic	-125dBm EIN	-129dBm (-127dBm) EIN	.....
Crosstalk (worst)	-70dB 1kHz pgm/aux	-80dB 1kHz 8dBm	<-65dB 30-20kHz	-70dB (-90dB)	.....
Reader Service Number	468	469	470	471	472



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## Audio Mixers, Studio/Production

Manufacturer	Neve Electronics	Orion Research	Ramko Research	RAMSA/Panasonic Audio	
Model/Series	Model 8232	V series	AMU series	◆DC38-10S‡ WR-T812‡ (T820)	
Modular construction	Yes	Yes	Yes	No	Yes
Mixing positions	32	60	32	10 max	12 (20)
Mixing buses	4+6 aux	4+8 aux	8 stereo	2	10
Patch points	Yes	Yes	Yes	No	No
Fader types	P&G slider	P&G slider	Slider	Slider	Slider
Equalizer	4-band	4-band	7-band	No	3-band
Filtering	High, low-pass	High, low-pass	High, low-pass	No	High pass
Panpots	Yes	Yes	Yes	No	Yes
Grouping	8 VCA optional	To 48/48	2/2 all stereo	No	8 groups
Sends-returns	6 pre/post switched	8 pre/post switchable	4 pre/post	No	12 (20)
Solo bus	AFL, in-place	AFL/PFL/in-place	PFL	None	Pre-fader
Compression/limiting	No	Yes	No	No	No
Talkback/muting	Yes	Yes	Yes	Yes	Yes
Lineup oscillator	Variable	Variable	Variable	Yes	1kHz/10kHz/slate
Metering types	VU+PPM, plasma	VU+PPM, plasma	VU/LED	LED	VU, bar graph
Input connections	TB/AB 1.2k/20kΩ	TB/AB 1.2k/10kΩ	AB 10kΩ	Bal 150Ω, high-Z	AB 5k/10kΩ
Output connection	TB/unbal 10Ω	AB 15Ω	Bal 600Ω	Bal 600Ω	600/3kΩ
Output levels	4/8dBm, 22dBm max	4/8dBm, 26dBm max	27dBm max	8dBm nom	20dB
AF response	±0.5dB 4/8dBm/0VU	±0.5dB 4/8dBm	±0.5dB 8dBm	-2dB ref 8dBm	-0.8, +0.5dB 20-20k
Distortion	<0.06% 100-10k 20dB	<0.04% 20-20k 20dBm	0.05% 20kHz 8dBm	0.5% 8dBm	0.08% 18dB 20-20k
S/N ratio	-124dBm EIN/76dB	-125dBm EIN/80dB	-128dBm EIN/-112dBm	63dB	-132dB typical
Crosstalk (worst)	-60dB 15kHz 20dBm	-80dB 20kHz 20dBm	-85dB 1kHz 8dBm	-70dB 1kHz 8dBm	60dB 1kHz
Reader Service Number	473	474	475	476	477

Manufacturer	RAMSA/Panasonic Audio	Solid State Logic	Sonosax	Sony Pro Audio	
Model/Series	WR-8616‡ (8428)	SL 6000 E stereo video	SL 4000 E series Master SX-T	MXP-2036	
Modular construction	Yes	Yes	Yes	No	Yes
Mixing positions	16 (28)	64	64	14	32
Mixing buses	11 (10)	6	4	10	4
Patch points	No	Yes	Yes	Yes	.....
Fader types	Sliders	Slider	Slider	Slider	Slider
Equalizer	3-band	4-band	4-band	3-band	3-band

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## Audio Mixers, Studio/Production

Manufacturer	.RAMSA/Panasonic Audio	Solid State Logic	Sonosax	Sony Pro Audio
Model/Series	WR-8616† (8428)	SL 6000 E stereo video	SL 4000 E series Master SX-T	MXP-2036
Filtering	High, low-pass	High, low-pass	High, low-pass	High-pass
Panpots	Yes	Yes	Yes	Yes
Grouping	2 (4) groups	32/8+6	32/8 VCA	4 groups
Sends-returns	2 + 2 effects	6 pre, 6 post	4 pre/post, 4 return	....
Solo bus	Yes	AFL, PFL, in-place	AFL, PFL, in-place	Yes
Compression/limiting	No	Yes	Expander/gate	Available
Speaker muting	Option	Yes	Yes	Yes
Lineup oscillator	1kHz/slate	Variable	Variable	Fixed frequency
Metering types	Bar graph & VU	VU, PPM, Bargraph	VU, PPM, plasma	PPM, LED
Input connections	AB 150/600Ω	600/35Ω	TB/AB 600Ω	TB/AB 5kΩ
Output connection	AB 600Ω load	Bal <35Ω	AB <35Ω	TB/AB 25Ω
Output levels	23(24)dBm max	26dBm 600Ω	26dBm 600Ω	26dBm max
AF response	-1.5, +0.5dB 20-20k	±0.5dB	±0.5dB 4dBm	±0.1dB
Distortion	0.05% 1kHz	0.03% 1kHz 4dBm	0.03% 1kHz 4dBm	0.02% 1kHz 6dBm
S/N ratio	-132dB (<-127dB)	-128.5dBm EIN mic	84dB	-129dBm EIN/-115dBm
Crosstalk (worst)	<-60dB 1kHz	-64dB 10kHz 4dBm	-64dB 10kHz 4dBm	-80dBm 1kHz 6dBm
Reader Service Number	478	479	480	481

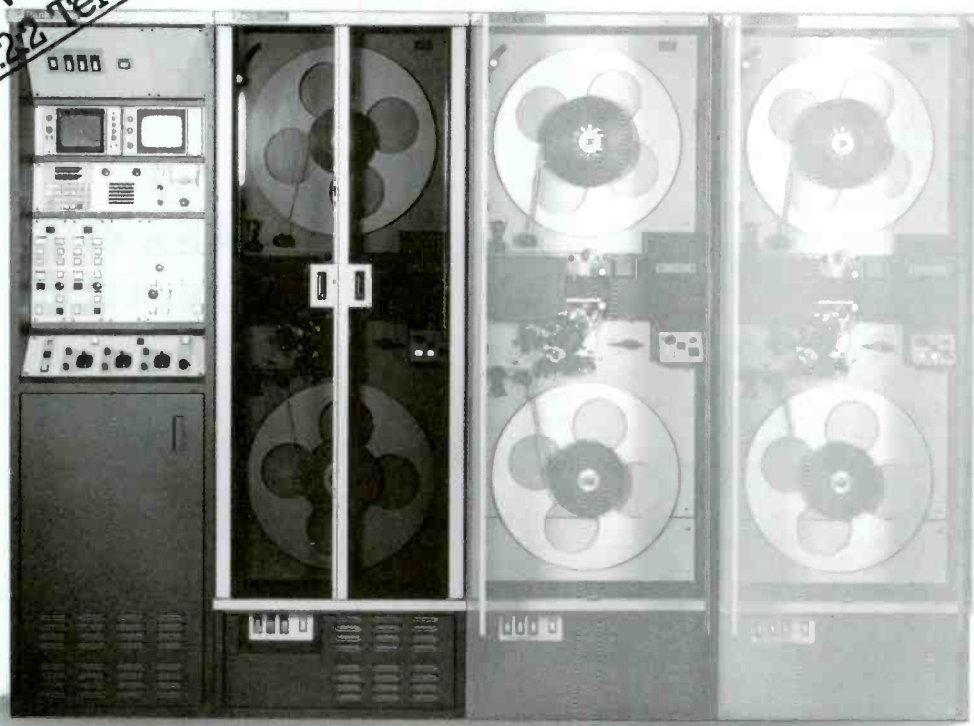
Manufacturer	.Sony Pro Audio	Soundcraft	Soundtracs/AGK Acoustics	Studer ReVox
Model/Series	MXP-3000 series	TS-12	CP6800 series MR series†	Model 963†
Modular construction	Yes	Yes	Yes	Yes
Mixing positions	18-52	24, 36	24+8	60-in/4sub/4-master
Mixing buses	3	Mix, channel	8 + 2	4-8sub/4master/4aux
Patch points	.....	Yes	.....	To +6dB
Fader types	Slider	Sliders	Sliders	Slider
Equalizer	Shelving/parametric	4-band	5-band	3-band
Filtering	High, low-pass	High-pass	High-pass	High-pass
Panpots	Yes	Yes	Yes	Yes
Grouping	8	12/8	Various config	4 or 8
Sends-returns	6 pre/8 post	6 pre/8 post	Various config	4 pre/post switched
Solo bus	PFL/in-place	PFL, in-place	In-place	Post-fader
Compression/limiting	No	.....	.....	Per channel/system
Talkback/muting	Yes	Yes	Yes	Yes
Lineup oscillator	Variable	Yes	Yes	Yes
Metering types	VU/PPM	VU	11-tone	5-frequency
Input connections	TB/AB 1.5k/7kΩ	AB 2k(m)/10kΩ(l)	Bargraph	VU or bar graph
Output connection	TB/AB 120Ω	5k/600Ω	AB 4k/10kΩ	TB >5kΩ
Output levels	22dBm 2kΩ	21dBu, 26dBu max	AB 50Ω	TB <50Ω
AF response	-0.3dB 4dBm	-1dB 20-20k 10dBu	22dBm	24dBm
Distortion	0.1% 1kHz 4dBm	<0.005% 1kHz	.....	0.03% 4dB... 30-15k
S/N ratio	80dB	-128.5dBm EIN	<0.015%	-125dBm EIN mic
Crosstalk (worst)	-70dB 20kHz	-80dB between groups	-i27.5dBm/>72dB	-80dB 4dBm 15kHz
Reader Service Number	483	484	485	487

Manufacturer	.Studer Revox	TASCAM	Ward-Beck Systems	Wheatstone	
Model/Series	Series 900	M-600 series	M-500 series††	ST3642/ST series†	SP-5
Modular construction	Yes	Yes	Yes	Yes	Yes
Mixing positions	To 50+24 master	24-32	12-20	36	48
Mixing buses	24	16+8+4+2	8main/4aux/2master	23	8
Patch points	Yes	Yes	Access patches	Yes	Yes
Fader types	Slider, VCAs	Slider	Slider	Slider	Slider
Equalizer	3-band	3/4-band	3-band	3-band	8-band
Filtering	High, low-pass	High-pass	No	High-pass	High-pass
Panpots	Yes	Yes	Yes	Yes	Yes
Grouping	8 groups	16 pgm	8 main, 4 aux	2-st, 2-m/4-st	8 groups
Sends-returns	5 pre/post switched	16 aux	Yes	6 pre/6 post	4 pro, post
Solo bus	In-place	PFL	In-place, PFL	AFL, PFL	PFL
Compression/limiting	w/VCA faders	No	Sidechain opt	Yes	No
Talkback/muting	Yes	Yes	Yes	Yes	Yes
Lineup oscillator	Variable	4-tone	3-tone	Variable	Variable
Metering types	VU, PPM	VU	VU meters	VU, PPM	VU movement
Input connections	TB/AB 75kΩ	Bal 2.2k/40kΩ	Bal 2k/100kΩ	TB 1.5k/20kΩ	AB/TB 150/10kΩ
Output connection	TB 50Ω	Bal 100Ω	Bal 100Ω	Bal <100Ω	AB 600Ω
Output levels	6dBm typical	4dBm nominal	18dBV maximum	8dBm nom, 30dBm max	22dBm max
AF response	-1, 0.5dB 6dBm	-1.5, +0.5dB 20-20k	±1dB 20-20k	<±1dB 20-20k	±0.5dB 20-20k
Distortion	0.1% 31-16k 6dBm	<0.015% 14dBm	0.025% 1kHz	<0.2% 24dBm	<0.005% 18dBm
S/N ratio	-125dBm EIN mic	-130dB EIN DIN	68dB unwtw mic-pgm	-125dBm EIN	-129dB EIN/>90dB
Crosstalk (worst)	-85dB	<-60dB 1kHz	<-70dB 1kHz	<-75dB 30-15k	<-90dB 1kHz
Reader Service Number	488	489	490	608	609



The World's First  
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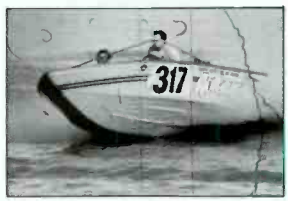
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## Audio Mixers, Studio/Production

**Manufacturer** . . . . .Wheatstone  
**Model/Series** . . . . .3224 series†

Modular construction . . . . . Yes  
 Mixing positions . . . . . 48  
 Mixing buses . . . . . 24  
 Patch points . . . . . Yes  
 Fader types . . . . . Slider  
 Equalizer . . . . . 3-band  
 Filtering . . . . . 12dB/oct high-pass  
 Panpots . . . . . Yes  
 Grouping . . . . . 24 groups  
 Sends-returns . . . . . 2 pre/4 post  
 Solo bus . . . . . AFL/PFL  
 Compression/limiting . . . . . No  
 Talkback/muting . . . . . Yes/No  
 Lineup oscillator . . . . . Variable tone  
 Metering types . . . . . VU  
 Input connections . . . . . AB 150/40kΩ  
 Output connection . . . . . AB <10Ω  
 Output levels . . . . . 28dBm max  
 AF response . . . . . ± 0.1dB 0dBm  
 Distortion . . . . . 0.05% 20dBm  
 S/N ratio . . . . . -129dBm EIN/90dB  
 Crosstalk (worst) . . . . . <-90dB 1kHz  
**Reader Service Number** . . . . . 654

Yamaha International

**RMM2408††**

**PM3000**

Yes  
 24 max  
 8  
 Yes  
 Slider  
 3-band  
 High-pass  
 Yes  
 8 groups  
 2-send switchable  
 AFL  
 No  
 Yes/No  
 Variable  
 VU  
 TB 600Ω  
 Unbal 600Ω  
 4dBm for 0VU  
 -3dB ref 4dBm  
 0.1%  
 -128dBm EIN  
 -70dB 1kHz 4dBm  
**655**

Yes  
 24, 32, 40  
 19  
 Yes  
 Slider  
 4-band  
 High-pass  
 Yes  
 8, VCA control  
 Yes  
 In-place  
 .....  
 Yes  
 w/pink noise  
 VU, peak LED  
 Bal/TB 1k/3k/10kΩ  
 Bal/TB opt 150Ω  
 4dBu nom  
 -3, +1dB 4dBm  
 <0.1% 14dBm  
 -128dBm EIN  
 -60dB 1kHz  
**1496**

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## Compact Disc Players

Digital audio reproduction equipment using CD media, designed for more strenuous use of on-air applications.

**Manufacturer** . . . . .**Sony/Pro Audio**  
**Model/Series** . . . . .**CDP-5000**

System configuration . . . . . Single player  
 Player trays . . . . . .....  
 Programmable . . . . . Yes  
 Output connection . . . . . Bal 600Ω  
 Output level . . . . . 4dBm  
 Audio response . . . . . -1, +0.5dB 20-20k  
 Distortion . . . . . 0.01%  
 Dynamic range . . . . . >94dB  
 Crosstalk . . . . . 90dB 1kHz  
 S/N ratio . . . . . .....  
 Access time . . . . . 2s  
**Reader Service Number** . . . . . 491

**CDP-3000/CDS-3000**

Multiplayer  
 2 per controller  
 Yes  
 Balanced  
 4dBm nom  
 -1, +0.8dB 20-20k  
 0.01%  
 94dB  
 <90dB 1kHz  
 .....  
 2s  
**492**

**Straight Wire Audio**  
**CDQue**

Single player  
 .....  
 Limited, speed adjust  
 Bal XLR 600Ω  
 4dBm  
 ± 0.3dB 20-20k  
 0.003%  
 96dB  
 94dB  
 >96dB  
 .....  
**493**

**A727**

Single player  
 .....  
 Multiple event  
 Xfmr bal <50Ω source  
 15dBm max  
 ± 0.1dB 20-20k  
 <0.006%  
 96dB  
 <90dB 1kHz  
 >100dB  
 3sec  
**494**

**Studer**

**Philips LHH-2000 series**

Multiplayer  
 3 max  
 To 3 events  
 Xfmr bal, unbal, <40Ω  
 6dBm  
 ± 0.5dB 20-20k  
 <0.01%  
 >90dB  
 <80dB  
 >90dB  
 <2sec  
**495**

**Manufacturer** . . . . .**Studer**  
**Model/Series** . . . . .**Philips LHH-2002**

System configuration . . . . . Multiplayer  
 Player trays . . . . . 99 max  
 Programmable . . . . . To 55 events  
 Output connection . . . . . Xfmr bal  
 Output level . . . . . 6dBm nom  
 Audio response . . . . . -0.05dB 20-20k  
 Distortion . . . . . 0.01% 6dBm  
 Dynamic range . . . . . >90dB  
 Crosstalk . . . . . 80dB 20kHz 6dBm  
 S/N ratio . . . . . >90dB unwt'd  
 Access time . . . . . 2s  
**Reader Service Number** . . . . . 496

**Studer/ReVox**  
**B226**

Single player  
 .....  
 To 19 events  
 Unbal <500Ω  
 0-2V  
 ± 0.1dB 20-20k  
 <0.005%  
 96dB  
 <90dB  
 >100dB  
 <3s random  
**497**

**TASCAM**  
**CD-501**

Single player  
 1  
 Yes, remote control  
 XLR bal 600Ω load  
 0dBm nom  
 ± 0.3dB 5-20k  
 0.0025% 1kHz  
 >96dB  
 <-95dB  
 >96dB  
 .....  
**498**

**Technics/Panasonic**  
**SL-P50P**

Single player  
 1  
 Yes  
 Bal 600Ω  
 -10, +4dBm  
 0.5dB  
 <0.01%  
 >96dB  
 -90dB  
 >96dB  
 >6s  
**499**



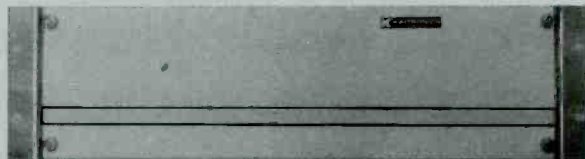


# Compact Video/Audio Switchers



## Routing Switchers

10 x 1, 10 x 5 and 10 x 10 Complimentary Series of Video/Audio, Vertical Interval Switchers . . .

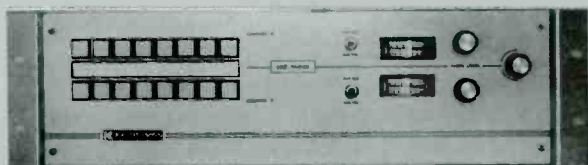


Starting with 10 x 1 Routing Switcher, easily expandable with matching 10 x 5, 10 x 10 Series.

Remote control up to 5,000 feet with a twisted pair allows for easy and flexible installation and any later changes, accomplished by using RS-422/232C serial data which also lends itself to computer/modem usage.

Individual audio connectors allow changing any single input without power shutdown, as encountered in switchers that use multi-pin connectors.

Typically, a 10 x 10 Routing Switcher including stereo audio and power supply occupies only 5 1/4" of your valuable rack space.



## Component/RGB Switchers

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Stabilized and multi-regulated. No adjustment needed for either phase or amplitude tracking.

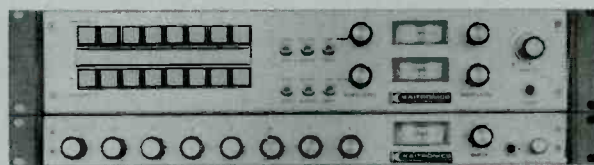
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# Audio Cartridge Recorders

These recorders use 1/4" continuous-loop cartridges for spot or longer announcements. Replay-Inhibit is not available on units marked with a diamond (◆). Models are stereo unless marked with a bullet (•). Models marked with a dagger (†) are belt-driven. A star (★) indicates fast-forward mode. In audio response ranges, Hz is understood.

Manufacturer	APPEL	Audi-Cord	◆Series 2100C	Broadcast Electronics	◆Series 3000A★	PT90RPS★ (PhaseTrak90)
Model/Series	•Model 578†	Series A/S/TDS				
Deck control logic	Transistor	CMOS devices	TTL & CMOS devices	TTL	.....	.....
Remote control bus	No	Yes	None	None	Simple remote	Option
Record timer	Yes	Yes	No	No	Sec, Tert, AFSK	Option
Sec, Tert tones	Yes	Yes	Sec only	No	Sec, Tert, AFSK	Option
Sec, tert output	TTL	Solid-state	Relay closure	Relay closure	Solid-state	Option
Phase correction	n.a.	None	No	No	Non-encoded type	Option
Capstan motor	ac-synchronous	ac-synchronous	ac-synchronous	ac-synchronous	dc-servo	Option
Play speeds	7.5	7.5	3.75/7.5	3.75/7.5	7.5 (3.7/15 options)	Option
Meter types	VU rec/play/erase	VU movement	Taut-band A	Taut-band A	LED VU	Option
Monaural model	.....	S21, A21	2100RP	3200ARP, 3400ARP	PT90P	Option
Play only model	Model 557	S11/-16, A11/-16	2100P	3100/3200/3400AP/APS	PT90PS	Option
Multideck model	Model 2214	TDS-1, TDS-6 twins	None	.....	.....	Option
Input connection	Balanced	Xfmr bal	Active bal	Xfmr bal bridging	Active bal	Option
Input level	-5, +20dB 5kΩ	-22, -12dBm	-10dBm	-20, +20dBm 50kΩ load	8dBm	Option
Output connection	Balanced	Xfmr bal	Active bal	Xfmr	Active bal	Option
Output level	12dBm 110Ω	-8dBm	0dBm	-54/+10dBm 600/150Ω	24dBm <75Ω source	Option
AF response	±1.5dB 40-12.5k	±2dB 50-15k	±2dB 50-15k	±2dB 50-15k	±2dB 40-16k	Option
S/N ratio	54dB	>47dB stereo	>52dB	>52dB unwt'd	80dB w/Dynafex NRS	Option
Crosstalk L-R-Cue	.....	<-50dB	-50dB 1kHz	-50dB 1kHz	-50dB	Option
Distortion	<1.5% 1kHz	1% 1kHz 160nWb/m	2%	<2% tape dependent	<1.5% tape dependent	Option
Wow & flutter	±0.3% unwt'd	0.15% peak wtd	≤0.15%	≤0.15% DIN wtd 7.5ips	0.12% DIN wtd 7.5ips	Option
Reader Service Number	1169	1170	1171	1172	1173	Option

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The R-33 provides 8 hours of operation on a single 9-volt battery. Audio is studio-quality (e.g., over 100 dB S/N).

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## Audio Cartridge Recorders

Manufacturer	Cartridge Technology	Fidelipac	ITC/3M
Model Series	◆CT-1001★	Dynamax CTR34	Dynamax CTR14★ (124) Delta series★ 99B series★
Deck control logic	CMOS devices	.....	μprocessor
Remote control bus	15-pin D-connector	50-pin D-connector	Simple remote
Record timer	Yes	No	Ext timer trigger
Sec, Tert tones	Yes	Yes	Yes
Sec, tert output	Solid-state	Relay contact	Solid-state, relay
Phase correction	No	.....	ELSA system
Capstan motor	dc-servo	dc servo	dc-servo
Play speeds	3.75	7.5ips	7.5 (3.75, 15 opt)
Meter types	VU/PPM movement	LED VU displays	Taut-band A/peak LED
Monaural model	.....	CTR33	RPME
Play only model	.....	.....	PM mono/PS stereo
Multideck model	.....	3-deck	None
Input connection	Active bal (Xfmr opt)	Diff-bal bridged 10kΩ	Xfmr or active bal
Input level	-10,0dBm (30kΩ)	-17, +20dBm	±18dB 20kΩ load
Output connection	Floating xfmr bal	-bal 440Ω source	Xfmr or active bal
Output level	-10,0dBm (150Ω)	20dBm 600Ω clipping	±18dBm 275Ω source
AF response	±1dB 40-15k	±2dB 50-16k	±2dB 50-16k
S/N ratio	>44dB 22-22k PPM	≥55dB hum/noise	60dB unwtid OVU
Crosstalk L-R-Cue	<-36dB	≤-50dB 1kHz	<-50dB 1kHz OVU
Distortion	1.5% 1kHz 405nWb/m	≤1%	<1.5% 1kHz OVU
Wow & flutter	<0.12% DIN wtd	0.15% DIN wtd	0.15% DIN wtd
Reader Service Number	1174	1175	1177

Manufacturer	ITC/3M	Otari	Pacific Recorders & Eng.	Sonifex
Model Series	OMEGA series	CTM-10SR★	◆Micromax† ◆Tomcat	◆CQ 20-R†★
Deck control logic	μprocessor	μprocessor	CMOS devices	CMOS
Remote control bus	Simple remote	Yes	Yes	Simple remote
Record timer	No	LED min/sec	Yes	No
Sec, Tert tones	Sec only	Yes	Yes	Sec only

  
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## Audio Cartridge Recorders

Manufacturer	Model Series	.ITC/3M	Otari	Pacific Recorders & Eng.		Sonifex
				◆Micromax†	◆Tomcat	
		<b>OMEGA series</b>	<b>CTM-10SR★</b>			<b>◆CQ 20-R†★</b>
Sec, tert output		Solid-state	Solid-state	Solid-state	Solid-state	Solid-state
Phase correction		No	No automatic	.....	None	No
Capstan motor		dc-servo	dc servo	dc-servo	dc-servo	dc-servo
Play speeds		7.5 (3.75 opt)	3.75, 7.5, 15ips	7.5	7.5, 15	3.75, 7.5
Meter types		Taut-band A	VU, peak LEDs	VU movements	VU movements	LED bar graph
Monaural model		OMEGA mono player	CTM-10MR	.....	.....	CQ 10-R
Play only model		OMEGA M or S	CTM-10	.....	.....	CQ 20, CQ 10
Multideck model		None	None	.....	.....	CQ 20-ST
Input connection		Xfmr bal, unbal	Active bal 10kΩ	Active bal	Active	Unbalanced
Input level		±18dB 20kΩ load	+28dBv max	+8dBm	+8dBm	0dB 10kΩ
Output connection		Xfmr bal	Active bal 5Ω	Active bal	Xfmr bal	Unbalanced
Output level		+18dBm 180Ω source	+26dBv into 200Ω	+8dBm	+8dBm	0dB 25Ω
AF response		±2dB 50-16k	±2dB 20-16k	-1, +0.5dB 40-16k	±1dB 40-15k	-2.5, +1dB 40-16k
S/N ratio		56dB unwt'd (68dBa)	53dB	58dB unwt'd 1kHz OVU	59dB 1kHz OVU	45dB unwt'd
Crosstalk L-R-Cue		<-50dB 1kHz OVU	<48dB 1kHz	-60dB, -50dB/1kHz	-60dB, -50dB/1kHz	-60dB/1kHz, -50dB
Distortion		1.5% 1kHz OVU out	<0.8% 1kHz	<0.9% 1kHz OVU	<0.9% 1kHz OVU	1% 1kHz
Wow & flutter		0.15% DIN wtd	<0.15% 7.5ips	0.08%	0.1%	0.09%
<b>Reader Service Number</b>		<b>1179</b>	<b>1180</b>	<b>1181</b>	<b>1182</b>	<b>1183</b>

Manufacturer	Model Series	.Sonifex	TTC/Ampro
Deck control logic		CMOS devices	TTL
Remote control bus		Simple remote	Yes
Record timer		No	Yes
Sec, Tert tones		Yes	Yes
Sec, tert output		Solid-state	Contact closure
Phase correction		No	No
Capstan motor		dc-servo	ac-hysteresis
Play speeds		7.5	3.75, 7.5
Meter types		VU movements	VU
Monaural model		HS100RX	Available
Play only model		HS100X, HS200X	Available
Multideck model		HS200XST	TTC/Scully 8300 3-deck
Input connection		Xfmr	Xfmr bal
Input level		0dBm, 600Ω/0dB 10kΩ	-20, +20dBm
Output connection		Xfmr	Xfmr bal 150-600Ω
Output level		0dBm 600Ω/0dB 10kΩ	+20dB max
AF response		-1.5, +1dB 40-16k	±2dB 50-15k
S/N ratio		45dB unwt'd	>50dB
Crosstalk L-R-Cue		-60dB/1kHz -50dB	<-50dB/1kHz
Distortion		1% 1kHz	3% max
Wow & flutter		0.06%	0.15% peak wtd
<b>Reader Service Number</b>		<b>1184</b>	<b>1185</b>

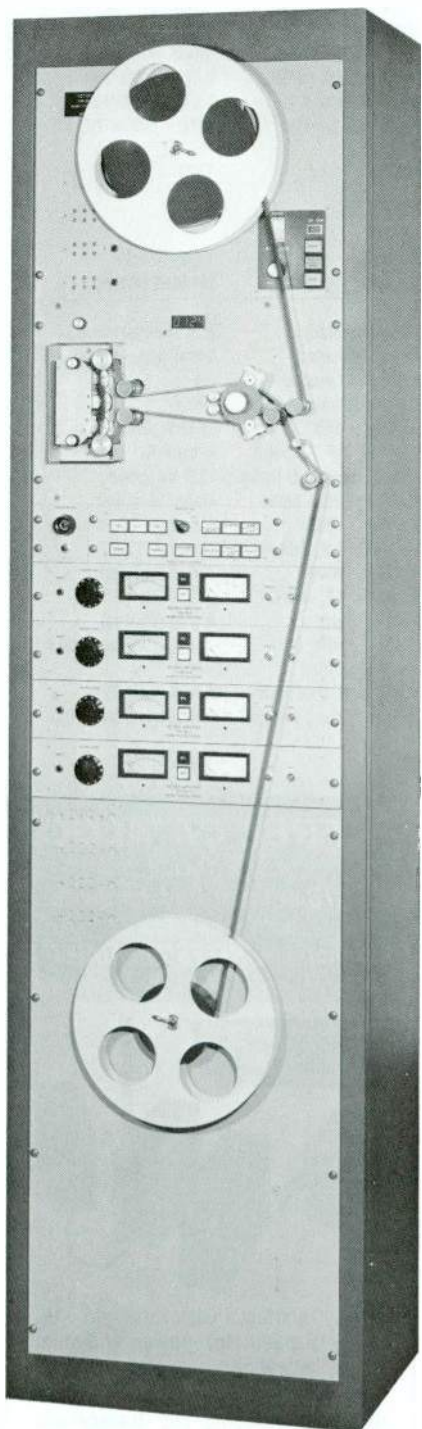
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## Audio Cassette Recorders

These stereo audio systems use Philips cassettes. All dc-servo drive motors for the capstan and reels. Standard play speed is 1 7/8 ips. In frequency ranges, Hz is understood.

Manufacturer	Model/Series	.a&a Systemes de Comm.	Fostex	JVC Company	Nakamichi
Deck control logic		μP control	TTL	Mechanical	μP control
Timer		Min/sec	Yes	No	Yes
Cue track		4 tones available	No	No	No
Capstan drive type		Direct	Belt	Belt	Direct
Other play speeds		7.5 ips	3.75ips	None	.....
No. of heads		Single 4-track	2	2	3
Meter types		L/R VU meters	VU, peak LEDs	Bar graph	LEDs
Input connection		10kΩ unbal, 600Ω bal	Unbal	Unbal	80kΩ
Input level		-10dBm for OVU	-60dBv 10kΩ	-50dBv 10kΩ	80mV





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Circle (122) on Reply Card

## Audio Cassette Recorders

Manufacturer	a&a Systemes de Comm.	Fostex	JVC Company	Nakamichi
Model/Series	Maj'30 Jingle	250 (250AV)	KD-V601J	MR-1 (MR-2)
Output connection	Bal, unbal, 600Ω	Unbal	5kΩ	Bal, (unbal)
Output level	+18dBm max	-10dBv, 10kΩ	0-500mV	+4dBm
AF response	-3,0dB 35-14k	-3, +2dB 20-18k	±3dB 20-14k metal	±3dB, 20-20k
S/N ratio	50dB	71dB wtd <sup>1</sup>	58dB metal	70(68)dB A-wtd <sup>1</sup>
Crosstalk Pgm-Pgm	>35dB separation	-50dB 1kHz OVU	65dB 1kHz*	-60dB 1kHz OVU
Distortion	1.5% 315Hz	1.5% 315Hz	1% OVU 1kHz metal	0.9(1)% 400Hz OVU
Wow & flutter	.....	<0.02%	0.05% WRMS	0.048% (0.06%)
Equalization	Types I, II	3180+70μs	Std, metal, chrome	3180+120 or 70μs
<sup>1</sup> S/N figure based on use of Dolby C noise reduction.				
Reader Service Number	1159	1160	1162	1163

Manufacturer	Studer	TASCAM	Yamaha Int'l	
Model Series	A721	B215	122mkII (112R/112)	
Deck control logic	μP control	μP control	TTL	
Timer	Yes	Yes	Tape counter	
Cue track	No	No	No	
Capstan drive type	Direct	Direct	Belt	
Other play speeds	None	3.75ips ±12%	3.75ips ±12%	
No. of heads	3	3	2 4-channel	
Meter types	Peak program	Bar graph	VU, peak LEDs	
Input connection	Xfmr bal 10kΩ	Unbal 100kΩ	Unbal	
Input level	+4dBu	-34dBm	Mic, line	
Output connection	Xfmr bal, <50Ω source	Unbal	Unbal, RCA, 1/2" phone	
Output level	+4dBu in 600Ω	0dBm, 47Ω	-10dBv nominal	
AF response	-3, +2dB 20-≥18kHz	-3, +2dB 20-22k	±3dB 40-14k	
S/N ratio	72dB Type IV <sup>1</sup>	72dB A-wtd <sup>1</sup>	>95dB IHF A wtd, dbx NR	
Crosstalk Pgm-Pgm	<-40dB @ 1kHz	-40dB, 1kHz, OVU	-50dB, 1kHz, OVU	
Distortion	≤1.5% Types I/II/IV	<1.5%, 315Hz, OVU	1%, 1kHz, OVU	
Wow, flutter	0.1% wtd C-46 to C-90	0.1%, DIN 45507	0.06%	
Equalization	Types I, II, IV	3180μs + 12μs/70μs	3180μs + 70μs	
<sup>1</sup> S/N figure based on use of Dolby C noise reduction.				
Reader Service Number	1164	1165	1166	



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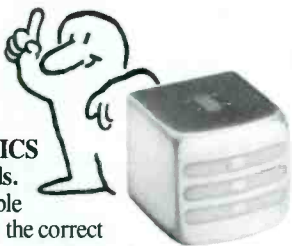
# Audio Reel-type Recorders

A dc-servo capstan motor is common to all models unless marked with a dagger (†). Belt-drive capstan models are noted with a bullet (•). In audio response range, Hz is understood.

Manufacturer Model Series	AEG AG/AEG Corp		Digitec F500	Fostex	
	M-20 series	M-21 series		•Model 20 (80)	B-16 series
No. of tracks	2, 2ime code	2	2, mono/stereo/sync	3(8)	16
Tape width	1/4"	1/4", 1/2"	1/4"	1/4"	1/2"
Deck control logic	μP 8085	μP 8085	μprocessor	μprocessor	μprocessor
Edit interface type	RS-232/422	Optional remote	Sync, RS-232	SMPTE port	Synchronizer
Recording timer	LCD	LCD	LED opt	Yes	Yes
Cue track	Center TC	No	SMPTE TC center	SMPTE TC center	No
Phase correction	Yes	No	No	No	No
Reel motor	dc-servo	dc-servo	dc-servo	dc-servo	dc-servo
Tape speeds	3.75-30, 20-50% var	2, 3.75-30, var	3.75/7.5/15, var	7.5/(15)ips	15/30ips
No. of heads	3 (6, TC model)	3 amorphous	2	3 (2)	2 (-DM has 3)
Meter types	VU in bridge	2 VU in bridge	VU panel	Bar graph	Bar graph
Equalization	NAB, IEC1/2	NAB, CCIR, DIN, AES	NAB, CCIR	NAB & (IEC)	IEC/15, AES/30
Input connection	Bal 5k/>10kΩ	Xfmrless bal, 10kΩ	Bal ≥15kΩ	Act unbal 30kΩ	RCA 25kΩ
Input level	+24dBm max	+24dBm max	+22dBu max	-10dBv	-10dBv
Output connection	Bal, xfmr opt <45Ω	Xfmrless bal, <40Ω	Bal, ≤50Ω source	Act unbal 10kΩ	RCA unbal 10kΩ
Output level	+24dBm	+24dBm max	+20dBu max	-10dBv	-10dBv
AF response	±1.5dB 20-16k 7.5ips	±1.5dB 20-16k 7.5ips	±2dB 31-16k 7.5ips	±3dB 30-20k(40-18k)	±3dB 40-18k
S/N ratio	>1dB stereo 7.5ips	>70dB 7.5ips	>71dB 7.5ips	70dB (60dB)	80dB wtd
Crosstalk Pgm-Pgm	-55dB stereo/-65dB 2-tr	<-60dB 1/4" 1kHz	<-40dB stereo	-70dB	-55dB 1kHz 0VU
Distortion	<0.6% max stereo/2-tr	<0.6% 510nWb/m	<1%	<1% 1kHz 0VU	1% 1kHz 0VU
Wow & flutter	<0.06% 7.5ips	<0.06% DIN 45507	<0.06% 7.5ips	±0.06% 15ips	±0.05% peak wtd
Reader Service Number	1186	1187	1188	1189	1190

# Two Rules Every Broadcast Professional Ought to Know

## RULE 1



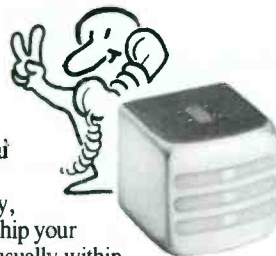
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## Audio Reel-type Recorders

Manufacturer	Lyrec A/S	Nagra-Kudelski		Otari	
Model Series	TR-55 (TR-533)	IV-STC	T-Audio Time Code	MTR-10-2	MX5050B-II
No. of tracks	2 (24)	3	2-track or stereo	2	2
Tape width	1/4", 1/2" (2")	1/4"	1/4"	1/4"	1/4"
Deck control logic	$\mu$ P control	Mechanical	$\mu$ processor	$\mu$ processor	TTL
Edit interface type	Audio/tape controller	To synchronizers	RS-232/422/SMPTE	RS-422	None
Recording timer	On panel, controller	Mechanical	Electronic	Yes	Yes
Cue track	None	SMPTE time code	Center time code	SMPTE center option	No
Phase correction	Yes	No	With $\pm 10^\circ$ 10kHz	Yes	No
Reel motor	dc-servo (ac-servo)	dc	Servo	dc-servo	ac-synchronous
Tape speeds	7.5/15(15/30 $\pm$ 33%), var	3.75, 7.5, 15 ips	3.75-30ips, var	3.75-30ips, var	3.75/7.5/15, var
No. of heads	3	4	4	3 or 4	4
Meter types	VU movements	VU movements	LEDs	VU, peak LEDs	VU, peak LEDs
Equalization	NAB, CCIR (& AES)	NAB, CCIR, NAGRA	NAB, DIN, IEC	NAB, IEC, AES-30ips	NAB, IEC
Input connection	Xfmr bal(floating) 8k $\Omega$	Bal, unbal	Bal, floating 10k $\Omega$	Active bal, xmtr opt	Active bal
Input level	-6, +24dBm max	Mic, line levels	390mV-4.4V	4dBm	10k $\Omega$
Output connection	Xfmr bal(floating) 40 $\Omega$	Resistive bal	Bal floating 30 $\Omega$	Active bal, xmtr opt	Active bal
Output level	24dBm max	1V to 5k $\Omega$	775mV-4.4V	28dBm max	27dB max
AF response	$\pm 1$ dB/60-18k	2dB 30-30k	$\pm 1.5$ dB 30-15k 7.5ips	$\pm 2$ dB, 20-25k	$\pm 2$ dB, 20-20k
S/N ratio	62dB unwt'd	>72dB	72dB	73dB unwt'd 30ips	72dB unwt'd
Crosstalk Pgm-Pgm	-40dB 1kHz, (<-46dB)	<-60dB 1kHz	<-88dB	-60dB 1kHz OVU	-55dB 1kHz, OVU
Distortion	0.4%, 1kHz OVU	<1% 810nWb/m 400Hz	0.3% NAB 7.5ips	0.25% 1kHz OVU	0.5% 1kHz OVU
Wow & flutter	0.04% 15ips pk wtd	0.028% NAB, 15ips	<0.025% 7.5ips	0.04%	0.04% 15ips
Reader Service Number	1191	1192	1193	1194	1195

Manufacturer	Otari		Sony Pro Audio		Soundcraft
Model Series	MX-70	MX-80	APR-5000 series	APR-2003 portable	Saturn
No. of tracks	8, 16	24, 32	Full, half, halfC	3	24
Tape width	1"	2"	1/4"	1/4"	2
Deck control logic	$\mu$ processor	$\mu$ processor	16-bit $\mu$ processor	.....	$\mu$ P control
Edit interface type	RS-232, 422	RS-232/422	Serial, parallel	No	Via remote, autolocator
Recording timer	Yes	Yes	.....	Tape counter	Digital display
Cue track	No	No	On APR-5003	Yes	No
Phase correction	Yes	Adjustments	.....	.....	.....
Reel motor	dc-servo	dc-servo	dc	dc	dc-servo
Tape speeds	7.5, 15, 30, var	7.5+100/-50%, 15 $\pm$ 50%	7.5, 15, 30ips $\pm$ 50%	3-75, 7.5ips	7.5, 15, 30 +100/-50%
No. of heads	3	3	.....	3	3
Meter types	VU	24/32 VU	.....	VU	24-VU option
Equalization	NAB, IEC, AES-30ips	AES, NAB, IEC	NAB, AES	.....	NAB, IEC, AES
Input connection	Act bal	Act bal 10k $\Omega$	.....	Bal, 10k $\Omega$	Bal (xfmr opt) 10k $\Omega$
Input level	Switchable level	4dBm, 30dBm max	.....	-70dBs, +4dBs	-10, +20dBm
Output connection	Act bal	Act bal, 5 $\Omega$ source	.....	Unbal 600 $\Omega$	Bal (xfmr opt) 75 $\Omega$
Output level	Switchable level	4dBm	.....	1V to 10k $\Omega$ load	28dBm max
AF response	$\pm 2$ dB 30-20k	$\pm 2$ dB 30-18k 7.5ips	-1.5, +.75dB, 30-20k	$\pm 3$ dB, 30-18k, 7.5ips	-2, +1dB 40-21k 15ips
S/N ratio	72dB unwt'd, 8-ch	>65dB 7.5	>67dB 7.5ips	.....	62dB, 15ips
Crosstalk Pgm-Pgm	-55dB 1kHz	<-55dB 2kHz 24-tr	.....	.....	-47dB, 1kHz
Distortion	0.2%, 1kHz OVU	<0.3% 1kHz	Variable per bias	.....	.....
Wow & flutter	0.04%, 30ips	<0.08% 7.5ips	.....	$\pm 0.08\%$ 7.5ips	0.03%, 15/30ips
Reader Service Number	1196	1197	1198	1199	1200

Manufacturer	Stellavox		Sluder/ReVox		
Model Series	SP8	TD9'	A807	A820 series (A812)	A810
No. of tracks	3	1-5	2	2 to 24 (2)	2
Tape width	1/4" $\pm$	1/4", 1/2"	1/4"	1/4" to 2" (1/4")	1/4"
Deck control logic	Mechanical	$\mu$ processor, CMOS	$\mu$ P control	$\mu$ P, TTL, CMOS	$\mu$ P
Edit interface type	Manual editing	RS-422 & direct	Serial, parallel	RS-232, RS-422	RS-232, RS-422
Recording timer	Option	Yes	LED display	Yes	Yes
Cue track	SMPTE center track	SMPTE center	No	SMPTE center track (No)	SMPTE center
Phase correction	No	No	Yes	Yes	Yes
Reel motor	dc-servo	dc-servo	ac servo	dc-servo	ac servo
Tape speeds	3.75, 7.5, 15ips, var	3.75-30ips, variable	3.75, 7.5, 15 $\pm$ 7 HT	3.75-30 $\pm$ 7 semitones	3.75-30ips $\pm$ 7 semitones
No. of heads	4	5 possible	3 (optional 1/2-track)	3 or 4 (3)	3
Meter types	Tautband A	Tautband A	VU movement	VU movement	VU
Equalization	NAB, DIN, IEC	NAB, IEC, DIN	NAB, CCIR	NAB, CCIR	NAB, CCIR
Input connection	Balanced	Balanced	Xfmr bal >10k $\Omega$	Xfmr, act bal 10k $\Omega$	Bal float >10 $\Omega$
Input level	-72dBm mic	6dBm	24dBu max	24dBm max	24dBm max
Output connection	Balanced	Balanced	Xfmr bal <50 $\Omega$	Xfmr, act bal <50 $\Omega$	Bal, float, <50 $\Omega$
Output level	6dBm typical	15dBm max	24dBu max 600 $\Omega$	24dBm max	24dBm max
AF response	-1, +1dB 20-20k	-2, +1dB 30-20k	$\pm 2$ dB 30-16k 7.5ips	$\pm 2$ dB 30-16k 7.5ips	$\pm 2$ dB 20-16k 7.5ips
S/N ratio	68dB	70dB	72dB, ASA-A wtd	>65dB, 1/4" 7.5ips	>65dB rms, 7.5ips stereo



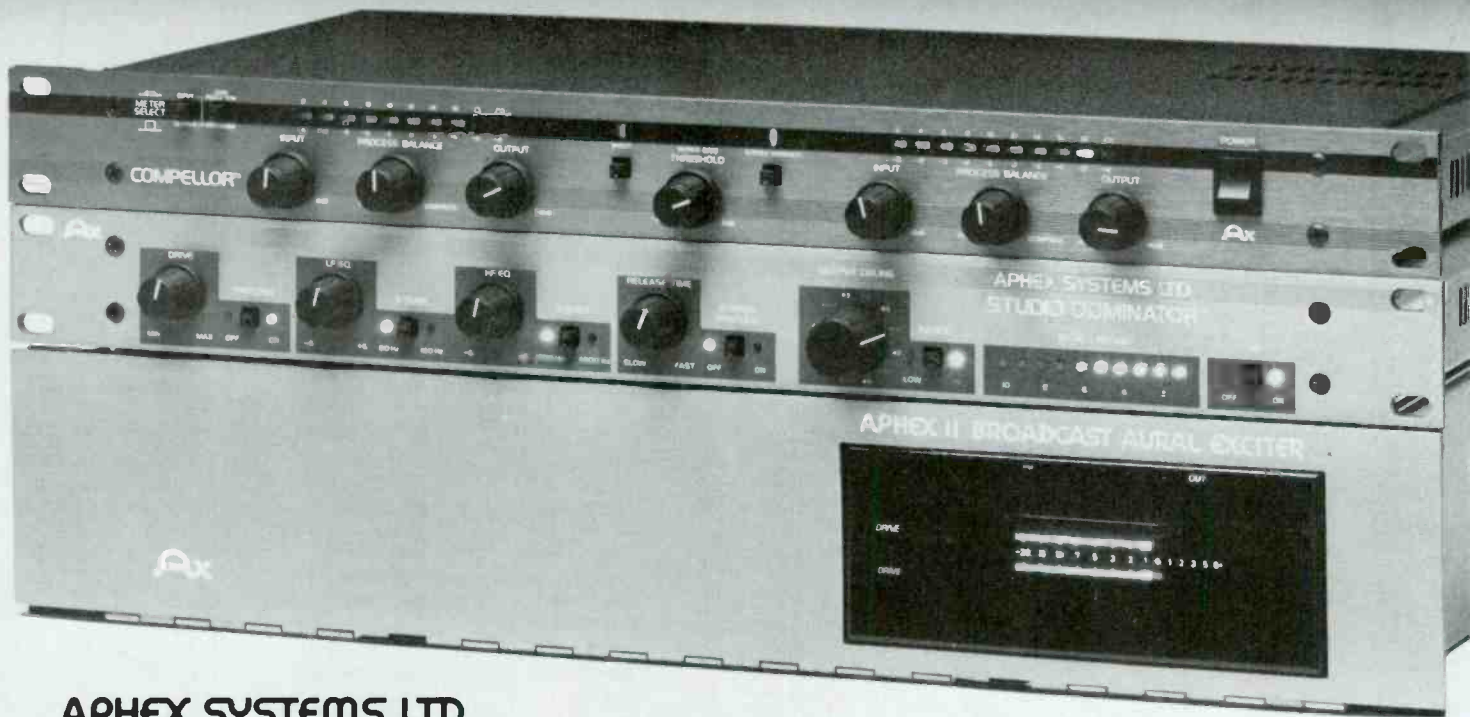
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## Audio Reel-type Recorders

Manufacturer	Stellavox		Studer/ReVox		
Model Series	SP8	TD9 <sup>1</sup>	A807	A820 series (A812)	A810
Crosstalk Pgm-Pgm	-55dB 1kHz 0VU	-55dB	<-55dB separation	<-55dB stereo 1kHz	<-55dB stereo 1kHz
Distortion	0.6% 1kHz 0VU	0.5% 1kHz 0VU	≤1% 7.5ips 1kHz	<0.5% 1kHz	<0.6% stereo 1kHz
Wow & flutter	0.02%	0.02%	0.07% 7.5ips	<0.06% 7.5ips	<0.07% 7.5ips
<sup>1</sup> Modular head block allows changes of head configuration and tape width.					
Reader Service Number	1201	1202	1203	1204	1205

Manufacturer	Studer/ReVox	TASCAM		TTC/Scully Tape	
Model Series	PR99 Mk II	Model 42B (44)	Model 48	250 series†	280B series
No. of tracks	2	2 (4)	8	1, 2, 3	1, 2, 4
Tape width	1/4"	1/4"	1/2"	1/4"	1/2, 1/4"
Deck control logic	TTL, μP	μP control	μP control	Solenoid	Solenoid
Edit interface type	.....	Synchronizer	SMPTE synchronizer	No	No
Recording timer	Yes	Yes	Yes	No	No
Cue track	No	Possible	Cue by RTZ. STC	No	No
Phase correction	.....	No	No	No	No
Reel motor	Triac control	dc-servo	dc-servo	Torque	ac hysteresis
Tape speeds	3.75-15ips	7.5, 15 ± 12% var	15ips ± 12% pitch	3.75/7.5, 7.5/15	3.75-30 available
No. of heads	3	3	3	3	3
Meter types	VU movements	2VU (4VU)	8 VU	VU	VU option
Equalization	NAB, CCIR	NAB, IEC/CCIR	IEC/CCIR, NAB	NAB or IEC	NAB, IEC
Input connection	Bal, >5kΩ	Bal 10kΩ, unbal 50kΩ	Bal 10kΩ, unbal 50kΩ	Bal 10Ω line	Xfmr bal
Input level	-10, +10dBu	+4-28dBm, -10, +18dBV	+4-28dBm, -10, +18dBV	200mV min 250-600Ω	200mV 10kΩ min
Output connection	Bal <50Ω	Bal <20Ω, unbal 60Ω	Bal 20Ω, unbal 60Ω	Unbal (xfmr bal opt)	Xfmr bal 60Ω
Output level	+22dBu 600Ω load	+28dBm/+18dBV max	+28dBm/+18dBV max	+17dBm max 600Ω	+24dB max 600Ω load
AF response	-3, +2dB 30-20k	±2dB 30(40)-16k	±3dB 40-20k	±2dB 50-15k	±2dB 30-15k
S/N ratio	>66dB 7.5ips	68(67)dB A-wtd	69dB A wtd	>66dB 7.5ips	68dB 2-TR, 7.5ips
Crosstalk Pgm-Pgm	<-45dB stereo 1kHz	<-55dB 1kHz 0VU	<-55dB 1kHz 0VU	.....	<-60dB 250nWb/m
Distortion	<0.3% 7.5ips	0.8% 0VU 1kHz	0.8% 0VU 1kHz	<0.7% 250nWb/m	<3%
Wow & flutter	<0.08% 7.5ips	0.05% NAB wtd	0.05% NAB wtd	<0.1% 7.5ips	0.05% w/dc-servo
Reader Service Number	1206	1207	1208	1209	1210

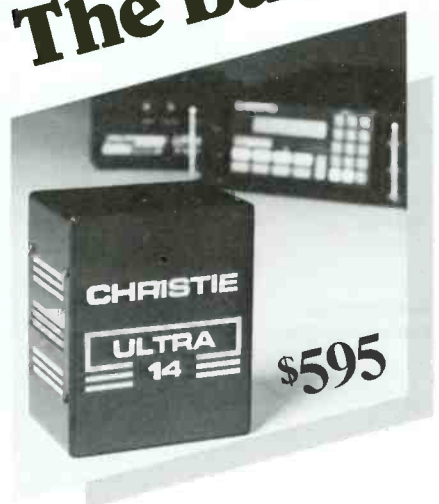
## Audio Processors, Level Control

These products provide compression, limiting, AGC action and expansion control over levels of audio signals. A diamond (◆) indicates group delay. Those providing multiband processing are denoted with a bullet (•). Those using digital processing techniques are marked with a dagger (†). Matrix processing is indicated with a star (★). Systems not indicating stereo facilities are marked with a double dagger (‡).

Manufacturer	Aphex Systems		ATI/Audio Technologies	Audio + Design/SWA	
Model/Series	#300 Compellor	700 Dominator	EM1000 Emph'a'Sizer	Gemini Easyrider	Express-Limiter Mk.III
Design function					
Compression	w/AGC	.....	Yes	Yes	Yes
Limiting	Peak	Peak	Peak	Peak	Peak/clip/asymm
Limiting pre-emp	No	No	Pre/post/side EQ	No	w/side chain
Expansion	No	No	Yes	No	Yes
Gate threshold	No	No	Yes	No	No
Programmable	No	No	User	User, factory	Factory, user
Meter type	LED ladder	LED ladder	LED bargraph	Bargraph	VU, GR meter
Meter functions	In/out/GR/peak/VU	In/out/GR/peak/VU	Output, GR	GR	In/out level, GR
Time constants	Pgm dep	Pgm dep	Variable	Variable, pgm dep	Variable, pgm dep
Input connection	Act bal/unbal	Act bal	Xfmr, act bal	Unbal, xfmr opt	Act bal 12kΩ
Input level	27dBm	24dBm	Mic, line	36dBm max	24dBm
Output connection	Act bal/unbal	Act bal/unbal	.....	Unbal xfmr opt	Act bal <1Ω
Output level	27dBm	24dBm	24dBm, mic	19dBm	20dBm max
AF response	±1dB 5-65k 20dBm	±0.5dB 20-50k	±0.25dB, 30-20k	±0.5dB, 30-20k	±0.5dB, 30-20k
Distortion	<0.1% 1kHz 20dBm	<0.04% 1kHz 20dBm	0.2%, 22dBm	<0.1%	<0.1%
S/N ratio	95dB 27dBm unwtd	95dB unwtd 20dBm	80dB	82dB	82dB
Reader Service Number	1074	1075	1076	1077	1078



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# CHRISTIE ELECTRIC CORP.

## Audio Processors, Level Control

Manufacturer	Audio + Design/SWA	Audioarts/Wheatstone	Broadcast Electronics	Brooke Siren Systems	
Model/Series	F601 Super-Dynamic	Model 1202	FM-601 limiter	FDS360 limiter	DPR 402
Design function					
Compression	No	Yes	w/AGC	No	Yes
Limiting	Peak/clip/asymm	Peak	Peak	Peak	Peak
Limiting pre-emp	Selectable curve	De-essing	Flat 25/75 $\mu$ s	No	De-ess/adj sidechain
Expansion	No	No	Yes	No	Yes
Gate threshold	No	No	Yes	No	No
Programmable	User, pgm dep	User	User	User	User, factory
Meter type	Meter, clip LEDs	LED bargraph	3 meters	None	LED bargraph
Meter functions	VU, GR	Output, compress	2 VU, 1 gain	.....	In, out, GR
Time constants	User set, pgm dep	Variable	Variable	Fixed	Variable
Input connection	Act bal 12k $\Omega$	Bal 20k $\Omega$	Xfmr bal 600 $\Omega$	Act bal bridging	Act bal bridging
Input level	24dBm max	18dBm max	20dBm	n.a.	20dBv
Output connection	Act bal 600 $\Omega$	Bal 10 $\Omega$	Xfmr bal 600 $\Omega$	Unbal xfmr opt	Unbalanced
Output level	24dBm	22dBm max	20dBm max	20dBm max	20dBv max
AF response	$\pm 0.5$ dB, 30-20k	$\pm 0.5$ dB, 20-50k	$\pm 0.5$ dB, 30-20k	Adjustable	$\pm 1$ dB, 25-20k
Distortion	<0.2%	0.04%	0.75%	0.05%	0.15%, 1kHz
S/N ratio	90dB	>90dB	>60dB	85dB	86dB
Reader Service Number	1079	1080	1081	1082	1083

Manufacturer	CRL Systems			D&R Electronica	Dorrough Electronics
Model/Series	AM-2/AM-4 systems	TVS-3010	FM-2/FM-3/FM-4	Compressor/limiter	-610 FM/TV/AM†
Design function					
Compression	w/gain control	w/AGC	w/AGC	Yes	Yes
Limiting	Asymmetric	Yes	Peak	Peak	Peak, asymm
Limiting pre-emp	NRSC	.....	.....	No	Yes
Expansion	No	No	No	No	No
Gate threshold	.....	.....	.....	No	Yes
Programmable	Yes	.....	Yes	User	Frequency mix
Meter type	LED ladder	LED ladder	LED ladder	LEDs	Segment LED display
Meter functions	GR, peaks	Gain reduction	Peaks, GR	GR	GR/out/level/peak
Time constants	Programmable	Pgm dep	Programmable	0.3/3/7ms a, var r	Pgm dep
Input connection	Act bal, unbal	Balanced	Act bal, unbal	Unbalanced	Act bal bridging
Input level	4dBm	.....	4dBm	$\pm 20$ dBu	20dBm
Output connection	Act bal, unbal	Balanced	Act bal, unbal	Unbalanced	Act bal
Output level	4dBm	.....	4dBm	$\pm 20$ dBu	20dBm
AF response	$\pm 1$ dB 50-15k	$\pm 0.75$ dB 50-15k	$\pm 1$ dB 50-15k	$\pm 0.5$ dB, 20-20k	n.a.
Distortion	<0.5%	.....	<0.5%	<0.046%	0.3% below clipping
S/N ratio	65dB unwt'd	>70dB S+N/N	<65dB	81dB	72dB at comp threshold
Reader Service Number	1084	1085	1086	1087	1088

Manufacturer	EMT-Franz/Gotham		Eventide	Furman Sound	
Model/Series	227DX AM	266X FM/TV peak limit	Omnipressor†	LC-6	LC-3A (LC-X)
Design function					
Compression	Yes	No	Yes	Yes	Yes
Limiting	Peak, asymm	Peak	Peak	Peak	Peak
Limiting pre emp	No	Variable	No	No	De-ess
Expansion	Yes	No	Yes	Noise gate	No (Yes)
Gate threshold	No	No	Yes	Yes	No (Yes)
Programmable	Yes	No	User	User	User
Meter type	LED, meter	LEDs	Meter	LED bargraph	LED bargraph
Meter functions	Peak, GR	Peak	In, out, gain	GR	GR (& output)
Time constants	Pgm dep	Pgm dep	Variable	Adjustable	Adjustable
Input connection	Xfmr bal	Xfmr bal	Act bal, xfmr opt	Act bal brdg opt	Act bal bridg opt
Input level	8dBm	8dBm	20dBm max	23dBv max	18dBm max
Output connection	Xfmr bal	Xfmr bal	Unbal, xfmr opt	Act bal opt	Act bal opt
Output level	8dBm	8dBm	18dBm max	23dBv 2.5k $\Omega$	23dBv 5k $\Omega$
AF response	$\pm 0.5$ dB 30-15k	$\pm 0.3$ dB 30-15k	-0.5dB 20-15k	$\pm 0.5$ dB 20-20k	-0.5dB 20-20k
Distortion	<0.25% 1kHz 8dBm	<0.2% 1kHz 8dBm	0.5% 1kHz	<0.1% w/compression	0.05% 1kHz 18dBm
S/N ratio	72dB	92dB	90dB	-92dBv	-86dBv
Reader Service Number	1089	1090	1091	1092	1093



## Audio Processors, Level Control

<b>Manufacturer</b> .....	Industrial Research
<b>Model/Series</b> .....	DI-4019
<b>Design function</b> .....	
Compression .....	No
Limiting .....	Peak
Limiting pre-emp .....	No
Expansion .....	No
Gate threshold .....	No
Programmable .....	Factory
Meter type .....	LED bargraph
Meter functions .....	GR
Time constants .....	100-500ms a, 1dB/s r
Input connection .....	Xfmr bal bridging
Input level .....	24dBv max
Output connection .....	Xfmr bal 600Ω
Output level .....	20dBm max
AF response .....	±1dB 20-20k
Distortion .....	<0.15%
S/N ratio .....	85dBa, 10dB GR
<b>Reader Service Number</b> .....	1094

		<b>Inovonics</b>	
<b>•250★†</b>	<b>222★</b>	<b>260† TV/FM (•255†)</b>	
w/AGC	No	w/AGC	
Peak, asymm	Peak, asymm	Peak	
Yes	NRSC filter	Yes	
No	No	No	
Yes	No	Yes	
Digital/RS-232 opt	No	No (User)	
LEDs	LEDs	LEDs	
GR	GR	GR	
Programmable	n.a.	Pgm dep (& user)	
Act bal bridging	Act bal bridging	Act bal bridging	
10dBm	15dBm max	10dBm max	
Act bal	Act bal 600Ω	Act bal 600Ω	
0-15dBm	15dBm max	15dBm max	
±0.5dB 10-15k	±1dB, 10-9.7k	±0.5dB, 10-15(20)k	
<0.5%	1% w/limiting	<0.25%	
70dB	>75dB	75dB (80dB)	
<b>1095</b>	<b>1096</b>	<b>1097</b>	

<b>Marti</b>
<b>CLA-40A†</b>
w/AGC
Peak, asymm
Yes
No
No
Switch select
Meter
Output, GR
0.8/2/5s release
Bal 600Ω
20dBm max
Bal 600Ω
20dBm max
±0.5dB, 50-15k
<1% any compr lvl
66dB 10dBm
<b>1098</b>

<b>Manufacturer</b> .....	
<b>Model/Series</b> .....	<b>•8100A Optimod-FM</b>

<b>Design function</b> .....	
Compression .....	w/AGC
Limiting .....	Peak
Limiting pre-emp .....	Yes (De-ess)
Expansion .....	No
Gate threshold .....	Yes
Programmable .....	User, pgm dep
Meter type .....	5 meters
Meter functions .....	GR, VU, volts
Time constants .....	Pgm dep
Input connection .....	Act bal

		<b>Orban Associates</b>	
<b>Co-Operator (424)</b>	<b>••9100A Optimod-AM★</b>	<b>•8182A Optimod-TV</b>	

w/AGC (Yes)	w/AGC	Yes	Yes
Peak	Peak, asymm	Peak	No
Yes	NRSC filter opt	Yes	No
No	No	No	No
Yes	Yes	Yes	No
Pgm dep & (user)	User, pgm dep	User, pgm dep	User
Bargraph (4 meters)	8 meters	5 meters	Meter
GR, output (GR/VCA)	GR, VU, volts	GR, VU, voltage	GR, output
Adjustable	Pgm dep	Pgm dep	0.05-0.5ms a/0.05-5s r
Act bal bridging	Act bal bridging	Act bal bridging	Xfmr bal 600Ω(unbal)

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## Audio Processors, Level Control

Manufacturer	Orban Associates				ProTech Audio
Model/Series	8100A Optimod-FM	Co-Operator (424)	◆9100A Optimod-AM★	8182A Optimod-TV	663CL (663CL1)
Input level	-30, +10dBm	-10dBm	-30dBm	-30, +10dBm	27dBm max
Output connection	Act unbal comp stereo	Act bal 93(100) $\Omega$	Act bal 290 $\Omega$	Act bal 370 $\Omega$	Xfmr bal 600 $\Omega$ (unbal)
Output level	4Vp-p	> 20dBm (26dBm)	20dBm	20dBm	27dBm (20dBm) max
AF response	$\pm 0.75$ dB 50-15k	$\pm 0.25$ dB	$\pm 1$ dB 50-7.5k	$\pm 0.75$ dB 50-15k	$\pm 0.5$ dB (0.25dB)
Distortion	0.05%	<0.05(0.03)% 1kHz	<0.2%	<0.25% 50-15k	0.4%
S/N ratio	75dB	> 85dB	75dB	75dB	78dB
Reader Service Number	1099	1100	1101	1102	1103

Manufacturer	Symetrix	TEXAR	UREI		Valley International
Model/Series	528 voice‡	Audio Prism†	1176LN (1178)	LA-4	400 mic‡ (440)
Design function					
Compression	Yes	w/AGC	No	RMS compressor	Yes (w/AGC)
Limiting	No	Peak, asymm	Peak	No	No (Peak)
Limiting pre-emp	De-ess	Yes	No	No	3-band EQ (de-ess)
Expansion	Yes	Yes	No	No	Yes
Gate threshold	No	Yes	No	No	Noise gate (No)
Programmable	Threshold/comp ratio	Yes	User	Compress ratio	User (& auto)
Meter type	LED bargraph	LED ladder	VU meter	VU	2(3) LED bargraphs
Meter functions	GR, de-ess, output	GR	Output, GR	Output, GR	In, out, VU, GR
Time constants	Fixed	Pgm dep	20-800 $\mu$ s 0.05-1.1s	Pgm dep	Fixed (adjustable)
Input connection	Act bal bridging	Act bal	Act bal bridging	Act bal bridging	Act bal bridging
Input level	18dBm max	-10dBm	20dBm max	20dBm	26dBm max (24dBm)
Output connection	Act bal xfmr opt	Act bal	Xfmr bal 600 $\Omega$	Xfmr bal 150 $\Omega$	Act bal <50(40) $\Omega$
Output level	24dBm max	14dBm	24dBm	24dBm 600 $\Omega$	26dBm (24dBm)
AF response	Param EQ, notch	-1dB 50-15k	$\pm 1$ dB 20-20k	$\pm 0.5$ dB, 20-20k	n.a.
Distortion	n.a.	0.3% 10dBm	<0.5% 50-15k/1.1s	<0.25% 30-15k	<0.05% (0.015%)
S/N ratio	n.a.	72dB unwt'd	> 81dB	-90dBm EIN	-128dBm EIN (> 78)
Reader Service Number	1104	1105	1106	1107	1108

Manufacturer	Valley International			Yamaha International	
Model/Series	Leveller	610	Dynamite	Commander‡	GQ2020
Design function					
Compression	w/AGC	w/AGC	Yes	w/AGC	1:1- $\infty$ :1
Limiting	No	Peak	Peak	No	Yes
Limiting pre-emp	No	Yes	No	No	.....
Expansion	No	Yes	Yes	Yes	Yes
Gate threshold	No	No	Noise gate mode	No	Yes
Programmable	Pgm dep	User, auto	User	User, auto	No
Meter type	4 LED bargraphs	LED bargraph	LED bargraph	LED bargraph	5-seg LED
Meter functions	In/out, VU, GR	GR	GR	GR	GR
Time constants	Pgm dep	Adjustable	Variable	Variable	Adjustable
Input connection	Act bal bridging	Act bal bridging	Act bal	Act bal griding	Unbal 30k $\Omega$
Input level	24dBm	24.5dB	24dBm max	24dBm	32dB max
Output connection	Act bal <50 $\Omega$	Act bal <50 $\Omega$	Unbal	Act bal <50 $\Omega$	Unbal 600 $\Omega$
Output level	24dBm 600 $\Omega$	24dBm 600 $\Omega$	21dBm 600 $\Omega$	24dBm 600 $\Omega$	+ 20dB max
AF response	n.a.	n.a.	n.a.	n.a.	$\pm 2$ dB, 20-20k
Distortion	<0.01%, 1kHz quiescent	<0.015% 1kHz	<0.04% 1kHz quiescent	<0.01%, 1kHz	$\pm 0.03$ %
S/N ratio	<-83dB 20-20k	<-75dB 20-20k	<-83dB 20-20k	<-83dB 20-20k	<-87dB IHF-A
Reader Service Number	1109	1110	1111	1112	1113

## Audio Delay Systems

These systems include products for simple delay to complex effects generation. Although not actually delay-based, time modification systems are included. Models marked with a diamond (◆) include AF contouring or multiband control. Digital delay techniques are used unless the model is noted with a bullet (•).

Manufacturer	AKG Acoustics			AMS/Advanced Music Systems	
Model/Series	TDU-8000 + R800	MSP-126	◆ADR68K	DMX 15-80S	DMX15T
Design features	Delay Phasing, flanging	Effects processor Echo, reverb Phasing, reverb	Reverb, effects Plate, room Echo, reverb Phasing, flanging	Delay/pitch change Talkshow delay Pitch change	Time modification Pitch change
Programmable	User	Factory, user	Factory, user	User	User
Delay range	1.3s	360ms	8s	> 50s	n.a.
Stereo operation	2-ch in, 8-ch out	Stereo, tapped line	Yes	Yes	Yes
AF bandwidth	20kHz	20kHz	15kHz	18kHz	18kHz



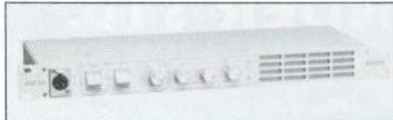
## Audio Delay Systems

Manufacturer	AKG Acoustics			AMS/Advanced Music Systems	
Model/Series	TDU-8000 + R800	MSP-126	◆ADR68K	DMX 15-80S	DMX15T
Input connection	Act bal, bridging	Act bal, bridging	Act bal, bridging	Act bal, bridging	Act bal, bridging
Output connection	Unbal	Act bal	Act bal	Act bal	Act bal, bridging
Dynamic range	110dB a-wtd	80dB	86dB	90dB	90dB
Remote control	Yes	No	Yes	No	w/interfaces
Interfaces	No	No	MIDI	Keyboard	RS-422/SMPTE, 9K6/19K2
Reader Service Number	1116	1117	1118	1119	1120

Manufacturer	AMS/Advanced Music System		ART/Applied Research & Technology		
Model Series	◆RMX 16	A/V Sync	DR1 (DR2a)	PD3	◆1500
Design features	Reverb, echo Room, plate Phasing, flanging	Audio synchronizer	Reverb, effects 21 (9) room Programs	Delay system Effective echo Multiaudio sync	Digital delay Effective echo Plate, room Phasing, flanging
Programmable	Factory, user	User, automatic	Factory, user	No	User
Delay range	1.5s	1.2s	25s (12.8s) decay	255ms	0.15-1500ms
Stereo operation	n.a.	3-channel	Yes (Stereo out)	1-in, 3-channel out	.....
AF bandwidth	18kHz	18kHz	14kHz (10kHz)	20kHz	22kHz
Input connection	Act bal, bridging	Act bal, bridging	Balanced	Act bal	n.a.
Output connection	Act bal	Act bal	Unbalanced	Act bal	n.a.
Dynamic range	90dB	90dB	>90dB (75dB)	90dB unwt'd	>90dB
Remote control	Yes	Yes	Yes	No	Yes
Interfaces	Bar code want opt	Video, TTL	MIDI	None	.....
Reader Service Number	1121	1122	1123	1124	1125

Manufacturer	Audio/Digital		BEL Electronics	EMT-Franz/Gotham	
Model Series	ADD-2 (ADD-3)	TC-4	TC-5	BD 320	# 445
Design features	Digital delay Effective Reverb, echo	Broadcast delay Talkshow delay Dump option	Delay processor Effective Reverb, echo	Delay system Talkshow delay Reverb, echo Plate, room Phasing, flanging Time modification	Delay Talkshow delay

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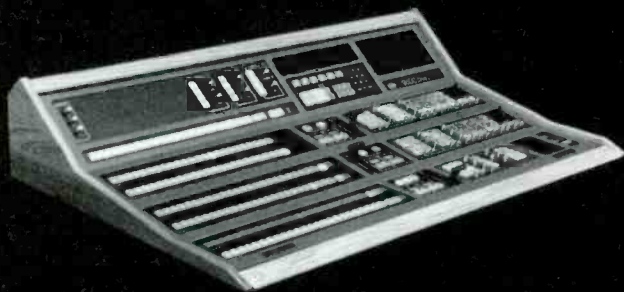
## Audio Delay Systems

Manufacturer	Audio/Digital				BEL Electronics BD 320	EMT-Franz/Gotham # 445
	Model Series	ADD-2 (ADD-3)	TC-4	TC-5		
Programmable	User	User	User	Manual setting	User	
Delay range	0-490ms	6.8s	500ms, exp to >1s	8s std, expandable	21.8s	
Stereo operation	No	w/2 units	No	Possible	w/2, 4, 6 outputs	
AF bandwidth	20kHz	15kHz	20kHz	15kHz for 8s	20kHz	
Input connection	Act bal,(xfmr opt)	Act bal, unbal	Act bal, unbal	Bal bridging	Act bal, bridging	
Output connection	Act bal,(xfmr opt)	Act bal, unbal	Act bal, unbal	Unbal	Act bal	
Dynamic range	>90dB	85dB A-wtd	90dB a-wtd	.....	88dB	
Remote control	No	Yes	.....	.....	Yes	
Interfaces	None	.....	None	.....	Serial remote	
Reader Service Number	1126	1127	1128	1129	1130	

Manufacturer	Eventide				
	Model Series	CD 254 (JJ 193)	BD 931 (BD 932)	BD 955 (BD 980)	◆SP2016
Design features	Reverb, echo Plate, room	Delay (multitap) (AV synchronization)	Broadcast delay w/delay dump	Broadcast delay w/delay dump (Time modification)	Special effects Plate, room Reverb, echo Phasing, flanging
Programmable	Factory, user	Internal switches	No	User	Factory, user
Delay range	999ms (440ms)	254ms (2.046s)	3.2, 6.4 s (BD 932 only)	6.4s (10s)	3.2s
Stereo operation	Stereo output	No	(BD 932 only)	w/2 inputs (Yes)	Yes
AF bandwidth	12kHz (15kHz)	12kHz	16kHz	7.5-15kHz (20kHz)	15kHz or 8kHz
Input connection	Act bal, bridging	Act bal, bridging	Bal bridging	Bal bridging (act)	Act bal
Output connection	Act bal	Act bal,(4 out)	Act bal	Act bal	Act bal
Dynamic range	88dB (75dB)	>90dB	90dB	90dB	87dB
Remote control	246S (252S) rmt ctl	No	No	Yes	Yes
Interfaces	No	No	No	No	IEEE, MIDI
Reader Service Number	1131	1132	1133	1134	1135

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## Audio Delay Systems

Manufacturer	Eventide	Fostex	Furman Sound	Industrial Research	JBL/UREI
Model Series	H969(949) Harmonizer	3050	◆RV-3	DF-4015	7922
Design features	Time modification +100%, -200% Pitch change Phasing, flanging	Reverb, echo	Reverb, echo Plate, room	4-tape Delay line	Dual output delay
Programmable	User	.....	Factory, switch select	User	User
Delay range	3.06s (393.75ms)	270ms	n.a.	192ms	327ms
Stereo operation	w/2 units	No	Stereo output	No	No
AF bandwidth	16kHz, 8kHz	10kHz	11kHz	15kHz	20kHz
Input connection	Bal/unbal	Unbalanced	n.a.	Xfmr bal bridging	Act bal, bridging
Output connection	Act bal, unbal	Unbalanced	n.a.	Xfmr bal	Xfmr
Dynamic range	>90dB	.....	79dB	90dB	>90dB
Remote control	Keyboard input	.....	On, off	No	No
Interfaces	(IEEE)	.....	No	No	No
Reader Service Number	1136	1137	1138	1139	1140

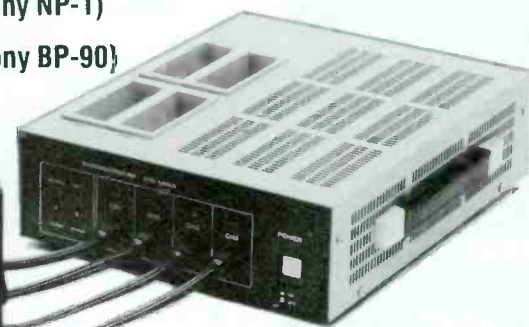
Manufacturer	Klark Teknik		KORG		
Model Series	DN 716	DN 773	◆SDD-3300	◆DRV-3000	DRV-2000
Design features	Delay line AV synchronization	Broadcast Delay Talkshow delay AV synchronization	3 digital delays No Reverb, echo Phasing, flanging	Special effects Plate, room Reverb, echo Pitch change Phasing, flanging	Reverb Plate, room Reverb, echo Phasing, flanging
Programmable	User	Internally	Factory, user	Factory, user	Factory, user
Delay range	1.3s	10s stereo, 20s mono	500ms	n.a.	n.a.
Stereo operation	3 outputs	Yes	3 channel	Through put	Yes
AF bandwidth	20kHz	20kHz	16kHz	20kHz	12kHz
Input connection	Act bal, bridging	Act bal, bridging	Unbal bridging	Unbal bridging	Unbal bridging
Output connection	Unbal xfmr opt	Xfmr	Unbal	Unbalanced	Unbal
Dynamic range	>90dB	85dB	80dB	89dB	80dB
Remote control	No	Yes	Yes	Wireless control	Yes
Interfaces	No	No	MIDI	MIDI	MIDI
Reader Service Number	1141	1142	1143	1144	1145

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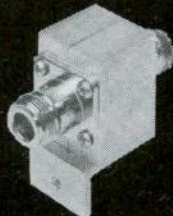
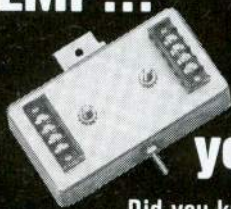
Circle (133) on Reply Card

## Audio Delay Systems

Manufacturer	Lexicon				
Model Series	1300	2400 (1200)	◆PCM 70	◆480L (224X)	◆#200 (PCM60)
Design features	AV delay Synchronizer	Time modification 0.75-1.33x range AV synchronizer ± 10% pitch change Factory, user	Effects Processor Plate, room Reverb, echo Phasing, flanging Factory, user 936ms	Effects processor Plate, room Reverb, echo Phasing, flanging Factory, user n.a.	Reverb Plate, room Reverb, echo User & (factory) n.a.
Programmable	User	Factory, user	Factory, user	Factory, user	User & (factory)
Delay range	2.048s	n.a.	936ms	n.a.	n.a.
Stereo operation	Yes (mono in)	Yes (2-1200 needed)	Mono in, stereo out	Yes	Yes
AF bandwidth	20kHz	15kHz	15kHz	20kHz (15kHz)	10kHz reverb
Input connection	Xfmr bridging	Xfmr, active opt	Act bal, bridging	Act bal, bridging	Act bal, bridging
Output connection	Xfmr	Xfmr, active opt	Unbal	Act bal	Xfmr (unbal)
Dynamic range	>90dB	90dB	80dB	98dB (86dB)	84dB (80dB)
Remote control	Through interface	Yes	Yes	LARC system	Yes
Interfaces	RS-232/422	Many, ask Mfr.	MIDI	MIDI, RS-232	.....
Reader Service Number	1146	1147	1148	1149	1150

Manufacturer	Lexicon	McCurdy Radio	NEC	Urban Associates	Tektronix
Model Series	PCM 41	ADU-10/-10S	AS-18	◆111B dual reverb	118-AS
Design features	Delay processor Reverb, echo Phasing, flanging	Delay Talkshow delay w/delay dump	AV synchronizer	Reverb, echo	AV synchronizer
Programmable	User	User	User	User	No
Delay range	400ms (4800ms)	7.1s	4s	30ms fixed - 2s	160ms, expandable
Stereo operation	No	ADU-10S	2-3 channel	Yes	No
AF bandwidth	16kHz	20kHz	20kHz	6kHz	20kHz
Input connection	Act bal, bridging	Balanced	Bal bridging	Act bal	Balanced
Output connection	Unbal	Balanced	Balanced	Xfmr bal	Balanced
Dynamic range	90dB DIN	>90dB	90dB	n.a.	100dB
Remote control	Yes	ADR-10-L panel	HPD-6377 panel	No	Yes
Interfaces	No	RS-422	Video, frame pulses	No	TEK 110-S video synchronizer
Reader Service Number	1151	1152	1153	1154	1155

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## Audio Delay Systems

Manufacturer	Yamaha International		
Model Series	REV-7	◆SPX90 effects	◆YDD-2600
Design features	Plate, room 15 early reflection Phasing, flanging	Plate, room 2 early reflection 4 pitch change, 2 flange/phase programs 128 programs	Talkshow delay AV synchronizer
Programmable	Factory, user	.....	Yes
Delay range	99.9ms + 9.9s	.....	2.66s adjustable
Stereo operation	Dual channel	Yes	Yes
AF bandwidth	20Hz-12kHz	20Hz-12kHz	20Hz-20kHz
Input connection	Bal 10kΩ + 4dBm	Unbal 10kΩ	Bal > 10kΩ + 4dBu
Output connection	Bal 600Ω + 4dBm	Unbal 600Ω	Bal 600Ω + 4dBm
Dynamic range	> 90dB typical	> 90dB typical	≥ 90dB
Remote control	w/RC7 controller	MIDI	Yes
Interfaces	MIDI bus	MIDI bus	RS-232, serial I/O
Reader Service Number	1156	1157	1158

## Telephone Bandwidth Extenders

These systems use a frequency translation scheme to improve the operational bandwidth of telco lines for remote audio pickups. All systems operate on 110Vac.

Manufacturer	Comrex Corporation			Gentner Engineering	C N Rood Electronics
Model Series	PTLX/RTLX	PLX II/RLX II	TLX/PLX (PLX micro◆)	EFT-1000	System 114M/110D
System type	Dual line	Single line	Single line	Single line	Dual line
Frequency offset	250Hz, 2kHz	250Hz	250Hz	250Hz	350Hz, 2.1kHz
AF response	± 2dB, 50Hz-50kHz	± 1.5dB 50Hz-3kHz	± 2.5dB 50Hz-3kHz	± 0.5dB 50Hz-3.5Hz	± 0.5dB, 50Hz-4.95kHz
Translation error	0.08Hz	0.08Hz	0.08Hz	0.0006Hz	± 1Hz
Source inputs	600Ω line	600Ω line	600Ω line	Mic, line	Mic, line
Output connection	Xfmr bal	Xfmr bal	Balanced	Active bal	Xfmr bal

*Nothing*

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## Telephone Bandwidth Extenders

Manufacturer	Comrex Corporation	Gentner Engineering	C N Rood Electronics
Model Series	PTLX/RTLX	PLX II/RLX II	TLX/PLX (PLX micro♦)
Output level	-9, +8dBm	-10, +4dBm	-9dBm
Packaging	Portable	Portable	Rack-mount
Powering	120/240Vac	120Vac	120-240Vac
Input connection	Xfmr bal	Xfmr bal	Xfmr bal
Input level	-40dBm	-40dBm	-40dBm
AF output connection	Unbalanced	Xfmr bal	Unbalanced
AF output level	0dBm	0dBm	+8dBm
Packaging	Rack-mount	Desktop unit w/couplers	Rack-mount (portable) ♦w/coupler, AGC
Reader Service Number	1066	1067	1068

Manufacturer	C N Rood Electronics		
Model Series	System 110M/110D	System 111M/111D	System 112M/112D
System type	Dual line	Dual line	Single line
Frequency offset	350Hz, 2.1, Hz	350Hz, 2.1kHz	350Hz
AF response	± 0.5dB 50Hz-4.95kHz	± 0.5dB 50Hz-4.95kHz	± 0.5dB 50Hz-3.05kHz
Translation error	± 1Hz	± 1Hz	± 1Hz
Source inputs	Mic, line	Mic, line	Mic, line
Output connection	Xfmr bal	Xfmr bal	Xfmr bal
Output level	0dBm ± 12dBm adj	0dBm ± 12dBm adj	-6dBm
Packaging	Rack-mount	Rack-mount	Portable
Powering	110-220Vac	110-220Vac	R14S battery
Input connection	Xfmr bal	Xfmr bal	Xfmr bal
Input level	-30, +17dBm	-30, +17dBm	-6dBm
AF output connection	Active bal	Active bal	Active bal
AF output level	0dBm	0dBm	0dBm w/auto EQ
Packaging	Rack-mount	Rack-mount †+2 unshifted channels	Rack-mount
Reader Service Number	1071	1072	1073

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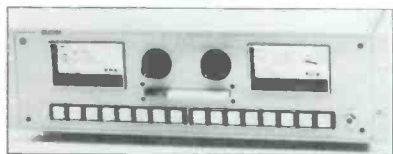


# Wireless Microphone Systems

These low power FM mic/transmitter, receiver links are intended for in-studio, on-set performer use. Range is limited to approximately 1,100 feet, dependent upon the surroundings. Unless marked with a diamond (◆), the transmitters do not have a line input facility. For 9Vdc powering on most units, the MN1604 transistor radio battery is recommended. Most systems operate in the 150-216MHz band and may extend to 130MHz and to 250MHz. Others in low frequency ranges are marked with a bullet (•); those in the UHF spectra are noted with a star (★). In audio response ranges, Hz is understood. Stability of FM center carrier is rated  $\leq 0.005\%$  for all models.

Manufacturer	AKG Acoustics	Beyer Dynamic		Cetec Vega	
Model Series	System 185	•System 85 (185 <sup>2</sup> )	System TS185	T-80 series/R-40 series	CVX "Reporter" series
Audio response	-2dB 40-20k(-15k)	±1dB, 40-20k	-2dB, 40-14k	±1.5dB 90-15k	±1.5dB 60-14k
S/N ratio	>90dB, >85dB <sup>1</sup>	>56dB mic dependent	>56dB (MCE-5 mic)	>100dB	101dB
Distortion, system	<0.2%	<0.5%	<2%	0.15% THD/IMD typical	0.5% max
Modulation control	Switchable limiter	Limiting	Limiting	Limiting, compression	.....
Companding function	Low Noise compander	Yes	Yes	Dynex II	.....
Transmitter model	T185.10W (T185.10N)	SEM85R-LN (SEM185 US)	TS185US	T-81/82/83/84/87	T-23 (T-24)
Transmitter packaging	Hand-held	Handheld	Pocket transmitter	Handheld	Bodypack (Handheld)
RF output level	≈25mW (≈35mW)	25mW	50mW (3mW radiated)	50mW	50mW nominal
Carrier deviation	±60Hz (±12kHz)	±50kHz, ±65kHz peak	±13kHz peak	±15kHz	15kHz max
Microphone type	Dynamic, condenser	Electret	Electret, dynamic	Dynamic, electret, ribbon	Electret
Power requirement	9Vdc	9Vdc	9Vdc	9Vdc	9Vdc
Operating weight	13.6 oz w/mic, bat	360gm	220gm	9-13.5oz per model	7oz (9.5oz)
Receiver model	SR185.10 [SR185.11]	NE85.31 (NE185.31)	NE 185 US	R-41/42/42W	R-26 portable
Sensitivity for SNR	1μV, >35dB [>55dB]	1μV >50dB	1μV >85dB	<0.7μV, 20dB quieting	<1.9μV, 50dB
Spurious rejection	>110dB	>100dB (>110dB)	>110dB	-90dB	-80dB
Output connection	Bal 600Ω, unbal	Bal XLR, headphone	Bal, XLR	Bal XLR	Bal, XLR
Audio output level	+6dBm or variable	+6dBm	-20dBm, +6dBm	Mic, line selectable	Mic, line selectable
Power requirement	110-220Vac, 15-27Vdc	110-220Vac, 15-27Vdc	110Vac, 15-27Vdc	110-220Vac, 12Vdc	9Vdc, 10.5-18Vdc
Metering	AF, RF, battery levels	+Vdc, RF/transmit level	RF/transmit level, +Vdc	RF, VU/AF proc, diversity	RF, AF, battery
Panel indicators	LED ladder	LED displays	LED ladder, points	Meter, point LEDs	VU scale meter
Antenna types	50Ω SO-239 for whips	TTA85-MA whip accessory	TTA 85MA whip	Whip, dipole	1/2-wave whip
Diversity receiving	[SR185.11]	Yes	Available	R-42 only	No
Multichannel system	No	3-channel	1 or 3-channel	No	No
<sup>1</sup> S/N ratio w/companding and 1mV into receiver, W & N units, respectively. <sup>2</sup> Type 185 approved for US, UK use.					
Reader Service Number	1211	1212	1213	1214	1215

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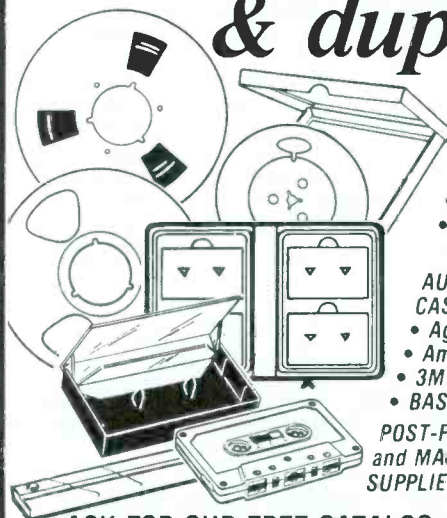
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## Wireless Microphone Systems

Manufacturer	Cetec Vega		ComTek	Edcor	
	Model Series	77Dynex II/R-33 ProPlus	Pro 1B/1H systems	◆ Model 72 (172)	E COM Highband
Audio response	± 1.5dB 45-15k	± 1.5dB, 100-13k	± 3dB (-2dB) 40-15k	± 2dB 200-16k	± 2dB 200-16k
S/N ratio	>100dB	103dB typical	75dB (95dB) unwt'd	.....	.....
Distortion, system	<0.5%, 0.2% typical	<0.4%	<1% (0.5%)	1%	1%
Modulation control	Limiting/compression	Limiting, compression	Compression	Soft compression	Soft compression
Companding function	Dynex II	Dynex II	No (Yes)	.....	.....
Transmitter model	Model 77 Dynex II	T-37 (T-36/-39)	M72L (M72CL)	E COM 1	E COM 1 Lavalier
Transmitter packaging	Bodypack	Bodypack (handheld)	Body, pocket pack	Hand-held	Pocket pack
RF output level	50mW	50mW (40mW)	50mW	100mW	100mW
Carrier deviation	± 15kHz	± 15kHz	± 30kHz, ± 15kHz in US	± 7.5kHz	± 7.5kHz
Microphone type	Electret, dyanmic	Electret	Dynamic, electret	EV671 element	Various lavalier
Power requirement	9Vdc	9Vdc	9Vdc	12Vdc	9Vdc
Operating weight	5oz	6oz (10oz)	4 oz (4.5 oz)	8.7 oz w/o battery	10.7 oz w/o battery
Receiver model	R-33 ProPlus	R-31A (66B portable)	MR-72 (MR172)	E COM 5	E COM 2 or 3
Sensitivity for SNR	<2.5µV, 50dB	<2.2µV, 50dB	0.5(0.7)mV 20dB quieting	1µV 20dB quieting	1µV, 12dB SINAD
Spurious rejection	<-70dB	<-80dB	-65dB (-80dB)	-70dB	-70dB
Output connection	Bal, 600Ω, 150Ω	Bal 600Ω, 150Ω	Active bal	.....	.....
Audio output level	Line, mic	Mic, line	0dBm (+8dBm)	3Vp-p	100mV or line
Power requirement	9Vdc, 10-20Vdc	110Vac or (dc)	12Vdc, 115Vac	12Vdc, 115Vac	12Vdc, 115Vac
Metering	RF, AF, battery	RF, AF (and battery)	AF (& RF) level	.....	.....
Panel indicators	LEDs (VU display)	LEDs (VU meter)	Power, carrier	Carrier presence	Carrier presence
Antenna types	Various	Whip	Whip or dipole	Furnished	Whip furnished
Diversity receiving	No	No	No (option)	Yes	No
Multichannel system	No	No	4 (8) per receiver	1 per receiver	1 per receiver
Reader Service Number	1216	1217	1218	1219	1220

Manufacturer	HM Electronics			Lectrosonics	Micron Audio
	Model Series	# 42/420 (25/25RA)	# 87/870 (85/850)	# 82/820 (58/580)	◆ Freedomike series
Audio response	± 1dB 100-12k	± 3dB 50-15k	± 3dB 50-15k	± 1dB 50-18k	< ± 2dB 40-15k
S/N ratio	>60dB A-wtd	115dB dynamic range	115dB dynamic range	109dB A-wtd	>75dB (115dB TX503)
Distortion, system	1%	0.3%	0.3%	<1% (0.7% typical)	<0.3%
Modulation control	Compression	.....	.....	Compression	Yes
Companding function	No	Yes	Yes	.....	CNS system
Transmitter model	TX425/TV (WM250/TV)	TX872/TV (TX852/TV)	TX822/TV (TX580/TV)	M 185	TX503
Transmitter packaging	Pocket (hand-held)	Hand-held	Pocket (hand-held)	Bodypack	Handheld
RF output level	50mW	50mW	50mW	50mW	50mW
Carrier deviation	± 15kHz	± 15kHz	± 15kHz	± 15kHz	± 15kHz
Microphone type	Electret or (dynamic)	Electret [or dynamic]	Electret or (dynamic)	Any type	AKG electret
Power requirement	9Vdc	9Vdc	9Vdc	9Vdc alkaline	9Vdc
Operating weight	4.5 oz (16 oz)	15 oz	4.5 oz (15 oz)	5.3oz	11 oz
Receiver model	WM125 [WM300A]	RX722 (RX752)	RS722/752	R 185/185D (CR 185/33)	MDR4/MDR540
Sensitivity for SNR	1µV 20[30]dB quieting	1µV 30dB quieting	1µV 30dB quieting	0.5µV 20(35)dB quieting	1.5µV, 75dB
Spurious rejection	>60dB	>60dB (>65dB)	>60dB	<-60dB (-80dB)	<-80dB
Output connection	Act [xfmr] bal	Xfmr bal	Xfmr bal	XLR and (phone)	XLR, Type D 600Ω
Audio output level	0dBm nominal	+8dBm (10dBm) & mic	+8dBm & mic level	Mic, line selectable	Line level
Power requirement	10-30Vdc, 115Vac	12-30Vdc, 110Vac	12-30Vdc, 110Vac	110Vac 12Vdc (9Vdc)	110-220Vac, +12Vdc
Metering	RF, AF, +V on WM125A	RF, AF, battery	RF, AF, battery	RF, AF, battery	RF, AF, +Vdc
Panel indicators	+V, carrier	+Vdc, carrier	+Vdc, carrier	LEDs (& VU meter)	LED ladder/module
Antenna types	Whip furnished	Whip furnished	Whip furnished	Whip	3-element Yagi dipole
Diversity receiving	Option	Option	Option	Yes (No)	Yes
Multichannel system	1 per receiver	1 per receiver	1 per receiver	No	To 8 channels
Reader Service Number	1221	1222	1223	1224	1225

Manufacturer	Micron Audio		Nady Systems	RF Technology	Sennheiser Electronics
	Model Series	TX500/MDR530CNS	TX100/MR110	VHF 601/701 systems	★RM-102 (RM-100)
Audio response	± 2dB 50-15k	± 1dB, 50-15k	± 3dB, 25-20k	± 1dB 50-10k	70-20k
S/N ratio	>115dB strong signal	>80dB	.....	60dB unwt'd	>96dB
Distortion, system	<0.3%	<0.3%	<0.3%	1% w/AGC	<1%
Modulation control	Yes	Yes	None	Soft limiting	Limiting
Companding function	CNS system	No	Yes	No	HiDyn system
Transmitter model	TX501 (TX502)	TX101 (TX102)	VHF 601/701LT	Standard Unit	SKM4031 (SKM4031-90)
Transmitter packaging	Pocket pack	Pocket pack	Pocket package	Pocket pack	Handheld
RF output level	50mW	50mW	50mW	50mW	10mW (30mW)
Carrier deviation	± 15kHz	± 15kHz	± 15kHz	± 50kHz	40-56kHz
Microphone type	Various	Various	Electret	External mic	Dynamic capsule
Power requirement	9Vdc	9Vdc	9Vdc	9Vdc	3 1.5V alk Mn cells



## Wireless Microphone Systems

Manufacturer	Micron Audio	Nady Systems	RF Technology	Sennheiser Electronics
Model Series	TX500/MDR530CNS	TX100/MR110	VHF 601/701 systems	★RM-102 (RM-100)
Operating weight	8.5oz (10.5oz)	10.5oz	2.6oz	12.5 oz
Receiver model	MDR530CNS	MR110 camera receiver	VHF 601/701R	RM-102 (RM-100)
Sensitivity for SNR	1.5 $\mu$ V, 75dB	<20 $\mu$ V, 80dB	1.5 $\mu$ V, 20dB quieting	.....
Spurious rejection	-80dB	<-80dB	-80dB	-70dB
Output connection	XLR, phone bal	Bal, 5-pin connector	Bal, unbal/XLR, phone	.....
Audio output level	Mic, line levels	Mic level	Switchable mic/line	+8dBm on RM-100
Power requirement	110Vac, 12-18Vdc	12-18Vdc from camera	110Vac, 24Vdc	12Vdc, 115Vac
Metering	Vdc, RF, AF	RF, battery	AF, RF level, +Vdc, RF	.....
Panel indicators	LED ladder	LED multifunction	LED ladders, points	Power, carrier
Antenna types	Whip, 3-element Yagi	Whip on BNC	Whip furnished	Furnished
Diversity receiving	Yes	No	No	Yes
Multichannel system	No	No	No	1/rcvr (5 RM-100)
Reader Service Number	1226	1227	1228	1229

Manufacturer	Sennheiser Electronics	Shure Brothers	Sony Broadcast	Switek Enterprises
Model Series	SK2012/EM1001	W10BT/W25DR	VHF systems	★UHF systems
Audio response	20-20k	±1dB 50-15k	±2.5dB 100-15k	±2dB 75-13k
S/N ratio	>73dB (90dB)	>90dB	>60dB	60dB
Distortion, system	<3%	<0.5%	<0.7% ±15kHz	2%
Modulation control	Switchable limiting	Compressor	.....	.....
Companding function	HiDyn system	.....	Yes	.....
Transmitter model	SK2012-6 (SK2012-90)	W10BT	WRT210/WRT220	WRT27/27A
Transmitter packaging	Pocket pack	Pocket, body pack	Hand-held	Body pack
RF output level	<10mW (ca 30mW)	50mW max	50mW into 50 $\Omega$	6mW
Carrier deviation	±8-10kHz (±40-56kHz)	±12kHz	±1.9kHz -64dB	±150kHz
Microphone type	Electret	WM98, WL83 lav electret	Various	Electret
Power requirement	3 1.5V alk Mn cells	9Vdc, 8.4V Nicad	3Vdc	9Vdc
Operating weight	200gm	6 oz w/battery	14 oz	6 oz
Receiver model	EM1001 (EM1001-90)	W25DR (W20R)	WRR210/WRR220	WRR27/37/57
Sensitivity for SNR	3 $\mu$ V (1.5 $\mu$ V)	<0.5 $\mu$ V, 12dB SINAD	>65 $\mu$ V 20dB quieting	20dB $\mu$ , 30dB
Spurious rejection	.....	>80dB	<-70dB	<-80dB
Output connection	Bal DIN 20 $\Omega$ (XLR 10 $\Omega$ )	Mic 200 $\Omega$ , line 600 $\Omega$	.....	Xfmr bal
Audio output level	Mic and (line)	+13.5dB max line	-58dBm mic level	-20dBm
				◆Mark 2L-RFSD/50A
				±1dB 20-12k
				96dB
				1%
				Compression
				Yes
				Mark 50A-dbs
				Body, pocket pack
				50mW
				±10kHz
				SM87, ECM-50
				9Vdc
				6 oz
				Mark 2L-RFSD
				0.2 $\mu$ V, 20dB quieting
				<-80dB
				Balanced
				-40, +0dBm

# ERASE IT!



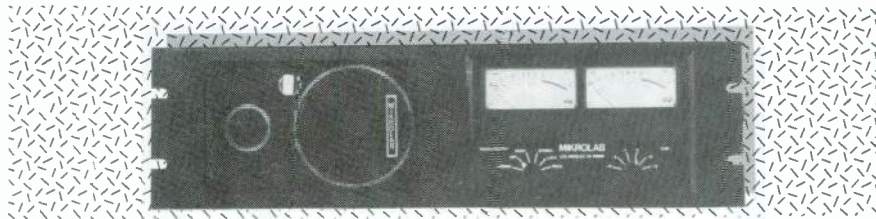
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<input type="checkbox"/> 1 ea. VU-III Stereo Monitoring Panel	\$240.00
<input type="checkbox"/> 1 ea. MM-I Self Powered Mikromonitor	\$179.95
<input type="checkbox"/> 1 ea. RM-I Rack Mount Kit	\$ 75.00
<input type="checkbox"/> 1 ea. XL 18MF Interconnect Cable	\$ 19.00
<input type="checkbox"/> Total Regular Price	\$513.95

★ Limited Introductory Package Price

**\$ 440.<sup>00</sup>**

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# SAVE TIME

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## Wireless Microphone Systems

Manufacturer	Sennheiser Electronics	Shure Brothers	Sony Broadcast	Swintek Enterprise-
Model Series	•SK2012/EM1001	W10BT/W25DR	VHF systems ★UHF systems	◆Mark 2L-RFSD/5CA
Power requirement	110-220Vac, 12-24Vdc	13.5Vdc 200mA	9Vdc 6-AA cells	12Vdc, 115Vac
Metering	HF, audio	AF, RF levels	RF, AF levels	RF, AF, battery
Panel indicators	LED display	LED ladder	.....	+V, carrier, channel
Antenna types	Whip	¾-wave whips	Whip furnished	Furnished
Diversity receiving	No	Diversiphase W25DR	Option	Option
Multichannel system	No	No	2 per receiver	1 per receiver
Reader Service Number	1231	1232	1233	1234

Manufacturer	Telex Communications			
Model Series	HT-400/FMR-4	WT-400/ENG-4	WT-50/FMR-2	WHM/FMR50
Audio response	50-15k	±1dB 100-15k	±2dB 50-15k	±1dB, 50-15k
S/N ratio	102dB w/comparing	104dB companded	>90dB ultimate	98dB A-wtd
Distortion, system	<0.5%	<1%	<0.3%	<0.5%
Modulation control	Compression	Compression	Compression	Compression
Companding function	Yes	Yes	Yes	Yes
Transmitter model	HT-400 series	WT-400	WT-50 (WT-50G)	WHM410/WHM500
Transmitter packaging	Handheld	Pocket/body pack	Pocket/body pack	Handheld
RF output level	45mW	50mW max, 45mW typical	50mW	15mW max
Carrier deviation	±12kHz	±12kHz	±12kHz	±12kHz
Microphone type	Dynamic, condenser	Dynamic, electret	Various	Dynamic/condenser
Power requirement	9Vdc, 8.4Vdc Nicad	9Vdc	8.4V Nicad, 9Vdc	9Vdc
Operating weight	14.8-16.4oz	5.5oz	5.4oz	16oz/14oz
Receiver model	FMR-4	ENG-4	FMR-2 (FMR-2G)	FRM-50
Sensitivity for SNR	<0.5µV 12dB SINAD	0.5µV 12dB SINAD	<0.5µV, 12dB SINAD	<0.5µV, 12dB SINAD
Spurious rejection	<-70dB	<-70dB	<-70dB	<-75dB
Output connection	Bal XLR 8/600/10kΩ	XLR bal 600Ω	XLR bal 8/600/10kΩ	XLR bal 200Ω
Audio output level	Mic, line selectable	Mic, line selectable	Mic, line selectable	Mic level
Power requirement	110-220Vac	12-24Vdc	110Vac, 13.6Vcc	110-220Vac, 13.6Vdc
Metering	RF, AF, Freq	RF, AF, battery	AF, RF	RF presence, AF
Panel indicators	LED ladder	Meter	LED ladder	LED ladder, pcint
Antenna types	¼, ¾-wave whips	Whip	Whip	Single whip
Diversity receiving	Pos-i-Phase	No	Pos-i-Phase	No
Multichannel system	To 4 channels	4-channel	No	No
Reader Service Number	1236	1237	1238	1239

# It's 3:55 a.m. Do you know what your transmitter is doing?

Now your transmitter can alert you to problems by phone—anywhere, anytime with the VRC-1000 Remote Control. A preprogrammed, synthesized voice quotes parameters; you make adjustments right on your Touch-Tone® phone. Or, you can dial from any-

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- Full automatic commands
- Fully secure
- Automatic alarm reporting and correction

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RF PRODUCTS DIVISION





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TRANSMITTING/TEST &  
MEASURING SPECS

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# RF/Test and measurement specs

## Remote Pickup Systems

These remote aural program transport systems include transmitters and receivers operating in 450-470MHz and 148-174MHz (unless marked with a dagger (†)) spectra. They are all 2-channel systems with a carrier tolerance of  $\pm 0.00025\%$ . All receivers are of dual conversion design and provide a balanced audio signal output. In audio frequency range, Hz is understood.

Manufacturer	Marti Electronics			Moseley Associates
Model/Series	RPT-2/AR-10	RPT-15/CR-10	RPT-30/CR-10	RPL-4C
Typical range	6 miles	15 miles	25 miles	.....
Audio response	$\pm 1.5$ dB 50-15k	$\pm 1.5$ dB 50-15k	$\pm 1.5$ dB 50-15k	$\pm 1.5$ dB 30-15k
S/N ratio (system)	55dB 100% mod unwt'd	55dB 100% mod unwt'd	55dB unwt'd 100% mod	55dB 100% mod
Harmonic distortion	<0.2% 100% mod	<0.2% 100% mod	<0.2% 100% mod	<2%
Transmitter No.	RPT-2	RPT-15	RPT-30	RPL-4C
RF output level	2.5W	15W	45W	10-13W
Carrier deviation	$\pm 10$ KHz	$\pm 10$ KHz	$\pm 10$ KHz	$\pm 12.5$ KHz
Modulation control	Compressor/limiter	Compressor, limiter	Compressor, limiter	Limiter
Auto relay encoder	27Hz	27Hz	27Hz	.....
Integral audio mixer	2-channel	2-channel	4-channel	3-channel
Active unbal	Active unbal	Active bal	Balanced	
Metering functions	RF, dcV, compression	RF, dcV, compression	RF, dcV, compression	AF, RF-F/R, dcV, drive
Power requirements	115Vac, 13Vdc	120Vac, 13Vdc	115Vac, 13Vdc	240Vac, 13Vdc
Operating weight	5 lbs	9 lbs	12 lbs	16 lbs
Receiver No.	AR-10	CR-10	CR-10	RPL-4C
Sensitivity	0.5 $\mu$ V 28dB quieting	0.5 $\mu$ V 28dB quieting	0.5 $\mu$ V 28dB quieting	1.5 $\mu$ V 20dB quieting
Spurious signal reject	90dB below carrier	90dB below carrier	90dB below carrier	65dB below carrier
AF output level	4dBm	10dBm	10dBm	10dBm
Power requirements	115Vac, 13Vdc	120Vac, 13Vdc	115Vac, 13Vdc	240Vac
Metering functions	AR, RF, decode	AR, RF, decode	AF, RF, dcV, decode	AF, RF, dcV
Auto relay decoder	27Hz	27Hz	27Hz	Yes
Reader Service Number	1497	1498	1499	1500

## AM Radio Transmitters

Radio transmission equipment based on amplitude modulation for operation in the broadcast band (550-1650kHz) or in shortwave service on international broadcast frequencies. A diamond (♦) indicates tube-type IPA driver stages; all others are solid-state. Auto recycling is standard on 1kW or greater output systems, as is a 50 $\Omega$  monitoring connection. Request information on stereo applicability for those noted for broadcast use.

Manufacturer	Cemlys		Varian Continental TVT		
Model Series	♦EB-KV/70 (EB-2VK/70†)	♦EB-VD/70 (EB-DT/70)	315-R1	419F-2	♦420B
Service band	Broadcast	Broadcast	Broadcast	Shortwave	Shortwave
RF output rating	10kW (20kW)	5kW (2kW)	5kW	250kW	500kW
RF connector (in.)	1 $\frac{1}{2}$ 50 $\Omega$	50 $\Omega$ unbal	1 $\frac{1}{2}$	9 EIA, 7 $\frac{5}{8}$ /300 $\Omega$	9 EIA 7 $\frac{5}{8}$ /300 $\Omega$
Carrier stability	$\pm 5$ Hz	$\pm 5$ Hz	$\pm 5$ Hz	$\pm 1 \times 10^6$ Hz	$\pm 1 \times 10^6$ Hz
Carrier shift	.....	.....	2%, 100% mod	<5%, 100% mod	<5%, 100% mod
Modulation (max)	125%	125%	125%	100%	100%
AF input connection	Bal, 600 $\Omega$	Bal, 600 $\Omega$	Active bal	Bal, unbal	Bal, unbal
AF response	$\pm 1$ dB 40Hz-8.5kHz	$\pm 1$ dB 100Hz-9kHz	1, 20Hz-20kHz, 95% mod	1dB, 50Hz-7.5kHz	1dB, 50Hz-7.5kHz
THD distortion	<1.5% 100% mod	<2% 95% mod	<2%, 100% mod	<3%, 90% mod	<4%, 95% mod
AM noise figure	<-65dB	<-65dB	<-60dB unwt'd	<-55dB	<-55dB
Final amp device	2 - 3CX2500F3 (2 prs)	3CX2500F3	3CX3000F7	4CV250,000B	4CM400,000
Modulator final device	2 - 4CX3000A (2 prs)	2 5CX1500A	3CX3000F7	2-4CV250,000B	4CM400,000
Floor space required	16'Wx37D	67'Wx34D (63'Wx31D)	35Wx34D	35m <sup>2</sup>	42m <sup>2</sup>
Separate power rack	No	No	No	Yes	Yes
Input ac power required	220Vac 3 $\phi$	220Vac 3 $\phi$	208-250Vac 3 $\phi$	480V, 3 $\phi$	4160V, 3 $\phi$
Power factor	>0.94	>0.92	0.95	0.9	0.9
Power consumption	54kVA for 20kW	15.6kW (6kVA)	12.8kVA	625kVA	1075kVA
System efficiency	80% final/40% modulator	...(80% final)	>55%	60%	70% typical
Fault logic architecture	Solid-state, relay	Solid-state, relay	Relay	Relay	$\mu$ P system
$\mu$ P diagnostics	No	.....	No	No	Yes
Reader Service Number	1336	1337	1338	1339	1340

Manufacturer	Varian Continental TVT			CSI Electronics
Model Series	♦418D-2	316F-1	317C-3	♦T-100-A1
Service band	Shortwave	Broadcast	Broadcast	Broadcast, shortwave
RF output rating	100kW	10kW	10kW	110kW
RF connector (in.)	6 EIA, 7 $\frac{5}{8}$ /300 $\Omega$	1 $\frac{1}{2}$	3 $\frac{1}{2}$ EIA female	6 $\frac{1}{2}$
Carrier stability	$\pm 1 \times 10^6$ Hz	$\pm$ Hz	$\pm 5$ Hz	$\pm 5$ Hz
Carrier shift	<5%, 100% mod	<2%, 100% mod	<2%	0.5% @ 100% mod
Modulation (max)	100%	125%	125%	125%
AF input connection	Bal, unbal	Active bal	Active bal	Xfmr bal
AF response	1dB 50Hz-7.5kHz	1.5, 30Hz-15kHz	0.5dB, 10H-7.5kHz	$\pm 1.5$ dB, 50Hz-10kHz
THD distortion	<3%, 90% mod	<3%, 100%	<2%, 100% mod	3% 95% mod
AM noise figure	<-60dB below 100% mod	<-60dB unwt'd	>-60dB unwt'd	-55dB unwt'd
Final amp device	4CV100,000C	4CX15000A	4CX35000C	4CV100000E
Modulator final device	2-4CV100,000C	Solid-state	4CX000A	4CV50000E
Floor space required	20m <sup>2</sup>	67Wx26D	144Wx54D	237Wx55D

# AM Radio Transmitters

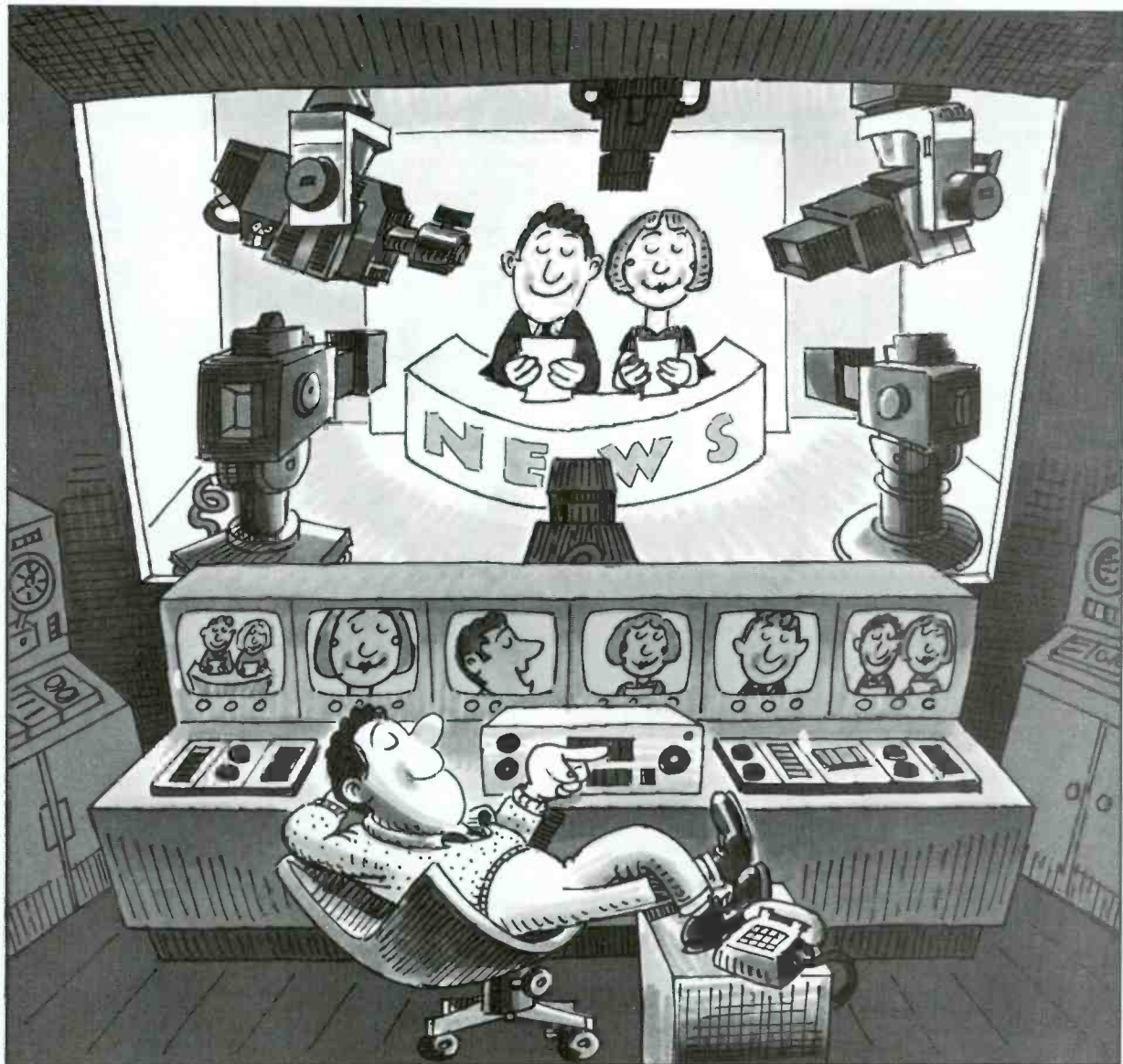
Manufacturer	Varian Continental TVT				CSI Electronics
Model Series	◆418D-2	316F-1	317C-3	314F solid-state	◆T-100-A1
Separate power rack	Yes	No	24Wx46D	No	Yes
Input ac power required	480Vac, 3φ	208-230Vac 3φ	460Vac, 3φ	180-250Vac 1φ	460Vac 3φ
Power factor	0.9	0.93	0.95	.....	0.89
Power consumption	275kVA	28.4kW 100% mod	118kVA	2.6kW, 100% mod	295kW
System efficiency	55%	53%	60% 100% mod	>57%, 100% mod	64%
Fault logic architecture	Relay	Relay	Relay	Digital relay	Relay
μP diagnostics	No	No	No	Option	No
Reader Service Number	1341	1342	1343	1344	Also 27.5kW, 55kW 1345

Manufacturer	CSI Electronics	Elcom Bauer		Harris Broadcast
Model Series	T-10-A1†	725 (715C★)	710C	SX-5A
Service band	Broadcast, shortwave	Broadcast, shortwave	Broadcast, shortwave	Broadcast
RF output rating	12kW	25kW (15kW)	10kW	5kW
RF connector (in.)	1 1/2"	.....	1 1/2"	3/4"
Carrier stability	±5Hz	±5Hz	±5Hz	±20Hz
Carrier shift	3%, 100% mod 400Hz	3%, 100% mod, 400Hz	3%	2%
Modulation (max)	125%	125%	125%	.....
AF input connection	Xfmr bal	.....	Xfmr bal	Balanced
AF response	±1.5dB, 50Hz-10kHz	±1dB, 50Hz-7.5kHz	±1dB, 50Hz-10kHz	±0.5dB, 20Hz-12.5kHz
THD distortion	2.5% 95% mod	<2.5%	<2% 95% mod	1%
AM noise figure	-55dB unwt'd	-60dB unwt'd	-60dB unwt'd	-60dB
Final amp device	3CX10000A3	4CX20000B/8990	4CX15000	Solid-state
Modulator final device	4CX3000A	4CX20000B/8990	4CX5000A	Solid-state
Floor space required	76.5Wx34D	140Wx30D	70Wx31D	28Wx30D
Separate power rack	No	Yes	No	No
Input ac power required	240Vac 3φ	380-450Vac 3φ (220Vac)	208-240Vac 3φ	200Vac 1φ
Power factor	0.89	0.9	0.9	.....
Power consumption	27kW	56kW 100% mod (28kW)	25kW	11.6kW
System efficiency	56%	54%	54%	65%
Fault logic architecture	Relay	Relay	Relay	μP
μP diagnostics	No	No	No	No
Other models	†1.1kW/3kW/6kW	★uses 4CX15000A final 4CX5000A for mod	701B, 1kW 705C, 5kW	
Reader Service Number	1346	1347	1348	1349

Manufacturer	Harris Broadcast	ITAME	LPB Inc	Marconi Comm.	
Model Series	DX-10	Tauro-S series	AM series	B6127 (B6126)	B6034
Service band	Broadcast	Broadcast	Broadcast	Shortwave	Broadcast
RF output rating	10kW	10kW (5/2kW)	25/30/50/100/150W	500kW (300kW)	1kW
RF connector (in.)	1 1/2"	1 1/2"	SO-230 UHF	300Ω bal/50-75Ω unbal	7/16
Carrier stability	±10Hz	±5Hz	±10Hz	<±10Hz	±10Hz
Carrier shift	2%	3%	2% 100% mod	<5% 100% mod 400Hz	<5%
Modulation (max)	.....	125%	110-120%	100%	100%
AF input connection	Balanced	Balanced	Xfmr bal	600Ω bal	600Ω bal
AF response	±0.5dB, 50Hz-12.5kHz	1dB, 20Hz-10kHz	±1dB, 20Hz-15kHz	±1dB, 50Hz-6kHz	±2dB, 40Hz-10kHz
THD distortion	1%	<2%	.....	<4% 90% mod	<3%, 90% mod
AM noise figure	-60dB	-60dB	-55dB	<-56dB	-60dB unwt'd
Final amp device	Solid-state	3CX10000A†	Solid-state	TH558 Hypervapotron	Solid-state modules
Modulator final device	Solid-state	4CX15000A	Solid-state	4CW25000A water cooled	Solid-state
Floor space required	72Wx30D	45Wx37D	Rack, wall mount	181Wx189D	32Wx22D
Separate power rack	No	Yes	No, 25/30W	314Wx433D	No
Input ac power required	220Vac 3φ	220-380Vac 3φ	110Vac 1φ	308-415Vac 3φ	230Vac 3φ
Power factor	.....	.....	.....	>0.9	>0.9
Power consumption	19kW	23.5kVA (13.5, 5.5)	0.7kVA for AM-50	.....	3.9kVA
System efficiency	75%	.....	25%	62%	48%
Fault logic architecture	μP system	.....	Relay	MOS/TTL, relay	CMOS/TTL
μP diagnostics	No	.....	No	Yes	No
Other models		†3000F7/1200A7 for 5/2kW mod and final			
Reader Service Number	1351	1352	1353	1354	1355

Manufacturer	Marconi Communications		Naute!	Radio Systems
Model Series	B6034†	B6040	AMPFET-25 (-50)	AMPFET-10 (-5, P400)
Service band	Broadcast	Broadcast	Broadcast	Broadcast
RF output rating	50kW	10kW	25kW (50kW)	10kW (5kW, 400W)
RF connector (in.)	3 1/2"	Coaxial cable	3 1/2"	1 1/2" (1 1/2", Type N)
Carrier stability	±10Hz (hi stab opt)	±10Hz (hi stab opt)	±5Hz	±5Hz
Carrier shift	<4%, 100% mod	<5%	1%, 100% mod, 400Hz	<3%
Modulation (max)	125%	125%	125%	125%
AF input connection	Xfmr bal	Active bal	Xfmr bal	Xfmr bal
AF response	±1dB, 30Hz-6kHz	±1dB, 50Hz-6kHz	±0.5dB, 30Hz-10kHz	±0.5dB, 50Hz-10kHz
THD distortion	<3%, 90% mod	<3%, 90% mod	<2%, 90% mod	<2%, 95% mod
AM noise figure	-58dB unwt'd	-58dB unwt'd	-60dB unwt'd	-60dB unwt'd
Final amp device	2 4CX35000C tetrode	2 4CX1500A tetrode	Solid-state modules	Solid-state
Modulator final device	2 4CX1500B tetrode	Solid-state	Solid-state	Solid-state
Floor space required	144Wx61D	65Wx33D	90Wx24D (135Wx30D)	25Wx24D
Separate power rack	No	No	Yes	Yes
Input ac power required	380-415Vac 3φ	380-415Vac 3φ	208-480Vac 3φ	208-480Vac 3φ†
Power factor	>0.9	>0.9	0.98	0.95
Power consumption	<129kVA	<33kVA	50kW (100kW)	20kVA (<10kVA, 0.9kVA)
System efficiency	52% at carrier	42%	>75%	>75% (>75%, >65%)
Fault logic architecture	CMOS, TTL, relay	CMOS, TTL, relay	CMOS, TTL	CMOS/TTL
μP diagnostics	No	No	No	No
Other models	†Also 100kW, 200kW			Also 1kW, 2.5kW ‡P400, 110Vac 1φ
Reader Service Number	1356	1357	1358	1359





# MULTIPLE CAMERAS. ONE OPERATOR.

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# FM Radio Transmitters

This equipment includes transmission systems for operation in the 88-108MHz (CCIR band II) spectrum with frequency modulation. Intermediate power amplifiers are solid-state unless the model number is marked with a diamond (◆). All models are capable of operating in FM stereo service, with each manufacturing providing appropriate exciters and generators. All include an auto-recycle feature.

Manufacturer	Model Series	Broadcast Electronics			Cemlys
		FM-10A	FM 35A	FM-3.5A	EF-5KX/80 (10KX/20KX)
AEG/Bayly	S-3152 (S-3168)				
RF output power	10kW (3kW)	10kW	35kW	3.5kW	5kW (10kW/20kW)
Output connector (in.)	.....	3 1/8	3 1/8	1 1/8	1 1/8 (1 1/8, 3 1/8)
Modulation capability	<100kHz	±200kHz	±200kHz	±200kHz	±150kHz
Final amp device	Tetrode	4CX7500A tetrode	4CX20000C tetrode	4CX35000A tetrode	YL-1631 cer. tetrode
AF input connection	Unbalanced	Bal 600Ω	Bal 600Ω	Bal/unbal resistive	Bal/unbal 600Ω, 1kΩ
AF response	±0.2dB 40Hz-43kHz	±0.5dB, 30Hz-15kHz	±0.5dB, 30Hz-15kHz	±0.5dB, 30Hz-15kHz	±0.5dB 40Hz-15kHz
THD distortion	<0.4%	0.08%	<0.08% THD/IMD	0.08%, 100% mod	<0.25%
Pre emphasis	Any std value	Switch selected	Switch selected	75μs	25/50/75μs
AM noise figure	<-50dB unwt'd	-45dB	-55dB	-40dB	<-55dB
FM noise figure (mono)	<-62dB unwt'd	-72dB 75μs deemp	-72dB 400Hz	-75dB 75μs deemp	-70dB unwt'd
Floor space (in.)	23.6Wx39.4D	33.7x37.2	56.5x31.5	34.5x37.25	48.7x35
Separate power rack	No	No	Yes	No	No
Input ac power	380Vac 3φ (11D/22D)	240V 3φ	240V 3φ	240V 1φ	220-380Vac 3φ
Typical power factor	.....	>0.90	>0.94	>0.9	>0.93
Power consumption	20kVA (5.5kVA)	17.2kW	51kW	6.8kW	.....
System efficiency	.....	.....	68%	.....	.....
Fault logic architecture	.....	μP system	μP control	μP system	CMOS
μP diagnostics	.....	Yes	Yes	No	.....
Other models 50W-1kW					
Reader Service Number	1301	1302	1303	1304	1305

Manufacturer	Model Series	Varian Continental TVT				
		816-2A◆ (817R-2A)◆	817A	816R-5 (817R-5)	814R-1 (814B/815A)	814C solid-state
RF output power	20kW (40kW)	60kW	35kW (70kW)	2.4kW (4.3/5kW)	3.8kW	
Output connector (in.)	3 1/8, 6 1/8	6 1/8 EIA male	3 1/8 (6 1/8)	1 1/8 EIA male	1 1/8 EIA	
Modulation capability	±150kHz	±150kHz	±150kHz	±150kHz	±150kHz	
Final amp device	4CX15,000A	4CX40,000G	9019/YC130 (2 tubes)	5CX1500B (4CX3500A)	Solid-state	
AF input connection	Active bal	Active bal	Active bal	Active bal	Active bal	
AF response	0.5dB, 20Hz-15kHz	0.5dB, 20Hz-15kHz	0.5dB, 20Hz-15kHz	0.5dB, 20Hz-15kHz	0.5dB, 20Hz-15kHz	
THD distortion	0.08%	0.2%	≤0.1%	0.08%	.....	
Pre emphasis	25/50/75μs	25/50/75μs	25/50/75μs	25/50/75μs	25/50/75μs	
AM noise figure	-55dB	-55dB	-55dB	-40dB (-50dB)	.....	
FM noise figure (mono)	-75dB unwt'd (-72dB)	-72dB unwt'd	-72dB (-75dB)	-75dB	.....	
Floor space (in.)	72(160)Wx28D	128Wx40D	72(160)Wx28D	35Wx24D (x34D)	35Wx34D	
Separate power rack	No	No	No	No	No	
Input ac power	200-250Vac 3φ	200-250Vac 3φ	200-250Vac 3φ	200-250Vac 1φ	200-250Vac 1φ	
Typical power factor	>0.92	>0.95	>0.92	>0.94 (>0.92/.....)	.....	
Power consumption	33.5 (67.3)kVA	99kVA	57kVA (114kVA)	4.9kVA (7.6kVA/9.7kVA)	.....	
System efficiency	58% (57%)	64%	66%	57% (55%/.....)	.....	
Fault logic architecture	Relay	μP based	Relay	Relay	Solid-state	
μP diagnostics	No	No	No	No	No	
Reader Service Number	1306	1307	1308	1309	1310	

◆816-3 rated 25kW, 816-4 rated 27.5kW, 817R-1 rated 50kW, 817R-4 rated 55kW

Manufacturer	Model Series	Elcom-Bauer			
		◆610A (625A/610C)	6100 (6300)	61000	605-FAT ◆(605C/603)
RF output power	27.5kW	10kW (25/10kW)	100W (300W)	1kW	5kW (5/3kW)
Output connector (in.)	3 1/8 EIA female	3 1/8	Type N	7/8	1 1/8
Modulation capability	±150kHz	±150kHz	±200kHz	±200kHz	±200kHz (±150kHz)
Final amp device	3CX10000A7	3CX10000A7 (15000A7)±	Solid-state	Solid-state modules	4CX3500A (3CX3000A7)†
AF input connection	Balanced	Bal 600Ω, unbal 10kΩ	Bal, unbal, 10kΩ	Bal, unbal, 10kΩ	Bal 600Ω, unbal 10kΩ
AF response	±0.5dB 30Hz-15kHz	±0.1dB 30Hz-100kHz	±0.1dB 30Hz-100kHz	±0.1dB 30Hz-100kHz	±0.1dB 30Hz-100kHz
THD distortion	0.5%	0.25%	0.08%, 0.1%IMD	0.08%, 0.1% IMD	0.08% (0.1% IMD)
Pre emphasis	75μs std	75μs	25, 50, 75μs	75μs	25, 50, 75μs
AM noise figure	-55dB	-55dB	-50dB sync, -70dB sync	-60dB	-40dB sync, -50dB nsync
FM noise figure (mono)	-65dB	<-65dB	-72dB	<-72dB	<-75dB
Floor space (in.)	76.5Wx37.8D	70Wx30D	Rack mount	23Wx30D	23Wx34D (35Wx30D)
Separate power rack	No	(34Wx26D 625 only)	No	No	No
Input ac power	190-460Vac 3φ	208-240Vac 3φ	110-220Vac 1φ	110-220Vac 1φ	440 or (220)Vac 3φ
Typical power factor	.....	0.9	>0.9	0.9	0.9
Power consumption	36kW	21kW (38kW)	250W (600W)	2.7kVA	8.2kW (8.9/7.1kW)
System efficiency	.....	80% final amp	.....	.....	.....
Fault logic architecture	Relay/resistor	Relay	Solid-state	CMOS/TTL	Solid-state
μP diagnostics	No	No	.....	No	DTMF rmt ctl (No)
Models for 1kW, 10kW		±4CX7500A for 610C		Fluorinert coolant	±4CX3500A for 603
Reader Service Number	1311	1312	1313	1314	601A, 1kW; 602A, 2kW 1315

Manufacturer	Model Series	Energy/Onix			Harris Broadcast	
		MK 15	MK 1.5	MK 30	FM 5K1	◆FM 25K1
RF output power	15kW	1.5kW	30kW	5kW	25kW	
Output connector (in.)	1 1/8	1 1/8	3 1/8	1 1/8	3 1/8	
Modulation capability	±200kHz	±200kHz	±200kHz	±133%	±75kHz	
Final amp device	3CX10000A7 triode	3CX3000A7 triode	3CX20000A7 triode	4CX3500A	4CX20000A	
AF input connection	Balanced	Balanced	Balanced	Balanced	Balanced	
AF response	0.2dB, 30Hz-100kHz	0.2dB, 30Hz-100kHz	0.2dB, 30Hz-100kHz	0.5dB, 30Hz-15kHz	0.5dB, 30Hz-15kHz	
THD distortion	0.2%	0.2%	0.2%	0.2%	0.2%	
Pre emphasis	75μs	75μs	75μs	25/50μs	25/50μs	
AM noise figure	-60dB	-60dB	-60dB	.....	-50dB	
FM noise figure (mono)	-70dB	-70dB	-70dB	-80dB	-80dB	
Floor space (in.)	58x32.5	38.75x32.5	58x32.5	33Wx34D	33Wx30D	
Separate power rack	No	No	Yes	No	Yes	
Input ac power	230V 3φ	230V 1φ	230V 3φ	240Vac 3φ	240Vac 3φ	
Typical power factor	.....	.....	.....	.....	0.95	





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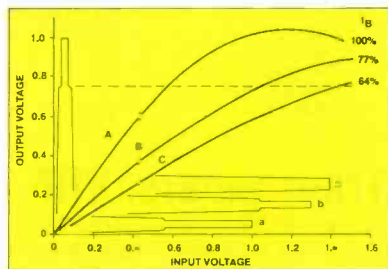
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## FM Radio Transmitters

Manufacturer	Energy/Onix			Harris Broadcast		
Model Series	MK 15	MK 1.5	MK 30	FM 5K1	◆FM 25K1	
Power consumption	24kW	3.1kW	48kW	10kW	40kW	
System efficiency	.....	.....	.....	.....	.....	
Fault logic architecture	μP	μP	μP	μP	μP	
μP diagnostics	No	No	No	No	.....	
Reader Service Number	1316	1317	1318	1319	1320	
Manufacturer	ITAME		ITELCO	LDL Comm./Larcam	Marconi Comm.	
Model Series	Tauro 30kW	Europa 600BT (100/300)	T-294 (T-234)	◆FMT25L	B6525 (B6526)	
RF output power	30kW	600W (100/300W)	55kW (12.5kW)	25kW	10kW (20kW)	
Output connector (in.)	3 1/8"	Type N	.....	3 1/8"	3 1/8" EIA	
Modulation capability	> ± 75kHz	> ± 75kHz	± 75kHz	± 200kHz	± 75kHz	
Final amp device	Tetrode	Solid-state	Solid-state modules	9011 tetrode	8986 (9011 tetrode)	
AF input connection	Balanced	Unbalanced	600Ω balanced	Balanced	Xfmr bal	
AF response	0.5dB, 40Hz-15kHz	0.5dB, 40Hz-15kHz	0.2dB 20Hz-15kHz	± 0.1dB, 30Hz-15kHz	± 0.5dB 40Hz-15kHz	
THD distortion	0.5%	0.5%	< 0.05% ± 75kHz dev.	0.1%	< 0.4% 100% mod	
Pre emphasis	50μs	50μs	50/75μ jumper	75μs	0/50μs switchable	
AM noise figure	< -65dB	< -65dB	< -70dB	-55dB	-50dB	
FM noise figure (mono)	< -70dB	< -70dB	< -84dB CCIR wtd	-75dB	-70dB de-emph unwtd	
Floor space (in.)	68x39	Rack-mount	86Wx32D (43Wx32D)	47.75Wx32.5D	24Wx40D (42Wx40D)	
Separate power rack	No	Integral circuit	No	No	No	
Input ac power	220-380Vac 3φ	220Vac 1φ	208/380Vac 3φ	240Vac 3φ	380/415V 3φ	
Typical power factor	.....	.....	.....	.....	> 0.9	
Power consumption	43kW	1.2kW (220W, 650W)	96kVA (19kVA)	37kVA	< 19kVA (< 37kVA)	
System efficiency	.....	.....	.....	.....	60% (61%)	
Fault logic architecture	μP	TTL, solid-state	μP	μP	CMOS/TTL & relay	
μP diagnostics	Yes	.....	Yes	Yes	No	
Reader Service Number	1321	1322	Models 50W-27.5kW 1323	1324	Models 500W-4kW 1325	
Manufacturer	QEI Corporation			Rohde & Schwarz	Thomson-LGT	
Model Series	695T30kW	FMQ-3500	FMQ-10000	NU-421	EVHF 5000	
RF output power	30kW	3.5kW	10kW	20kW	5kW	
Output connector (in.)	3 1/8"	1-3/8"	1 1/8"	Air line 25/58	EIA type	
Modulation capability	.....	.....	.....	.....	> ± 75kHz	
Final amp device	3CX15000A7 triode	3CX3000A7 triode	YU148 triode	Tetrode	Solid-state	
AF input connection	.....	Balanced	Balanced?.....	5kΩ bal/unbal	Balanced	
AF response	.....	.....	.....	± 0.1dB, 40-43k	± 0.2dB, 40Hz-15kHz	
THD distortion	.....	0.025%	0.025%	< 0.4% ± 40kHz dev	< 0.5%	
Pre emphasis	0.025%	.....	.....	50, 75	50 (75 opt)	
AM noise figure	.....	-55dB	-55dB	.....	< -52dB	
FM noise figure (mono)	-55dB	-75dB	-75dB	68dB ± 40kHz dev	< -60dB	
Floor space (in.)	772F generator	24x30	24x30	70Wx29D	23Wx30D	
Separate power rack	48x30	No	.....	No	No	
Input ac power	240V 3φ	240V 1φ	240V 1φ	220-380V, 3φ	120/240Vac	
Typical power factor	.....	.....	.....	> 0.95	.....	
Power consumption	50kW	6.4kW	17kW	42kVA	6.5kW	
System efficiency	.....	.....	.....	.....	.....	
Fault logic architecture	.....	CMOS/TTL	CMOS/TTL	Yes	CMOS/TTL	
μP diagnostics	No	No	No	.....	No	
Reader Service Number	1326	1327	1328	NU351, 5kW; NU411, 10kW 1329	1330	
Manufacturer	TTC/Wilkinson Div	Varian Continental TVT		Harris Broadcast		
Model Series	◆FM-5000	LDM-1233 (-1236)	LDM-1239 (-1238)	TV 30H	TV 20L	TV 50H
RF output power	5kW	10kW (27.5kW)	1kW (0.5kW)	CCIR III	CCIR I	CCIR III
Output connector (in.)	1 1/8"	1 1/8" (3 1/8")	Type N (1 1/8")	30kW	22.5kW	50kW
Modulation capability	75kHz deviation	± 100kHz	± 100kHz	2%	± 0.75dB	± 0.75dB
Final amp device	Tube	TH-339 (TH-374)	Solid-state	± 0.75dB	.....	.....
AF input connection	Xfmr balanced	Bal, unbal	Bal, unbal	.....	.....	.....
AF response	± 0.5dB, 25Hz-100kHz	± 0.5dB, 30Hz-15kHz	± 0.5dB, 30Hz-15kHz	.....	.....	.....
THD distortion	0.5% at 100% mod.	0.3%, ± 75kHz dev	0.3%, ± 75kHz	.....	.....	.....
Pre emphasis	75μs	Any std value	Switch selectable	.....	.....	.....
AM noise figure	-58dB	-65dB	-65dB	.....	.....	.....
FM noise figure (mono)	-80dB, 75μs deemph	-75dB	-75dB	.....	.....	.....
Floor space (in.)	24.5x38	44Wx23D (43Wx37D)	22Wx29D	.....	.....	.....
Separate power rack	.....	Yes	No	.....	.....	.....
Input ac power	240V 3φ	220Vac 3φ	220V 1φ	.....	.....	.....
Typical power factor	.....	> 0.9	> 0.9	.....	.....	.....
Power consumption	9.5kW	18.5kVA (50kVA)	2.1kVA (1.3kVA)	.....	.....	.....
System efficiency	.....	55% (55.5%)	48%	.....	.....	.....
Fault logic architecture	Relay	CMOS/TTL	CMOX/TTL	.....	.....	.....
μP diagnostics	No	No	No	.....	.....	.....
Reader Service Number	FM-10000J, 10kW FM-25000J - 25kW 1331	1332	Models for 0.3/0.1kW 1333	.....	.....	.....

## Television Transmitters, VHF

These transmitter systems operate on CCIR VHF bands I/III (ch 2-6/7-13). All systems use IF level modulation and have solid-state IPA stages unless marked with a diamond (◆). Forced air cooling is standard. All systems are capable of multichannel sound. Those with a star (★) are designed for a European dual aural channel system. Modulation capability is >97% or <3%, or marked with a bullet (•) ≥90% or ≤10%. In general, audio response covers a frequency span of 30Hz-15kHz.

Manufacturer	Acrodyne	Comark/Thomson-LGT	Harris Broadcast		
Model/Series	FL/30KL(KH) series	CTT-V-30L (-50H)	TV 30H	TV 20L	TV 50H
Frequency band	CCIR I(III)	CCIR I(III)	CCIR III	CCIR I	CCIR III
Visual peak power	30kW	30kW (50kW)	30kW	22.5kW	50kW
Carrier level regulation	3%	2%	2%	2%	2%
Response vs brightness	± 0.75dB	± 0.75dB	± 0.75dB	± 0.75dB	± 0.75dB



## Television Transmitters, VHF

Manufacturer	Acrodyne	Comark/Thomson-LGT		Harris Broadcast	
Model/Series	FL/30KL(KH) series	CCT-V-30H (-50H)	TV 30H	TV 20L	TV 50H
ICPM uncorrected	± 2°	± 1.5°	± 1.5°	± 1.5°	± 1.5°
Diff phase, gain	± 1.5°, 3%	2°, 5%	± 1°, 3%	± 1°, 3%	± 1°, 3%
LF linearity	0.5dB	5%	10%	1%	1%
S/N ratio	.....	55dB RMS	.....	55dB	60dB
K factor 2T, 12.5T	2%, 5%	2%, 5%	1%	2%, 5%	2%, 5%
Harmonics below visual	-70dB	<-65dB	-80dB	-80dB	-80dB
Visual PA device	Tetrode	Solid-state (1-tube)	Tetrode	Tetrode	Tetrode
Aural power output	3kW	3kW (5kW)	3kW	2.25kW	5kW
Carrier deviation	± 75kHz	± 50kHz	± 25kHz	± 25kHz	± 50kHz
AF response	± 0.1dB 30-50k	± 0.5dB per std curve	± 0.5dB	± 0.5dB	± 0.5dB
Harmonic distortion	0.5%	0.3%	0.5%	0.5%	0.5%
AM, FM noise	-52dB, -58dB	-56dB, -60dB unwt'd	-55dB, -60dB	-55dB, -60dB	-40dB, -60dB
Aural PA device	Tube or solid-state	Solid-state	Tetrode	Tetrode	Tetrode
Input ac power	480Vac, 3φ	.....	208-230Vac 3φ	240Vac 3φ	450Vac 3φ
Power consumption	83kW	.....	61kW	48kW	107kW
Other models	From 1kW-50kW	From 5kW-50kW	.....	.....	.....
Reader Service Number	1385	1386	1387	1388	1389

Manufacturer	Information Transmission	LDL Comm/Larcen		Marconi Comm	
Model/Series	ITS-10/15	◆TTC 50LH	◆TTC-30LLS/LHS	◆B7532 (B7536)	◆B7530 (B7531)
Frequency band	CCIR I/III	CCIR III	CCIR I/III	CCIR III	CCIR III
Visual peak power	10W	30kW	30kW	5kW (25-30kW)	1kW (2kW)
Carrier level regulation	2%	3%	3%	± 1%	± 1%
Response vs brightness	± 0.2dB	± 0.75dB	± 0.75dB	± 0.5dB	± 0.5dB
ICPM uncorrected	± 2°	± 1°	± 1°	± 4°	± 4°
Diff phase, gain	± 1°, 5%	± 2°, 0.5dB	± 2°, 0.5dB	± 3°, 0.4dB	± 3°, 0.4dB
LF linearity	2%	-0.5dB	-0.5dB	90%	90%
S/N ratio	58dB	55dB	55dB	60dB	60dB
K factor 2T, 12.5T	2%, 4%	2%, 5%	2%, 5%	2%, 2%	2%, 2%
Harmonics below visual	-60dB	-60dB	-80dB	-60dB	-60dB
Visual PA device	Solid-state	Tetrode	Tetrode	Tetrode	Solid-state
Aural power output	0.02W	10kW	3kW	0.5kW (3kW)	0.1kW (0.2kW)
Carrier deviation	± 150kHz	± 200kHz	± 200kHz	± 50kHz	± 50kHz
AF response	0.5dB	± 0.5dB 50-15k	± 0.5dB 50-15k	± 1dB	± 1dB
Harmonic distortion	0.5%	0.75%	0.1%	<0.5dB	<0.5%
AM, FM noise	-60dB, -60dB	-50dB, -60dB	-50dB, -60dB	-50dB, -60dB	-50dB, -60dB
Aural PA device	Solid-state	Solid-state	Solid-state	Solid-state	Solid-state
Input ac power	120Vac 1φ	480Vac 3φ	240Vac 3φ	380-415Vac 3φ	380-415Vac 3φ
Power consumption	0.7kW	120kVA, black	63kVA, black	<18kVA (<66kVA)	<5.4kVA (<10.1kVA)
Power factor	.....	0.95	0.95	>0.9	>0.9
Visual PA efficiency	.....	.....	.....	34% (56%)	22% (24%)
Reader Service Number	1390	1391	1392	1393	1394

Manufacturer	NEC	PESA		Rohde & Schwarz	Thomson-LGT
Model/Series	PCN 1435AH/1	◆TT-4823	◆TR-series	◆VU series	◆E 10000S (-5000S)
Frequency band	CCIR I/III	CCIR III	CCIR I/III	CCIR III	CCIR I/III
Visual peak power	35kW	2kW or 6kW	1-5kW	2-20kW range	10kW (5kW)
Carrier level regulation	2%	.....	1%	.....	.....
Response vs brightness	± 0.5dB	<0.1%	<0.1%	<0.3dB	<0.7dB
ICPM uncorrected	± 3°	.....	.....	.....	< ± 1°
Diff phase, gain	± 3°, 3%	± 2°, 2%	± 3°, 5%	± 3°	± 3°, 3%
LF linearity	2%	<1%	5%	<0.9dB 4.43MHz	0.5%
S/N ratio	>50dB	>50dB	54dB	>63dB	60dB
K factor 2T, 12.5T	1.5%	.....	1%	....., <2%	2%, 2%
Harmonics below visual	-60dB	<-60dB	-60dB	<1mW	-60dB
Visual PA device	8984 tetrode	TH-361 tetrode	Tetrode, solid-state	Tetrode	TH-361 tetrode
Aural power output	3.5kW	0.2kW or 0.6kW	10% of visual	0.2-2kW range	1kW (500/100W)
Carrier deviation	± 100kHz	± 25kHz	± 25kHz	± 50kHz	± 100kHz
AF response	± 0.5dB	± 3dB	0.2dB 50-15k	< ± 1dB	± 0.5dB
Harmonic distortion	0.5%	<2%, ± 30kHz dev	0.5%, -60dB IMD	0.4%	0.5%
AM, FM noise	-50dB, -60dB	-55dB, -65dB	-60dB, -60dB	<-36dB, <-56dB	-50dB, -60dB
Aural PA device	Solid-state	Diplexed	Multiplexed	Multiplexed or tetrode	Solid-state
Input ac power	240Vac 3φ	220-380Vac 3φ	220Vac, 1/2/3φ	220-380Vac 3φ	220-380Vac 3φ
Power consumption	70kW, black	20kVA, 6kW no mod	.....	52kVA for 20kW	.....
Power factor	≥ 0.9	>0.9	0.9	>0.9	>0.95
Visual PA efficiency	>78.4%	.....	.....	.....	.....
Reader Service Number	1395	1396	1397	1398	1399

Manufacturer	Townsend	Varian Continental TVT
Model/Series	TA15TH/L	◆LDM-1761
Frequency band	CCIR I/III	CCIR III
Visual peak power	15kW	10kW
Carrier level regulation	3%	.....
Response vs brightness	± 0.75dB	± 0.5dB
ICPM uncorrected	.....	± 4°
Diff phase, gain	± 2°, 2%	± 3°, 0.3dB
LF linearity	1dB	90%
S/N ratio	50dB	55dB
K factor 2T, 12.5T	2%, 5%	2%, 2%
Harmonics below visual	-60dB	-70dB
Visual PA device	Triode	YL1610 tetrode
Aural power output	1.5kW	1kW
Carrier deviation	± 75kHz	± 100kHz
AF response	+0.5dB	± 0.5dB
Harmonic distortion	0.5%	± 0.5dB
AM, FM noise	-55dB, -58dB	-50dB, -60dB
Aural PA device	Solid-state	Solid-state
Input ac power	230Vac 3φ	220V
Power consumption	35kVA	25kVA
Power factor	0.9	0.9
Visual PA efficiency	.....	70%
Reader Service Number	1400	1401

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# TV Transmitters, UHF

These UHF systems are for the CCIR IV/V bands, channels 14-69. All support stereo aural transmissions. Those marked with a diamond (◆) are designed for a European two aural carrier system. IPA sections are solid-state unless marked with a star (★). IF level modulation is common to all. AF response is generally 30Hz-15kHz.

Manufacturer Model/Series	Acrodyne		Comark/Thomson		
	TRU 10 KVC	TRU 30 KV	CCT-U-60SK SK-series	CCT-U-10T T-series	CCT-U-60SE S-series
Visual peak power	10kW	30kW	60kW	10kW	60kW
Carrier level regulation	±3%	±3%	3%	3%	3%
Modulation capability	3%	3%	97%	97%	97%
Response vs brightness	±0.75dB	±0.75dB	±0.75dB	±0.5dB	±0.75dB
ICPM uncorrected	±2°	±2°	.....	.....	.....
Diff phase, gain	±2°, 5%	±2°, 5%	±3°, 0.5dB	±2°, 3% max	±3°, 0.5dB
LF linearity	5%	5%	1dB or better	±2% max	<1dB
S/N ratio (AM)	.....	.....	>55dB	>55dB	55dB
K factor 2T, 12.5T	2%, 5%	2%, 5%	2%, 5%	2%, 5%	2%, 5%
Harmonics below visual	-60dB	-60dB	<-60dB	<-60dB	<-60dB
Visual PA device	Tetrode	Tetrode	Klystrode, klystron	Tetrode	Klystron
Aural power output	1kW	1kW	6kW	1kW	6kW
Carrier deviation	.....	.....	±25kHz, ±50kHz	±75kHz	>±25kHz
AF response	±1dB 10-15k	±1dB 10-15k	±0.5dB	±0.5dB	±0.5dB
Harmonic distortion	.....	.....	0.5% max, ±50kHz	0.5dB, ±25kHz dev	0.5%, ±50kHz dev
AM, FM noise	-52dB, -60dB	-50dB, -60dB	<-50dB, <-60dB	<-50dB, <-60dB	-50dB, -60dB
Aural PA device	Diplexed	Multiplexed	Klystrode, klystron	Tetrode	Klystron
Cooling system	Vapor-phase	Vapor-phase	Water	Air	Water, air
Input ac power	230Vac 3	230Vac 3	480Vac 3φ	240Vac 3φ	460-500Vac 3φ
Power consumption	26kVA	55kW	.....	36kW black	.....
Visual PA efficiency	.....	.....	.....	.....	>70% beam
Other models	.....	.....	Also 30/120/240kW	1kW, 2kW, 5kW	Also 10/30/120/240kW
Reader Service Number	1363	1364	1365	1366	1367

Manufacturer Model/Series	EMCEE		Harris Broadcast		Information Transmission ITS-230
	TU-1000EP/U	★TTU-5000DP (100DP)	UX series	TVE-60S (-120S)	
Visual peak power	1kW	5kW (0.1kW)	60kW, 120kW	60kW (120kW)	1kW
Carrier level regulation	2%	2%	<3%	<2%	2%
Modulation capability	2%	2%	0%	0%	1%
Response vs brightness	±0.5dB	±0.5dB	±0.75dB	±0.75dB	±0.5dB
ICPM uncorrected	±2°	±2°	±2° corrected	±4°	±2°
Diff phase, gain	±3°, 0.5dB	53°, 5%	±3°, 0.5dB	<±3°, <0.5dB	±1°, 5%
LF linearity	5%	5%	≥1dB	<1dB	5%
S/N ratio (AM)	55dB	55dB	55dB	55dB	55dB
K factor 2T, 12.5T	2%, 2%	2%	1%, <3%	2%, 5%	2%, 2%
Harmonics below visual	-60dB	-60dB	-60dB	-70dB	-60dB
Visual PA device	Solid-state	TH-382 tetrode	Klystron, ext cav	Klystron, int cav	Tetrode
Aural power output	0.1kW	0.5kW (0.01kW)	6-12kW, 12-24kW	12kW (24kW)	0.1kW
Carrier deviation	±100kHz	>±25kHz	>±100kHz	±120kHz	±75kHz
AF response	±0.5dB, 20Hz-100kHz	±0.2dB, 30Hz-110kHz	±0.5dB,	±0.5dB,	±0.5dB,
Harmonic distortion	0.1%	0.15%	0.5dB	0.5%, 100% mod	0.5%
AM, FM noise	-55dB, -60dB	-55dB, -60dB	-55dB, -60dB	-55dB, -60dB	-55dB, -60dB
Aural PA device	Diplexed	Diplexed	Klystron, ext cav	Klystron, int cav	Diplexed
Cooling system	Forced air	Forced air	Air, glycol-vapor	Vapor phase	Forced air
Input ac power	220Vac 3	230Vac 3 (115Vac 1)	480Vac 3φ	480Vac 3φ	240Vac 1
Power consumption	5.5kW	20kVA (10kW)	135kW, 245.W	135kW (245kW)	5kW
Power factor	0.98	0.95	>0.95	>0.95 (>0.9)	.....
Visual PA efficiency	53%	45%	>63%	65%	.....
Reader Service Number	1368	1369	1370	1371	1372

Manufacturer Model/Series	Information Transmission ITS-242		NEC		PESA		Rohde & Schwarz ◆★NT414A1 (424/425A1)
	PCU-930HC	PCU960HC	TR-series	TR-series			
Visual peak power	10kW	30kW	60kW	5kW	10kW (20kW)		
Carrier level regulation	2%	2%	1% or better	1% or better	±0.3%		
Modulation capability	1%	0%	0%	.....	>75%		
Response vs brightness	±0.5dB	±0.5dB	±0.5dB	<5%	<0.3dB		
ICPM uncorrected	±2°	<±3°	±3°	.....	.....		
Diff phase/gain	±1°, 5%	±3°, 0.5dB	±3°, 0.5dB	±3°, ≤5%	±3°, 5%		
LF linearity	5%	5%	1dB	≤2%	>0.9		
S/N ratio (AM)	55dB	60dB	60dB wtd	>60dB L/>54dB C	>63dB wtd		
K factor 2T, 12.5T	2%, 4%	1.5%, 5%	1.5%, 5%	<1%, <1%	<2%, 20T pulse		
Harmonics below visual	-60dB	-80dB	-80dB	<-3dB	<20mW, <-60dB		
Visual PA device	Tetrode	Klystron	YK-1265 klystron	Tetrode	Tetrode (tet/klystron)		
Aural power output	1kW	6kW	6kW	0.5kW	1kW (2kW)		
Carrier deviation	±75kHz	±100kHz	±150kHz	>±50kHz	±30kHz		
AF response	±0.5dB, 50Hz-15kHz	±0.5dB,	±0.5dB,	±0.2dB	<±1dB,		
Harmonic distortion	0.5%	0.5%	0.5%	<0.5%	<0.4%, 50kHz dev		
AM, FM noise	-55dB, -60dB	-50dB, -60dB	-50dB, -60dB	<-3dB, <-3dB	-46dB, -56dB unwtd		
Aural PA device	Tetrode	Klystron	Klystron	Diplexed	Tetrode (tet/klystron)		
Cooling system	Vapor-phase	Vapor phase	Vapor phase	Forced air	Air (air/vapor)		
Input ac power	240Vac 1φ/3φ	480Vac 3φ	480Vac 3φ	220-380Vac 1/2/3φ	220-380Vac 3φ		
Power consumption	26kW	.....	132kVA	.....	28kVA (60/78kVA)		
Power factor	.....	>0.9	0.9	>0.9	>0.9		
Visual PA efficiency	.....	75%	75%	.....	.....		
Reader Service Number	1373	1374	1375	1376	1377		

Manufacturer Model/Series	Rohde & Schwarz		Thomson-LGT		Townsend		TTC/Television Technology	
	★NT325A1 (NT354A1)	◆★NT414A1 (424/425A1)	◆★EUFH 10000S (-5000S)	TA 60TA	UHF 60S Silverline	XL1000U		
Visual peak power	2kW (5kW)	10kW (5kW)	60kW	60kW	60kW	1kW		
Carrier level regulation	±0.3dB	.....	2%	2%	<4%	.....		
Modulation capability	75%	100%	1%	1%	.....	95%		
Response vs brightness	<0.3dB	0.7dB, 0.5dB	±0.1dB	±0.1dB	.....	0.5dB		
ICPM uncorrected	.....	±1°	±2°	±2°	.....	±2°		
Diff phase gain	±3°, 5%	±3°, 0.3dB	±3°, 5%	±4°, 5%	±4°, 0.5dB	±2°, 0.25dB		
LF linearity	.....	0.5dB	10%	10%	1.5dB	1dB		
S/N ratio (AM)	>63dB wtd	>60dB	55dB	55dB	.....	.....		



## TV Transmitters, UHF

Manufacturer	Rohde & Schwarz
Model/Series	★NT325A1 (NT354A1)
K factor 2T, 12.5T	<2% for 20T pulse
Harmonics below visual	-60dB
Visual PA device	Tetrode
Aural power output	0.2kW (0.5kW)
Carrier deviation	±30kHz
AF response	1dB
Harmonic distortion	0.4%
AM, FM noise	-46dB, -56dB
Aural PA device	Multiplexed
Cooling system	Forced air
Input ac power	220Vac 3φ
Power consumption	12kVA (25kVA)
Power factor	>0.9
Other models	
Reader Service Number	1378

Manufacturer	Thomson-LGT
Model/Series	◆EUHF 1000S (-5000S)
K factor 2T, 12.5T	2%, 2%
Harmonics below visual	-60dB
Visual PA device	TH-382 tetrode
Aural power output	1kW (500W)
Carrier deviation	±75kHz (±100kHz)
AF response	±0.5dB
Harmonic distortion	<0.5%
AM, FM noise	-50dB, -60dB
Aural PA device	Multiplexed
Cooling system	Forced air
Input ac power	220-380Vac 3φ
Power consumption	24kW (19kW)
Power factor	>0.95
Other models	
Reader Service Number	1379

Manufacturer	Townsend
Model/Series	TA 60TA
K factor 2T, 12.5T	2%, 5%
Harmonics below visual	-60dB
Visual PA device	Klystron
Aural power output	6kW
Carrier deviation	±100kHz
AF response	±0.5dB
Harmonic distortion	-54dB THD/IMD
AM, FM noise	-50dB, -58dB
Aural PA device	Klystron
Cooling system	Water
Input ac power	480Vac, 3φ
Power consumption	130kW
Power factor	0.9
Other models	
Reader Service Number	1380





Manufacturer	TTC/Television Technology
Model/Series	UHF 60S Silverline XL1000U
K factor 2T, 12.5T	2%
Harmonics below visual	-80dB
Visual PA device	TH-347 tetrode
Aural power output	100W
Carrier deviation	±40kHz
AF response	±0.5dB
Harmonic distortion	0.5%
AM, FM noise	-55dB, -55dB
Aural PA device	Diplexed
Cooling system	Forced air
Input ac power	230Vac 1φ
Power consumption	4.8kVA
Power factor	0.9
Other models	Also 120kW, 240kW
Reader Service Number	1382

Manufacturer	Varian Continental TVT
Model Series	LDM-1791 (1791/90)
Visual peak power	60kW (120kW)
Carrier level regulation	100%
Modulation capability	100%
Response vs brightness	±0.5dB
ICPM uncorrected	±4°
Diff phase gain	±3°, 0.5dB
LF linearity	90%
S/N ratio (AM)	60dB
K factor 2T, 12.5T	2%, 2%
Harmonics below visual	-70dB
Visual PA device	2-KY1265 klystron
Aural power output	5.5kW
Carrier deviation	±100kHz
AF response	±0.5dB
Harmonic distortion	0.5% 100% mod 1kHz
AM, FM noise	-50dB, -60dB
Aural PA device	Klystron
Cooling system	Vapor-phase
Input ac power	226V 3φ
Power consumption	135kVA
Power factor	0.9
Visual PA efficiency	65%
Other models	Also 180kW, 240kW
Reader Service Number	1383

Manufacturer	Varian Continental TVT
Model Series	LDM-1780 (1781)
Visual peak power	5kW (10kW)
Carrier level regulation	100%
Modulation capability	100%
Response vs brightness	-80.5dB
ICPM uncorrected	±4°
Diff phase gain	±3°, 0.5dB
LF linearity	90%
S/N ratio (AM)	60dB
K factor 2T, 12.5T	2%, 2%
Harmonics below visual	-70dB
Visual PA device	TH-382 tetrode
Aural power output	0.5kW (1kW)
Carrier deviation	±100kHz
AF response	±0.5dB
Harmonic distortion	0.5%
AM, FM noise	-50dB, -60dB
Aural PA device	Diplexed (tetrode)
Cooling system	Forced air
Input ac power	220Vac
Power consumption	21kVA (23kVA)
Power factor	0.9
Visual PA efficiency	75%
Other models	
Reader Service Number	1384

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# Aural STL Systems

These systems consist of transmitter and receiver units, designed for transporting the aural program material from the studio to the transmitter. Operation is in the 900MHz spectrum. Those systems providing a hot standby capability are marked with a diamond (♦). In audio frequency ranges, Hz is understood.

Manufacturer	.ITAME	Marti	Moseley Associates
Model/Series	♦UHF-900A	STL-10	♦PCL-600/C (PCL-600) CL-100 comm link
System type	Composite	Dual	Composite stereo (mono)
Audio response	±0.1dB 30-15k	±0.3dB 20-15k	< ±0.2dB 30-53k
Distortion	1% 40-70k	0.3% 20-15k THD	<0.2% 30-7.5k
S/N ratio	70dB 100% mod	73dB 100% mod	>75dB typical
Crosstalk	.....	.....	<-50dB
Stereo separation	.....	.....	>50dB 50-15k
Transmitter No.	UHF-900A	STL-10	PCL-600/C
RF power output	20W	10W	7W max 890-960MHz
RF output connector	Type N	UG-58	Type N 50Ω
Frequency stability	<5 part/million	±0.00025%	<0.00025%
AM noise rating	<-70dB spur/harmonic	<-60dB spurious	<-60dB below carrier
Audio level	12dBm/3.5V 22kΩ	8dB, 600Ω	3.5Vp-p 6kΩ
Metering	RF for/rev, dcV	RF, final/driver I, dcV	Fwd/rev power, FM lock
	Main ch mod	Main/mux mod, multiplier	Pgm/mux level
Receiver No.	UHF-900A	R-10	PCL-600/C
Signal conversion	Dual	Dual	Dual
Sensitivity	30μV, 65dB S/N	4μV, 50dB S/N	<140μV, 60dB SNR
Bandwidth	3dB IF BW 280kHz	>200kHz FM stereo	±125kHz 3dB IF bw
Metering	RF, baseband, dcV	RF, LO, subcarrier, dcV	RF input, system status, Pgm/subcarrier level
	Pgm	AF levels, mixer	
Reader Service Number	426	427	429

Manufacturer	Moseley Associates	TFT		
Model/Series	♦PCL-606/C† (PCL-606)	♦Model 8600	♦Model 8300	♦Model 7700B
System type	Composite stereo (mono)	Composite	Composite	Composite
Audio response	±0.1dB 30-53k	±0.2dB 30-15k	±0.1dB 30-53k	±0.5dB 50-75k
Distortion	≤0.2% 30Hz-7.5kHz	≤0.2% at 1kHz THD	0.2%, 30Hz-75kHz	0.25% 30Hz-75kHz
S/N ratio	>70dB below 100% mod	65dB 100% mod wtd	75dB 100% mod	>72dB 100% mod
Crosstalk	<-53dB	.....	-50dB main-sub/sub-main	<-60dB, sub-main 150kHz
Stereo separation	>50dB 50-15k	.....	+45dB	60dB sub-main
Transmitter No.	PCL-606/C	8600	8300	7700B
RF power output	10W (890MHz-1.71GHz)	6W	14W	12W
RF output connector	Type N 50Ω	Type N 50Ω	Type N, 50Ω	Type N, 50Ω
Frequency stability	>0.00025%	±0.0001%	±0.0001%	±0.0001%
AM noise rating	<-60dB below carrier	<-60dB spurious/harmonic	-65dB spurious/harmonic	-65dB
Audio level	3.5Vp-p 6kΩ unbal	1.24V 3kΩ/0.775V 1kΩ	3.5V 10kΩ/1.5V 10kΩ	1.24V 10kΩ/0.53V 10kΩ
Metering	RF, final/driver I, main, multi, AFC, mux, dcV	RF, Main ch mod, dcV	RF, Main ch/Mux mod	RF, main ch mod, dcV
		Mux mod	dcV, Rev RF	Mux mod
Receiver No.	PCL-606/C	8601	8301	7707
Signal conversion	Triple	Triple	Dual	Triple
Sensitivity	150μV, 60dB SNR	14μV, 55dB S/N	40μV, 60dB S/N	40μV, 60dB S/N
Bandwidth	±450kHz 60dB IF BW	6dB to 125kHz	±3dB IF BW ±200kHz	320kHz 3dB BW
Metering	RF, AF, AFC, LO, multi dcV, subcarrier	LO, AF levels, Mux dcV	dcV, Mux1, Mux2	dcV, RF, Pgm, Mux1, Mux 2
	†300k/600kHz spacing values are for 600kHz			
Reader Service Number	431	432	433	434

# Audio Distortion Analyzers

These systems determine total harmonic distortion (THD) and, with some models, intermodulation distortion (IMD). On those marked with a diamond (♦), an AM detector is available. Those with a bullet (•) include video or X-Y scope display capability. A dagger (†) designates a port to drive an X-Y plotter or printer. Systems marked with a star (★) include specific functions for audio recording systems. In audio frequency ranges, Hz is understood.

Manufacturer	Amber Electro Design	ASACA/ShibaSoku	Audio Precision	Boonton Electronics
Model/Series	♦3501	♦5500	725B automatic	System One†★ 1120 analyzer†
Frequency range	10-100k 4-range	10-100k	5-500k	10-100k
Input level	30mV-100V, 100kΩ	30mV-100V, 100kΩ	0.1-100V	100μV-140V, 100kΩ
Input connection	Active bal	Active bal	BNC float/fixd grnd	Differential bal
Fundamental reject	>100dB 1kHz	>100dB 1kHz	>90dB	110dB
Minimum THD figure	0.0008%	0.001%	0.001% w/o noise-hum	0.0003%
THD accuracy	±1dB	±1dB	.....	±5%
IMD measurement	Opt SMPTE/DIN	Opt SMPTE/DIN	.....	Opt SMPTE/DIN
IMD accuracy	±1dB	±1dB	.....	±10%
Minimum IMD	0.001%	0.001%	.....	0.0001%
ac Volts/accuracy	-100, +40dBm, ±1%	-100, +40dBm, ±1%	30μV-100V ±3%	-114, +45dBm ±1%
Audio noise range	-120dBm	-120dBm	>100dB	-114dBm
Signal generator range	10-100k +28dBm	10-100k +30dBm	No	10-204k 30dBm
Generator output	Xfmr, bal/unbal	Xfmr, bal	No	Xfmr bal
Frequency counter	Option	Yes	5-500k, autorange	Yes
Meters/displays	True RMS movement	LED readout	Analog meter, LEDs	On-CRT bar graph
Digital design	No	Yes	Yes	PC base/software
Automated measurements	.....	GPIB, RS-232	GPIB opt	On PC bus
Reader Service Number	1402	1403	1404	1405

Manufacturer	Hewlett Packard	Leader Instruments	Panasonic Industrial	Potomac Instruments
Model/Series	8903B/8903E†	LDM-170	VP-7722P†	VP-7721P ♦AA-51 analyzer★
Frequency range	20-100k	20-20k	10-110k/to 10th harm	5-159.9k
Input level	425V peak, 100kΩ	0.35-30Vrms	0.05-100Vrms, 100kΩ	0.1V-100Vrms 100kΩ
Input connection	Balanced, BNC	.....	BNC, floating	Floating
Fundamental reject	>100dB	.....	>140dB	>86dB overall
Minimum THD figure	<-90dB, 0.003%	0.01%	0.001%	0.003% (10 ranges)
THD accuracy	±1dB, 20-20k	.....	< ±2%	.....
				20-20k
				2mV-15.5V, 300kΩ
				Balanced
				>80dB overall
				0.1% fs
				±5% fs



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## Audio Distortion Analyzers

Manufacturer	Hewlett Packard	Leader Instruments	Panasonic Industrial	Potomac Instruments
Model/Series	8903B/8903E†	LDM-170	VP-7722P†	◆AA-51 analyzer★
IMD measurement	No	No	SMPT	SMPT
IMD accuracy	.....	.....	± 1dB	± 5% fs
Minimum IMD	.....	.....	0.01%	0.1%
ac Volts/accuracy	0.3mV-300V ± 2%	100µV-300Vrms	0.316mV-100V	1mV-100Vrms
Audio noise range	-85dB (17µV) 80kHz BW	To 70dB SNR	0-130dB SNR	(Signal+ noise)/noise
Signal generator range	20-100k for 8903B	.....	10-110k	20-20k
Generator output	0.6mV-6V open circuit	.....	BNC floating	Xfmrless bal, unbal
Frequency counter	± 0.004% + 1 digit	No	Yes	No
Meters/displays	Digital readout	.....	LED displays	VU movement
Digital design	Yes	.....	Yes	No
Automated measurements	HP-IB	.....	GPIB	No
Reader Service Number	1407	1408	1409	1411

Manufacturer	RE Instruments	Rohde & Schwarz	Schmid Telecomm. Zurich	
Model/Series	RE201 dual channel★	UPA analyzer†★	SIAT/short interval test★	
Frequency range	1-25k	10-100k(to 300k)	40-15k/400 THD	
Input level	2mV-15.5V, 300kΩ	12mV to 400Hz, 1.2mV	-70, +21dBm 600Ω	
Input connection	Active bal	Active bal	.....	
Fundamental reject	105dB, 20-12.5k	Bal(600Ω), unbal(10kΩ)	.....	
Minimum THD figure	0.006%	.....	> 65dB	
THD accuracy	± 2.5dB, THD-70dB	0.003%	.....	
IMD measurement	SMPT, DIN	± 1dB to 100kHz	.....	
IMD accuracy	± 2.5dB, IMD-50dB	.....	SMPT	
Minimum IMD	< -67dB	.....	.....	
ac Volts/accuracy	-51.8, +25.7dBm ± 3%	10µV-300V unb (35V bal)	-70, +21dBm	
Audio noise range	-99dBm	0-120dB SNR	W/stereo crosstalk	
Signal generator range	1-25k, 24.2dBu	UPA-B6 opt (10-100k)	40-15k programmable	
Generator output	Active bal	Bal, unbal	.....	
Frequency counter	Yes	8-250k	.....	
Meters/displays	CRT alphanumerics	LCD displays	LED displays, printer	
Digital design	Yes	Yes	Yes	
Automated measurements	GPIB	IEEE-488/IEC 625-1	µP control	
†Transmitter and receiver set, primary design for testing of telephone links.				
Reader Service Number	1412	1413	1415	1416

Manufacturer	Sound Technology	Technical Projects	Tektronix	
Model/Series	1510A†★	3100A/3200A†	AA5001†	
Frequency range	20-40k	10-110k	10-300k	
Input level	0.1mV-40V, 100kΩ	0.03mV-110V, 200kΩ	100V, 100kΩ	
Input connection	Active bal	Active bal	Active bal	
Fundamental reject	100dB, 1kHz	> 100dB 1kHz	94dB at 1kHz	
Minimum THD figure	0.01%	0.002%	0.002%	
THD accuracy	± 5% of full scale	± 10%	± 2%	
IMD measurement	No	Opt SMPT/DIN	SMPT/DIN opt	
IMD accuracy	.....	± 4%	± 2%	
Minimum IMD	.....	0.0025%	0.002%	
ac Volts/accuracy	-0.2, +0.2dBm, ± 1%	± 0.2dBm ± 2%	-107, +40dBm, ± 0.1dB	
Audio noise range	-79dBm	-103dBm	< -115dBm, 30kHz bw 600Ω	
Signal generator range	20-40k, 30dBm	10-110k +26dBm	10-300k, +30dBm	
Generator output	Active bal	Active bal	Active bal/unbal	
Frequency counter	No	No	Yes	
Meters/displays	Bargraph, CRT	RMS, AVG, PEAK	LEDs, meter movement	
Digital design	Yes	No	Yes	
Automated measurements	GPIB	.....	GPIB IEEE-488 opt	
‡Below specified residual THD & N or actual THD, whichever is greater.				
Reader Service Number	1417	1418	1420	1421

Manufacturer	Tektronix	Wandel & Goltermann
Model/Series	AA501	NFA-1†★
Frequency range	10H-100k	15-200k (receiver)
Input level	60mV-200V, 100kΩ	140nV-30V, 600Ω, 100kΩ
Input connection	Balanced	Bal, unbal, BNC/XLR/CF
Fundamental reject	10dB <sup>2</sup>	90dB at 1kHz
Minimum THD figure	0.0025%	0.003% typical
THD accuracy	± 10%	± 0.003% absolute
IMD measurement	Opt SMPT/DIN	Program for any
IMD accuracy	± 10%	± 0.01%
Minimum IMD	0.0018%	0.01%
ac Volts/accuracy	-108, +48dBm ± 2% fs	-135dB, +30dB
Audio noise range	-108dBm	-100dBm A-wtd, <-90 CCIR
Signal generator range	10-100k, 28dBm	10-50k, full level
Generator output	Balanced	Bal, unbal, BNC/XLR/CF
Frequency counter	No	Yes w/SNR > -10dB
Meters/displays	LED displays	CRT graph/numeric
Digital design	Yes	Yes
Automated measurements	No	GPIB/IEEE, IEC
‡Below specified residual THD & N or actual THD, whichever is greater.		
Reader Service Number	1422	1423

**Want To Talk  
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## AM Modulation Monitors

These systems include AGC circuitry and internal calibration facilities. They are ATS compatible.

Manufacturer	Belar Electronics Labs	Boonton Electronics	Broadcast Electronics	Harris Broadcast	TFT
Model Number	AMM-3 (AMM-2B)	8200 analyzer†	AM-90	AS-10 stereo	753/754
Frequency range	200k-160MHz	100k-2GHz(2.5G opt)	450k-30MHz	530-1620kHz	500k-4MHz
Off-air RF input	100µV w/pre-amp	100µV w/pre-amp	.....	500mV-15Vrms	100µV
Direct input	5Vrms 50Ω	10mVrms AM band	1Vrms 50Ω	.....	1-10Vrms 50Ω
Modulation range	-99, +199% (± 133%)	To 99%	-100, +140%	0-133%	-100, +125%



# SURGE MASTER

## HEAVY DUTY AC POWER LINE PROTECTORS



### Devastation in a microsecond

It could happen tomorrow.

A sudden thunderstorm. Lightning strikes the power line And you're down.

How long would it take you to be back up again? What would be the cost in downtime alone—to say nothing of the actual cost of repairs?

Even if lightning strikes many miles away, it can still do physical damage—although it may not show up immediately. The effects of such transients are cumulative and will ultimately cause random, unexplained failure.

And it's not only lightning that can do all this. Power company load adjustments, welding activities, operation of elevators, motors, and a vast number of other things, particularly in heavy industrial areas, can dump tremendous overvoltages on AC lines.

Fortunately there is a simple, reliable, and relatively inexpensive way to provide exceptional protection for your entire installation.

#### **SURGE MASTER HEAVY DUTY AC POWER LINE PROTECTORS**

The UL listed Surge Master acts as a buffer between the problem transients and the sensitive equipment. It is designed to protect in two ways. The first stage of protection employs high-speed (5ns) silicon suppression technology totally absorbing the lesser transients and the leading edge of

#### Representative Pricing:

<b>1800A</b> – 120Y	\$3985
– 277Y	5778
– 480D	6376
<b>2800A</b> – 120Y	\$5475
– 277Y	7429
– 480D	7944
<b>3100A</b> – 120Y	\$5975
– 277Y	8664
– 480D	9560

larger transients. The second stage consists of "brute force" MOV technology which reacts rapidly to absorb the brunt of the strike. Field-proven MOV technology has been protecting major installations for many years.

#### **YOU WON'T WORRY ABOUT DOWNTIME**

A catastrophic hit can damage a protector. Most protectors must then be removed from the line and sent to the manufacturer for repair or replacement. This leaves your equipment vulnerable until the unit is returned.

Surge Masters not only provide quality protection, it's insured it with triple redundancy. There are 3 heavy-duty suppression modules on each phase. Even in the unlikely event that one module fails, the system still retains 80% of its protection capability on all phases. **Protection is always present.**

#### **YOU'LL LIKE ITS FAST & SIMPLE INSTALLATION**

One of the major attractions of MCG Surge Masters is that they can be installed without breaking the power line. Whether your power is single phase or three phase, the unit is connected across the lines, in parallel rather than in series. This is because the Surge Master protects against overvoltages not by blocking them, but



by diverting them. This has proven to be a very effective and economical way of preventing overvoltages from reaching sensitive equipment.

#### **FRONT PANEL INDICATORS ELIMINATE GUESSWORK**

Comprehensive, front panel monitoring indicates the exact status of the unit at all times. The green light indicates that all systems are "go." The yellow signifies that the Surge Master has suppressed a transient; simply reset to green. In the event that a transient was severe enough to damage the Surge Master, a red light indicates that there is an internal fault.

A resettable "Event Counter" enables you to log the number of transients that have been suppressed.

#### **EASY FIVE MINUTE REPAIR**

If the red front panel indicator illuminates, a fault situation exists. Simply open the Surge Master—internal troubleshooting LED's quickly pinpoint the precise location of the damaged module. Modular construction permits on-site correction within 5 minutes.

#### **2 YEAR WARRANTY**

All Surge Masters come with a two year, no-nonsense warranty.

#### **NEED TECHNICAL ASSISTANCE?**

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Specialists in Circuit Protectors,  
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Circle (151) on Reply Card

## AM Modulation Monitors

Manufacturer	Belar Electronics Labs	Boonton Electronics	Broadcast Electronics	Harris Broadcast	TFT
Model Number	AMM-3 (AMM-2B)	8200 analyzer <sup>1</sup>	AM-90	AS-10 stereo	753/754
Input attenuator	Yes	Yes	No	Yes	Yes
Peak modulation indicator	Yes (adjustable)	Peak hold	Programmable	Adjustable	Adjustable
Peak flasher accuracy	0.5% (2%) 25kHz	1% of peak	± 1% 1kHz	.....	± 2% 400kHz
Audio output level	+ 10dBm	1Vrms 600Ω	+ 10dBm	0dBm L/R/L + R/L-R	0dBm
Audio connection	Unbalanced	Balanced	Bal or unbal	Xfmr/act bal/unbal	.....
Audio response/mono	± 0.5dB 20-25k	.....	-0.5dB 20-20k	L/R act bal 600Ω	± 0.5dB 20-25k
Distortion/mono	0.25% 25kHz	< 0.1%	0.15%	.....	0.05% 10kHz
S/N ratio/mono	75dB	0.05% res. AM	75dB unwt'd 100% mod	.....	75dB unwt'd
Meter/display	Analog meter	Digital display	LED bar graph	Dual meters, LEDs	Analog meter
Oscilloscope output	Yes	From detector	Yes	No	No
Remote meter output	Yes	No	Yes	Yes	Yes
Failure alarms	Carrier	None	Carrier, mod	.....	Carrier, mod
<sup>1</sup> Instrument designed for AM, FM, φM measurement in maintenance show.					
Reader Service Number	1424	1425	1426	1427	1428

## FM Modulation Monitors

These units include remote metering outputs and are ATS compatible. An internal calibration circuit and carrier failure indication are standard.

Manufacturer	Belar Electronics Labs	QEI	Rohde & Schwarz	TFT
Model Number	FMM-2	Model 691	FKD, FKDL	Model 844
FM channel selector	Crystal	Pre-selector switch	Tuned PLL	Pre-selector/crystal
Off-air input	100μV, opt pre-amp	5mV	3.16mV	200μV
Direct input	1Vrms 50Ω	0.2-10Vrms 50Ω	0.5-2Vrms 50Ω	1-10Vrms 50Ω
AGC circuitry	No	No	.....	Yes
Modulation range	± 133%	± 133%	77.5kHz(2.5kHz LED)	-100, +133%
Input attenuator	Yes	Yes	No	Yes
AF response (meter)	± 0.1dB 50-75k	± 0.2dB 30-75k	± 0.5dB 40-65k	± 0.5dB 30-120k
Peak mod adjustment	199%	199%	None	199%
Peak flasher accuracy	2%	± 2% 5kHz	5%	± 2%
Residual AM monitor	Integral	Integral	.....	.....
Audio output	+ 10dBm	+ 10dBm	6dBm	0dBm
Audio connection	Active bal	Xfmr	Bal 600Ω L-R	Unbalanced
Audio response	± 0.1dB 50-15k	± 1dB 30-15k	0.05dB 40-65k	± 0.5dB 30-120k
Audio distortion/mono	0.01%	0.05%	< 0.5% 30-15k	0.1%
S/N ratio/mono	90dB unwt'd	75dB wtd 100% mod	> 68dB wtd	80dB unwt'd
Composite output	1.5Vrms	2Vrms 100% mod	6dBm ± 40kHz dev	5Vrms 10kΩ
Metering display	Analog movement, LEDs	Analog movement	Dual 32-LED bar graphs	Analog meter, LEDs
Oscilloscope output	Yes	Yes	No	Yes
Modulation alarm	None	Yes	Yes	Yes
Stereo monitor	FMS-2	Integral	Integral	Integral
SCA monitor	SCM-1, SCM-2	Single, dual opt	Integral	TFT-730A, 845
Reader Service Number	1429	1430	1431	1432

## TV Aural Modulation Monitors

All models include remote metering output and internal calibration facilities. Peak modulation indicators are adjustable; peak flasher accuracy is ± 1%.

Manufacturer	Belar Electronics Labs	Model 850	TFT
Model Number	TVM-1	TVM-100L/100H	701 (702)
Frequency range	Single channel	Any TV channel	Any TV channel
Off-air input level	100μV/RFA-3 pre-amp	100mV-5Vrms composite	20μV 50Ω
AGC circuitry	Yes	.....	Yes
Modulation range	± 133% ± 25kHz dev	133%, 100% ± 73kHz	100% ± 25kHz
Meter frequency response	± 0.5dB 50-75k	± 0.1dB 30-50k	± 0.2dB 50-15k
Audio output	10dBm xfmr bal	10dBm bal, 5V unbal	6dBm active bal
Audio response/mono	± 0.5dB 50-15k	± 0.01dB 30-50k	± 0.2dB 50-15k
Audio distortion/mono	0.1%	0.01%	0.1% 1kHz
S/N ratio/mono	70dB	80dB	78dB de-emphasized
Composite output	1V 2kΩ	1.5V/Pro/SAP/SCA	3Vrms 75Ω
Meter/displays	Analog meter	Meter & LEDs	Meter & LEDs
Oscilloscope output	Yes	Yes	Yes
ATS compatible	Yes	Yes	No
Carrier alarms	None	90% power	Reduced power
Modulation alarm	None	None	Relay closure
Stereo monitor	.....	TVM-200/210/220	Integral
SCA monitor	SCM-1/SCM-2	SCM-1/SCM-2	TFT855, TFT851
Reader Service Number	1433	1434	1435

## Vectorscopes

Equipment for measurement and display of the relative phase angles of color information in the video signal. Those models marked with a diamond (♦) provide component video inputs. Models marked with a bullet (•) are battery operated. All units are available in rack-mount or bench case configurations.

Manufacturer	B&K Precision	Electronic Visuals/BVS†	Hitachi Denshi	Leader Instruments
Model/Series	Model 1270	EV4021	V-069 (V-068)	V-089 (V-088)
Display size	6" rect	8x10cm rect	6" rect	3.5"
Graticule	Internal	Internal	Internal	External
Waveform monitor mode	No	Waveform only	Vector only	Vector only
Function control from	Manual	Manual	Manual	Manual
Standards	NTSC	NTSC, PAL/-M	NTSC (PAL)	NTSC (PAL)
Integral calibrator	Yes	No	Yes	Yes
Composite video inputs	A, B	A, B	A, B	A, B
Subcarrier input	Yes	Yes	Blackburst	Composite sync
Composite sync input	Yes	.....	Blackburst	Composite sync
Display references	A or B	A, B, ext	A, B, ext	A, B
Diff phase, gain mode	.....	1°, 1%	2°, .....	No
VITS line selector	No	No	No	No
Luminance measurements	None	No	None	No
Reader Service Number	1481	1482	1483	1484



## Vectorscopes

Manufacturer	Magni Systems	Philips T&M	Snell & Wilcox
<b>Model/Series</b>	VS 530 (VS 531)	◆VS 560 (VS 561)	PM 5667, PM 5668
Display size	8x10cm	8x10cm	8x10cm rect
Graticule	Internal	Internal	Internal
Waveform monitor mode	Vectors, audio phase	Vectors, audio phase	SC/H PM 5668
Function control from	Manual, rmt†	Manual, rmt†	Manual, remote
Standards	NTSC (PAL)	NTSC/CAV (PAL/CAV)	NTSC, PAL/-G/-M/-N
Integral calibrator	Yes	Yes	Yes
Composite video inputs	3 inputs	2 inputs w/3 channels	A, B
Subcarrier input	Yes	Yes	Yes
Composite sync input	Yes	Yes	Yes
Display references	Int, ext	Int, ext	A, B, ext
Diff phase, gain mode	<1°, <1%	<1°, <1%	<1°, <1%
VITS line selector	From WFM530/531	From WFM560/561	No
Luminance measurements	No	No	None
<b>Reader Service Number</b>	†From WFM530, RS-232 1486	†From WFM560, RS-232 1487	1488
<b>Manufacturer</b>	.System Video	Tektronix	Thomson-CSF
<b>Model/Series</b>	Model 1225	◆1720	◆TTV 8300
Display size	10x10cm	5½"	8x10cm
Graticule	Internal	Internal	External
Waveform monitor mode	X-Y display mode	Stereo audio phase	Waveform
Function control from	Manual	μP control	Manual
Standards	NTSC, PAL/-M	NTSC, PAL	None
Integral calibrator	Yes	Yes	SECAM
Composite video inputs	A, B	A, B	Yes
Subcarrier input	Yes	Ext ref	No
Composite sync input	Yes	Yes	Yes
Display references	A, B, ext	Int, ext	Yes
Diff phase, gain mode	2°, 2%	≤2°, ≤2%	.....
VITS line selector	Lines 15-21	From 1730 WFM	.....
Luminance measurements	No	No	Y/I/Q/R/G/B
<b>Reader Service Number</b>	1491	1492	1493
<b>Manufacturer</b>			Thomson-CSF
<b>Model/Series</b>			◆TTV 8300
Display size			8x10cm
Graticule			Internal
Waveform monitor mode			None
Function control from			Manual
Standards			NTSC, PAL/-M
Integral calibrator			Yes
Composite video inputs			A, B, alternate
Subcarrier input			Yes
Composite sync input			No
Display references			A, B, ext
Diff phase, gain mode			≤1°, <1%
VITS line selector			No
Luminance measurements			None
<b>Reader Service Number</b>			1494
<b>Manufacturer</b>			Videotek
<b>Model/Series</b>			VSM-60
Display size			8x10cm
Graticule			Internal
Waveform monitor mode			None
Function control from			Manual
Standards			NTSC, PAL/-M
Integral calibrator			Yes
Composite video inputs			A, B, alternate
Subcarrier input			Yes
Composite sync input			No
Display references			A, B, ext
Diff phase, gain mode			≤1°, <1%
VITS line selector			No
Luminance measurements			None
<b>Reader Service Number</b>			1495

## Video Waveform Monitors

Video monitoring equipment for assessment of visual signal components and signal quality. This equipment is ac-operated, but models marked with a bullet (•) may be battery operated. All units come in bench or rack-mount cabinets. A diamond (◆) indicates a test probe feature; a star (★) indicates an oscilloscope test mode.

Manufacturer	B&K Precision	Electronic Visuals/Broadcast Video Systems	Hitachi Denshi
<b>Model/Series</b>	1265	EV4050 component	EV4011 (EV4042)
Display size	8x10cm	8x10cm	8x10cm
Graticule	Internal	External	External
Available for	NTSC	CAV	NTSC, PAL/-M, SECAM
Internal calibrator	Yes	.....	No (Yes)
Vertical Response	Flat, chroma	Flat, LP, chroma	Chroma, LP, flat
Timebases	•2H, 2V	linear	•2H, 2V mag
Magnification factors	x10	V, 2V, 3V, H, 2H,	H, 2H, 2H mag
RGB/YRGB displays	Yes	3H, mag	V, 2V, 2V mag
dc restore	Back porch	1-line to 100ns/8 div	.....
VITS line select	Lines 13-22	AB, ABC parade	No (RGB or component)
Programmable	No	Individual restoration	Back porch
Remote controllable	No	No	No (Lines 7-22)
Composite inputs	Yes	No	No
Component inputs	No	No	1-input
Line strobe pulse	No	Y, Cr, Cb	No
Vectorscope function	No	No	No
Waveform comparison	No	Yes	No
<b>Reader Service Number</b>	1456	Superimposed	No
		1457	Parade only
		1458	1460

Manufacturer	Hitachi Denshi	Leader Instruments	Magni Systems
<b>Model/Series</b>	V-099 (V-098) portable	LBO-5860B (5865B)	WFM-530 (WFM-531)
Display size	3.5" rect	8x10cm	8x10cm
Graticule	.....	Internal	Internal
Available for	NTSC (PAL)	NTSC, PAL/SECAM opt	NTSC (PAL)
Internal calibrator	Yes	Yes	Yes
Vertical Response	Flat, IRE, chroma	Flat, LP, chroma	Flat, chroma, LP
Timebases	•2H, 2V, 1s/div	•2H, 1s, 2V	.....
Magnification factors	x20	2V mag	H, 2H, 2V,
RGB/YRGB displays	No	x20	V mag
dc restore	Blanking	Option	x5
VITS line select	No	Back porch	Yes
Programmable	No	7-21 (525)	Back porch
Remote controllable	No	No	Any line
Composite inputs	A, B	No	16 memories
Component inputs	No	No	RS-232
Line strobe pulse	No	A, B	3 channels
Vectorscope function	No	No	2 inputs, 3 channels
Waveform comparison	No	Yes	2 sets
<b>Reader Service Number</b>	1461	Limited components use	Yes
		Yes	Full components
		1463	Yes
		1464	SC/H phase on 1527
			1465

Manufacturer	Philips T&M	Rohde & Schwarz
<b>Model/Series</b>	★PM 5665	★PM 5662 combo
Display size	8x10cm	8x10cm
Graticule	Internal	Internal
<b>Model/Series</b>	★OKF	★OPF TV oscilloscope
Display size	8x10cm	8x10cm
Graticule	External	External
<b>Model/Series</b>	★ODF digital TV scope	
Display size	10x13cm	
Graticule	Electronic	

## Video Waveform Monitors

Manufacturer	Model/Series	Philips T&M	OKF	Rohde & Schwarz
	★PM 5665	★PM 5662 combo	★OKF	★OPF TV oscilloscope
Available for	NTSC, PAL/-M/-G/-N	NTSC, PAL/-G/-N/-M	PAL	PAL, CCIR M/B/G
Internal calibrator	Yes	Yes	Yes	Yes
Vertical Response	Flat, chroma, $\delta G$	Flat, luma, chroma $\delta G, \delta \leq$	LP, flat, noise $\delta$ staircase	LP, chroma, flat, ICPM $\delta$ staircase, noise
Timebases	H, 2H, V, 2H Mag x10	H, 2H, V, 2H Mags x10 H, x20 V	V, 2V, H, 2H 5H, 12H, 30H .....	1s-1s/div in 21 switched steps x10 .....
Magnification factors	Yes	Yes	4-field display	.....
RGB/YRGB displays	Yes	Yes	Black	Black
dc restore	Back porch	Back porch	4-623, 1-VBI	13-21, 326-334
VITS line select	1-263/1-262, 1-625	1-263, 1-262, 1-625	No	No
Programmable	No	No	No	No
Remote controllable	Yes	Yes	A, B	A, B, Z-axis
Composite inputs	A, B	A, B	No	No
Component inputs	No	No	Yes	Z-unblank
Line strobe pulse	.....	Yes	No	No
Vectorscope function	No	With SC/H $\leq$	No	No
Waveform comparison	No	No	Vertical display	No
Reader Service Number	1466	1467	1468	1469
Manufacturer	.Snell & Wilcox	System Video Ltd	1480 series	◆1740 series combo
Model/Series	MWV 200 multiscope	1254 (1258)	◆1740 series combo	1730 series
Display size	8x10cm	10x10 (8x10) cm	8x10cm	8x10cm
Graticule	Electronic	Internal	Int, ext	Internal
Available for	NTSC, PAL/-M/-N	PAL/-M, NTSC	NTSC, PAL/-M, SECAM	NTSC (PAL/-M)
Internal calibrator	Yes	Yes	Yes	Yes
Vertical Response	Flat, LP	Flat, LP, linearity chroma	Flat, chroma, LP	Flat, IRE, (luma)
Timebases	.....	H, 2H, V, 2V H mag	IRE, $\delta G$	Chroma
Magnification factors	2H, 2V	H, 2H, V, 2V H mag	H, 2H, 2H mag	H, 2H, 2H mag
RGB/YRGB displays	.....	x12.8	V, 2V, 2V mag	V, 2V, 2V mag
dc restore	Back porch	Yes	x5, x10, x20, x25, x50	x10, x20
VITS line select	No	Yes	Yes	Yes
Programmable	No	Any line, 16-line	Back porch or sync	Back porch or sync
Remote controllable	No	$\mu P$ control system	Single and 15-line	Internal jumper set
Composite inputs	Multistandard A, B, C	A, B	No	All functions
Component inputs	No	No	No	Yes
Line strobe pulse	No	.....	A, B, aux	A, B
Vectorscope function	Yes	Companion unit	No	No
Waveform comparison	No	Parade only	Yes	No
Reader Service Number	Also NTSC-4.43, SECAM 1471	1472	No Overlay, parade	With $\delta \leq$ in R-Y mode Parade
Manufacturer	WFM-300 component	1750 series combo	TSM-60	TSM-50
Model/Series	WFM-300 component	1750 series combo	TSM-60	TSM-50
Display size	8x10cm	8x10cm	8x10cm	8x10cm
Graticule	Electronic	Electronic	Internal etched	Internal
Available for	525/60, 625/50, RGB	NTSC (PAL)	NTSC, PAL/-M	NTSC, PAL/-M
Internal calibrator	Yes	Yes	Yes	Yes
Vertical Response	"Lightning", bowtie displays	Flat, IRE (luma) chroma	Flat, LP, chroma	Flat, LP, chroma
Timebases	1H, 2H, 2V and 2F mag	H, 2H, 2H mag V, 2V, 2V mag	.....	2H, 2V, 2V-mag
Magnification factors	x20	x2, x10, x20, x50	H, 2H, V, 2V, 1s 2V-mag	1s
RGB/YRGB displays	Yes	Yes	x20	x20
dc restore	Yes	Back porch or sync	Int jumper	Back porch
VITS line select	Any line	8-23 (6-21, 319-334)	Back porch	Back porch
Programmable	.....	All functions	14-21, field 1 or 2	No
Remote controllable	Yes	Yes	No	No
Composite inputs	No	A, B	No	No
Component inputs	1 input set	No	A, B	A, B
Line strobe pulse	.....	Yes	No	No
Vectorscope function	Yes	SC/H $\leq$ measurements	No	No
Waveform comparison	Overlay, parade Transcoders for YIQ, Y/R-Y/B-Y available	Simul vector/waveform	No	No
Reader Service Number	1476	1477	1478	1479
Manufacturer	.Barco Industries	Philips T&M	EMFT series	Rohde & Schwarz
Model/Series	VSD 1000BG	PM5560M	EMFT series	KDF2D (EKF2)
Service band	VHF/UHF	IF/VHF/UHF	IF/VHF/UHF	IF/VHF/UHF/CATV
CCIR standards	B/G/M, others	B/G/M/I/D/K	B/G	M/B/G
Channel selection	Fixed, PLL-tuned	Thumb-wheel PLL	Tunable, crystal	Tune & crystal
Direct input level	.....	1Vrms $\pm 6dB$ w/AGC	0.1-30mV, 1-100mV	20mV-1.5V
Off-air input level	-30mV, +30mV	100mV $\pm 6dB$ w/AGC	250 $\mu V$ -5mV	250 $\mu V$ -300mV
IF input level	10-40dBmV	70mV $\pm 3dB$ 50 $\Omega$	5mV-100mV	5mV-100mV
Input level indicator	LED display	Vision & IF meters	Panel meter	Meter
Intercarrier input	No	Yes	.....	.....
Split carrier mode	No	Yes	Yes	Yes
Zero carrier reference	Int	Int, ext	Line 15 or ext	Int, ext
Envelope detection	Yes	Yes	Yes	Yes
Synchronous detection	Yes	Yes	Yes	Yes
Quadrature detection	No	Yes	Yes	.....
Aural signal reject	Yes	Yes	Yes	Yes
SAW filter design	.....	Nyquist filter	Yes	.....
Aural deviation port	.....	+6dBm $\pm 25kHz$	.....	0-50kHz
Audio line out	+6dBm	+6dBm/1.55V	+6dBm $\pm 30kHz$	+6dBm $\pm 30kHz$
Speaker output	8 $\Omega$	None	No	+6dBm
Manufacturer	Barco Industries	Philips T&M	EMFT series	Rohde & Schwarz
Model/Series	VSD 1000BG	PM5560M	EMFT series	KDF2D (EKF2)
Service band	VHF/UHF	IF/VHF/UHF	IF/VHF/UHF	IF/VHF/UHF/CATV
CCIR standards	B/G/M, others	B/G/M/I/D/K	B/G	M/B/G
Channel selection	Fixed, PLL-tuned	Thumb-wheel PLL	Tunable, crystal	Tune & crystal
Direct input level	.....	1Vrms $\pm 6dB$ w/AGC	0.1-30mV, 1-100mV	20mV-1.5V
Off-air input level	-30mV, +30mV	100mV $\pm 6dB$ w/AGC	250 $\mu V$ -5mV	250 $\mu V$ -300mV
IF input level	10-40dBmV	70mV $\pm 3dB$ 50 $\Omega$	5mV-100mV	5mV-100mV
Input level indicator	LED display	Vision & IF meters	Panel meter	Meter
Intercarrier input	No	Yes	.....	.....
Split carrier mode	No	Yes	Yes	Yes
Zero carrier reference	Int	Int, ext	Line 15 or ext	Int, ext
Envelope detection	Yes	Yes	Yes	Yes
Synchronous detection	Yes	Yes	Yes	Yes
Quadrature detection	No	Yes	Yes	.....
Aural signal reject	Yes	Yes	Yes	Yes
SAW filter design	.....	Nyquist filter	Yes	.....
Aural deviation port	.....	+6dBm $\pm 25kHz$	.....	0-50kHz
Audio line out	+6dBm	+6dBm/1.55V	+6dBm $\pm 30kHz$	+6dBm $\pm 30kHz$
Speaker output	8 $\Omega$	None	No	+6dBm

## TV Demodulators

TV receiving equipment for signal monitoring and examination. Inputs are typically 50/75 $\Omega$ . At least two video outputs are rated 75 $\Omega$ .

Manufacturer	Model/Series	Philips T&M	EMFT series	Rohde & Schwarz
	.Barco Industries VSD 1000BG	Philips T&M PM5560M	EMFT series	KDF2D (EKF2)
Service band	VHF/UHF	IF/VHF/UHF	IF/VHF/UHF	IF/VHF/UHF/CATV
CCIR standards	B/G/M, others	B/G/M/I/D/K	B/G	M/B/G
Channel selection	Fixed, PLL-tuned	Thumb-wheel PLL	Tunable, crystal	Tune & crystal
Direct input level	.....	1Vrms $\pm 6dB$ w/AGC	0.1-30mV, 1-100mV	20mV-1.5V
Off-air input level	-30mV, +30mV	100mV $\pm 6dB$ w/AGC	250 $\mu V$ -5mV	250 $\mu V$ -300mV
IF input level	10-40dBmV	70mV $\pm 3dB$ 50 $\Omega$	5mV-100mV	5mV-100mV
Input level indicator	LED display	Vision & IF meters	Panel meter	Meter
Intercarrier input	No	Yes	.....	.....
Split carrier mode	No	Yes	Yes	Yes
Zero carrier reference	Int	Int, ext	Line 15 or ext	Int, ext
Envelope detection	Yes	Yes	Yes	Yes
Synchronous detection	Yes	Yes	Yes	Yes
Quadrature detection	No	Yes	Yes	.....
Aural signal reject	Yes	Yes	Yes	Yes
SAW filter design	.....	Nyquist filter	Yes	.....
Aural deviation port	.....	+6dBm $\pm 25kHz$	.....	0-50kHz
Audio line out	+6dBm	+6dBm/1.55V	+6dBm $\pm 30kHz$	+6dBm $\pm 30kHz$
Speaker output	8 $\Omega$	None	No	+6dBm
Manufacturer	Barco Industries	Philips T&M	EMFT series	Rohde & Schwarz
Model/Series	VSD 1000BG	PM5560M	EMFT series	KDF2D (EKF2)
Service band	VHF/UHF	IF/VHF/UHF	IF/VHF/UHF	IF/VHF/UHF/CATV
CCIR standards	B/G/M, others	B/G/M/I/D/K	B/G	M/B/G
Channel selection	Fixed, PLL-tuned	Thumb-wheel PLL	Tunable, crystal	Tune & crystal
Direct input level	.....	1Vrms $\pm 6dB$ w/AGC	0.1-30mV, 1-100mV	20mV-1.5V
Off-air input level	-30mV, +30mV	100mV $\pm 6dB$ w/AGC	250 $\mu V$ -5mV	250 $\mu V$ -300mV
IF input level	10-40dBmV	70mV $\pm 3dB$ 50 $\Omega$	5mV-100mV	5mV-100mV
Input level indicator	LED display	Vision & IF meters	Panel meter	Meter
Intercarrier input	No	Yes	.....	.....
Split carrier mode	No	Yes	Yes	Yes
Zero carrier reference	Int	Int, ext	Line 15 or ext	Int, ext
Envelope detection	Yes	Yes	Yes	Yes
Synchronous detection	Yes	Yes	Yes	Yes
Quadrature detection	No	Yes	Yes	.....
Aural signal reject	Yes	Yes	Yes	Yes
SAW filter design	.....	Nyquist filter	Yes	.....
Aural deviation port	.....	+6dBm $\pm 25kHz$	.....	0-50kHz
Audio line out	+6dBm	+6dBm/1.55V	+6dBm $\pm 30kHz$	+6dBm $\pm 30kHz$
Speaker output	8 $\Omega$	None	No	+6dBm



# WATTS UP?



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## TV Demodulators

<b>Manufacturer</b> .....	<b>Barco Industries</b>
<b>Model Series</b> .....	<b>VSD 1000BG</b>
Video clamp on .....	Back porch
Modulation fail alarm .....	No
Stereo aural type .....	German system
<b>Reader Service Number</b> .....	<b>1445</b>

<b>Philips T&amp;M</b>
<b>PM5560M</b>
0 IRE active or VBI
No
.....
<b>1446</b>

<b>Rohde &amp; Schwarz</b>		
<b>EMFT series</b>	<b>KDF2D (EKF2)</b>	<b>AMF2</b>
Sync, blanking	Sync, blanking	Sync, blanking
.....	No	Sync failure LED
Dual carrier Std B/G	.....	For German system
<b>1447</b>	<b>1448</b>	<b>1449</b>

<b>Manufacturer</b> .....	<b>Tektronix</b>
<b>Model Series</b> .....	<b>1450-1</b>
Service band .....	IF, VHF, UHF
CCIR standards .....	M/B/G/1
Channel selection .....	Fixed & crystal
Direct input level .....	80mV-5V
Off.air input level .....	80mV-5V
IF input level .....	80µV-22mV
Input level indicator .....	LED display
Intercarrier input .....	Yes, 50Ω
Split carrier mode .....	Yes
Zero carrier reference .....	Int, ext
Envelope detection .....	Yes
Synchronous detection .....	Yes
Quadrature detection .....	Yes
Aural signal reject .....	Yes
SAW filter design .....	Yes
Aural deviation port .....	50mV/kHz, 600
Audio line out .....	.....
Speaker output .....	Yes
Video clamp on .....	Sync, blanking, other
Modulation fail alarm .....	.....
Stereo aural type .....	BTSC/US
<b>Reader Service Number</b> .....	<b>1450</b>

<b>Telemet</b>	<b>Videotek</b>
<b>4500-B1 (-B2)[-F1]</b>	<b>DM-140S</b>
VHF (UHF)	VHF, UHF, CATV
.....	M
Fixed channel, xtal	Varacter/synthesized
300µV-30mV	.....
.....	-15dBmV min
None	No
.....	No
Internal	No
No	No
.....	Yes
Yes	.....
.....	.....
Yes	No
.....	Yes
BNC	No
Winchester M7	Shown on LEDs
Yes	+8dBm
.....	8Ω, headphone
No	.....
No	L & R
.....	No
BTSC/US	BTSC/US
<b>1451</b>	<b>1454</b>

## Automatic TV Test Systems

<b>Manufacturer</b> .....	<b>Magni Systems</b>
<b>Model Series</b> .....	<b>2015 generator</b>
Controlling computer .....	MS PC-DOS
Video signal generator .....	Multistandard
System control mode .....	IBM-PC/compatible
Programmable .....	Yes
Standards .....	NTSC/PAL/CAV/HDTV
External data storage .....	Yes
Auto logging mode .....	No
Waveform plotting .....	Yes
Parameter limits .....	No...
Out of tolerance alarm .....	No...
Carrier failure alarm .....	No...
Modulation loss alarm .....	No...
Measurements per .....	Any reference
Tests made on line .....	Any line
<b>Reader Service Number</b> .....	<b>1437</b>

<b>Marconi Instruments</b>
<b>TF2914A analyzer</b>
.....
TF2913 system
.....
No
NTSC, PAL
Possible
Yes
.....
Yes
Defined by TF2915
Aural & printer
.....
NTC-7/FCC
Individual lines
<b>1438</b>

<b>PESA Electronica</b>
<b>SWAT</b>
Proprietary
Uses program video
.....
.....
NTSC, PAL
Printout or PC
RS-232 link
.....
Yes
Yes
Per programming
Per programming
CCIR/RS-170A
Total signal
<b>1439</b>

<b>Philips T&amp;M</b>
<b>PM5578</b>
Proprietary
External
Yes
.....
NTSC/PAL
Possible
Yes
On CRT only
RS-232
Set via jumpers
Yes
VITS low LED
CCIR/NTC-7
Lines 17/18, 2-field
<b>1440</b>

<b>Rohde &amp; Schwarz</b>
<b>UVF video analyzer</b>
Proprietary
Bar, dot only
Yes
.....
PAL
.....
Yes
Yes
IEC-625/IEEE-488
EEPROM, user defined
Blinking LED
No
CCIR-569-1
Individual lines
<b>1441</b>

<b>Manufacturer</b> .....	<b>Tektronix</b>
<b>Model Series</b> .....	<b>1980 ANSWER</b>
Controlling computer .....	Proprietary
Video signal generator .....	External (TEK1910)
System control mode .....	Manual
Programmable .....	No
Standards .....	NTSC
External data storage .....	Yes
Auto logging mode .....	Yes
Waveform plotting .....	Yes
Parameter limits .....	User defined
Out of tolerance alarm .....	Printer
Carrier failure alarm .....	No
Modulation loss alarm .....	No
Measurements per .....	RS170A/NTC-7/CCIR-569
Tests made on line .....	Any VBI line
<b>Reader Service Number</b> .....	<b>1442</b>

<b>Tektronix</b>
<b>VM7000</b>
Motorola 68020
No
Manual, programmable
Yes
NTSC
Also internal
Via RS-232C
Raster scan display
User programmable
No
No
No
RS-170A
Any line
<b>1443</b>

<b>Thomson-CSF</b>
<b>TTV8400 Thom-CAT</b>
Apple
TTV8410 Prodigie
Yes
Yes
NTSC, PAL
Floppy disk
Yes
Yes
Yes
User defined
Printer, CRT
None
CCIR-569
1-line, 1-field
<b>1444</b>

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# Video Recorders, Types B & C

These reel-to-reel systems use 1" media for recording and reproduction of composite video signals. A capstan-pinch roller tape pull system is used except those marked with a dagger (†), which are air/vacuum assisted. Transport and electronics control involves one or more microprocessors. Most systems include individual meters for each audio channel; video metering includes tracking. Luminance bandwidth is  $\pm 0.5$ dB, 0-4.2MHz, except those specifically for PAL and SECAM, where bandwidth extends to  $\geq 5$ MHz. In audio range figures, Hz is understood.

Manufacturer	Ampex AVSD			Ampex/Nagra	BTS
	Model/Series	VPR-80	VPR-3†	VPR-6	VPR-5
S/N ratio L/C	46dB L, 46dB C	47dB w/Zeus processor	46dB L, 46dB C	46dB L	>44dB
Diff phase/gain	4°/4%	±2dB, 50-18k	±2dB, 50-18k	4°/4%	<4°/ <4%
K factor 2T	1%	1% max	1%	1%	<20ns
Video confidence	No	Yes	Yes	Yes	Yes
No. of audio channels	3	3 NTSC, 4 PAL	3 NTSC, 4 PAL	3	3 or 2 audio, 1 TC
AF response	±2dB, 50-15k	56dB 18dBm out	56dB 18dBm out	±2dB, 50-15k	-3, +2dB 40-18k
AF S/N ratio	56dB 8dBm out	56dB 8dBm out	56dB unwt'd 8dBm out	56dB 8dBm out	>57dB w/o Dolby/Telcom
AF distortion	1% 8dBm 1kHz	1% 8dBm 1kHz	1% 8dBm 1kHz	1% 8dBm	<3% 1kHz 284nWb/m
LTC read/gen	Integral equipment	Integral equipment	Integral equipment	Yes	Integral
VITC read/gen	External unit	Integral equipment	Integral equipment	Integral equipment	.....
TC displays	Yes	Yes	Yes	External unit	Yes
Integral editor	Full feature	Full feature	Full feature	Partial feature	Full feature
Diagnostic software	Yes	Yes	Yes	Yes	Yes
Remote control type	RS-422	RS-422	RS-422	Simple remote	RS423, EBU/SMPTE, BTS
System TBC preference	External required	External Zeus	External	External required	W/4-field framstore
Nonstandard tracking	-1x, +3x	-1, +3x play	-1x, +3x	No	.....
Slow motion mode	No	No	No	No	-1/4, +1x play
Single frame mode	No	Yes	No	No	No
Reel size/Time (min)	11.75", 124 min.	14", 190 min	11.75", 124 min.	9", 60 min.	12.5" 2.5 hr
Weight	145 lb	270 lb	150 lb	15 lb	484 lbs
Portable, rack mount	19"	19"	19"	With adapter kit	52 console, 53 rack
Color standards	N/P(-M)/S	N/P(-M)/S	N/P(-M)/S	N/P(-M)/S	PAL
Reader Service Number	841	842	843	844	845

Manufacturer	BTS Broadcast TV Systems		Hitachi Denshi	Sony Broadcast	
	Model/Series	BCN-51 (B format)	BCN-21 portable Type B	HR-230	BVH-3000/-3010†
S/N ratio L/C	47dB	47dB NTSC, 43dB PAL	48dB	49dB unwt'd V1-K tape	47(47)dB
Diff phase/gain	<4°/ <4%	<4°/ <4%	3°/3%	<4°/ <4%	4°/4% (6°, 6%)
K factor 2T	>1.5%	>1.5%	>1%	>1% TBC output	1% (2%)
Video confidence	Yes	.....	Yes	Video and audio	Yes
No. of audio channels	3	3 AF or 2 AF/1 TC	3	4 (LTC tr-3/sync tr-4)	3
AF response	-3, +2dB, 40-14k	-3, +2dB, 40-14k	-3, +1.5dB, 50-15k	-3, +1.5dB, 50-15k	-3, +1.5dB 70-15k
AF S/N ratio	57dB	57dB NTSC/54dB PAL	56dB unwt'd, 8dBm out	>56dB 3% THD, Ch 1/2	>56dB
AF distortion	<3%	<3% 1kHz	≤1% 1kHz	<0.1%	1% 1kHz 0dBm
LTC read/gen	Integral equipment	μP controlled generator	Integral option	LTC & cue Audio Ch 3	Generator
VITC read/gen	External available	.....	Integral option	Available	Generator
TC displays	Yes	W/user bits	Yes	Display panel or video	Yes
Integral editor	Full feature	Assemble, inserts	Full feature	Full feature	Backspace edits
Diagnostic software	No	No	Yes	Yes	Yes
Remote control type	RS-423 & simple remote	Standard functions	RS-422, RP-113	RS422, 232 opt, parallel	RS-422
System TBC preference	Integral equipment	No	Integral or ext opt	BKH-3010, BKH-3050	BVT-2700
Nonstandard tracking	-1/2x, +1/2x	No	-1x, +3x	With BKH-3050	In Type C mode
Slow motion mode	No	No	No	-1, +3x play; time mod.	-1x, +3x
Single frame mode	Yes	No	No	No	Dual mode VTR
Reel size/Time (min)	12", 196 min.	To 9" for 60 min	14", 180 min	11.75" (126 min)	11.75"/126 (42)
Weight	.....	20 obs	198 lb VTR/661 console	148 lbs	.....
Portable, rack mount	Includes rack	.....	Yes	Or self-contained	19"
Color standards	N/P(-M)/S	N/P(-M)/S	NTSC	NTSC	NTSC
13x standard record speed for 1/2x slow motion playback.					
Reader Service Number	846	847	848	849	850

Manufacturer	Sony Broadcast			Thomson Video
	Model/Series	BVH-500A	BVH-2000 (2180)	BVH-2500 Delta-Time
S/N ratio L/C	47dB p-pV/RMS noise	48dB unwt'd	48dB unwt'd	>44dB unwt'd
Diff phase/gain	<4°, <4%	<±4°, <4%	<4°, <4%	<4°, <4%
K factor 2T	<1%	<1%	<1%	<1%



## Video Recorders, Types B & C

Manufacturer	Sony Broadcast			Thomson Video
	Model/Series	BVH-500A	BVH-2000 (2180)	BVH-2500 Delta-Time
Video confidence	Yes	Yes	Yes	.....
No. of audio channels	3	3 analog	3 analog	3 AF, 1 TC/AF
AF response	-3, +1.5dB 50-15k	-3, +1.5dB 50-15k	-3, +1.5dB 50-15k	-3, +1.5dB 50-15k
AF S/N ratio	56dB 3% THD	56dB	56dB ch 1/2	>56dB
AF distortion	1% 1kHz 0dBm	1% 1kHz 0dBm	1% 1kHz	<1%
LTC read/gen	Integral	Integral opt	Integral	Integral
VITC read/gen	Integral	Integral opt	Integral	Integral
TC displays	Yes	Yes	Yes	Yes
Integral editor	Assemble only	Full feature	Full feature	Full feature
Diagnostic software	None	Yes	Yes	Yes
Remote control type	Simple rmt ctrl	RS-422	RS-422	RS-422
System TBC preference	External required	Integral	External required	BKH-2300 int
Nonstandard tracking	No	Yes	Still, step, slow	Yes
Slow motion mode	.....	-1x, +3x	-1x, +3x	-1x, +3x
Single frame mode	No	No	Yes	No
Reel size/Time (min)	9" 62 min	11.75(14")/126(188)min	11.75"/126 min	14"
Weight	35 lbs	.....	.....	.....
Portable, rack mount	No	14" (24") rack	19"	19"
Color standards	NTSC	NTSC	NTSC	PAL/SECAM
Reader Service Number	851	852	853	854

## Small Format VCRs

These video recorders use 1/2" cassettes and Betacam or M-II recording format. Typically, studio units include full metering with possible switching for video input/tracking and time code monitoring. RS-422 remote control and full feature editing are available on studio systems. Back space editing is typical on portable units. Betacam SP and M-II models offer two channels of AFM audio which is recorded with video by the scanner heads. Dolby C noise reduction is standard unless marked with a diamond (◆).

Manufacturer	Amplex AVSD		BTS Broadcast Television Systems		Hitachi Denshi
	Betacam	Betacam SP	Betacam	Betacam SP	M format
Models					
Docking units	CVR-1A	CVR-5	BCB-5	BCB-5	.....
Recorder units	CVR-25 portable CVR-40 studio editor	CVR-35 portable CVR-75 studio	BCB-25 portable BCB-40 studio editor	BCB-35 portable BCB-75 studio	◆HR-50 portable
Play only units	CVR-10/15 studio CVR-21 portable	.....	BCB10/15 BCB-21 portable		
Video parameters					
Luma response	-6, +0.5dB 4.1MHz	-6, +0.5dB 5.5MHz	-6, +0.5dB 4.1MHz	-6, +0.5dB 5.5MHz	-3dB 3.6MHz
Chroma response	-3, +0.5dB 1.5MHz	-3, +0.5dB 1.5MHz	-3, +0.5dB 1.5MHz	-3, +0.5dB 1.5MHz	-1dB 1MHz
Video S/N ratio	48dB N, 46dB P/S	51dB N, 50dB P	48dB N, 46dB P/S	51dB N, 50dB P	>47dB L/>48dB C
Composite	NTSC, PAL, SECAM	NTSC, PAL	NTSC, PAL, SECAM	NTSC, PAL	NTSC
Component	YCrCb, Y-C	YCrCb, Y-C	YCrCb, Y-C	YCrCb, Y-C	YIQ
Audio parameters					
Response	±3dB 50-15k	-3, +1.5dB 50-15k	±3dB 50-15k	-3, +1.5dB 50-15k	±3dB 50-15k
S/N ratio	>50dB w/o NRS	>53dB w/o NRS	>50dB w/o NRS	>53dB w/o NRS	>50dB
Distortion	<2%	<1% 1kHz	<2%	<1% 1kHz	.....
No. of tracks	2	2 analog/2 AFM	2	2 analog/2 AFM	2 analog
Variable tracking	CVR-15	CVR-75	CVR-15/ CVR-15/40	CVR-75	No
TBC facilities	CVR-15/40	CVR-75	CVR-15/40	CVR-75	No
Reader Service Number	856	857	858	859	860

Manufacturer	JVC Company	Panasonic Broadcast	Sony Broadcast		Thomson Video
	M-II	M-II	Betacam	Betacam SP	Betacam
Models					
Docking units	KR-X200U	AU 400	BVW-1A	BVW-5	MA1611A
Recorder units	KR-X400U portable KR-X800U studio KR-Z800U editor	AU-500 AU-600/650 studio AU-620 editor	BVW-25 portable BVW-40 studio editor	BVW-35 portable BVW-75 studio	TTV3625 (3626) TTV3635
Play only units		AU-505 portable	BVW-10/15 studio BVW-21 portable		TTV3615 (3616)
Video parameters					
Luma response	-3, +0.5dB 4.5MHz	-3, +0.5dB 4.5MHz	-6, +0.5dB 4.1MHz	-6, +0.5dB 5.5MHz	-6, +0.5dB 4.4MHz
Chroma response	-3, +0.5dB 1.5MHz	-3, +0.5dB 1.5MHz	-3, +0.5dB 1.5MHz	-3, +0.5dB 1.5MHz	-3, +0.5dB 1.5MHz
Video S/N ratio	50dB L, 50dB C	50dB L, 50dB C	48dB N, 46dB P/S	51dB N, 50dB P	48dB N, 46dB P/S
Composite	NTSC out	NTSC out	NTSC, PAL, SECAM	NTSC, PAL	N/P/S (P/S)
Component	YCrCb, Y-C	YCrCb, Y-C	YCrCb, Y-C	YCrCb, Y-C	YCrCb, Y-C

## Small Format VCRs

Manufacturer	JVC Company	Panasonic Broadcast	Sony Broadcast	Thomson Video
Format	M-II	M-II	Betacam Betacam SP	Betacam
Audio parameters				
Response	-3,+1.5dB 50-15k	-3,+1.5dB 50-15k	±3dB 50-15k	-3,+1.5dB 50-15k
S/N ratio	56dB unwt'd	56dB unwt'd	>50dB w/o NRS	>53dB w/o NRS
Distortion	1% 8dBm 1kHz	1% 8dBm 1kHz	<2%	<1% 1kHz
No. of tracks	2 analog, 2 AFM	2 analog, 2 AFM	2	2 analog/2 AFM
Variable tracking	.....	AU-650	BVW-15	BWV-75
TBC facilities	.....	Integral	BVW-10/15/40	.....
Reader Service Number	861	862	863	864
				865

## Videocassette Recorders, 3/4" U-matic

These videocassette systems use 3/4" or 19mm cassette tape media. A reference input of sync and subcarrier may be used. Luminance resolution is approximately 340 TVL, while chroma resolution is 260 TVL. All require an external TBC for on-air or production system applications. A time code track is standard. Models listed are NTSC standard. When applicable for PAL, a bullet (•) is used; for SECAM, a star (★). Studio units include full metering and full editing facilities, while portable units typically provide switchable metering and backspace editing only.

Manufacturer	JVC Company	Sony Broadcast		Thomson Video Equipment	
Format	Standard	Standard	SP	Standard	SP
Models					
Portable units	CR-4900U	•★BVU-50/110	•BVU-150	•★TTV3905S/P	•TTV3902P
Player units	CP-5200U/5550U				
Record units	CR-600U/6650U			•★TTV3901 portable	
Editing units	CR-850U/8250U	•★BVU-800/820	•BVU-850	•★TTV3915/3916	•TTV3935/3936
Video parameters					
Response C/L	260 TVL C/340 L	260 TVL C/340 L	340TVL	260 TVL C	370 TVL L/260 C
S/N ratio	49dB L, 47dB C	49dB L, 47dB C	>50dB L, >47dB C	>46dB	>46dB
AGC control	Yes	Yes	Yes	Yes	Yes
Audio parameters					
Input connection	Bal, 600/10kΩ	Xfmr bal, 3k/10kΩ	Bal 3k/10kΩ	Bal 3k/10kΩ	Bal 3k/10kΩ
Output connection	Bal, low Z	600Ω (not -50)	Bal low-Z	Bal low-Z	Bal low-Z
Output level	0dBs	+4dBm (not -50)	+4dBm	+4dBm	+4dBm
S/N ratio	>48dB	48dB, 3% THD	>52dB, 3% THD	>48dB	>52dB
Distortion	<3%	<2.5%	<2%	<3%	<3%
LTC modules	External units	Integral 800/820	Integral	Available	Option
VITC modules	No	External required	External	.....	.....
Remote control format	RS-422/45-pin	RS-422	RS-422	RS-422	RS-422
Reference input	Sync, subc	Sync, subc	Sync, subc	Sync, subc	Sync, video
System TBC	External	External	External	External	External
RF Y-C dub in/out	Yes	Yes	Yes	Yes	Yes
Variable tracking	No	On 820	No	On TTV3916	On TTV3936
Reader Service Number	704	705	706	707	708

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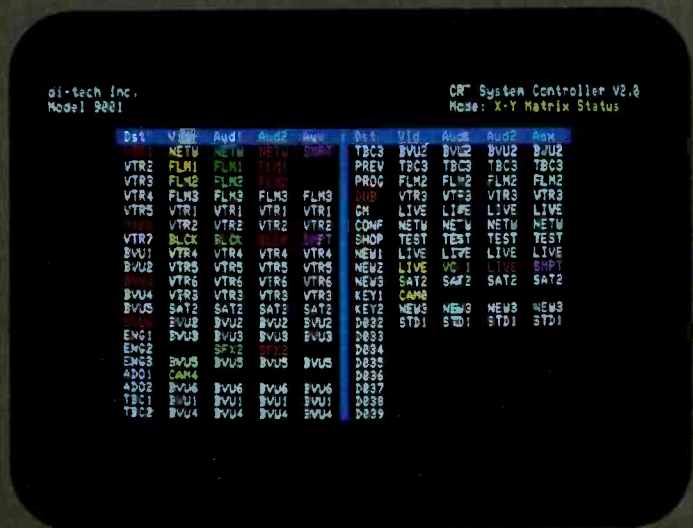


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