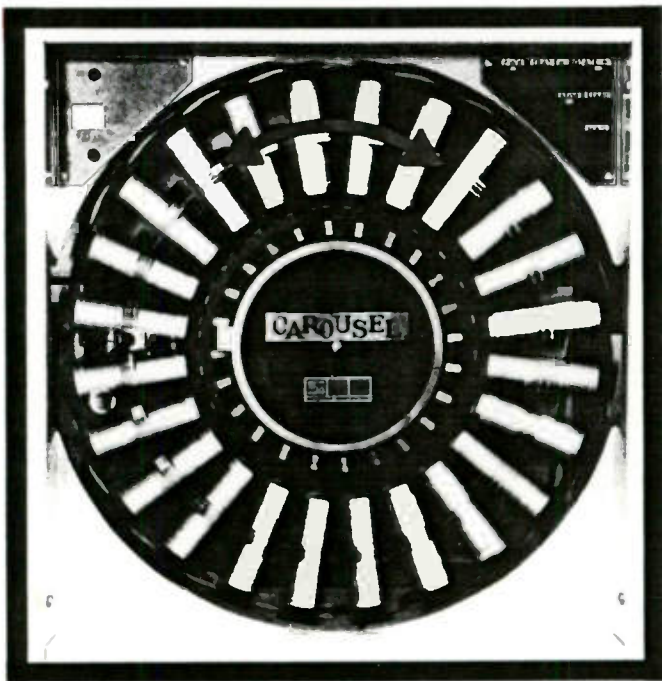


## ALL NEW CAROUSEL® FOR THE EIGHTIES

OVER 20 YEARS OF REFINEMENTS ARE EMBODIED  
IN THE NEW SERIES 800, MODEL 450-452 CAROUSEL®  
STILL THE LEADER IN AUDIO CARTRIDGE ROBOTS.



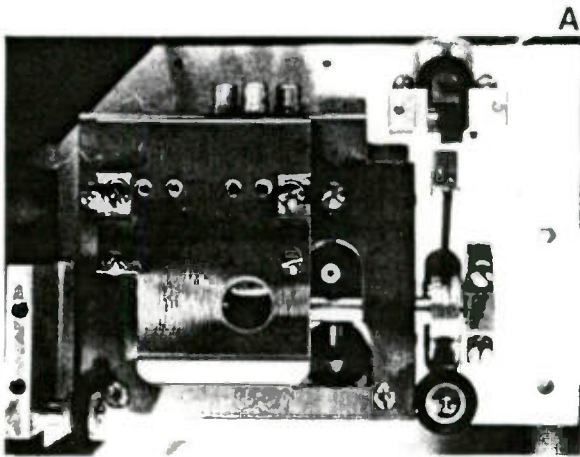
- Microprocessor controlled logic gives Bi-Directional action, — half the access time.
- Same physical size means easy replacement of older models
- Control panel lights give full status indication.
- Digital tray number panel readout for easy checking.

For more than 20 years Carousels have played a major role in broadcasting around the world. The name Carousel has become synonymous with automated tape cartridge players, the backbone of modern broadcasting. Twenty five years of refinements by SMC, the only maker of the Carousel, have been incorporated in the new model 450 Bi-Directional. The proven features of earlier Carousels have been retained including cast aluminum drum, steel cartridge trays and ball bearing cross shaft. Now the Model 450-452 combines microprocessor flexibility for Bi-Directional operation, front monitoring lights, enable system to allow off air audition. SMC Carousels give the maximum performance at the lowest cost per tray in the industry.

**S O N O - M A G C O R P O R A T I O N**  
"THE MOST TRUSTED NAME IN BROADCAST AUTOMATION"



## — BUILT FOR PERFORMING & LONG LIFE

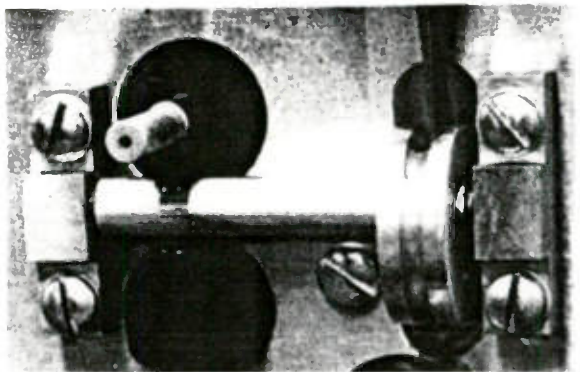


The cartridge tape transport system (A) (deck) for the Carousel has time proven construction. It is assembled on an aluminum jig plate that retains its mechanical integrity free of massive cut outs. The stainless steel wear surfaces provide shielding and ventilation for a cooler cartridge.

The solenoid operator system (SMC pioneered the tapered plunger - 2000 NI solenoid in 1958—copied by all manufacturers), is vertically mounted to eliminate plunger friction. (B)

The pinch roller cross shaft is the SMC pioneered ball bearing system that is fully adjustable and field replaceable.

In the Model 450 Carousel, the cartridge is guided into playing position (C) by two neoprene rollers, which hold the bottom of the cartridge directly on the head mounting plate.



## — TIME PROVEN CONSTRUCTION

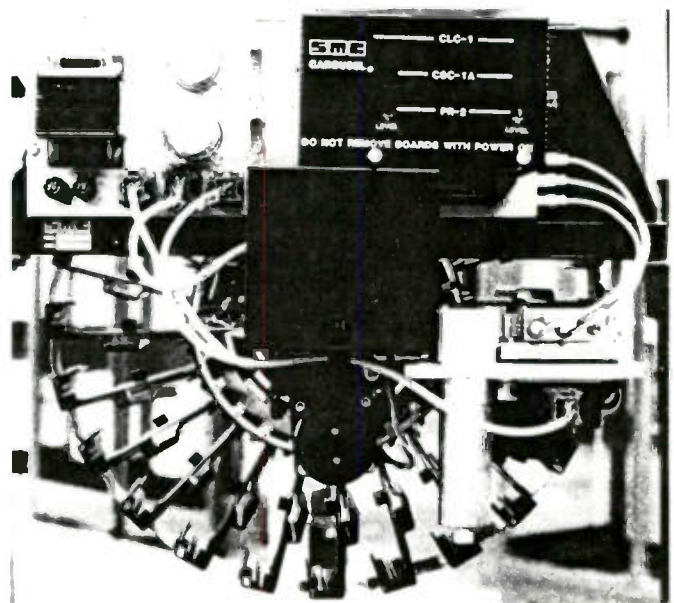
The Model 450 Carousel is assembled on a one piece cold-formed steel plate for maximum operational life. Massive castings and 2-inch ball bearings support the rotating drum assembly.

The tape deck, the drive motors, and the electronic chassis are all readily field-serviceable.

Electrical modules are connected to the electronic chassis with locking type connectors.

Cartridge trays are Teflon coated steel. This construction provides wear protection for cartridges.

The Model 450 will fit in the same space and mounting rails used with previous Carousels.



# BUILT FOR BEACHCOMBING



The beach is the perfect place to relax and enjoy the sun. The sand is soft and the water is clear. It's a great spot for a picnic or a walk. The view is beautiful and the air is fresh. It's a great place to spend a day.

The beach is a great place to enjoy the sun and the sand. It's a great spot for a picnic or a walk. The view is beautiful and the air is fresh. It's a great place to spend a day.

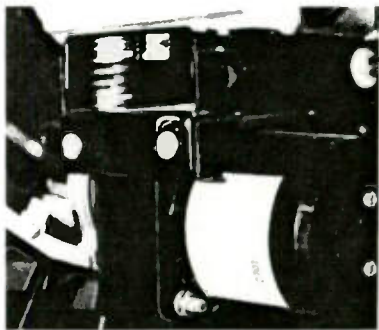
The beach is a great place to enjoy the sun and the sand. It's a great spot for a picnic or a walk. The view is beautiful and the air is fresh. It's a great place to spend a day.



# THE MOVIE COMPANY



## — ROTATION & SHIFTING SYSTEM



The bi-directional rotate motor system is solid-state controlled providing dynamic electrical braking. Additional mechanical brakes, internal to the motor, hold the drum position.

The motor and drive wheel are mounted to slide-out for easy service.



The Model 450 cartridge tray shifting system uses a rack and pinion gear and solid state controlled motor. Gears are no oil nylon.

Travel limit switches are solid-state opto-electronic.

The shift motor and pinion gear are a slide-in assembly.

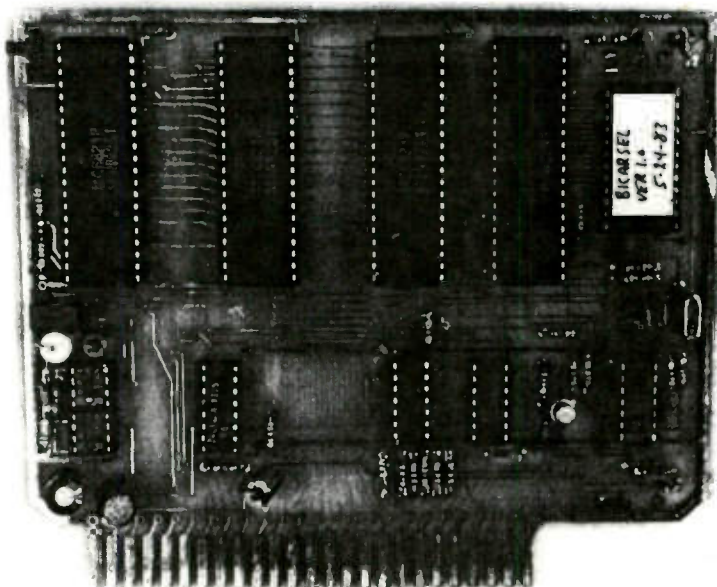
## — ELECTRONIC PACKAGE

The electronic chassis has three plug-in circuit boards for all logic and audio functions.

Two regulated power supplies use a flux shielded power transformer.

The solenoid power system is ramped to give fast start and reduced power during run.

All sockets to sub-assemblies are polarized and have finger release locks.



All Model 450 Carousel logic inputs from limit switches, cartridge switch, binary tray location reader, index reader, as well as Start, Stop, and Enable signals, are processed by the CLC-1, a micro-processor.

Among its many functions, this board makes the decision to turn the Carousel the shortest direction from its present location to the new address.

If the Model 450 is "busy", an immediate return signal is provided.

All front panel control switches have lighted indicators to show status of related circuits. When a logging encoded tape is running, the logging and EOM pulses are shown on the STOP LED.

A digital read out of the tray number in playing position is shown on the escutcheon panel.



# — SPECIFICATIONS & APPLICATIONS

MODELS: 450 - MONO  
452 - STEREO

Catalog No. 150-0410-001  
Catalog No. 150-0411-001

Cartridge Capacity:	24 NAB Type A-AA
Tape Speed:	7.5 ips (19.05 CM/S)
Tape Drive:	Hysteresis Synchronous Motor
Speed Accuracy:	±0.2%
Wow/Flutter:	Weighted Peak .15% (ANSI S4.3)
Rotation Access:	Bi-directional 11 sec. max. (60 Hz)
Shift Time:	4 sec
Random Access:	External BCD data and Timing Strobes required Selector Switch provided.
Sequential:	
Audio:	
Output:	Transformer; External load 600 Ohm. (Series impedance 77 Ohms)
Level:	0 dBm re 160nWm tape flux +12 dBm (before clipping)
Response:	(at-10 dBm) 50 Hz-12KHz ± 2dB
Noise:	RE NAB 0 level; Mono - 48dB Stereo - 45dB RE 3%THD level; Mono -56dB Stereo -53dB
Tape Cue:	1KHz Phase Lock Loop-Adjustable
Logging:	3.85KHz Phase Lock Loop-Adjustable
E.O.M.:	150Hz Adjustable
Power:	117v 60Hz 1Amp 120/240v 50Hz; Special Order
Dimensions:	Rack Space: 19x19¼ inches (48.26 x 48.9 cm)
Weight:	90 lbs (41 kilo)

U.S. Pat. 3,113,708

## APPLICATIONS

Models 450/452 are directly interchangeable with SMC Models 350RSB/352RSB on ESP-1 and DP-2 Systems, and Mini-Pro 1 with RSC-100 equipment.

On systems using SMC Carousels model 250, consult factory.

**SONO-MAG CORPORATION**

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TWX No. 510-352-2506  
PRINTED IN U.S.A 7/83 15M

# SPECIFICATIONS & APPLICATIONS

Model	Capacity	Dimensions	Weight	Material	Finish	Color	Notes
Model 100	100 lbs	18" x 18" x 18"	15 lbs	Aluminum	Brushed	White	Standard model
Model 200	200 lbs	24" x 24" x 24"	25 lbs	Aluminum	Brushed	White	Standard model
Model 300	300 lbs	30" x 30" x 30"	35 lbs	Aluminum	Brushed	White	Standard model
Model 400	400 lbs	36" x 36" x 36"	45 lbs	Aluminum	Brushed	White	Standard model
Model 500	500 lbs	42" x 42" x 42"	55 lbs	Aluminum	Brushed	White	Standard model
Model 600	600 lbs	48" x 48" x 48"	65 lbs	Aluminum	Brushed	White	Standard model
Model 700	700 lbs	54" x 54" x 54"	75 lbs	Aluminum	Brushed	White	Standard model
Model 800	800 lbs	60" x 60" x 60"	85 lbs	Aluminum	Brushed	White	Standard model
Model 900	900 lbs	66" x 66" x 66"	95 lbs	Aluminum	Brushed	White	Standard model
Model 1000	1000 lbs	72" x 72" x 72"	105 lbs	Aluminum	Brushed	White	Standard model
Model 1100	1100 lbs	78" x 78" x 78"	115 lbs	Aluminum	Brushed	White	Standard model
Model 1200	1200 lbs	84" x 84" x 84"	125 lbs	Aluminum	Brushed	White	Standard model
Model 1300	1300 lbs	90" x 90" x 90"	135 lbs	Aluminum	Brushed	White	Standard model
Model 1400	1400 lbs	96" x 96" x 96"	145 lbs	Aluminum	Brushed	White	Standard model
Model 1500	1500 lbs	102" x 102" x 102"	155 lbs	Aluminum	Brushed	White	Standard model
Model 1600	1600 lbs	108" x 108" x 108"	165 lbs	Aluminum	Brushed	White	Standard model
Model 1700	1700 lbs	114" x 114" x 114"	175 lbs	Aluminum	Brushed	White	Standard model
Model 1800	1800 lbs	120" x 120" x 120"	185 lbs	Aluminum	Brushed	White	Standard model
Model 1900	1900 lbs	126" x 126" x 126"	195 lbs	Aluminum	Brushed	White	Standard model
Model 2000	2000 lbs	132" x 132" x 132"	205 lbs	Aluminum	Brushed	White	Standard model

Model 1000  
Capacity: 1000 lbs  
Dimensions: 72" x 72" x 72"

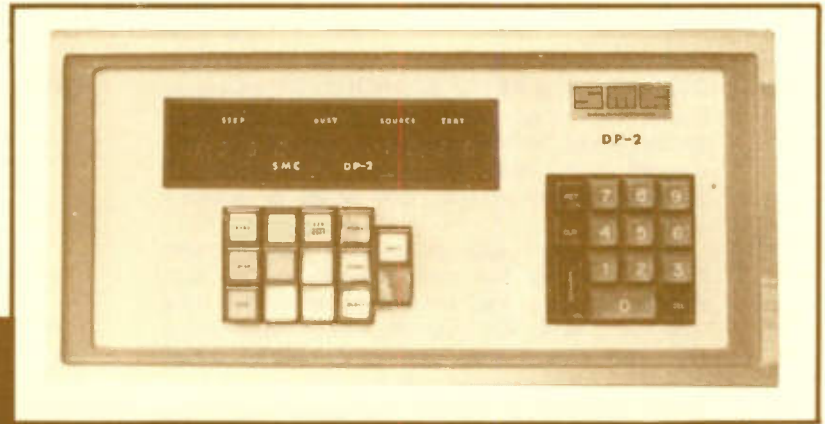
Model 2000  
Capacity: 2000 lbs  
Dimensions: 132" x 132" x 132"





## FEATURES . . .

- ALL decision making instructions are permanently stored in non-volatile read only memory units.
- Full display of the next or now data even while the cassette or teletype is dumping or loading into the memory.
- Teletype or cassette may be loaded with information directly from the console of the programmer, without any interruption of "on air".
- Subroutine may be scheduled in any manner.
- Video display of the fifteen next and now events plus time and date.
- Additional control mini consoles may be added for the traffic office and P.D.
- Business computer interface built in. ASCII and 110, 300, 600 Baud W/DP-2 Format.



# DP-2 AUTOMATION PROGRAMMER

## Specifications

The DP-2 DIGITAL PROGRAMMER, alternately called the central processor, or memory. Is used to store all the information about events to be used in the format and to sort them out for random select and airing. The DIGITAL PROGRAMMER comes in various sizes, the two thousand event unit has 500 steps of subroutine, the four, six and eight thousand event units all have one thousand events of subroutine. The DIGITAL PROGRAMMER utilizes non-volatile PROM integrated circuits into which the software instructions are fixed, and the user changes only the event information and the instruction codes to cause the machine to do different things . . . fade, join net, etc.

Using micro-processor control, the DP-2 can be programmed up to seven days. Used with the PDC-4 Super Clock, program segments may be aired on selected days. Multi-cartridge machines may be armed up to 25 steps in advance, even in the subroutines.

Memory Capacity: 2K, 4K, 6K, 8K  
 Sub-Routines: 500 steps with 2K; 1000 steps, 4K - 8K.  
 Work length: 16 bits  
 Output signals: Active high TTL, Tri-State.  
 Control capacity: 99 channels x 99 random access trays.  
 Special Function codes: 15

Power requirements: +8 - 10 volts, 4 amps  
 +8 - 10 volts, 4 amps  
 15 Volts, 1 amp  
 Cooling fan: 120 volts ¼ amp.

Size: Panel space: 19" x 5¼" (48 cm. x 13 cm)  
 Depth: 19½" (49.5cm)  
 Control console projection: 7" (18 cm)

Weight: 25 lbs. (11 Kilo)

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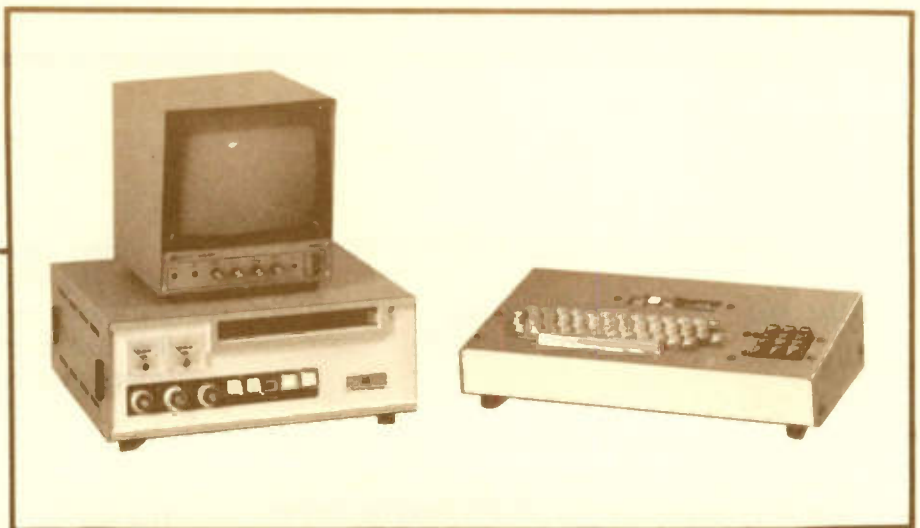
## SPECIAL CODES

- 8000 RTS, RETURN FROM SUBROUTINE, this code marks the end of a subroutine and should always appear as the last step of a subroutine. If this code appears in the main memory it is ignored. (All subroutines are in the 7000 series of events.)
- 8010 LINK, this code appears between two or more events in either the main memory or the subroutine memory, that are not to be divided by a time command. An example would be a music tape and a talk tape used extra and/or intro.
- 8020 TIME CORRECT FLAG, this code marks the point that the programmer will "step ahead" to upon a time correct instruction from the PDC-5 clock. The next event after this code becomes the next to play.
- 8030 START REPEAT BLOCK, marks the beginning of a block of events, including the subroutine if desired, that are to be repeated. The last digit (the 0) may be changed on this command to indicate to the programmer how many times the repeat is to take place (up to 9 times). The block can be any length and would be used for late night or early morning when you are only playing music.
- 8040 END REPEAT, used to tell the programmer that this is the end of the repeat block. When the programmer sees this command it will automatically go back to the 8030 command and start all over with block of steps. If the repeat is not to be done again it will go to the main programmer and pick up at the appropriate event.
- 8050 SKIP, this code marks the beginning of a block of steps that are to be skipped by the programmer, useful for getting around special formats that may run only on Sunday.
- 8060 END SKIP, this code marks the end of the block of steps that you desired to skip . . . 8050 starts the skip and 8060 stops the skip.
- 8100 AUTO SWITCHER START, this command is used for delay start of an event that you may want to lay over another event, time over the first part of a musical selection, an artificial AUX tone is generated. The exact time of the delay is controlled by changing the last "0" in this command to the desired delay start time (up to nine seconds). Used primarily for production control of jingles, time, voice overs, etc.
- 8110 AUTO START, this code places the switcher in the auto start mode and enables the silence sensor, it is activated from the system master clock.
- 8120 AUTO STOP places the switcher in the auto stop mode and disables the internal silence sensor, used to turn the unit off at sign-off, in normal application the unit would wait for an 8110 command to start at sign-on.
- 8130 FADE DOWN, this code sends a fade down instruction to the digital switcher with the effect of fading out of whatever is on the air and going immediately to the next to play. Normally this code is controlled by the master clock and is used for net joins from a fade.
- 8150 LOAD CASSETTE, LOAD TELETYPE, when this code becomes next to play the programmer will sequentially and automatically turn on either the Cassette or Teletype and load your new format into the programmer's master file. The loading is accomplished even while the programmer is operating the station on the air. The Cassette stores hundreds of thousands of events. The Teletype storage is on paper punch tape.
- 8160 NET END, this code causes an immediate switch FROM THE NET to the NEXT SCHEDULED EVENT.
- 8170 BACKFILL START, used in conjunction with the master clock to automatically start the backfill machine without placing it on the air but making it the next to play. The backfill will automatically crossfade with the now playing event if the current event is too long or will fade up at a normal switch.
- 8180 USER FLAG may be used to do anything the operator wants that we haven't thought of and that is possible electrically. Either clock or programmer function.



### FEATURES ...

- Studio encoding
- 512 Character monitor
- Simultaneous or after the fact encoding
- Instant proof back
- Encoder may be connected to hard copy printer
- Easy message correction



## AUTOMATION LOGGING SYSTEM

### Specifications

The SMC automation logging system consists of SMC Logi-Cart recorder (model 790 mono or 792 stereo), encoding terminal model DT-4, and CRT monitor screen.

This system permits silent studio operation for the encoding of messages on the cue track of broadcast cartridges.

Cartridges may be encoded at 10 characters per second for the running time of the audio portion of the cartridge.

The encoding terminal and monitor screen allow the message to be typed, verified and then transmitted to the cartridge in the recorder. The message on the screen may be retained for transmitting to carts with multiple cuts. The cartridge may be played back to proof the message on the screen.

Full cursor control of the screen permits easy corrections or deletions prior to transmitting to the cartridge.

Up to 16 one-line messages may be put on the screen at the same time for transmitting one at a time to 16 different cartridges.

Speed: 110 baud  
Screen: 32 characters x 16 lines  
Keyboard: Full ASCII  
Cursor Control: Full  
Power: 120/240 50/60 Hz.  
Encode Freq: 3960 or 3520 Hz.

The encoding terminal DT-4 may be connected to 20-ma. loop printer as Teletype.

The logging printer furnished with the SMC logging package will be an 80 column dot-matrix machine.

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## LOGGING PACKAGE DISCRIPTION

Cat. No. 150-0275-001 MONO  
150-0275-002 STEREO

The complete SMC logging package includes the DT-4 encoder, the SMC Recorder, the CRT monitor, the CLB-1 logging buffer card in the DS-20A, and the page printer. Necessary cables are included.

The logging system will print audio source number and tray number, hours, minutes, and seconds that the event started, and the encoded information from any cartridge.

Carriage return and line feed codes are generated automatically at each start cycle. Encoded messages longer than one printer line are accomodated by encoding the CR and LF code at the proper point on the tape.

## BUFFER TITLER OPTION

The logging package may be enhanced with a buffer-titler board, BT-1. Cat. No. 150-0279-001.

When this board is plugged into SMC audio switcher model DS-20A, up to eight music channels can be identified on the log with MUSIC. When Ch. 15 is aired, the word NETWORK will be printed.

Any time the silence sensor operates, the log will show SIL SNSE on the faulty event line.

When using the manual remote control with the DS-20A, the word MAN will print the first time the system is in manual mode and will print AUTO at the time the system is returned to automatic mode.

The following titles may be printed on the log when selected by external active high TTL pulses:

XMIT OFF

SIGN OFF  
STA ID.

All of the titles can be changed for a program charge.

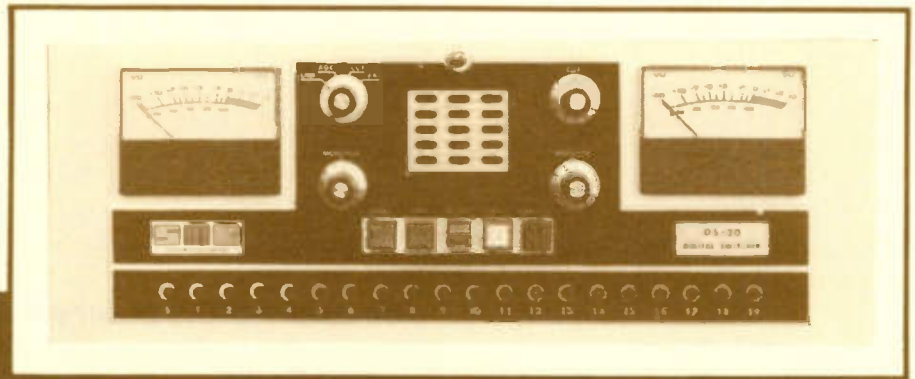
## EXAMPLE PRINT OUT

```
1200 11:26:25 MUSIC
0500 11:59:57 TC
1500 12:00:00 NETWORK
0109 12:05:00 BRIGGS-GAMEL FUNERAL HOME 30 SECS CA
0322 12:05:30 FAMILY FURNITURE CENTER 30 SECS CA
0214 12:06:00 CINEMA THEATRE 15 SECS CA
0600 12:06:15 WEATHER
0700 12:06:27 JINGLE
1000 12:06:36 MUSIC
1100 12:09:41 MUSIC SIL SNSE
1200 12:10:06 MUSIC
0307 12:13:15 NATIONAL BUILDING CENTERS 30 SECS CA
0116 12:13:45 DAIRY QUEEN (COPY ID#-1254-A) 30 SECS CA
0500 12:14:15 WEATHER
0700 12:14:27 JINGLE
1000 12:15:02 MUSIC
1100 12:18:11 MUSIC
0400 12:21:17 COMMUNITY BULLETIN BOARD 45 SECS PSA
1200 12:22:02 MUSIC
0301 12:25:09 WESTERN AUTO (SALE COPY) 60 SECS CA
0203 12:26:09 MARTIN'S CAFE 30 SECS CA
1200 12:26:39 MUSIC
0500 12:29:58 TC
1000 12:30:01 MUSIC
1100 12:33:09 MUSIC
0105 12:35:56 ANN'S LADIES SHOP 30 SECS CA
0303 12:36:26 PUFF'S PLACE 30 SECS CA
0212 12:36:56 CASS WEXALL DRUG 30 SECS CA
1200 12:37:26 MUSIC
1000 12:40:35 MUSIC
1100 12:43:27 MUSIC
0107 12:45:57 HUTLAND'S 30 SECS CA
0321 12:46:27 FAUGHT SALES AGENCY 40 SECS CA
0215 12:47:27 CARTER-HARGROVE FURNITURE 30 SECS CA
0700 12:47:57 JINGLE
1000 12:48:00 MUSIC
1100 12:51:06 MUSIC
```

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## FEATURES

- 20-Channel solid state switcher
- Stereo Silence Sensor
- Built-in network line amplifier
- BCD Channel select
- AGC and Balance metering.

## DS-20 20 CHANNEL AUDIO SWITCHER

### Specifications

Designed to be programmed from SMC DP-2, this 20-channel audio switcher includes stereo line amplifiers with selectable AGC and fade down facilities. Unlimited overlap of any number of channels is standard. Carousel® arming system improves tray select time by a factor equal to number of Carousels. Built-in 25 Hz stereo filter.

**Data input:** 8 bit active high source select and 8 bit tray select

**Data output:** Source start: active low  
Source enable: Active high  
Logging; 20 ma loop & TTL

**Capacity:** 19 programmable channels  
1 channel special.

**Source input:** 0 dBm maximum  
**Source load:** 600 ohms  
**Output:** +18 dBm MAX.  
**Distortion:** 0.7%, 400 Hz. +18dBm  
**Noise:** -62 dB re + 8 dBm

**Cat. No. 150-0252-001**

With logging option, the DS-20 provides time, channel/tray and cartridge logging information for direct connection to 20-Ma. serial printer. Tilt-down panel provides access to all adjustments on plug-in circuit boards. Optional accessories include AP-20 manual access panel. RC-20 remote manual control for Auto, Manual, or Semi-Auto (operator assist) mode; Slave switcher, SS-20 for 20 additional channels.

**Response:** ±1.5 db; 50 - 15KHz  
25Hz. -28 dB re 0 dBm.

**Cross talk:** -55 dB @ 1KHz.

**Overlap:** -1 dB level shift  
(no AGC)

**Silence Sens:** Adjustable, 2 - 20 sec.  
Continuous or auto reset alarm.

**Mon. Amps:** 1 w. @ 8 ohms  
**Power Reqd:** 24 V dc @ 250 Ma.  
10 V dc @ 2.6 A.

**Size:** 19" x 7" x 15"  
48 x 17.8 x 38 cm.

**Weight:** 25 lbs. (11 kilo)

**Options:** AP-20 (150-0272-001) Manual panel  
RC-20 (150-0259-001) Remote control  
SS-20 (150-0256-001) 20 Channel Slave

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## DS-20 OPTIONAL EQUIPMENT

### RAC-20 CAT. No. 150-0259-001 Remote Control

The RAC-20 is designed to operate with the Model DS-20 Digital Audio Switcher equipment.

It provides for manual operation of the 19 normal channels of the switcher, and for the random select arming of up to 20 multi-cartridge playbacks.

A semi-Auto mode permits the operator to use the pre-programmed instructions from a DP-2, DP-1B or RP-1000 and manually control the "Start" sequence for operator "assist."

Several RAC-20 units may be connected to the systems at the same time.

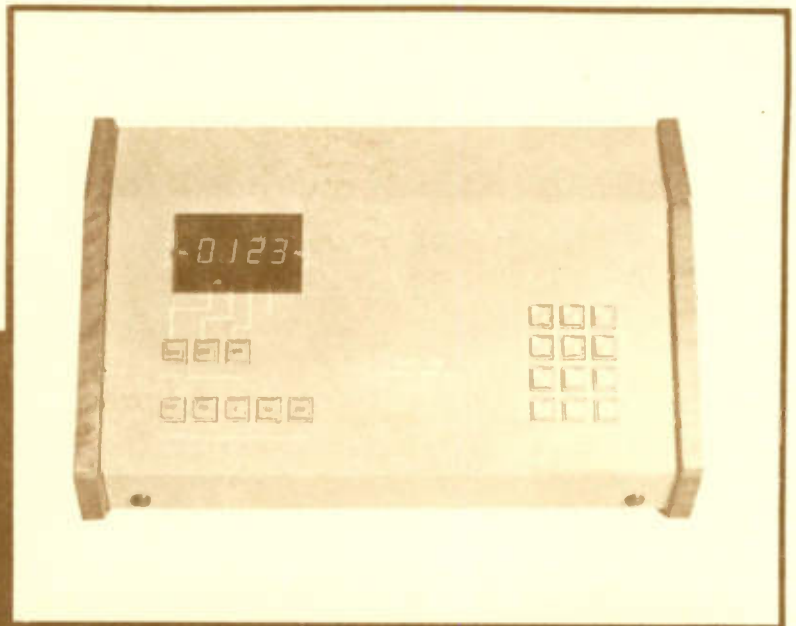
It is self-powered, and requires a 25-wire cable to the DS-20. Several RAC-20 units may be connected together and used on a "one at a time" control basis. The DS-20 switcher must be equipped with the RMT-1 Interface board.

### AP-20 CAT. No. 150-0272-001 Access Panel

This unit is located next to the DS-20 to allow local control of start function of all 20 channels of DS-20. Channel S may be controlled as a "bulletin" source.

### SS 20 CAT. No. 150-0256-001 Slave Switcher

Used in conjunction with the DS-20, an additional 20 channels may be controlled by the DP-2. Same size as the DS-20.



### FEATURES

- Remote Control of Automation System Including random select of carousels
- Manual or semi-auto modes of operation
- Fall safe changeover which prevents on air errors.
- Increases system flexibility and permits live assist operation

## RAC-30 REMOTE CONTROL

The RAC-30 remote control is designed to operate with the SMC-DS-20/A digital audio switcher. Providing for manual operation of the 19 normal audio channels of the switcher, and for random-select arming of up to 99 multi-cartridge playback machines. Switcher channel and tray number data are stored in the RAC-30 by using the data keyboard. The operator simply keys in four digits to enter the required data.

The semi-automatic mode permits the operator to use pre-programmed instructions from a DP-2 or ESP-1 programmer and manually control the 'start' command of each pre-programmed source.

When in the automatic mode the RAC-30 has no control over the automation system.

Totally self contained, the RAC-30 is self powered, and several units may be used together on the same system on a 'one at a time' control basis. A busy light is provided to indicate when another RAC-30 is in control of the system.

### SPECIFICATIONS

Source Selection: Numeric Keyboard, 1 to 99

Arming Selection: 99 machines by 24 cartridges

Output Signals: BCD, Active high TTL, Tri-State

Modes: Automatic; Semi-automatic; Manual

Power Requirement: 120/240v, 50/60 Hz, 10 watts

Dimensions: 33 x 20.3 x 11.4 cm (13 x 8 x 4 Inches) W-D-H

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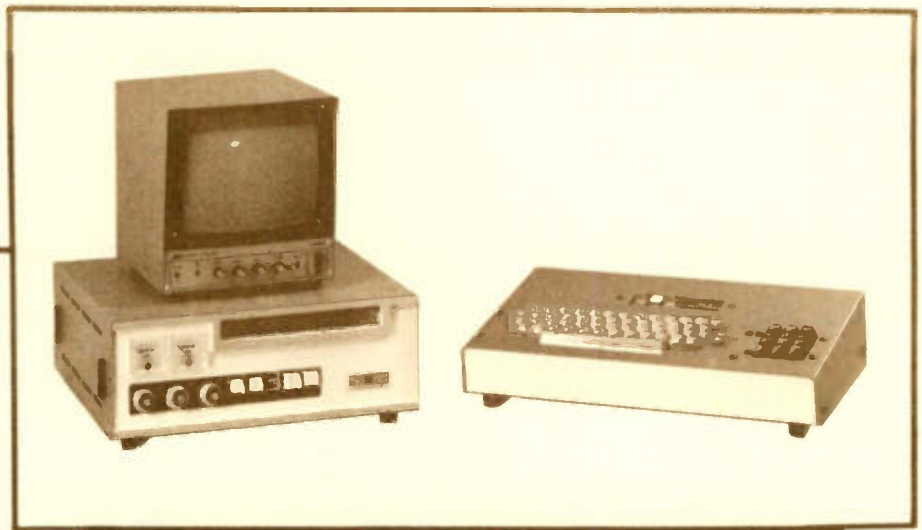






### FEATURES ...

- Studio encoding
- 512 Character monitor
- Simultaneous or after the fact encoding
- Instant proof back
- Encoder may be connected to hard copy printer
- Easy message correction



## AUTOMATION LOGGING SYSTEM

### *Specifications*

The SMC automation logging system consists of SMC Logi-Cart recorder (model 790 mono or 792 stereo), encoding terminal model DT-4, and CRT monitor screen.

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Full cursor control of the screen permits easy corrections or deletions prior to transmitting to the cartridge.

Up to 16 one-line messages may be put on the screen at the same time for transmitting one at a time to 16 different cartridges.

Speed: 110 baud  
Screen: 32 characters x 16 lines  
Keyboard: Full ASCII  
Cursor Control: Full  
Power: 120/240 50/60 Hz.  
Encode Freq: 3960 or 3520 Hz.

The encoding terminal DT-4 may be connected to 20-ma. loop printer as Teletype.

The logging printer furnished with the SMC logging package will be an 80 column dot-matrix machine.

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1019 W. Washington St., Bloomington, Ill. 61701 U.S.A.

Phone 309-829-6373  
TWX No. 510-352-2506  
PRINTED IN U.S.A. 1-78

## LOGGING PACKAGE DISCRIPTION

Cat. No. 150-0275-001 MONO  
150-0275-002 STEREO

The complete SMC logging package includes the DT-4 encoder, the SMC Recorder, the CRT monitor, the CLB-1 logging buffer card in the DS-20A, and the page printer. Necessary cables are included.

The logging system will print audio source number and tray number, hours, minutes, and seconds that the event started, and the encoded information from any cartridge.

Carriage return and line feed codes are generated automatically at each start cycle. Encoded messages longer than one printer line are accomodated by encoding the CR and LF code at the proper point on the tape.

## BUFFER TITLER OPTION

The logging package may be enhanced with a buffer-titler board, BT-1. Cat. No. 150-0279-001.

When this board is plugged into SMC audio switcher model DS-20A, up to eight music channels can be identified on the log with MUSIC. When Ch. 15 is aired, the word NETWORK will be printed.

Any time the silence sensor operates, the log will show SIL SNSE on the faulty event line.

When using the manual remote control with the DS-20A, the word MAN will print the first time the system is in manual mode and will print AUTO at the time the system is returned to automatic mode.

The following titles may be printed on the log when selected by external active high TTL pulses:

XMIT OFF

SIGN OFF  
STA ID.

All of the titles can be changed for a program charge.

## EXAMPLE PRINT OUT

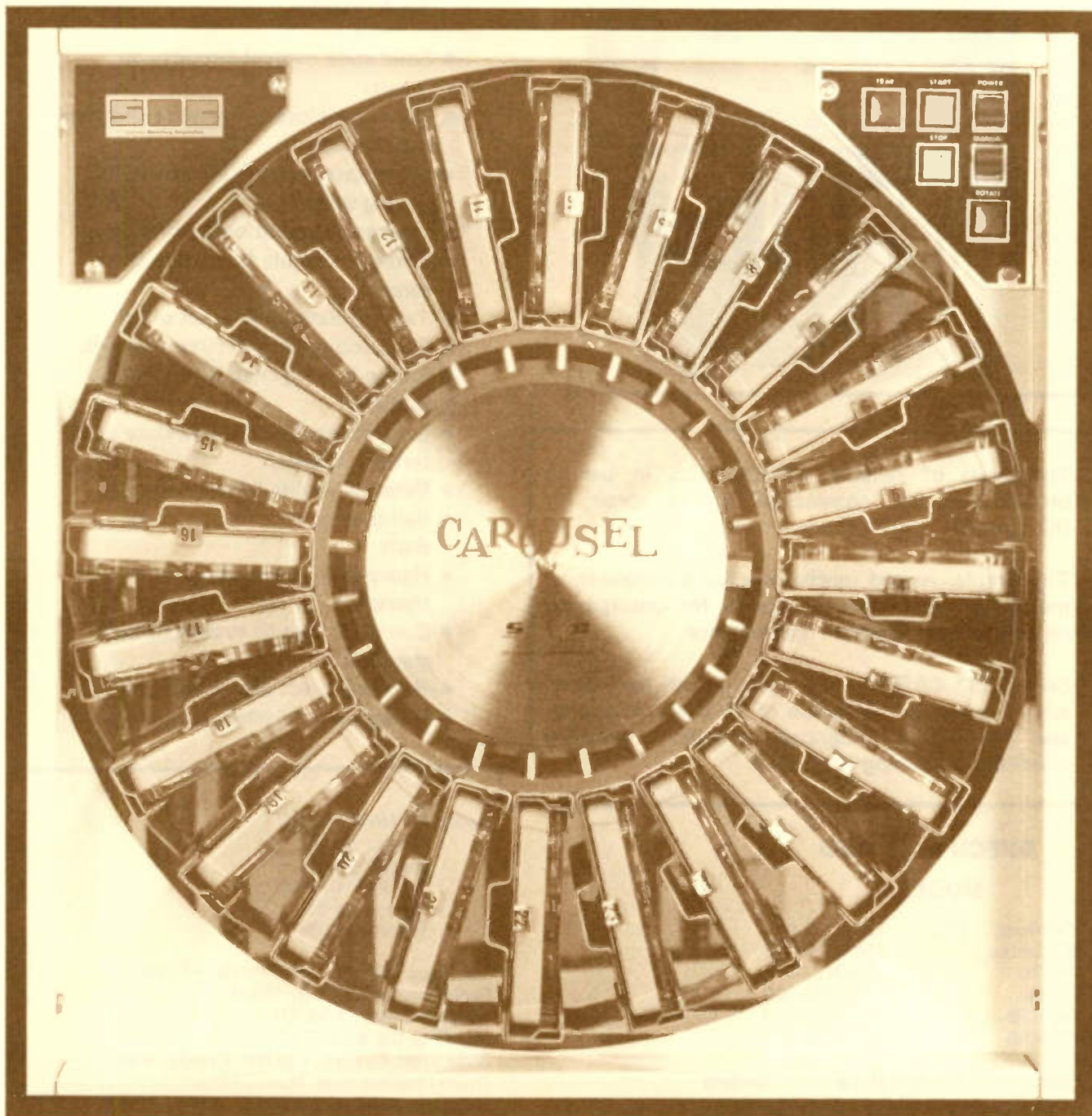
```
1200 11:26:25 MUSIC
0500 11:59:57 ID
1500 12:00:00 NETWORK
0109 12:05:00 BRIGGS-GAMBL FUNERAL HOME 30 SECS CA
0322 12:05:30 FAMILY FURNITURE CENTER 30 SECS CA
0214 12:06:00 CINEMA THEATRE 15 SECS CA
0600 12:06:15 WEATHER
0700 12:06:27 JINGLE
1000 12:06:36 MUSIC
1100 12:09:41 MUSIC SIL SNSE
1200 12:10:06 MUSIC
0307 12:13:15 NATIONAL BUILDING CENTERS 30 SECS CA
0116 12:13:45 DAIRY QUEER (COPY ID#-1254-A) 30 SECS CA
0600 12:14:15 WEATHER
0700 12:14:27 JINGLE
1000 12:15:02 MUSIC
1100 12:18:11 MUSIC
0400 12:21:17 COMMUNITY BULLETIN BOARD 45 SECS PSA
1200 12:22:02 MUSIC
0301 12:25:09 WESTERN AUTO (SALE COPY) 60 SECS CA
0203 12:26:09 MARTIN'S CAFE 30 SECS CA
1200 12:26:39 MUSIC
0500 12:29:58 ID
1000 12:30:01 MUSIC
1100 12:33:09 MUSIC
0105 12:35:56 ANN'S LADIES SHOP 30 SECS CA
0303 12:36:26 PUFF'S PLACE 30 SECS CA
0212 12:36:56 CASS WEXALL DRUG 30 SECS CA
1200 12:37:26 MUSIC
1000 12:40:35 MUSIC
1100 12:43:27 MUSIC
0107 12:45:57 HUTLAND'S 30 SECS CA
0321 12:46:27 FAUGHT SALES AGENCY 60 SECS CA
0215 12:47:27 CARTEE-HARGROVE FURNITURE 30 SECS CA
0700 12:47:57 JINGLE
1000 12:48:00 MUSIC
1100 12:51:06 MUSIC
```

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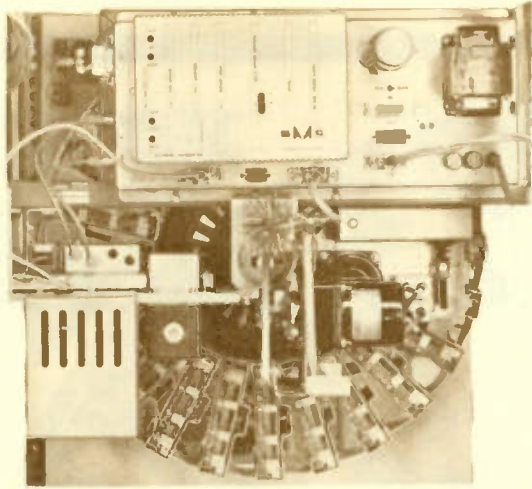
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S M C



***The MOST WIDELY USED  
MULTIPLE CARTRIDGE PLAYER***

# The CAROUSEL<sup>®</sup>



Thousands of reliable CAROUSELS in use in broadcasting and commercial service speak for this versatile cartridge tape player.

The simple, rugged mechanism has a minimum of mechanical and electronic parts for unsurpassed reliability and minimum maintenance.

Series 350 CAROUSELS are fourth generation with a unique combination of 15 years experience and the latest integrated circuitry, including solid-state switching—no relays.

## SPECIFICATIONS

### MODELS:

350 Mono	Cat. No. 150-0172-001
352 Stereo	150-0172-002
350 RS	150-0172-005
352 RS	150-0172-006
350 RSB	150-0172-003
352 RSB	150-0172-004

Tape Speed: 7.5 IPS (19.05 cm/s) standard  
Output:  $\pm 12$  dBm (before clipping)  
600 ohms, floating transformer  
Normally 0 dBm re NAB reference

Har. Dist: Below 1% @ NAB 0 level.  
Freq. Response: (at -10 dBm level)  
50 Hz. to 12KHz:  $\pm 2$  dB

## FEATURES...

- Solid-state control circuits—no relays.
- Totally enclosed, low noise shift and rotate motors.
- Solid-state, noiseless electronic indexing system.
- Low-noise operational amplifiers.
- Three adjustable frequency tone sensors.
- Two regulated power supplies.
- Glass-epoxy plug-in circuit boards.
- Spring-locking chassis connection sockets.
- External enable for secondary and tertiary sensors.
- External enable for tray eject.
- Ball-bearing pinch roller cross shaft.
- Heavy-duty, direct-drive tape transport.
- Cue track logging system output standard.
- Random-select switch optional.
- Direct random select programming.

Noise: Re NAB 0 Level;  
Mono: -48 dB  
Stereo: -45 dB  
Re 3% THD level  
Mono: -56 dB  
Stereo: -53 dB

Cue Freq. (end of tape): 1 KHz.  $\pm 75$  Hz.  
Secondary cue (EOM): 150 Hz.  
Logging sensor: 3.96 KHz.  
Cartridge Capacity: 24 Type 300  
Shift time: Cue No. 1 to No. 2 ready; 4 sec.  
Drum rotation time: Max. 22 sec.  
Dimensions: Rack space; 19" W x 19 1/8" H x 18" D.  
48.26 cm x 48.9 cm. x 45.7 cm.

Weight: 90 pounds (41 kg)  
Power: 115 V. 60 HZ. 2 Amp. Standard  
120/240 V. 50 Hz. Special order  
U.S. Pat. 3,113,708

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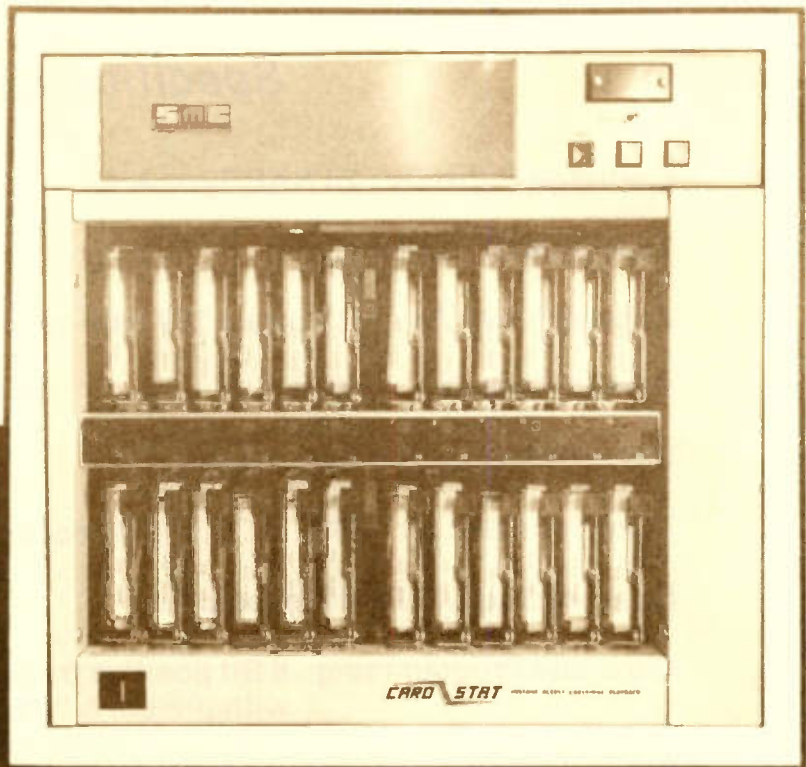
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### ELECTRONIC FEATURES

- Analog audio switching.
- Operational amplifiers for all tape-track signals.
- Dual independent audio systems with 12 carts per channel. May be strapped for single source.
- Stereo electronics standard.
- Decoded logging output standard.
- BCD tray selection circuit.
- Lowest power consumption instant access machine.
- Transformer isolated individual solenoid power supplies.
- No relays. Solid state counter for audition selection or sequential operation.
- Premium printed circuit boards and plug-in IC devices.



**CARO STAT**

## Specifications

The Caro-Stat® plays NAB type A cartridges in a vertical position with reduced internal cartridge friction. The horizontal 7.94 mm non-magnetic stainless steel capstan does not collect tape oxide in the shaft bearings. The cartridge and its holding tray are pivoted on bearings into play position,—no fragile sliding trays. The head nest is an integral part of the cartridge tray system and the registration of head and cartridge is not dependent upon a sliding fit of a tray and guide system. Solenoid operated lever-roller system permits fast, quiet start and stop. High energy storage drive belt system provides approximately four times the torque of similar machines. Head azimuth is adjusted on a true co-axial mount that does not change track alignment or zenith.

The Caro-Stat® is the result of 15 years SMC experience building thousands of Carousels®. It combines the time proven techniques with the latest solid-state circuitry.

The dual output circuits allow the Caro-Stat to be used as two independent 12-cartridge sources or one 24-cartridge source.

Programming restrictions common to multiple cartridge players are eliminated with the true instant access of the Caro-Stat.

Engineered by the designers of the Carousel®, long life, serviceability, and performance are inherent in the Caro-Stat.

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## *Specifications*

Cartridge Capacity: 24 NAB Type A/AA

Tape Speed: 7.5 ISP

Access Time: Any cart; under 100 milli-seconds

Primary Stop Cue: 1000 Hz.

Secondary (Aux) Sensor: 150 Hz.

Third Tone Sensor: 3960 Hz. (Logging decoder)

Sensors Output: Positive logic true

Cartridge Programming: 6 Bit positive true BCD logic  
with pre-set & "next" strobes

Solenoid Power: 24 independent rectifier/switching units.

Audio Output: +15 dBm peak re 160 nW/m  
Balanced for 600-ohm load.

Audio Performance:  $\pm 2$  db, 50 - 12 kHz  
Noise: -49 dB below 0 dBm Mono  
-45 dB below 0 dBm Stereo

Amplifier Distor: Less than 1% at 0 dBm, 1000 Hz.

Cross Talk: Stereo channels: -50 dB @ 1 kHz

Power Rqd.: 117 v. 60 hz. 2 amp.  
240 v. 50 hz. 1 amp.

Mounting Space: 19" W x 17½" H. x 19" D  
48.3 x 44.5 x 48.3 cm.

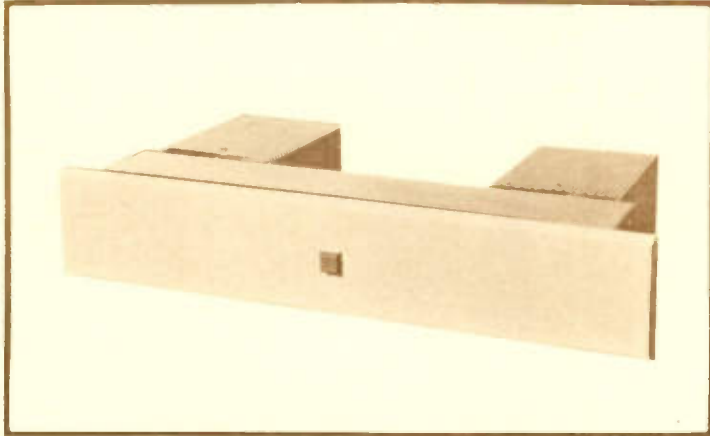
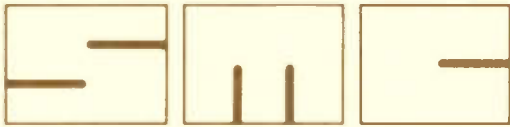
Equipment Weight: 120 lbs.  
55 kilo.

	<u>60 HZ</u>	<u>50 HZ</u>
Model: CS-24M MONO.	Cat. #150-0205-001	150-0281-001M
CS-245 STEREO.	#150-0205-001	150-0281-002S

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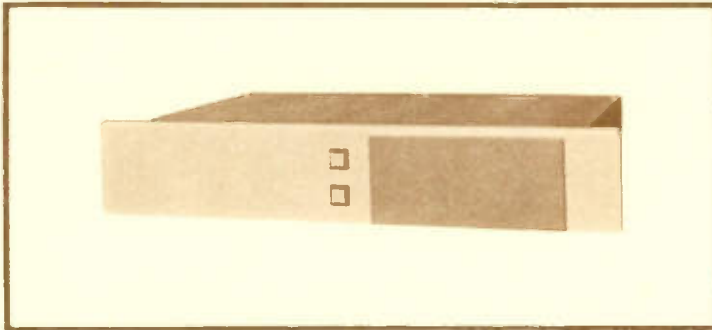
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**TONE GENERATOR TG-25**

The TONE GENERATOR is a compact all solid state unit designed for mounting in 3½ inches of rack space. Illuminated front panel button provided with rear terminal for remote operation. Freq. stability is plus or minus 1.5Hz. Low harmonic content. Adjustable length of the tone or extended tone operation. Utility relay provided for secondary equipment operation if desired. Self contained power supply. Unit connects directly to recorder input.

Cat. No. 150-0184-001



**25Hz TONE SENSOR TS-25**

State of the art, logic oriented, using all I.C. components in a phase lock loop circuit. Hi Z bridging. All front panel service with two indicator lights for sensing action. Internal power supply with auxiliary relays for external use. Interface directly to logic level signals. Adjustable time delay and frequency . . . instant restart option and 20Hz operation are available. The SMC TS-25 eliminates virtually all interface problems. Mounts in standard 19" rack in 3½" vertical space. Each TS-25 controls two reel-to-reel players.

Cat. No. 150-0161-001



**SILENCE ALARM SA-1**

This equipment is designed to serve as an alarm system upon the loss of audio material after an adjustable time delay. The SA-1 is self-contained requiring 117 v. AC and audio mono or stereo from -10 to +10 VU. Input is high impedance single ended bridging. Panel controls include level adjust, test button and alarm reset. Audio alarm unit and relay for external signal are included.

Cat. No. 150-0183-001

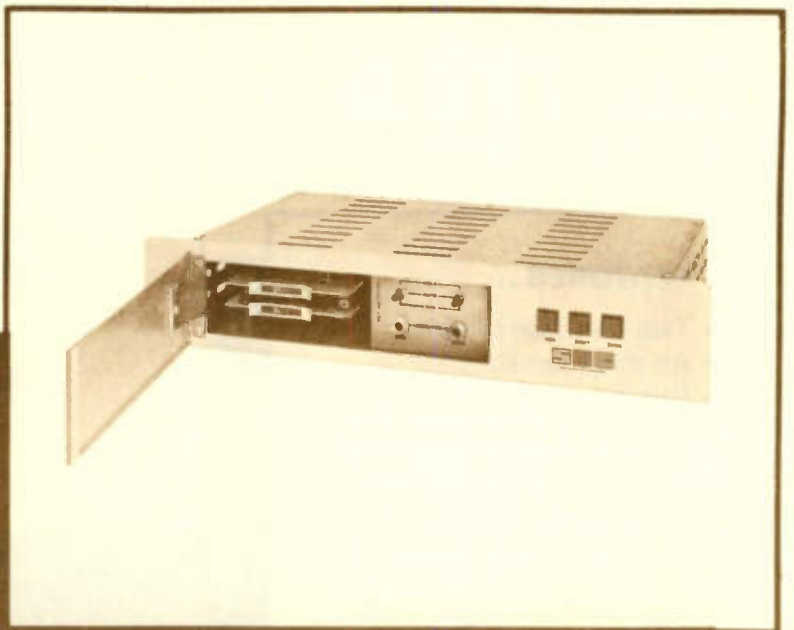
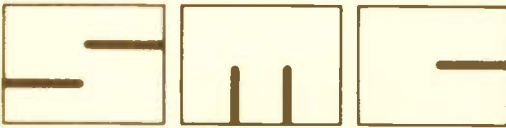
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### FEATURES...

- Two alternate "start" signals at 60 second intervals
- Controls any two audio sources
- Provides audio switching for source when commanded
- External connection sockets
- Power fail locks out announcement
- Self-contained power supply
- Relay contact and logic start signals
- Controls EOM output signal
- 60 Hz time base standard, 50 Hz optional
- ODD, EVEN, POWER indicators
- Run and Hold controls
- Odd & Even monitor jacks

## TIME ANNOUNCER CONTROL MODEL TAC-1

### Specifications

Audio Switching: Passive opto-resistive

Insert Loss: 2 db

Response: DC to 30 KHz.

Cross Talk: -55 db @ 1 KHz, 0 DBM

Noise: -60 DBM.

Controls: ODD & EVEN Hold/Run switches

Power Fail reset

Indicators: ODD & EVEN next

One minute LED

Command LED

Start LED

Cat. No. 150-0008-001-60 Hz

150-0008-002-50 Hz

Time Base: Line frequency divided

Power: 105/125 V. 50/60 Hz 20-watts  
(Specify line frequency)

Size 3½" x 19" x 11"

8.9 CM x 48.3 CM

x 27.9 CM

Weight: 13 lbs.

5.9 kilo

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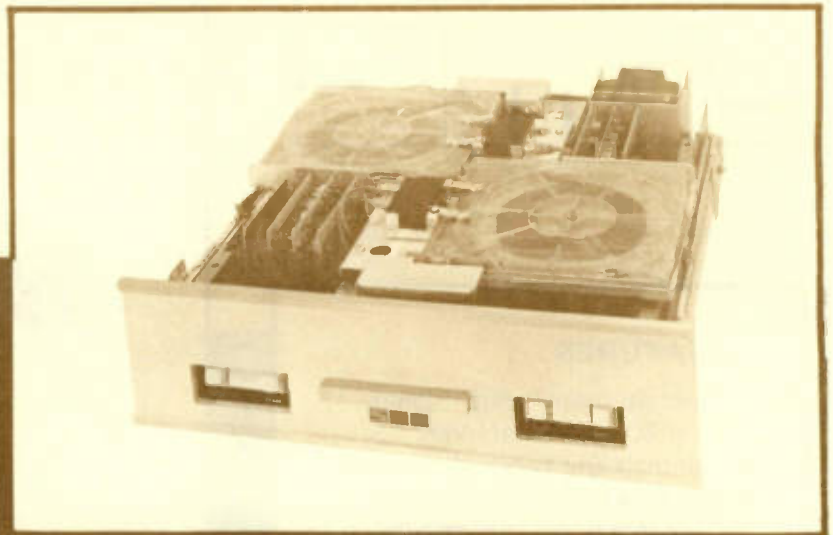
TWX No. 510-352-2506

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## FEATURES ...

- Two Cartridge capacity
- All three cart sizes
- Direct drive hysteresis motor
- Ideal time announcer with TAC-1 Control
- Logic level remote control
- Output & control sockets
- No relays used
- Ball bearing slide out track
- Quiet solenoid operation
- Premium glass epoxy plug-in boards
- Three control tone sensing standard



## MODEL 721R MONO RACK MOUNT MODEL 722R STEREO RACK MOUNT

USE WITH TAC-1 CONTROL FOR TIME ANNOUNCER

## Specifications

Tape Speed: 7½ Inches per second (19.05  
CM/SEC)

Output: 600 ohms balanced  
12 dBm before clipping  
Normally 0 dBm @ NAB Reference

Playback Distortion: Less than 1% @ 0 dBm,  
400 Hz NAB Reference

Frequency Response: ± 2dB, 50 Hz to 15 kHz

Equalization: NAB, adjustable for head wear  
Other equalization  
on special order.

Wow/Flutter: 0.15% DIN maximum

Noise: Mono, 57 dB below 3% THD @ 400 Hz  
49 dB below NAB Reference  
Stereo, 52 dB below 3% THD, 400 Hz  
45 dB below NAB Reference

Cat. No. 150-0140-001-Mono-60Hz -003 50Hz  
150-0140-002-Stereo-60Hz -004 50Hz

Speed Accuracy: 0.2%

Remote Control: All operating functions

Head Configuration: In accordance  
with NAB specifications

Primary cue tone: 1000 Hz ± 75 Hz  
Secondary cue tone: 150 Hz ± 10 Hz  
Third Tone: (Logging or Tertiary)

Power: 117 V. 60 Hz., 75 Watts  
120/240 V. 50 Hz.  
Available on order

Dimensions: Rack mounts,  
19" W x 5¼" x 20½" D  
48CM x 13.31CM x 52CM

Weight: 40 pounds (18.1 Kg.)

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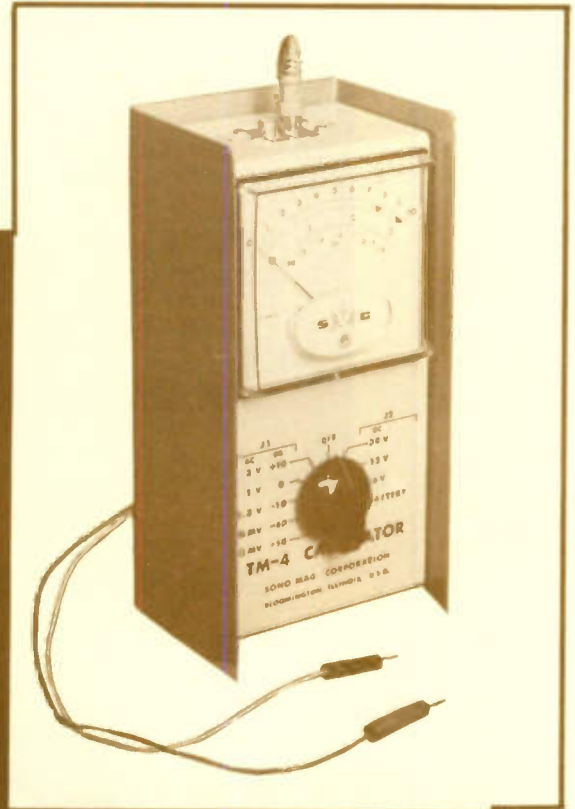
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#### TM-4 TAPE METER FEATURES . . .

- Measure tape-head signals and monitor with built-in head phone amplifier.
- Measure signal/noise ratios.
- Measure AC ripple in power supplies.
- Measure DC voltages used in powering IC circuits.
- Monitor hum, cue signals, etc. with head phones



## TEST EQUIPMENT

### *Specifications*

The Model TM-4 is a multi-function test instrument intended primarily for checking the various circuit parameters of cartridge tape recorder-players. The TM-4 is a sensitive AC meter with five ranges from 0.003 volts to 3 volts. The input impedance is approximately 70,000 ohms and the frequency response is  $\pm 1$  dB from 30 Hz to 100 KHz.

Three individually calibrated DC ranges of 6, 12, and 30 volts have sensitivity of 5000 ohms/volt.

The TM-4 is internally powered with a 9-volt battery. The condition of the battery is satisfactory if the needle indicates above

the triangle mark at the 5 point on the scale when selector switch is in Test Bat position. The accuracy of TM-4 is independent of battery voltage over the useful life of the battery.

The OFF position selector switch electrically clamps the meter movement and protects it from damage due to rough handling.

The five AC voltage scales are used when the input test lead is connected to J1 jack at top end of the TM-4.

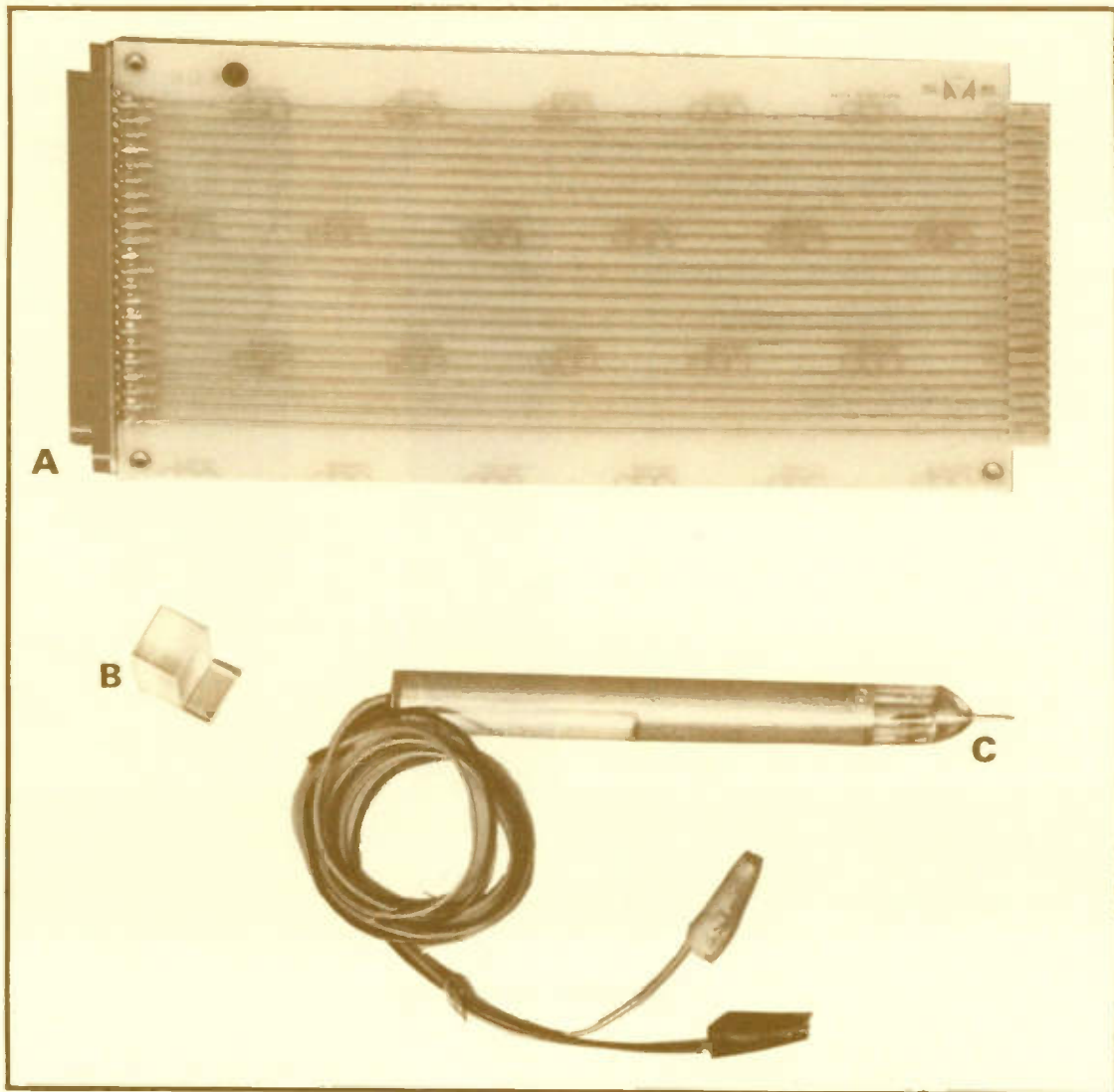
The three DC voltage scales are used when the input test lead is connected to J2.

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## TEST EQUIPMENT



**A** Extender test board for dual 22 pin circuit boards use in SMC automation equipment. Edge contacts are spaced on standard 0.156" centers. Board is 4½" x 9". Catalog No. 150-0218-001

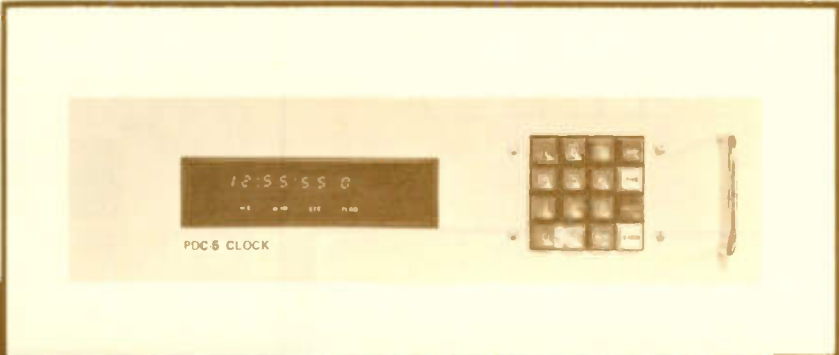
**B** Cartridge tape head gage block is made of lucite (to prevent head scratches) and is designed to show correct head penetration distance, correct track location, and head perpendicularity (zenith). The center line, upper and lower limits of standard tape path are precision engraved on the head side of the gage to eliminate parallax. Catalog No. 150-0277-001

**C** TTL logic test probe is a service must to check circuit board performance. Three colored signal lights in the tip show the basic high, low, and pulse states found in logic circuits. Power for the test probe is taken from the board under test with color coded clip leads. Catalog No. 153-0059-001

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### FEATURES . . .

- 250 Time Instruction capacity
- Hour, minute, second, and 10 function flags are stored instructions
- Keyboard time set and data entry.
- Stored instructions may be displayed on front read-out in chronological order from any time keyed in.

## PDC-5 PROGRAM CLOCK

### Specifications

The PDC-5 24-hour programmable clock uses micro-processor control of up to 250 time instructions. Time instructions are hours-minutes-and seconds and a flag 0 through 9. Normally flag 0 is used as update command to DP-2 automation programmer. The other flags may be used independently for other functions. Optional flag start interface unit, FSI-6 may be used to give relay contact action from PDC-5 flags.

Memory capacity: 250 instructions  
6 digits time;  
1 digit flag.

Flag capacity: 0 through 9

Time base: AC line frequency  
Crystal base during  
battery support time

Flag data: Flag 1 thru 9, active low, 200  
microsecond.

Time data: BCD parallel with time strobe.

Cat. No. 150-0270-001 (60 Hz)  
150-0270-002 (50 Hz)

Time instructions may be entered into PDC-5 memory in any order and they will be executed in chronological order. Keyboard provides time set, data entry, search, and delete functions. The PDC-5 has built-in line power supply and requires optional battery supply to retain time and memory during line interruption.

Power required: 115/230 V.  
50/60 Hz.

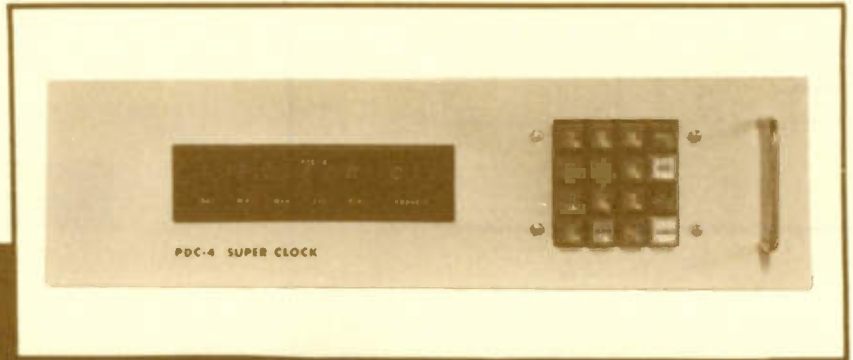
Battery support: 8 to 10 V.  
@ 1 A.

Physical: 19" x 5 1/4" x 11"  
48 x 13.3 x 27.9 cm.  
10 lbs. (4.5 kilo)

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## FEATURES . . .

- 675 Time Instruction capacity.
- Day, hour, minute, and second and 10 function flag instructions
- Keyboard time set and instruction entry.
- Print-out direct to 20-MA printer of stored instructions.

## PDC-4 SUPER CLOCK

### *Specifications*

Powerful time control functions provided by the PDC-4 includes direct addressing of any step in the DP-2 automation programmer on a time basis. Instructions may be entered into the PDC-4 memory for any of 7 days or on day 0 if instruction is used every day. Nine discrete flags may be used to time-command external functions independently from DP-2 program.

Memory capacity: 675 instructions  
1 digit day  
6 digits time  
1 digit flag  
4 digits address

Day capacity: 0 thru 7  
Flag capacity: 0 thru 9  
Address capacity: 0000 thru 9999  
Time base: Line frequency.  
Crystal on battery.

Cat. No. 150-0269-001 60 Hz.  
150-0268-002 50 Hz.

The PDC-4 has built-in line power supply and requires optional battery supply to retain time and memory during line interruption. Time base is line frequency or crystal when on battery supply. Optional video display accessory available to print all instructions stored in chronological order at 110 or 300 baud.

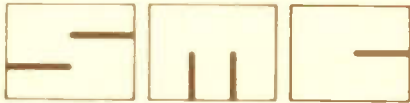
Address data: Active high TTL BCD parallel  
Flag data: Flag 1 thru 9, 200 microsecond active low  
Time data: BCD parallel with time strobe  
Power reqd: 115/230 V., 50/60 Hz.  
Physical: 19" x 5 1/4" x 11"  
48 x 13.3 x 27.9 cm.  
10 lbs. (4.5 kilo)

Cat. No. 153-0072-001: Optional Video Display board for PDC-4

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## FEATURES

- Logical programming without clumsy dedicated controls or slow interrogative programming modes
- 4,000 event memory with flexible sub-routine capability
- Fail-safe underprogramming security built in
- Uses fewer complex components for high reliability
- Instant multi-day programming from highly efficient memory
- Built in diagnostic routine
- Power fail support system
- Fully compatible with all high quality format services and audio processors
- No source or interface cards required as all audio channels are furnished as standard

## ESP-1 AUTOMATION PROGRAMMER

### *Specifications*

The ESP-1 digital programmer, for the first time offers the vast majority of broadcasters a simple yet fully flexible programmer at the lowest cost. Designed around readily available MIL-SPEC components, the ESP-1 provides all the features and abilities of earlier more expensive programmers and operates in a logical non-complex sequence. Staff training is held to a minimum because the ESP-1 adapts to your operation without requiring you to adapt to its limitations. All functions are standard from auto stop and start to link, subroutine, network and fade functions. The ESP-1 does not require dedication of vast quantities of steps for over-programming as it is automatically under-programming proof, providing error free operation. The ESP-1 is fully compatible with the SMC DS-20/A audio switcher and PCD-5 programmable clock and provides full arming look-ahead capabilities, even in the subroutines. Built in multi-function test facilities using the keyboard and display panel permit testing of the major sections of the system. Designed and built with micro-processor techniques, the ESP-1 utilizes smaller, less complex plug-in circuit boards with sockets for IC devices to permit rapid field servicing. Now for the first time a programmer providing simplicity, economy and security without sacrifice of ability or compromise in quality.

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## Specifications - ESP-1

Memory Capacity: 4000	Word length: 16 Bit
Sub-routine: to 999	Output Signal: Active High, Tri-State
Power Required: 8 - 10 V @ 3A. -15 V @ 1/2 A. + 15 V @ 1/2 A.	Control Capacity: 99 Source X 99 Tray
Fan: 120 V AC @ 1/4 A.	Panel Size: 19" x 5 1/4" (48 x 13 cm)
	Console Projection: 7" (18 cm)

## Function Codes

P100: Time Update.	Marker flag for time clock program update
P200: Fade.	Fade flag to audio
P300: Auto Start.	Begin program flag
P400: Auto Stop.	End program flag
P500: Switcher Start.	Audio enable
P700: Backfill Start.	Backfill Start
P800: Network End.	Net program end flag
Axxx: Call Subroutine.	Flag jump to routine xxx
Exxx: End Subroutine.	Flag jump from routine xxx to Main Program
LOOO: Link Steps.	Flag tying two or more events
HOOO: Skip.	Flag to omit steps up to end skip flag
HEOO: End Skip.	Terminate skip

ESP-1 4 K PROGRAMMER Cat. #150-0290-001

Specifications subject to change without notice.





## FEATURES

- For 250-RS or 350RS Carousel Series
- 100 Events each Carousel
- Alternating display for two carousels
- Self-contained - easy installation
- Fast-simple keyboard entry

## MODEL RSC-100

### PROGRAMMABLE RANDOM SELECTOR FOR CAROUSELS

## Specifications

Program up to 100 cart selections for each of one or two Carousels® either model 250-RS, or 350-RS Series.

The RSC100 will add random select to your Carousels with minimum cost. Simple field installation.

Unit is self-contained and has keyboard entry to program each 100 step memory. Data may be changed at any time and is battery protected for short power off situations.

Carousel identity number may be matched to its automation system number by circuit board jumpers.

RSC-100 display shows Carousel identity number, memory step number and cartridge selection number.

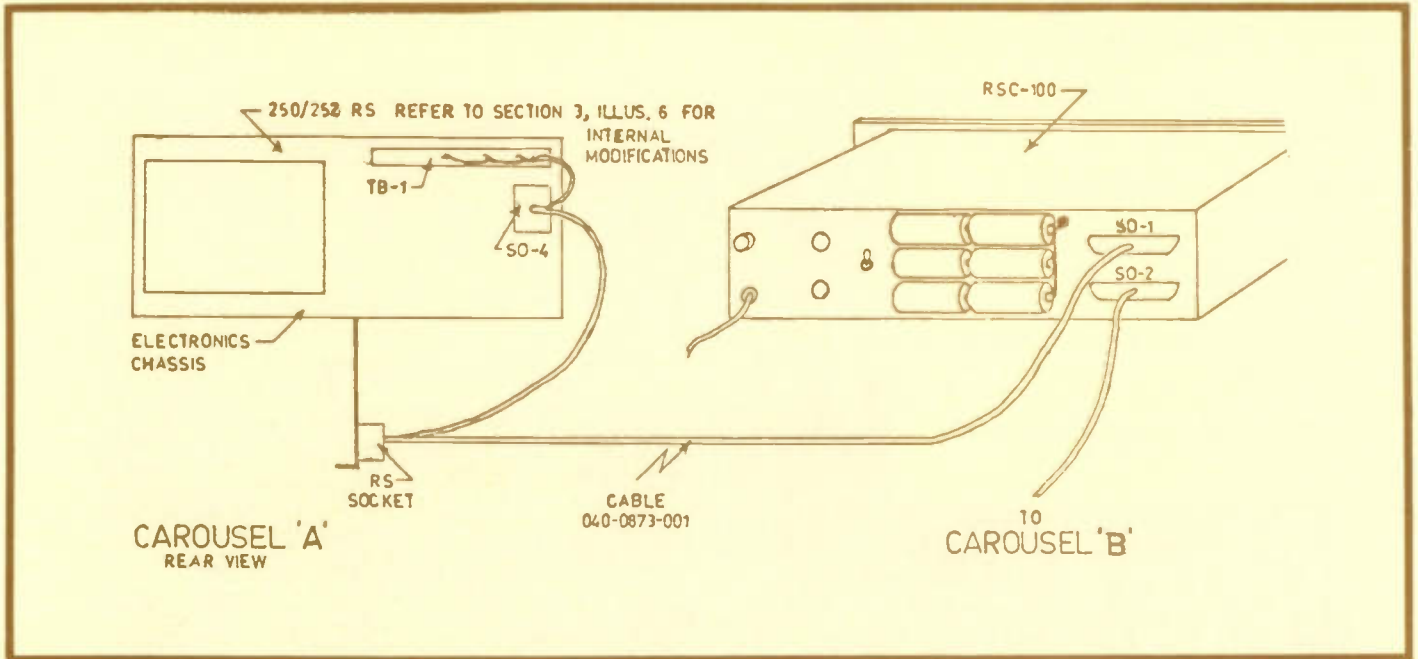
Display and programming mode keys allow operator to check or change memory data or to have alternating display of memory data.

Memory steps can be programmed "00" to allow late entries.

A "next" mode allows operator to advance to any specified step.

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Size: 3½" x 19" Panel  
x 11" depth.

Weight: 15 lbs.

Power: 115/230 50-60 Hz

Battery: 6 "c" cells

Capacity: 100 programmable selections  
for each of two Carousels.

### ORDERING DATA

RSC-100 Cat. No. 150-0319-001

Cable Set for 250/252RS Carousel  
Cat. No. 155-0086-001

Cable Set for 350/352RS Carousel  
Cat. No. 155-0087-001

RS Switch Kit Cat. No. 150-0178-001  
(Required if Carousel Is not equipped with  
- RS Switch Assy.)

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## The SMC DP-2 Digital Program System

The DP-2 Automation Programming System is a fully integrated combination of an advanced microprocessor computer and digitally controlled audio switcher and processor; utilizing non-volatile PROM and ROM integrated circuits into which the software instructions are fixed. The user changes only the event information and the instruction codes to cause the machine to do different things . . . fade, join net, etc. The entire unit (including software programs) is designed and written by SMC engineers. Also, because instructions are stored in plug-in units, new and more powerful programs can be furnished to users at any time as the technology advances.

Other features of the system include a complete lineup of user applied options such as additional keyboard/controllers, data terminals, video displays, automatic logging, interfacing to other computers, selective dumping, master clock for external functions, remote control, standard teletype, automatic transmitter logging, automatic network recording and playback, and a digital cassette dump/load. The DIGITAL PROGRAMMER expands from the 2,000 programmable events to 8,000 programmable events. The 2,000 event unit features 500 steps of sub-routine; the 4,000, 6,000, and 8,000 event units all have 1,000 steps of sub-routine. All models include up to 40 audio channels (20 normally) and a fully programmable clock for net joins.



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# ESP-1

## THINKERS'

## MANUAL

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EXTREMELY  
SIMPLE  
PROGRAMMER



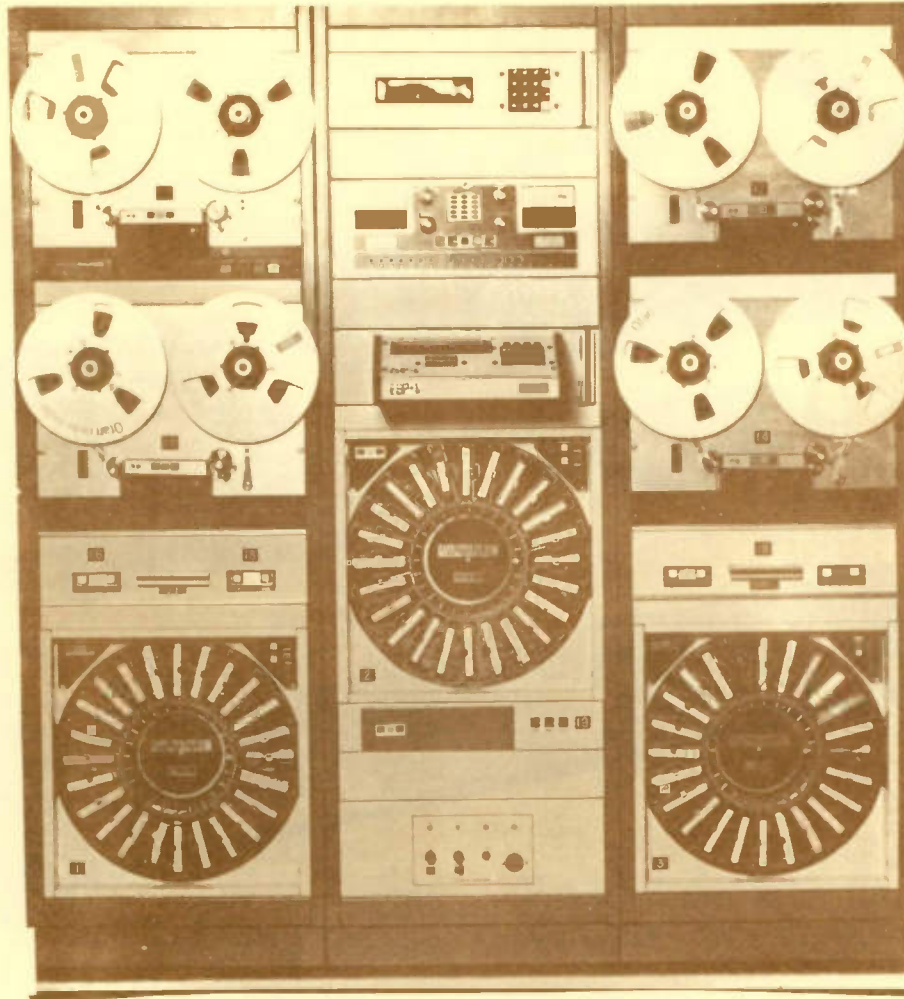
## **"SIMPLE" DOES NOT MEAN "DUMB"**

*Everyone wants the most for the dollar spent when they purchase a programming system. Sometimes it is easy to mistake 'most' for 'busy'. Too often a lack of visual gadgetry is described as 'dumb' when the word should be 'simple'. A programming system like the ESP-1 is capable of fulfilling 95% of all the system needs now, and in the future, of all the stations in the world. Be sure when you consider any system that it is flexible, expandable, simple to learn, simple to operate, and that it will run any format you can conceive. Then be sure that the system is not encumbered with gadgets that will be useless in day-to-day operation. You will find that the ESP-1 meets all these criteria and is still the LOWEST PRICED system with any capability on the market today.*



## THE "SIMPLE" CONTROL

- \* **POWERFUL** — *FOUR THOUSAND MEMORY EVENTS — PLUS —  
More than enough memory for 95% of all stations.*
- \* **FLEXIBLE** — *FULL SUBROUTINE CAPABILITY —  
Called by Alpha-Numeric Labels. Use as you need them.*
- \* **FULL TIME** — *TWO HUNDRED FIFTY-SIX EVENT DIGITAL CLOCK —  
Standard at no extra cost for Network, Fades, Updates, Etc.*
- \* **EXPANDABLE** — *NEVER BUY ANOTHER SOURCE CARD —  
20 stereo source cards in place. Add only what you need.*
- \* **ENGLISH** — *EXCLUSIVE ESP-1 'LABEL-TABLE' TELLS ALL —  
In English you are asked for information, told of errors.*
- \* **HELP** — *DIAGNOSTIC PACKAGE GIVES YOU A CLUE —  
A series of programs that helps isolate a system problem.*
- \* **SIMPLE** — *THREE BUTTONS AND A CALCULATOR-STYLE KEYBOARD —  
No confusing displays, no computer language, no hassle.*
- \* **LOW-COST** — *SAVE AT LEAST TEN PERCENT ON SYSTEM COST —  
No system is easier, or programs better. Why pay more?*



ESP - 1 "MUSIC MACHINE"

*The SMC/Sono-Mag programming system pictured above is a unit that is typical to many radio stations. Your system might vary a little, or be somewhat larger, but the basic components and programming ability are included here.*

#### SYSTEM CAPABILITIES

- Memory: 4000 events; microprocessor controlled. Full sub-routines.*
- Sources: 20 stereo, with all source cards in place. Monitor and source cue included.*
- Time: 256 event fully programmable digital real-time clock for Net, fades, updates, externals.*
- Music: Four stereo auto rewind/play units 1½ hours maximum each before rewind.*
- Spots: Three random select Carousels with capacity for up to 72 commercial accounts.*
- Misc.: Two large trays for deadroll-to-net, Id's, ETC, and one complete time-announce set. In three racks with all filler panels.*

*This system is sold on an installed basis only. A maintenance kit and factory spares, and all manuals are included in the price. The only item you pay above this is shipping from Bloomington, Illinois.*

- Pricing: You will be happily surprised. Call your SMC man or the Sales department at the factory 309-829-6373.*
- Financing: After 10% down with normal credit, we can have your system financed up to 60 months.*
- Extras: There are many accessories available for the ESP unit including a very low cost Clear-Text logging package with CRT encoding.*





Think about a SIMPLE system. . .

You don't have to read this. But a few minutes spent on this page might mean saving a lot of money and programming pain.

State-of-the-Art is not Simple. Wrong. Simple is State-of-the-Art. It is a lot easier to design something complex because you just keep throwing one thing on top of another. Simple design is thinking very carefully about the real need of the user and then designing a specific piece of equipment.

I only want the best for my station. That is why you should carefully consider the ESP-1. Quite often it is more important to have enough budget for random or instant tray storage than to have an impressive looking console, or multiple displays.

Are you saying there is no place for Video-type systems? No. In fact, SMC/Sono-Mag makes the best of the large systems. Each has its place, but you should have a choice and you should take time to consider both approaches.

Why do you use a simple keyboard, rather than a video screen and a typewriter keyboard?

- \* Typewriter keyboards on other systems use only 10% of the keys. The rest just cause confusion.
- \* Video based systems that load on the 'interactive' idea are very, very slow.
- \* Video based systems depend on the screen. Either you invest in a second terminal, or else you are out of business if the screen tube fails.
- \* Video based systems add about 30 to 50% more electronic components to a system control and add greatly to troubleshooting procedures.
- \* Because of their complexity, video based systems take longer to learn and are harder to train new people to operate.
- \* There is no real value to most of the information shown on a screen when operation is considered on a day-to-day basis.
- \* The ESP-1 can do a better programming job, with less chance for operator error, with a much simpler maintenance procedure for a very large savings in systems cost.

What can an ESP-1 really do?

- \* Program several individual days in a typical station.
- \* Handle up to 20 sources without expensive 'source cards'.
- \* Run up to 256 individual programmable real-time updates, Net, fades, etc.
- \* Handle up to 8 external time functions like net delay recording.
- \* Run up to 20 random or instant access cart machines without interfaces.
- \* Provide more programming memory than 95% of all systems sold last year.
- \* Operate the most complex format(s) you could devise with full subroutines.
- \* Let the operator load the program changes about 50% faster.
- \* Shows you in English descriptive 'Labels' that guide your programming.
- \* Save you at least 10% on your system cost.

Tell me about the 'Labels': It's very simple. Instead of using a clumsy, expensive screen, the ESP-1 simply uses the 10-digit display to spell out in English some 'prompting' messages. In the display you might see the word 'STEP' which asks you: "Which step do you want to Display or Go-To." If you enter a source that is not allowed, you would see 'SOURCE'. An incorrect tray might show 'TRAY'. If two events using the same random source are programmed together you would see 'BAC TO BAC'. There are others, like 'TEST', etc. Simple isn't it?

Are there really only three buttons? Yes. Other than the standard calculator-type keyboard on the right the only other buttons are: Now/Next; Go-To; and Display. A very simple design.

What about subroutines? The subroutines are handled in a very simple but very efficient way. You decide on the number of subroutines and their content. You give them a simple letter and three digit code label. Then, everytime you want to run a subroutine you call for it by its label. You have up to 1000 steps in subroutine.

What do I put in main memory? Typically, most of the information that you will have in main memory will consist of spot 'sets' or clusters each followed by a return to subroutine.

Do I have to program that way? Absolutely not! The idea of the ESP-1 is that you program it the way you want. If you want to use all sequential, or time based or any combination of Main/Sub/Time. . .then do it!

What if I make a program error? The ESP-1 'Label-Table' will let you know in English on the Display. If you have any sort of error and are away from the system, there is an audible 'bleep' that lets you know something is wrong. And, there are other safeguards. Among them, it is not possible to 'underprogram' the ESP-1. There is a safety subroutine that takes over in these situations.

In summary: In spite of its operating simplicity, and its very low cost, the ESP-1 is a highly sophisticated computer operated program controller that is designed specifically for the typical radio station operation.

You may be committing a programming error if you don't have an ESP-1!

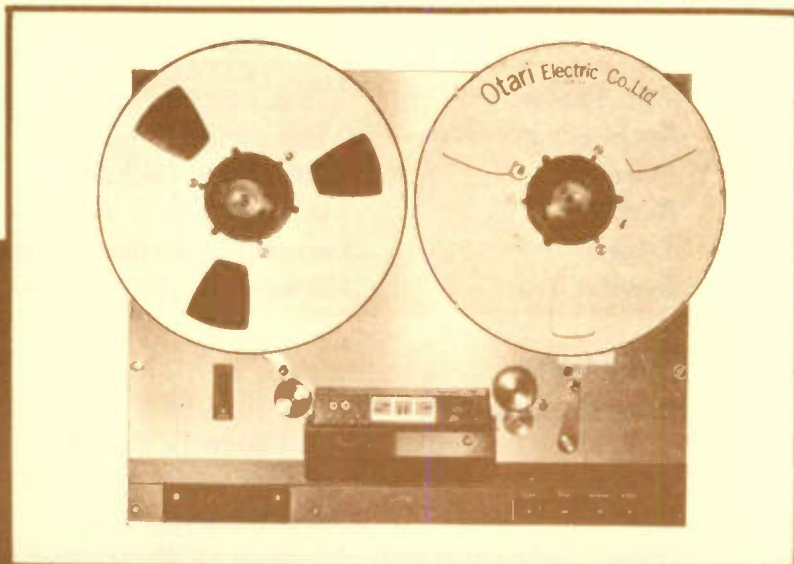
Thank you for your time. . .

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# SMC - OTARI REEL TO REEL PLAYER



## REEL PLAYBACK FOR AUTOMATION

- PROFESSIONAL PERFORMANCE
- COMPLETE WITH 25 HZ TONE SENSING
- ADJUSTABLE STOP DELAY
- AUTOMATIC REWIND OPTION WITH BUSY RESPONSE
- INTEGRATED STEREO AMPLIFIERS
- DUAL TAPE SPEED

THE SMC-OTARI MACHINE UTILIZES THE FAMOUS OTARI MECHANICAL TRANSPORT AND AN SMC ELECTRONIC ASSEMBLY.

The SMC-OTARI reel tape playback is a fully integrated automation audio source system. All the essential electronic circuits are incorporated within the unit. No additional tone sensors or re-wind controllers are required. This self-contained unit provides better performance with savings in initial cost and rack mounting space.

Tape handling with the SMC-OTARI transport is smooth, and operator error safe. Fast forward and fast reverse modes are electronically interlocked with play mode to prevent tape damage. Tape threading is clean, fast and without any slot paths.

Transformer voltage controlled torque motors are used with external, fully adjustable band brakes. Brakes are fully power fail safe.

The capstan motor is hysteresis synchronous and indirectly drives a precision flywheel capstan system. This provides important inertial mass to the tape drive with resultant lower wow and flutter performance. The

capstan bearing is of the long sleeve type for reduced axial deflection, and freedom from shipping damage.

The tape pinch roller is long life polypropylene wearing surface with ball bearings.

The tape head is a wide pole, permalloy design that combined with the optimum location of motor magnetic fields, possible with indirect drive, gives superb frequency response and very low noise figures. Head azimuth adjustment is accessible through front cover.

Tape head pre-amplifiers are located at the head mount for maximum performance as relates to noise figures and RF field interference. Equalization for both tape speeds is switch selectable on the pre-amplifier board and individually adjustable. Two amplifier level controls are front panel accessed.

All electronic circuits, including power supply, are plug-in glass epoxy printed circuit boards.

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# — OTARI SPECIFICATIONS

Tape Speeds: 3.75 & 7.5 IPS (9.5 & 19 CM/SEC)  
Speed Error: 0.15% using 1.5 mil. tape  
Flutter: 0.06% (NAB weighted)  
Reel Size: 7-in. or 10½-in. EIA or NAB  
Tracks: Two channel stereo (half tracks)\*  
Rewind Time: 125 seconds; 10½-inch reel

## Performance:

Freq. Response: ±2 dB 30 to 16 KHz, 7.5 IPS  
±2 dB 30 to 12 KHz, 3.75 IPS  
Output: +18 dBm at clip (600 ohm load)  
Load: 600 ohms, unbalanced  
Noise: (total wideband) -54 dB; at +8 dBm output from 160 nW/m 1 KHz. signal  
Crosstalk: -50 dB at 1 KHz.  
Distortion: 1% Max. @ 200 nW/m, 1 kHz. +8 dBm.  
Tone Sense: 25 Hz ±1 Hz. Phase lock loop requires 0.5 second minimum tone.  
Stop Delay: Adjustable from approximately 0 to 5 seconds after end of 25 Hz tone.  
EOM Signal: Active high TTL output for length of 25 Hz tone. May be inhibited with external command.

\*May be jumpered on ASB-1 PCB to provide Mono output

## Optional Features: (Combined with above)

Right Channel  
Tone Sensor: 25 Hz sensor on Right channel.  
Right tone  
search command: Active high TTL pulse required to (a) start tape; (b) keep left channel tone from stopping.  
Automatic Rewind: Provides automatic rewinding of tape to supply reel when reflective aluminum foil operates sensor, and re-cue to first 25 Hz tone at beginning of tape.  
Busy Signal: Provides pulse output if externally commanded to play at any time machine is rewinding or cueing up.

## Operating Requirements:

Power: 117 V. 60 Hz 100 watts Pulley & Belt change for 50 Hz.  
Environment: 40 to 104 F. (5 to 40 C.)  
20 to 80 per cent R.H.  
Weight: 45 lbs. (20.4 kg.)  
Rack Space: 17¼ inch (43.8 cm.) including reels.

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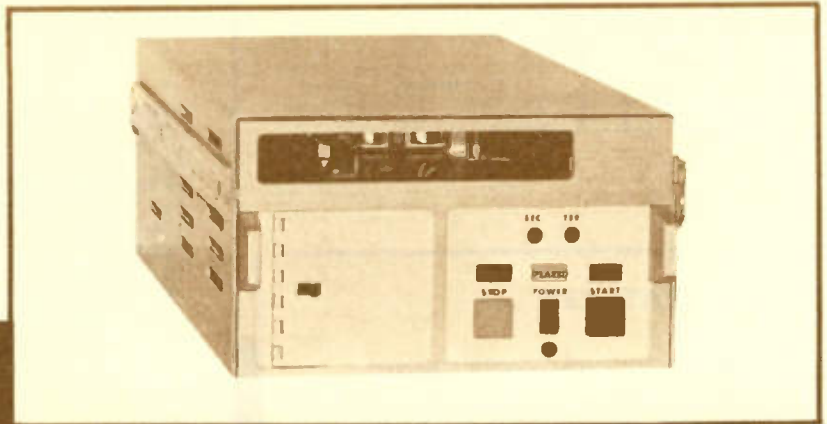
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### FEATURES . . .

- Logic level remote control
- No relays used
- Ball-bearing cross shaft
- Desk cabinet or rack mount
- Glass epoxy plug-in boards
- Three control tone sensing standard
- Quiet solenoid operation



## SMC AUDI-CORD REPRODUCERS

**MODEL 101S MONO PLAY  
WITH 3 TONES #153-0097-001**  
**model 106S STEREO PLAY  
WITH 3 TONES #153-0098-001**  
**RACK MOUNT -002 OPTION.**

### GENERAL SPECIFICATIONS

All transports are interchangeable between similar type machines (mono or stereo) and are front removable for service and cleaning. A unique pressure regulating solenoid coupling system which improves tape skew and eliminates adjustments.

Very rugged head mounting with top adjustments that stay put. Split precision adjustable stainless steel tape guides. Reversible for two wearing surfaces.

Thick aluminum deck overlaid with a stainless steel wearing surface.

## 100 SERIES PLAYBACK PERFORMANCE

Rated Audio Output  
 Amplifier Overload Capability.  
 Amplifier Distortion  
 Hum and Noise  
 (Wideband)  
 W.B. S/N (Typical Tape)

Equalization  
 Frequency Response  
 Phase Stability

Optional Cue Switching  
 Cue Switching Loads  
 Flutter  
 Dimensions  
 Power

+8 dBm  
 + 18 dBm min., + 20 dBm clipping  
 0.5% max. total harmonic @ + 18 dBm  
 -50 dB re 160 nWb/m @ 1 kHz-mono  
 -47 dB re 160 nWb/m @ 1 kHz-stereo  
 -48 dB re 160 nWb/m @ 1 kHz-mono  
 -46 dB re 160 nWb/m @ 1 kHz-stereo  
 Dual Hi-Lo  
 ± 2 dB to NAB Standard Tape, 50 Hz to 15 kHz  
 ± 90 degrees, long term @ 12 kHz  
 (The audi-Cord Transport is designed for long term phase stability. However, it is appreciated that phase differential over long term use is difficult to achieve unless stringent maintenance is applied.)  
 Sinking (Open Collector) Logic  
 100 ma. max., + 40 VDC open circuit max.  
 0.15% weighted peak, Max.  
 8 5/8" W x 5 1/4" H x 15" L  
 115V - 60Hz, 50 Hz option

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## FEATURES . . .

- Logic level remote control
- No relays used
- Ball-bearing cross shaft
- Direct drive hysteresis motor
- Desk cabinet or rack mount models
- Premium Glass epoxy plug-in boards
- Three control tone sensing standard



## SMC AUDI-CORD RECORDERS MODEL 126S STEREO RECORD/PLAY WITH TIMER — #153-0095-001 MODEL 121S MONO RECORD/PLAY WITH TIMER - #153-0096-001 RACK MOUNT - 002 OPTION.

## GENERAL SPECIFICATIONS

Front accessible controls for all day to day adjustments, with tilt open front panel.

Multi-purpose 6-position record metering system with automatic switching from record to play modes, and cue track monitoring.

Precision internal frequency response test facilities.

Dual record (Hi-Lo) equalization.

Bias and tone recording indicators.

SMC automation compatible.

Optional precision digital recording timer with true recorded time indication, either overlap or non-overlap modes when secondary cue is used.

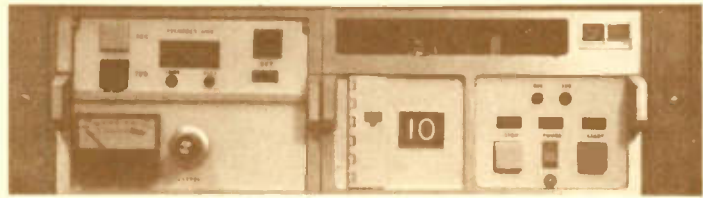
## 120 SERIES RECORDER PERFORMANCE

Rated Audio Input (for 160 nWb/m)	-24 dBm, 600 ohms, (50 MV.RMS) min. 2.5 Volts Max.
Input Impedance	5100 ohms, Balanced
Amplifier Distortion	0.5% total harmonic, 18 dB above 160 nWb/m, 1kHz
System Distortion	1% Typical at 160 nWb/m, 1 kHz
Equalization	Dual Hi-Lo
Bias Oscillator Frequency	100 kHz, nominal
Response Test Accuracy	± 2 dB, verified by metering internal
Record Timer Stop Mode	Selectable for front or end of E.O.M.
Optional Record Timer	4 Digit, Seconds and Tenths
Record Timer Accuracy	± .2 second (Plus transport timing accuracy)
Cue Tone Oscillators	All 3 NAB Tones are Standard
Dimensions (Record-Play)	16" W x 15" L x 5 1/4" H
Power	115V - 60Hz, 50Hz option

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### FEATURES . . .

- Logic level remote control
- No relays used
- Ball-bearing cross shaft
- Direct drive hysteresis motor
- Desk cabinet or rack mount models
- Premium glass epoxy plug-in boards

Three control tone sensing standard

**SMC AUDI-CORD DELAY  
RECORD/REPRODUCE  
MODEL 132S MONO RECORD/PLAY  
WITH - ERASE - RECORD - PLAY  
3 TONES. #153-0099-001  
RACK MOUNT -002 OPTION.**

### GENERAL SPECIFICATIONS

The model 132S is designed with a switch selected erase function that allows recording of network programs for later replay. When controlled by an external time clock, previous recorded material will be erased and new material recorded. Since the erase function is active only in the record mode, material on the tape may be replayed as often as desired. Only program material is erased and the cue and secondary aux signal (and logging data) need be applied only the first time. With the erase function turned off, the 132S works the same as any standard recorder.

## 130 SERIES RECORDER PERFORMANCE

Rated Audio Input (for 160 nWb/m)

Input Impedance  
Amplifier Distortion

System Distortion  
Equalization  
Bias Oscillator Frequency  
Response Test Accuracy  
Record Timer Stop Mode  
Optional Record Timer  
Record Timer Accuracy  
Cue Tone Oscillators  
Dimensions (Record-Play)  
Power

-24 dBm, 600 ohms, (50 MV.RMS) min. 2.5 Volts Max.  
5100 ohms, Balanced  
0.5% total harmonic, 18 dB above 160 nWb/m.  
1kHz  
1% Typical at 160 nWb/m, 1 kHz  
Dual Hi-Lo  
100 kHz, nominal  
± 2 dB, verified by metering internal  
Selectable for front or end of E.O.M.  
4 Digit, Seconds and Tenths  
± .2 second (Plus transport timing accuracy)  
All 3NAB Tones are Standard  
16" W x 15" L x 5 1/4" H  
115V - 60H 50H Option

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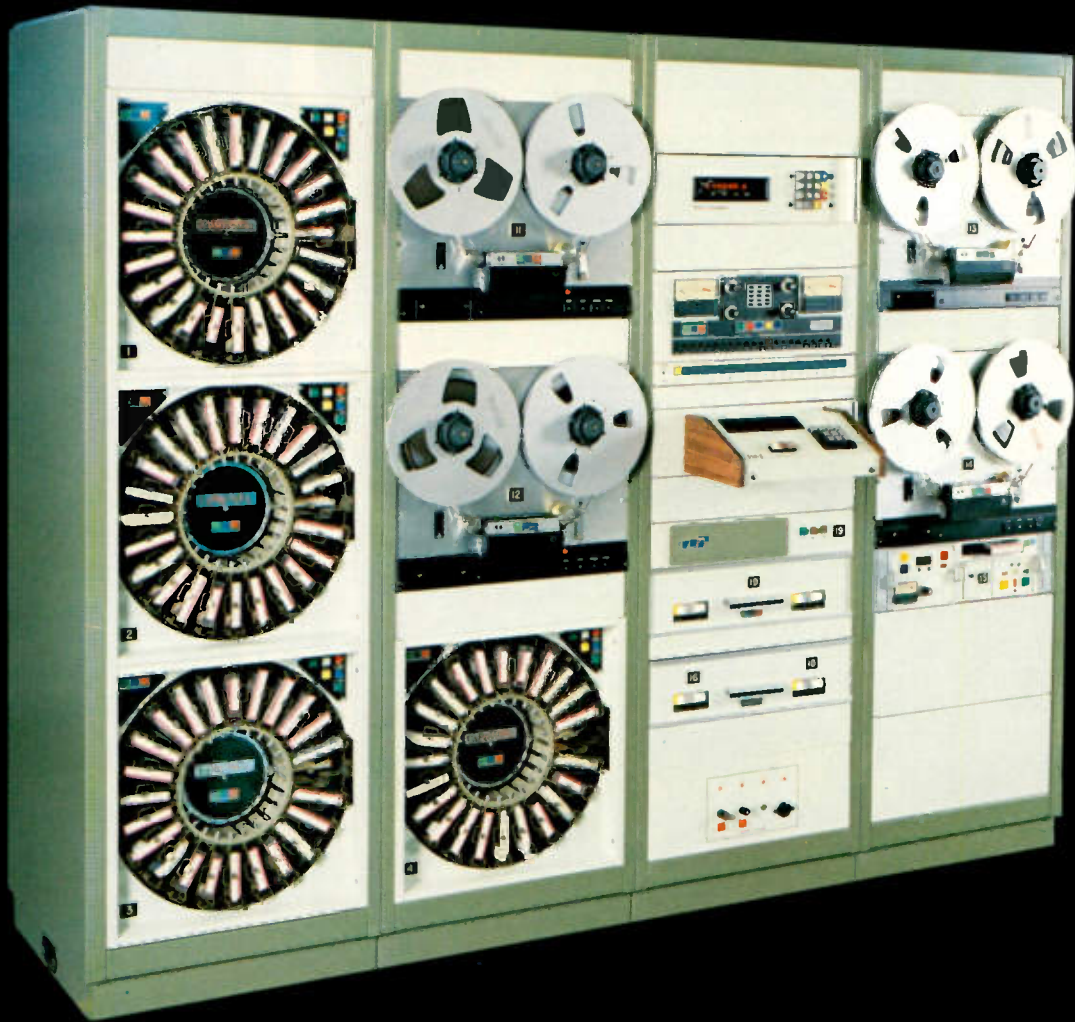






E  
S  
P

*Stereo and Mono Automation  
and Cleartext Logging*



Sono-Mag Corporation

*Radio Automation*

## SPECIFICATIONS - ESP-1

Memory Capacity: 4,000  
Word length: 16 Bit  
Sub-routine: to 999  
Control Capacity: 99 sources X 99 Trays

## FUNCTION CODES

T000 Simple Update  
T100 Update, fade source on air and start next step  
T300 Update and cancel network channel  
T400 Update and start backfill source  
Fxxx General purpose flags  
F10X Link the next 'x' events  
F200 Skip next events until an F300 is found  
F300 End of skip function  
F40X Delayed switcher start  
F500 Disable the switcher  
F600 Rewind, load and start Automatic Program Loader  
F610 Load next file on Loading tape  
F700 Enable Switcher  
F900 Flag indicating end of memory program  
b999 Underprogramming Safeguard

## ESP-1 LABEL TABLE

The following English labels will appear on the ESP-1 operating display indicating:

step -	asks operator to enter a step number
tray -	advises that tray information may be incorrect
source -	advises that source number is incorrect
bac-to-bac -	indicates that a single source has been entered twice.
too-big -	indicates that the step number is incorrect or invalid
under-pro -	indicates that memory is under-programmed (In this case Function b999 provides underprogramming protection)



### Sono-Mag Corporation

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To learn more about ESP contact your SMC Regional Manager or contact

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