ABX

ABX

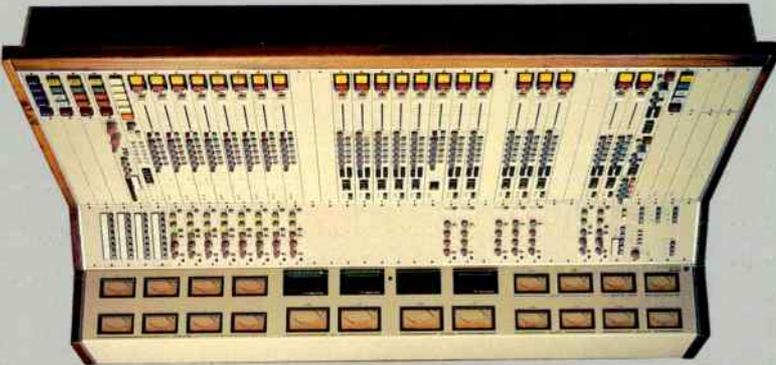## THE USER FRIENDLY CONSOLE

ABX-34

ABX-26

ABX-18

ABX FEATURES . . .

- Three main stereo mix buses
- Distribution line amplifiers on each main output
- 2-Mix stereo mixdown buses
- Up to eight multitrack mix buses
- Four effect/foldback send mix buses, each with remote control logic
- Stereo cue system with automatic console headphone monitor switching
- Stereo solo-in-place monitoring system
- Multifunction metering with automatic cue and solo level display
- Two stereo reverb/effects returns each with remote control logic
- Monaural equalizer with filters
- Monaural equalizers with gate, compressor and de-esser
- Stereo tracking equalizers
- Monitor system provides independent and unique outputs for console, host, co-host, and guest headphone feeds
- Two independent studio monitor systems available
- Multi-way intercommunication system including producer and external feeds
- Multi-frequency low distortion test oscillator
- Voice slate system with identification tone
- Four telephone mix-minus feeds plus telephone monitor mix
- Full and independent remote control logic on each input of microphone and line modules
- Fully regulated, independent supplies for audio, logic and phantom power
- On-board audio supply regulation on each module
- Mainframe fully wired for all present and future inputs, outputs, patch points and logic
- Connector panel silkscreened with clear, functional designations
- Audio logic interconnection system is compatible with BMX and AMX series consoles
- Mainframes for 18, 26, 34 input positions, larger frames sizes available upon request
- Console supplied with installation connectors and tools, service tool kit and spare parts kit

The ABX is a complete broadcast operations console . . . designed for all contemporary broadcast operations. ABX was designed from the ground up to provide the modern broadcaster with a console which does not compromise either production or on-air capabilities.

Until now, broadcasters have been forced to choose either on-air consoles that do not provide full equalization, reverb, foldback, solo, multitrack and mixdown; or recording consoles that do not give multiple stereo broadcast outputs, interactive machine control and sufficient stereo source inputs. The ABX provides all of these in a console suited for telephone talk, all news, multitrack production and all music formats.

As you look through this brochure, note the attention to detail, the thoughtful selection of components and most importantly, the thorough consideration of broadcaster needs that will give ABX a reputation for service and reliability equal to its sister console, the BMX.

First-quality components, the basis for a high performance product, are featured throughout the ABX. Advanced discrete and integrated circuitry yields low noise and distortion and provides excellent frequency response and headroom/overload capability. At least 30 dB of microphone and line input headroom is maintained to provide that extra margin for "hot" levels and operator error. Mixers are full travel Penny & Giles conductive plastic faders. Their conductive plastic elements and precious metal wipers are extremely linear and are impervious to the environment. The faders' mechanical components are non-corrodible nylon and stainless steel. All push buttons are Honeywell, EAO and Schadow, chosen for their extended life ratings. Audio transformers, where used, are designed by Deane Jensen. The VU meters conform to American National Standard C16.5-1954 and are driven by isolation bridging buffer amplifiers. Optional Peak Program Meters (PPM) conform to British Standard 4297:1969.

The sophisticated control logic of the ABX utilizes CMOS integrated circuits. CMOS provides silent and flexible control. Operating on 12 volt low current power, CMOS is very immune to electrical noise and strong RF fields. CMOS circuits generate little electrical noise, so you won't hear "chirps" or "clicks" in the audio as the logic operates. FET switches invariably introduce some form of non-linear distortion, even if slight, and the ABX is so clean that you might hear the difference. We therefore go a step further and use miniature, sealed gold-contact relays for all logic controlled audio switching outside of the side chains. The relays are quiet, reliable and cannot degrade audio performance. CMOS control logic is also easy to interface to external equipment. Logic interface/translator units are available with the ABX from Pacific Recorders & Engineering. The outputs of the control logic to external equipment are buffered by short-proof, discrete transistor circuitry.

The ABX is a low profile design. Plenty of room is available for the broadcaster to arrange his peripheral equipment. Careful attention has been paid to human engineering needs in the logical placement of switches and controls. All active electronics are accessible from the face of the console. Panel modules simply unplug from the housing. The separate power supply is rack mountable and comes supplied with a six-foot interconnecting cable. All audio, input/output and logic wiring between the console and studio equipment is done with easy-to-use connectors. Time consuming hand-wiring to terminal blocks is eliminated. Supplied with the ABX are mating connectors, pins, pin crimp tool and full wiring information. By pre-wiring the studio connectors, an ABX console can be installed and on the air in a few hours. Input assignments can be changed in the future with ease by simply moving the connector plugs.
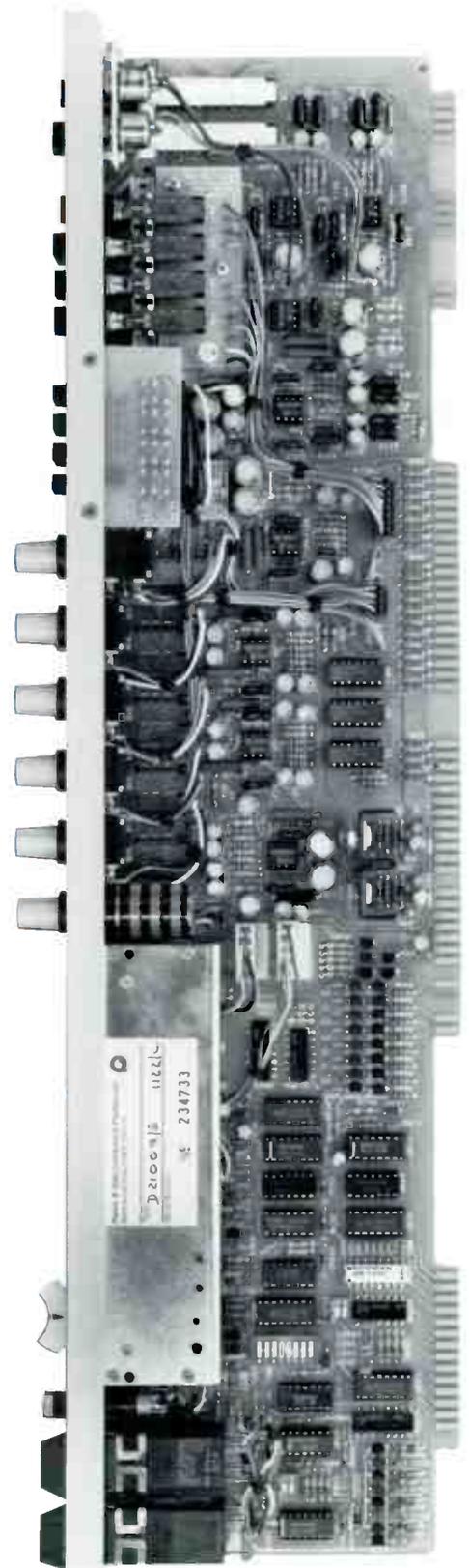
The ABX is available in three mainframe sizes, to accommodate 18, 26 or 34 input modules. Every ABX mainframe is factory wired and tested for the full compliment of modules. You may order the console with fewer than capacity and expand the system at any time by simply plugging in the extra modules. Universal layout enables any input position to accept any input module. Simply select from microphone, line and multitrack modules to configure the console as you wish.

By plug-in connection of microphones, turntables, cartridge and reel-to-reel tape units and other inputs and outputs, the console is air-ready.

Reliability starts with a tough housing. The ABX is fabricated from aerospace materials and methods. Heavy gauge aluminum alloy end panels are fabricated on CNC mills for the ultimate in dimensional accuracy. Shaped, formed and riveted sheet metal frames are then fastened to these precision panels providing "skin tensioning" for even more stiffness. This housing does not twist or flex and therefore will not degrade card edge contacts or strain circuit traces. Hand wiring is minimized by the use of plug in circuit boards and a "mother board." This large interconnecting printed circuit board is strengthened and shielded by being fully enclosed by a continuous ground plane for the ultimate in RF and noise isolation. Only glass epoxy double-sided circuit boards are used. They allow the layout of components for optimum performance. Double-sided boards also support the use of ground plane shielding technology originally developed in the BMX console, which further reduces susceptibility to RF interference, noise and cross-talk. For added service convenience the components on each board are identified with silk screened designations. All circuit card fingers and mating edge connectors are gold plated. Front panels are constructed on anodized aluminum extrusions with aluminum inlays coated with durable polyurethane paint and epoxy silk screened with clearly labeled nomenclature.

The ABX is complimented in other design features by the solid oak trim panels that provide an attractive appearance that will also withstand the rigors of continuous professional use. The power supply is constructed in a rugged steel chassis and features massive regulator heat sinks. The audio, logic and phantom supply voltages are individually switched by magnetic circuit breakers.

From a careful design philosophy, utilizing state of the art technology, rugged physical construction techniques, and a sensitivity to the needs of the user, the ABX approaches perfection. It is a human-engineered console that broadcasters may run through the paces and come to universally accept as the standard of comparison.

ABX . . . easy to buy, easy to install and easy to service, with reliability and performance that has become a Pacific Recorders & Engineering trademark.

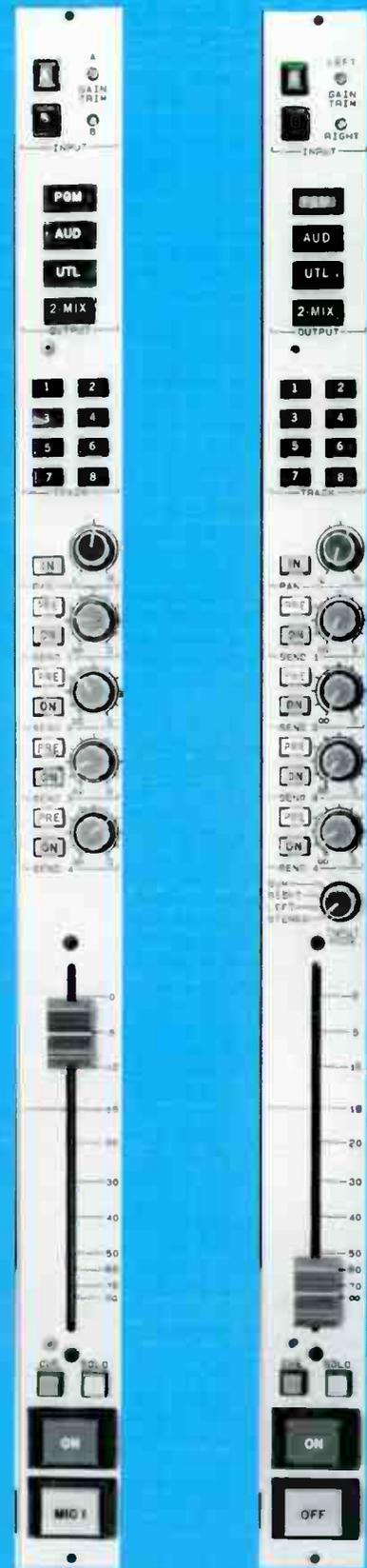**MICROPHONE INPUT MODULE**
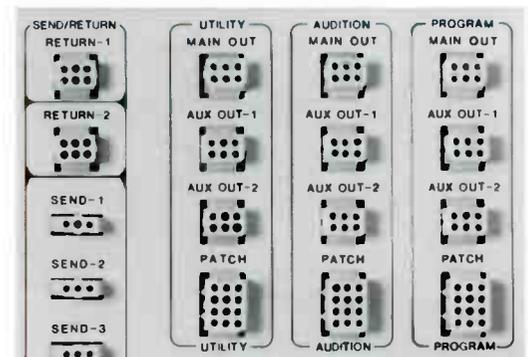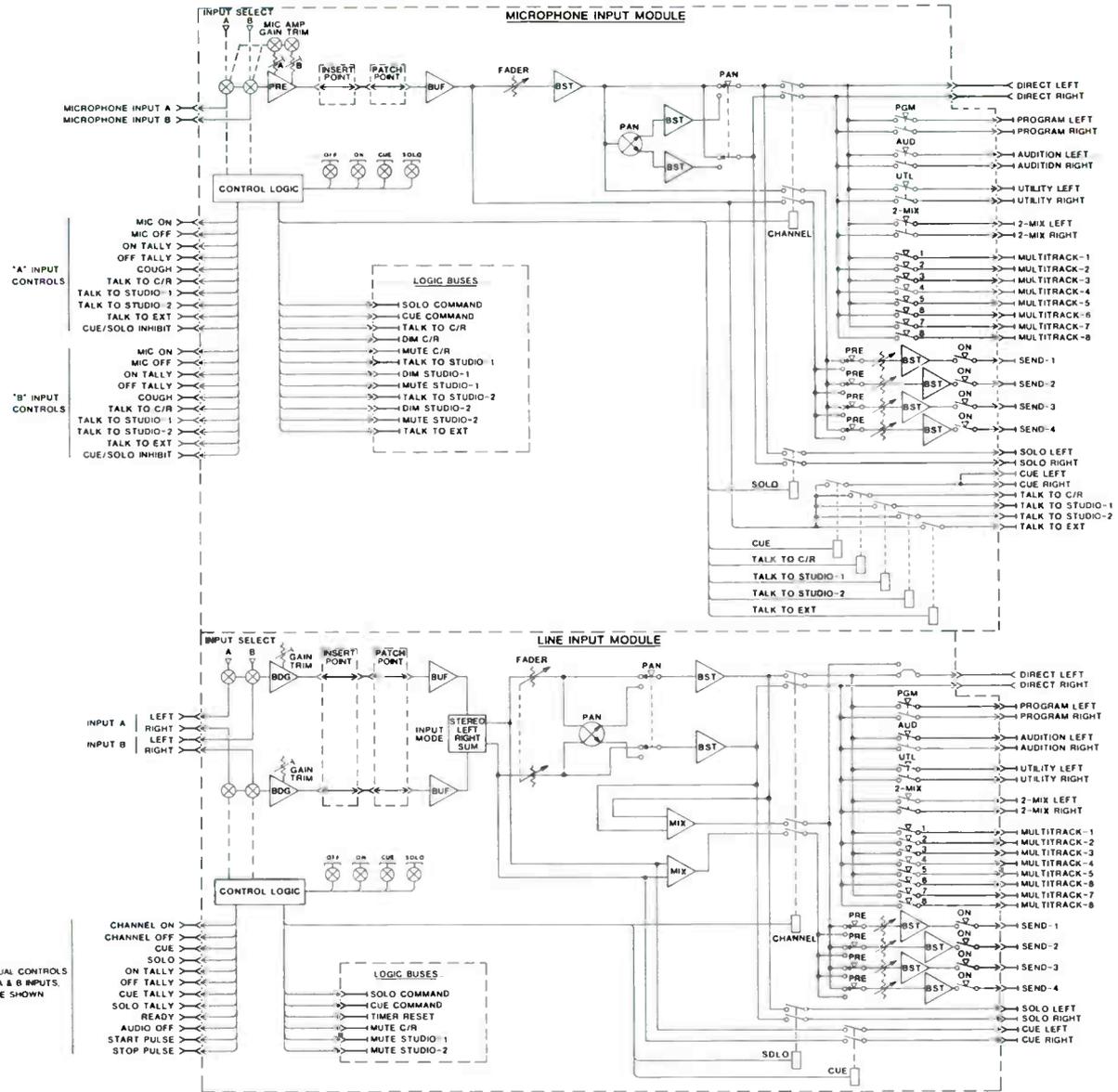
LINE INPUT MODULE

MICROPHONE INPUT MODULE

The Microphone Input Module accommodates a wide range of input levels to permit use of all contemporary microphones. Input preamplifier gain is adjustable for nominal inputs of −60 dBu to −35 dBu. The A/B input selector provides two microphone inputs per module, each with individually programmable monitor muting which incorporates an automatic 40 millisecond delay before the microphone audio is turned on to permit "room reverb" to decay off mic. Each microphone input provides separate remote control capability to ON/OFF, COUGH and multiple TALKBACK functions. The module output is assignable to PROGRAM, AUDITION, UTILITY, MULTITRACK and 2-MIX buses. The four effects/foldbacks SENDS have individual level controls which can be source selected PRE- or post-fader. A PAN control, with insert switch, allows positioning of the microphone in the stereo image. The illuminated CUE button provides stereo cue monitoring which is pre-fader. Additionally, a similar style button allows monitoring of SOLO-in-place which is post-fader and pan. The channel ON and OFF buttons are illuminated to indicate the status of the channel. For further operator convenience, the control logic may be optionally set so that depression of the ON button provides momentary cough muting.
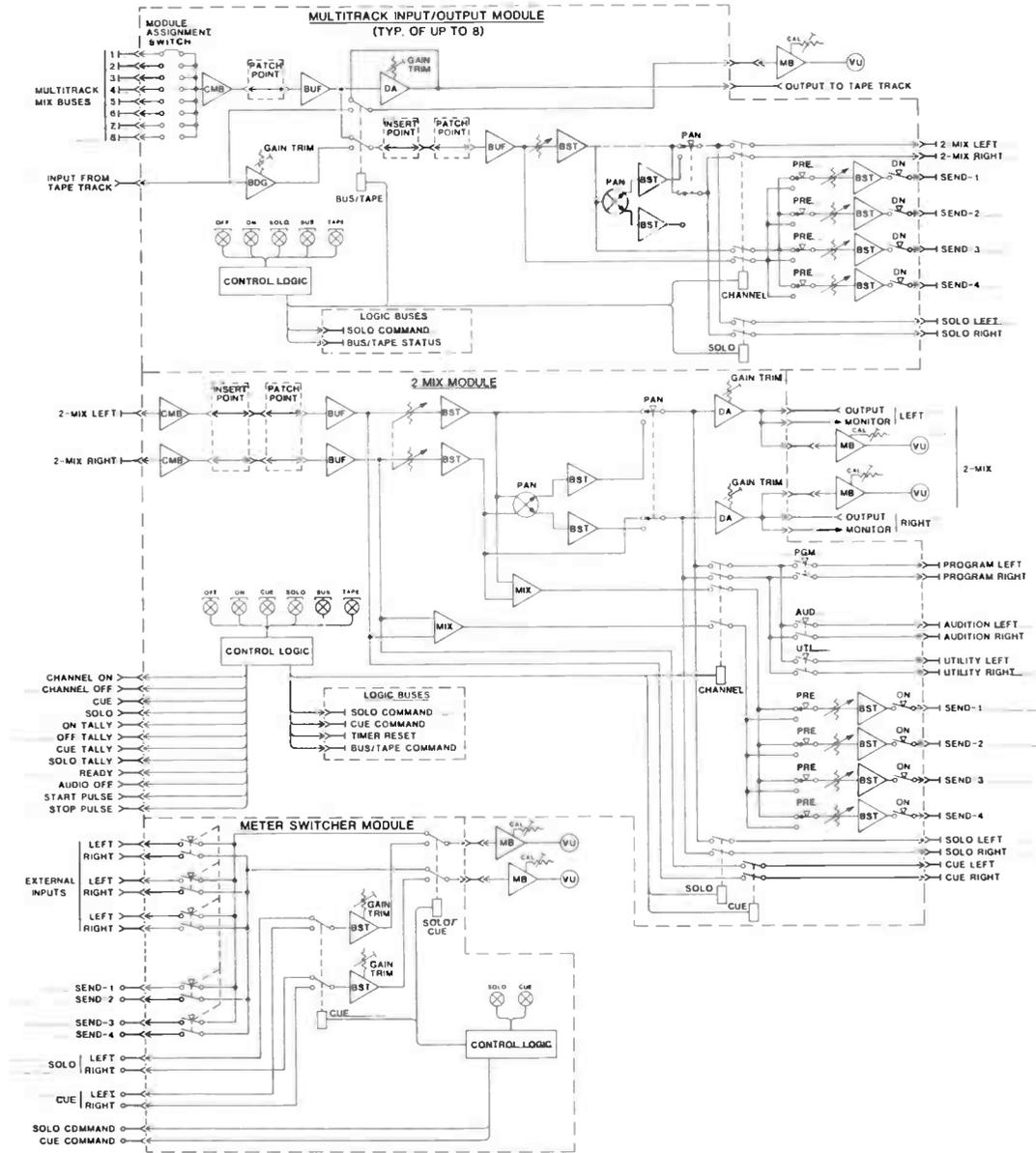
LINE INPUT MODULE

The stereo Line Input Module will accommodate nominal input levels from −12 dBu to +8 dBu. The A/B input switch selects either of two stereo inputs. Separate control logic is available on each input for the remote control of tape machines or other sources by the module. Four stereo outputs are assignable, including PROGRAM, AUDITION, UTILITY and 2-MIX. In addition, the module may be assigned to any combination of tracks for multitrack recording. The PAN control may be used to balance a stereo signal source or to position a mono source in the stereo image. Effect/foldback SENDS are provided, each with PRE-/post-fader and ON/OFF switches. An INPUT MODE switch allows input selection of stereo, left channel only, right channel only or the sum of right and left channel. Both CUE and SOLO facilities are also available as in the microphone input modules.

Every Line Input Module includes a comprehensive family of control logic input and output commands which include remote control of module ON/OFF, CUE and SOLO functions with tally lights. Provided are start/stop command pulses for turntables, cartridges and reel-to-reel tape machines, the ready, start and stop commands for tape cartridge machines, with the cart ready status illuminating the channel OFF button. The ON button starts the cartridge as well as turns on the module. Upon receipt of the end of message or the end tape signal from the cartridge machine, the module is automatically turned off. The ready tally, start/stop for open real tape machines is also available with functions similar to the foregoing cartridge machine functions. In addition, the module may be programmed to reset and restart the console timer to provide an elapsed time countup for user designated inputs, i.e., turntables, tape cartridges, etc.

Microphone
Input
Module

Line
Input
Module

MULTITRACK MODULE

The Multitrack Module is a combination input and output module to be used with each track of a multitrack tape recorder. It provides the line output to the track as well as the stereo mixdown facilities for the bus or tape signals. The BUS and TAPE buttons select the source to be mixed and metered. Each mixdown channel is equipped with ON, OFF and SOLO buttons, four effects/foldback SEND controls and a PAN potentiometer.

2-MIX MODULE

The 2-Mix Module is the mixing amplifier for the multitrack modules and, therefore, should be viewed as the stereo "input" module from the multitrack tape machine. This module provides the same audio and logic features as a stereo line input module except that its input is composed of the multitrack modules, plus other sources which have been assigned to the 2-Mix bus. The master BUS and TAPE buttons control the mixdown status of all the individual multi-track modules. The 2-Mix Module also contains the line amplifiers for the 2-Mix output channel.

METERING

The ABX Meter Panel provides meters to display the levels of the following console outputs: Stereo PROGRAM, stereo AUDITION, stereo UTILITY (ABX 26 & 34), stereo 2-MIX (optional), 4 or 8 MULTI-TRACK (optional), MONAURAL (optional), TELCO (optional) and AUXILIARY (two meters).

The AUXILIARY meters are driven by the Meter Switcher Module which may select from three external signals, SEND 1 & 2 and SEND 3 & 4. The Auxiliary meters automatically default to either CUE or SOLO whenever either is selected on any module. This provides rapid confirmation and line-up levels. The SOLO metering function eliminates the need to use a console output bus for preview and level setting.

Multitrack Module

2-Mix Module

Meter Switcher Module

TALKBACK/SLATE MODULE

OUTPUT LINE SWITCHER MODULE
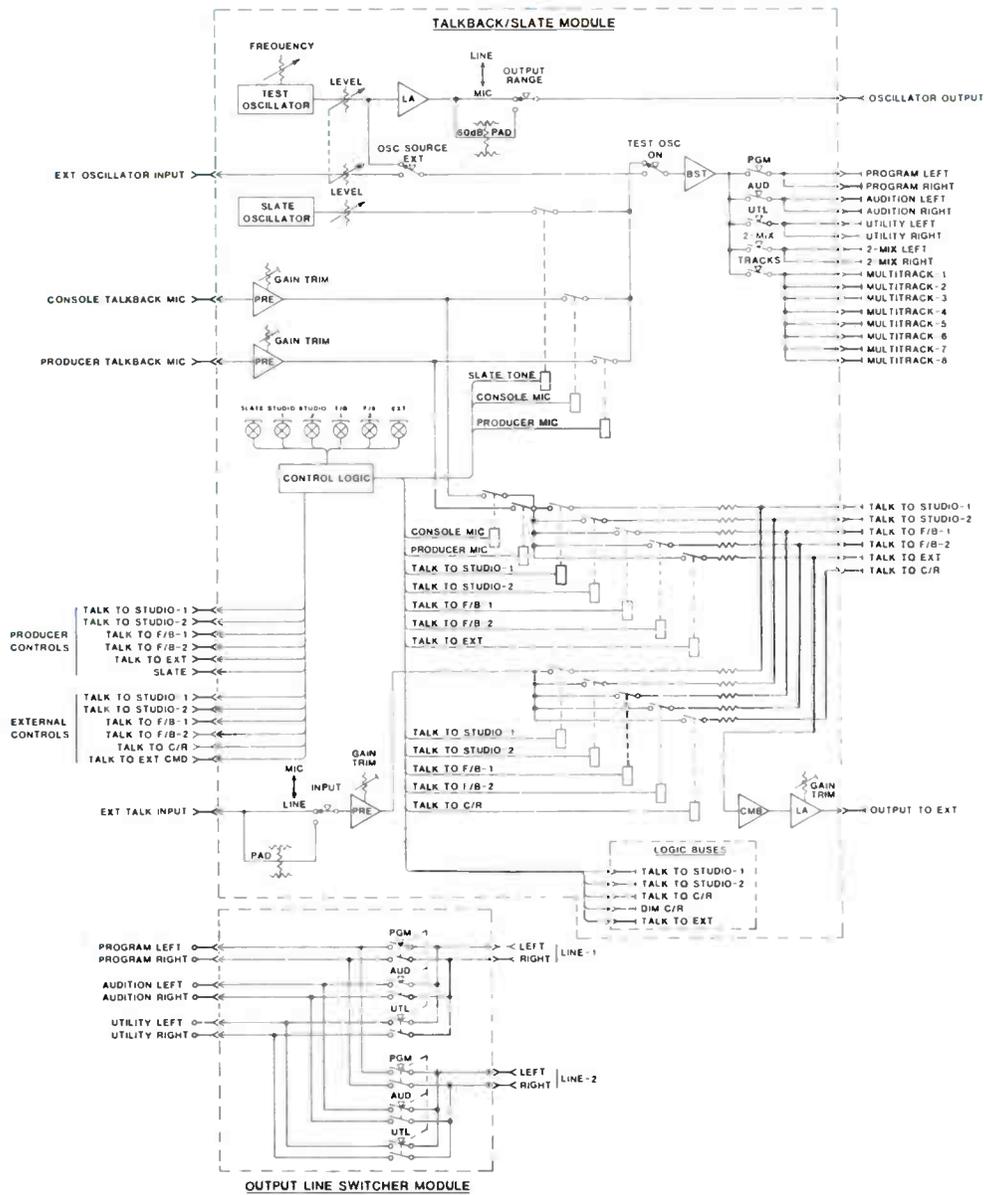
SLATE/TALKBACK/TEST MODULE

The Slate/Talkback/Test Module provides a test oscillator, a Slate oscillator and Talkback facilities for the ABX console.

A test tone oscillator generates a low-distortion and stable-amplitude audio tone to allow system testing with any of 12 frequencies in the audio range.

Its output can be directed to the PROGRAM, AUDITION, UTILITY, 2-MIX and MULTITRACK buses. In addition, its output is available at the Oscillator Output terminals on the rear of the console. This output can be switched between either line or microphone level for the test and alignment of external equipment.

SLATE commentary may be added to the tape by the electret-microphone built into the console meter panel or from a producer's external microphone.

A low-distortion slate identification tone (nominally 30 Hz, adjust-able) with carefully controlled envelope rise and fall times may be recorded onto a tape for ease of identification of the cuts on a track. The slate tone may be switched on from either of two locations, (e.g., producer and operator) and may be routed to any of the same buses as the test tone.

The producer and console microphones can talk back to any of two studios, two of the foldback lines or to an external location, such as a screener booth, 2-way, etc. The frequency responses of the talkback microphone-preamplifiers have been carefully shaped to favor speech frequencies.
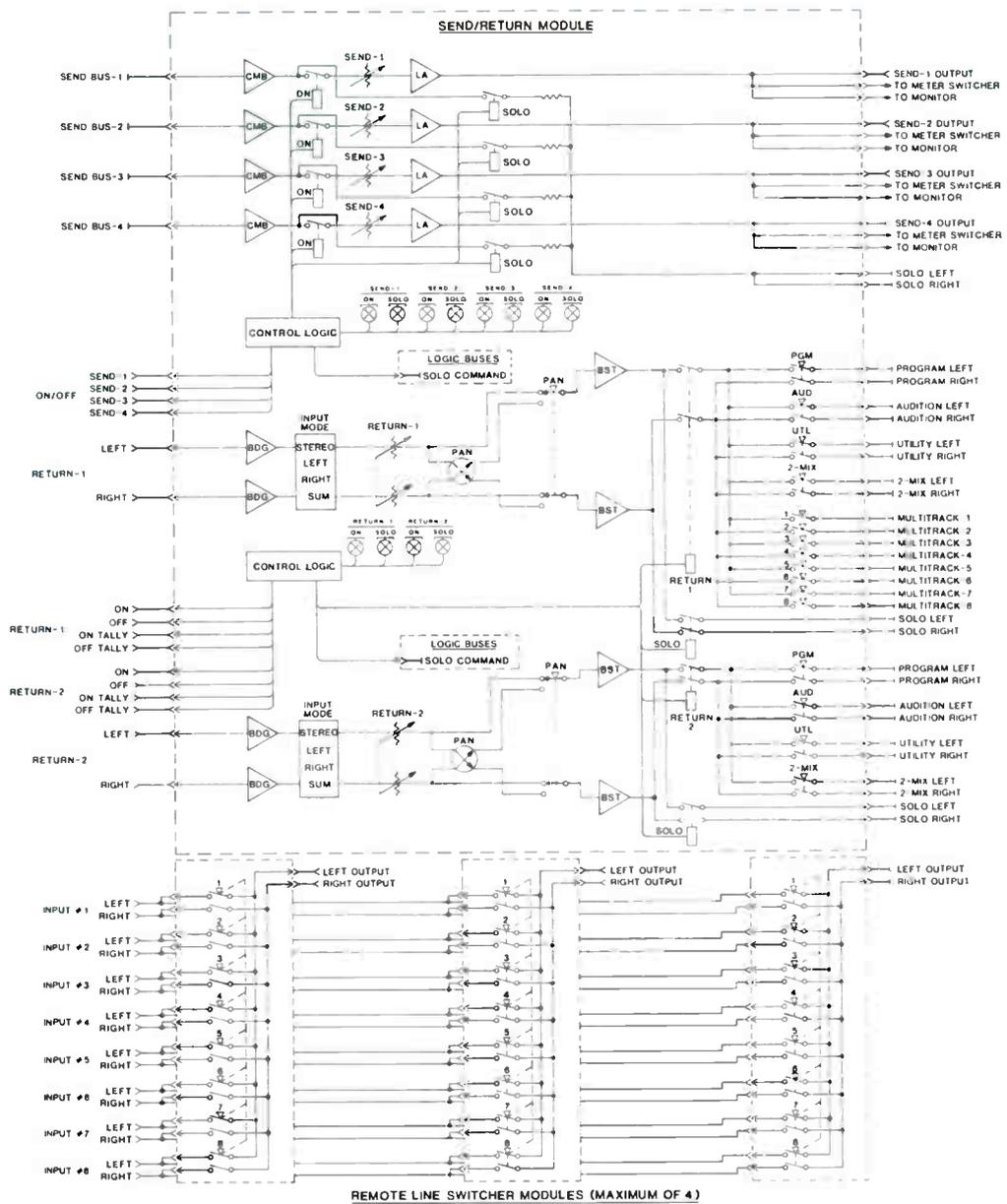
OUTPUT LINE SWITCHER MODULE

The Output Line Switcher Module selects PROGRAM, AUDITION or UTILITY buses for each of two lines out from the console.
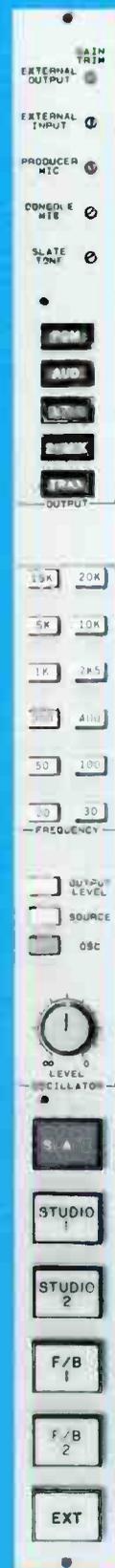
Slate/
Talkback/
Test
Module

Output
Line
Switcher
Module

SEND/RETURN MODULE

REMOTE LINE SWITCHER MODULES (MAXIMUM OF 4)

SEND/RETURN MODULE

The Send/Return Module co-houses the SEND amplifiers and the RETURN circuits

The SEND portion of the module contains the four mixing and output amplifiers for the effects/foldback channels. Each of these has a variable LEVEL control, ON/OFF and SOLO facilities.

The return section of the module contains two stereo echo return circuits with ON/OFF, SOLO, input MODE and PAN/balance controls. One of these returns may be assigned to all stereo buses and multi-tracks. The second return is equipped with assignments to the stereo buses only.

Logic circuitry is provided in both the SEND and the RETURN circuits for the remote control of the ON/OFF function of each module.

REMOTE LINE SELECTOR MODULE

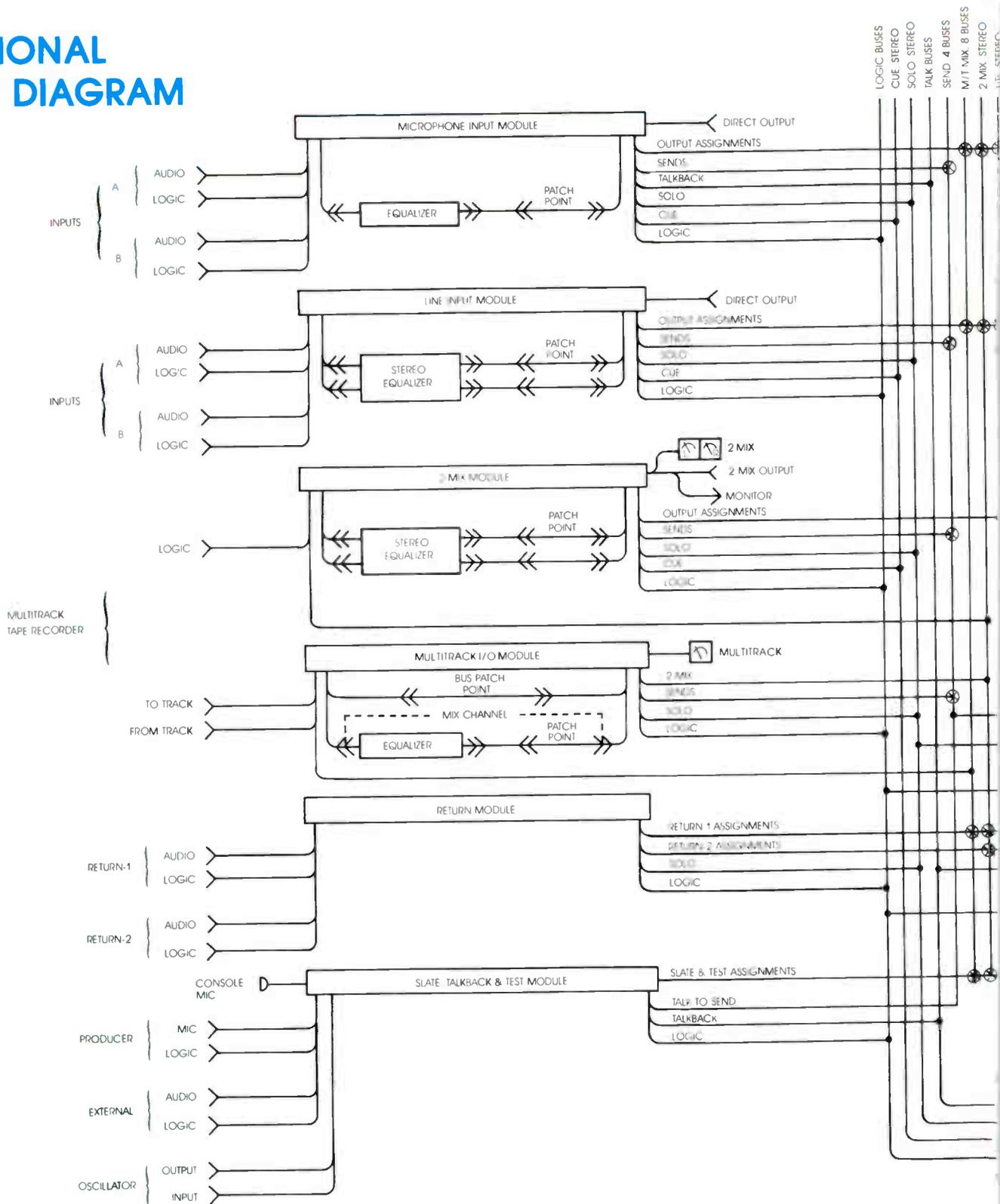The Remote Line Selector module provides a selection of eight stereo signals switched to one output. Up to four parallel-input selector modules may be installed in the ABX. The inputs and outputs for the modules are all brought out to the connector panel for ease of assignment. Typical applications include use as a line pre-selector ahead of input modules and tape recorders.

Send/
Return
Module

Remote
Line
Selector
Module

ABX
FUNCTIONAL
BLOCK DIAGRAM

LOGIC BUSES
CUE STEREO
SOLO STEREO
TALK BUSES
SEND 4 BUSES
M/T MIX 8 BUSES
2 MIX STEREO

MICROPHONE INPUT MODULE
DIRECT OUTPUT
OUTPUT ASSIGNMENTS
SENDS
TALKBACK
SOLO
CUE
LOGIC

INPUTS
A — AUDIO / LOGIC
B — AUDIO / LOGIC

EQUALIZER — PATCH POINT

LINE INPUT MODULE
DIRECT OUTPUT
OUTPUT ASSIGNMENTS
SENDS
SOLO
CUE
LOGIC

INPUTS
A — AUDIO / LOGIC
B — AUDIO / LOGIC

STEREO EQUALIZER — PATCH POINT

2 MIX MODULE
2 MIX
2 MIX OUTPUT
MONITOR
OUTPUT ASSIGNMENTS
SENDS
SOLO
CUE
LOGIC

LOGIC

STEREO EQUALIZER — PATCH POINT

MULTITRACK TAPE RECORDER

MULTITRACK I/O MODULE
MULTITRACK
BUS PATCH POINT
2 MIX
SENDS
SOLO
LOGIC

MIX CHANNEL

TO TRACK
FROM TRACK

EQUALIZER — PATCH POINT

RETURN MODULE
RETURN 1 ASSIGNMENTS
RETURN 2 ASSIGNMENTS
SOLO
LOGIC

RETURN-1 — AUDIO / LOGIC
RETURN-2 — AUDIO / LOGIC

SLATE TALKBACK & TEST MODULE
SLATE & TEST ASSIGNMENTS
TALK TO SEND
TALKBACK
LOGIC

CONSOLE MIC
PRODUCER — MIC / LOGIC
EXTERNAL — AUDIO / LOGIC
OSCILLATOR — OUTPUT / INPUT

EXTERNAL MONITOR INPUT

ABX 26

Block diagram — audio console routing

Left inputs: AUD STEREO, PGM STEREO

PGM MIX → PROGRAM AMP MODULE — PATCH POINTS — MONO PROGRAM
AUD MIX → AUDITION AMP MODULE — PATCH POINTS — MONO AUDITION
UTL MIX → UTILITY AMP MODULE — PATCH POINTS — MONO UTILITY
MONAURAL AMP MODULE — PATCH POINT
TELCO MIX MODULE
FROM TELCO INPUT MODULES 1 2 3 4
SEND MIX → SEND MODULE
SOLO
LOGIC
SEND 1 SEND 2 SEND 3 SEND 4
STUDIO MONITOR MODULE
TALK TO STUDIO
LOGIC
EXTERNAL INPUTS 1 2 3
METER SWITCH MODULE
SOLO CUE LOGIC
CONTROL ROOM MONITOR MODULE
TALK TO CONTROL
SOLO
CUE
LOGIC
PROGRAM
AUDITION
UTILITY
2 MIX
1 2 3 4

Right outputs:

PGM
MAIN, AUX 1, AUX 2, MONITOR — PROGRAM OUTPUTS

AUD
MAIN, AUX-1, AUX 2, MONITOR — AUDITION OUTPUTS

UTL
MAIN, AUX-1, AUX-2, MONITOR — UTILITY OUTPUTS

LINE SELECTOR
LINE 1, LINE 2 — LINE OUTPUTS

MONO
MAIN, AUX — MONAURAL OUTPUTS

TELCO MIX
TELCO MONITOR FIXED
TELCO MONITOR VARIABLE
1 2 3 4 — OUTPUTS TO TELCO HYBRIDS

1 2 3 4 — SEND OUTPUTS
SEND CONTROL LOGIC

VARIABLE OUTPUT
FIXED OUTPUT
HOST HEADPHONE
GUEST HEADPHONE
TALKBACK
LOGIC CONTROL & WARNING COMMAND — STUDIO MONITOR OUTPUTS

AUX

MAIN
CONSOLE HEADPHONE
"SECOND" HEADPHONE
CUE
TALKBACK
LOGIC CONTROL & WARNING COMMAND — CONTROL ROOM MONITOR OUTPUTS

CONTROL ROOM
MONITOR MODULE

Monitoring of PROGRAM, AUDITION, UTILITY, 2-MIX or any of four external signals is provided by the interlocking monitor selector. Level control is available for DIMming, which provides an adjustable amount of level reduction during TALKBACK. Headphone selection may be directed to receive MONITOR, CUE or be placed in the AUTOmatic mode.

The AUTOmatic headphone/monitor circuit in the ABX is unique to the industry and provides the following facility: Whenever a cue button is pressed, the console operator's headphones switch from the normal stereo monitor mode to one of two user assignable states. These are stereo cue or mono cue in one earphone and mono monitor in the other. The feed to a co-host or guest headphone is not interrupted. A mode switch allows normal stereophonic operation or the choice of left, right or the sum of left and right as monaural sources.

STUDIO MONITOR MODULE

The Studio Monitor is expressly designed for applications where a separate voice/announce booth or conference studio is used. The module allows selection of PROGRAM, AUDITION, UTILITY and 2-MIX sources, any of the four SEND buses and up to four external signals. The nominal output level is adjustable as is the amount of DIMming or reduction of level during TALKBACK. A fixed level output is available in those situations where the studio personnel are provided operation of their own level control. This allows studio personnel to set their own levels, however, having the advantage of the preset DIM function.

A muting override button is provided to enable TALKBACK to the studio even when the speakers are muted. This is used when doing off-air production voice work and the talent chooses not to use headphones. An output for talent headphones is provided with talkback and the preset DIM. Another output is provided for guest headphones which contains neither TALKBACK nor DIM.

Up to two Studio Monitor Modules may be utilized in each console.
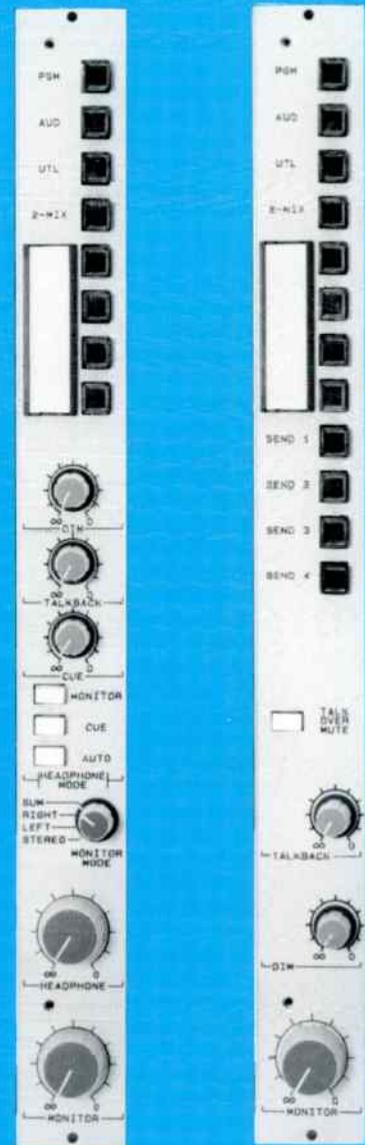
Control
Room
Monitor
Module

Studio
Monitor
Module
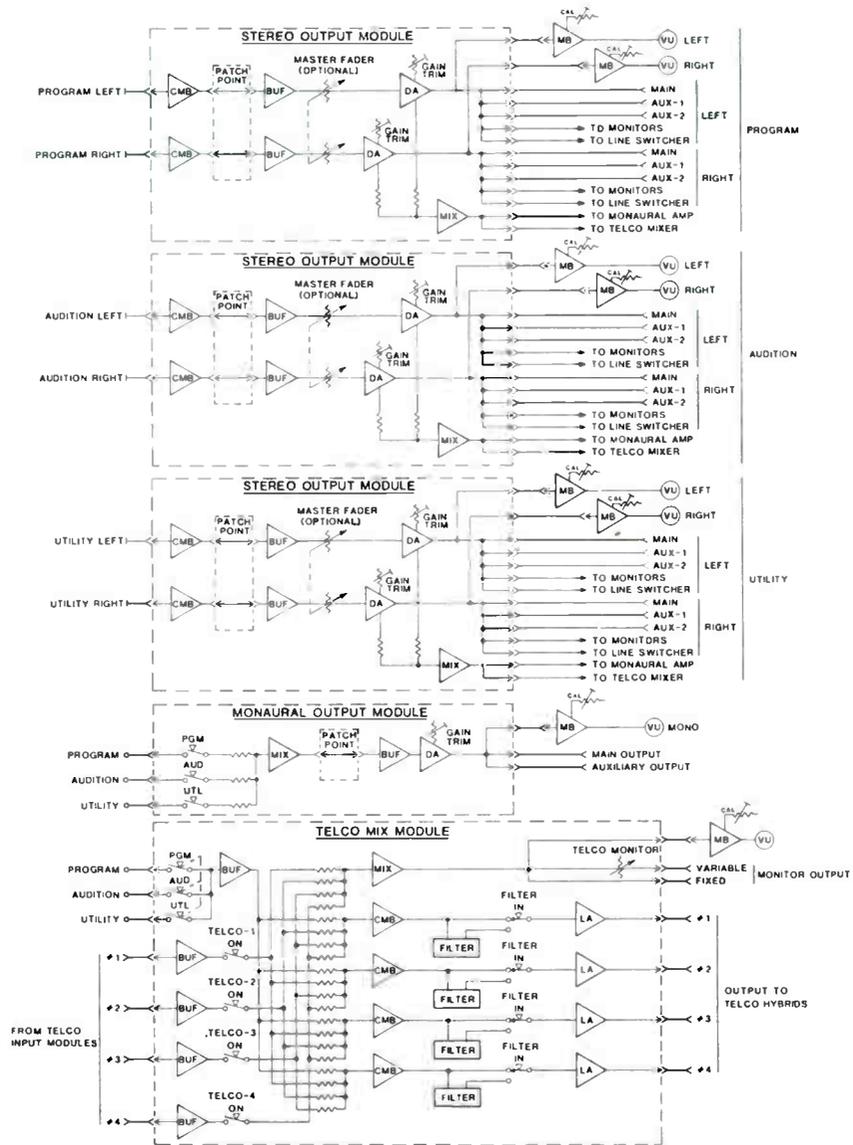
STEREO OUTPUT MODULE

The stereo output module contains the mixing and distribution amplifiers for a console line output. The console is supplied with three of these modules, one each for the PROGRAM, AUDITION and UTILITY buses. Each module supplies four stereo distribution outputs; each output is capable of supplying up to +28 dBm. Patch send and return points are available for the connection of external processing equipment and/or a patch field. The output is an active balanced design; output transformers are available as an option. A master fader may be installed as special option.

MONAURAL OUTPUT MODULE

The monaural output module provides a selection of the three main outputs. The module may select or mix any combination of the PROGRAM, AUDITION and UTILITY signals to derive a monaural output. A patch send and return point is available for the connection of external processing equipment and/or a patch field. The output is an active balanced design; an output transformer is available as an option.

Monaural
Output
Module

TELCO MIX MODULE

The telco mix module derives five unique mixes of the signals from up to four telephone callers and a selection of the PROGRAM, AUDITION and UTILITY buses.

The telephone signals, which are to be broadcast, are selected and controlled by the input modules connected to the external hybrid systems. The telco mix module receives the audio from the input modules and sums them. This sum signal is routed to the metering system and to the monitor output. This telephone mix-monitor output is very useful when talk show talent and/or guests prefer to not use headphones.

The module provides for the selection of the output bus which is to contain the "base-mix" to be fed back to all the callers so that they may hear what is transpiring, even before air time. The signal fed back to a given caller includes the selected bus plus all the other callers, except himself (mix-minus). The signals fed back to the callers may be passed through the on-board telephone bandpass filters for improved hybrid operation.

Stereo
Output
Module

Telco
Mix
Module

MONAURAL AND STEREO EQUALIZER MODULES

These modules allow alteration of the frequency response of an input channel, either for correction of deficiencies in the original signal or for creative reasons. The mono module provides tunable highpass and lowpass filters that correct many commonly encountered problems such as hum or hiss, and creation of effects such as a telephone-type response. The equalizer section, which may be switched in or out independently of the filter section, contains bass and treble equalizers which are each independently switchable from the shelving to the peaking modes. The midrange equalizer is tunable over a considerable range and is unique in that the Q of the boost or cut is very broad at modest levels of boost or cut and becomes higher in Q as boost and cut become greater. All of these have reciprocal boost and cut curves, although an internal switch allows the bass equalizer to always remain in the shelving mode during cut. The mono filter section contains separately-tunable sharp-cutoff highpass and lowpass filters. Special care has been taken to minimize noise when switching the equalization or filtering in or out. An overload sensor provides a front panel indication that the signal levels at key points within the module are nearing the clip point.

EQUALIZER/COMPRESSOR MODULE

The Equalizer/Compressor module is a monaural device containing two major blocks. The first block is a switch-insertable equalizer, which allows alteration of the frequency response of the audio channel, for deficiency correction or for creative reasons. The bass equalizer automatically switches from the shelving mode during cut to the peaking mode during boost. The treble equalizer is tunable in frequency; it is switchable from the peaking mode to the shelving mode. An overload sensor provides a front-panel indication that the signal levels at key points within the equalizer are nearing the clip point.

The second block is a switch-insertable high-performance compressor, which also contains a flexible expander and a de-esser, all of unusual sophistication. The compressor is not intended to be a "gain-rider," it is designed to produce an effect of signal smoothness and increased sound density. The compression and the expansion circuits both use advanced AGC-bus ripple-reduction techniques, which allow remarkably short recovery times. The de-esser senses and operates only upon the treble region. As a result of the techniques used, unwanted byproducts (both audible and measurable) have been held to uncommonly low levels. The LED gain-reduction display is unique: it indicates expansion in the dot mode and compression in the bar-graph mode. A separate LED monitors the degree of de-essing.

REMOTE CONTROL PANELS

Tape deck remote control panels are available for most professional reel-to-reel tape recorders. The engraved RWD, FWD, STOP, PLAY and RECord buttons are function color-coded to common industry practice and are supplied with tally lamps.

Cartridge deck remote control panels are available for TOMCAT, Micromax and ITC cartridge recorders. Engraved buttons for TERtiary tone, SECondary tone, STOP, START and RECord are provided. The buttons are supplied with the appropriate tally lamps.

The timer control panel provides illuminated START, STOP, RESET and HOLD buttons for the meter panel mounted DT-4 digital timer. An AUTO button couples the timer's reset and restart functions to the console timer reset command bus for the automatic up-time of events, (start with module on).

Monaural Equalizer Module

Stereo Equalizer Module

Equalizer/ Compressor Module

Tape Remote Control Panel

Cart Remote Control Panel

Timer Remote Control Panel

METER PANEL

The meter panel has four centrally positioned accessory cutouts for the convenient installation and view of clocks, timers and other customer specified panels. The meter panel assembly contains an audio and logic power distribution system which has several convenient unassigned ports for the powering of future optional and/or custom meter panel mounted equipment.

CLOCK

The TD-2 digital clock provides a functional and clear LED readout for time-of-day. The clock is set by using a small magnet tool, supplied, and Hall effect magnetic switches located just behind the bezel lens. This eliminates the possibility of unauthorized or accidental time set operation. The clock utilizes a quartz crystal time base and is constructed in a black aluminum case for electrostatic shielding. The beveled black anodyzed face panel compliments the style, size and color of the level display meters.

TIMER

The DT-4 digital clock is a style companion to the TD-2 digital clock and is also intended for use in the sometimes hostile broadcast RF environment. The timer has a five digit readout for minutes, seconds and tenth of seconds. A rear panel remote control connector provides START, STOP, DISPLAY HOLD, RESET and a strapping option to blank the tenth of second display in all operating modes except STOP and HOLD. The timer may be installed as a dedicated event start up-timer, a manual/automatic timer using the timer control panel shown, or two timers may be installed with one dedicated to up-timing and the other only manual using a control panel without the AUTOmatic mode button.

VU METERS

The VU meters used in the ABX console are manufactured expressly for Pacific Recorders & Engineering by Sifam Limited of England. These meters fully conform to the technical requirements of American National Standard C16.5-1954. The very important "Dynamic Characteristics" clause within this standard states that if a sinusoidal voltage between 35 and 10,000 Hz of such amplitude to give reference deflection under steady-state conditions is suddenly applied, the meter pointer shall reach 99% of reference deflection in 0.3 seconds ±10% and then shall overswing reference deflection by at least 1% and not more than 1.5%. It is the compliance with this characteristic which provides the ABX operator with an exceptionally easy to read level display. The meters are driven by bridging buffer amplifiers to isolate the meter rectifiers from the audio line and to provide ease of reference calibration. Special attention has been made to provide uniform scale illumination without "hot spots."

PPM METERS

Optional Peak Program Meters may be supplied to replace or augment the VU meters in the ABX. These meters are manufactured for Pacific Recorders & Engineering by Sifam Limited of England and fully conform to British Standard 4297:1968. This standard specifies the characteristics for the meter movement and the overall performance when connected to the required drive circuitry. The dynamic characteristics of a PPM system are radically different from a VU meter and deserve special understanding from operators unfamiliar with them. The rise time is measured with isolated, variable length, tone bursts of 5 kHz sinusoidal voltage whose steady-state value will result in a "0" reference reading. The burst times and scale indications are as follows: 100 ms = 0 dB, 10 ms = −2.5 dB, 5 ms = −4 dB, 1.5 ms = −9 dB. The fall-back time is defined as between 2.5 seconds and 3.2 seconds for the pointer to fall from +4 to −20 (white dot) after the removal of a steady-state 1 kHz sinusoidal voltage.
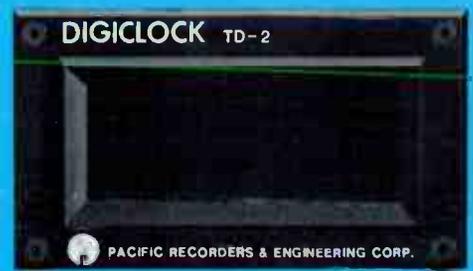
POWER SUPPLY

The Power Supply for the ABX console is a rugged assembly consisting of a set of three individual supplies, each of which is protected by its own individual magnetic circuit breaker, in addition to a master ON/OFF switch. The three supply power for the audio circuitry, the logic circuitry and the phantom supply for microphones. The power transformers each have a grounded interwinding electrostatic shield to minimize abnormal powerline transients from being coupled to the system electrostatically. Those transformers also feature a copper band to minimize stray radiated current. The various outputs are all fully regulated, although the individual plug-in modules in the console use local regulation to prevent inter-module coupling via the power supply. With the exception of the custom heavy-duty transformers, all active components are standard. The regulators are the latest of the adjustable-output integrated-circuit type, with internal current and temperature limiting, mounted on massive heatsinks. The filter capacitors are rated for high temperature operation, and are clamp-mounted and connected with screw terminals for simplified replacement. Test points are provided on the front panel for routine measurement purposes. Although over-designed for dependability, a second power supply assembly may be added with a power-supply coupler/switcher for complete redundancy.
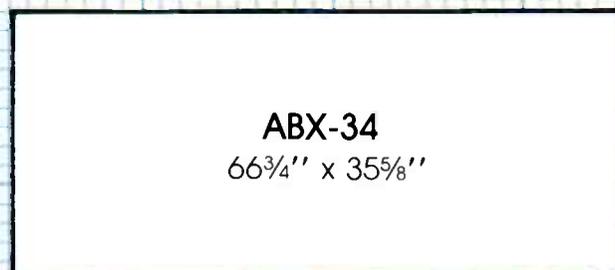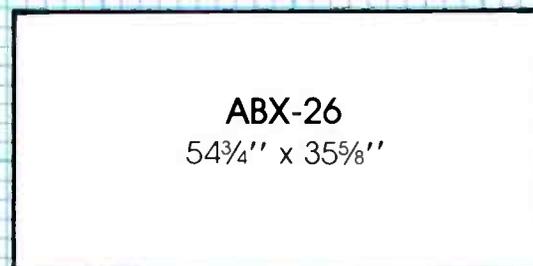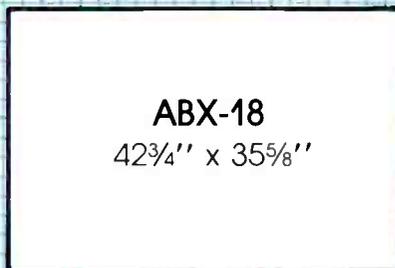
12¼''

7''

37½''

5''

44'' FOR ABX-18
56'' FOR ABX-26
68'' FOR ABX-34
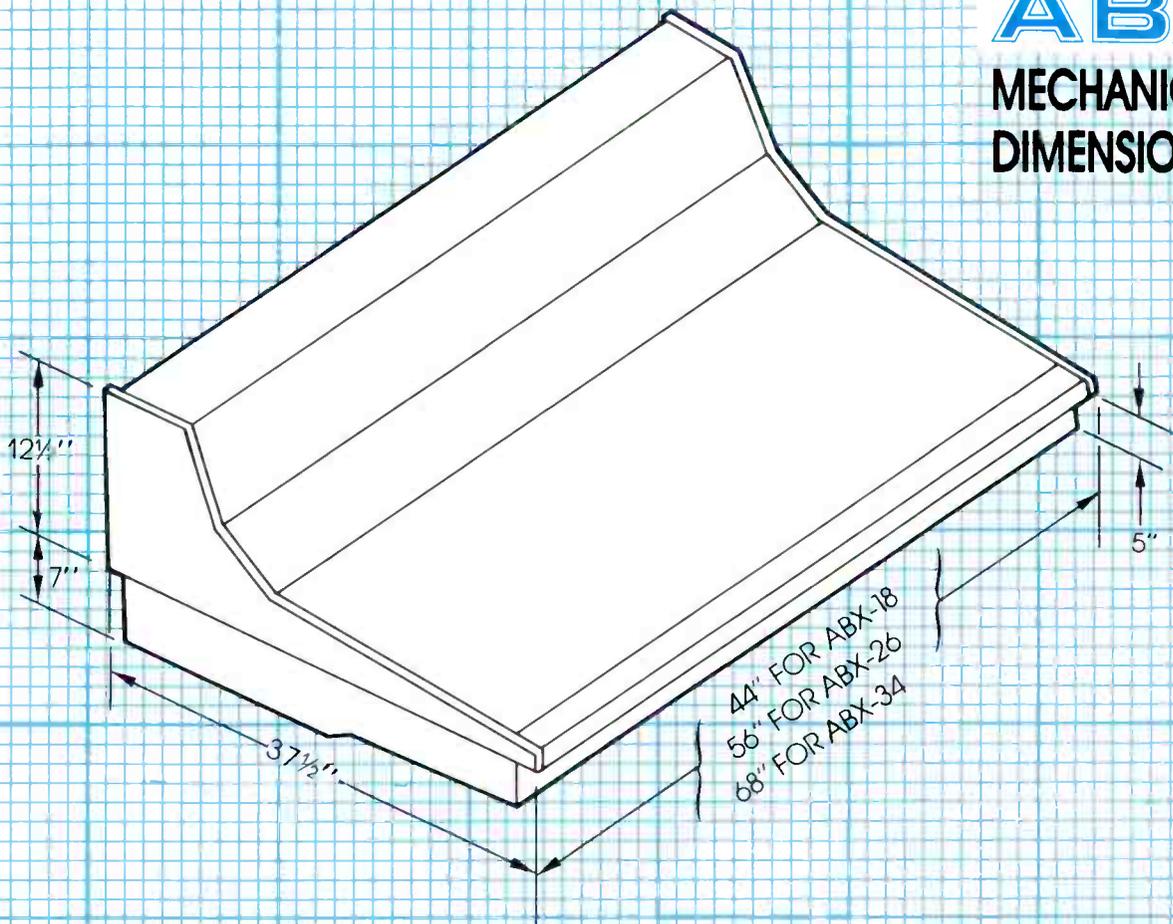
CUTOUT DIMENSIONS
(CUTOUTS ALLOW FOR ¼'' CLEARANCE)

ABX-26
54¾'' x 35⅝''

ABX-18
42¾'' x 35⅝''

ABX-34
66¾'' x 35⅝''

TURRETS/PANELS

Turret cabinets are available in three standard sizes offering 18, 24, and 30 inches of horizontal panel space. Custom sizes are available on special order.

Microphone Control/Status Panels

The first two panels are identical except for the addition of the TALKBACK function. TALKBACK to console overrides the microphone ON/OFF status, muting the mic channel if ON, and "talks" to the console via the TALKBACK circuits. COUGH mutes the ON status of the microphone but does not unmute the studio monitor speakers.

The third panel was specifically designed for the host of a talk/public affairs show and provides the individual and group control of up to five "GUEST" microphone inputs. Selected inputs are turned ON and OFF as a group; however, any individual input may be added to or deleted from those already ON.

Monitoring Panels

The monitor control panel is designed to be connected between the console studio monitor module output and the input of the studio monitor amplifier. The headphone control panel is designed to be connected at the output of a studio headphone amplifier. This panel is supplied with a separate, panel mounted, headphone jack which is usually installed in the apron of the studio furniture top.

The third panel is a self contained monitoring system and includes an input selector, balanced bridging input buffer amplifiers and an input for console TALKBACK to MONITOR and HEADPHONE. The select buffers have a separate output, pre-talkback, to feed "GUEST" headphone amplifiers. There are two other versions of this panel which are used where the system requirements dictate separate selectors for the monitor and headphone feeds. The first version has only the selector and monitor level control while the second version has the selector and headphone control with TALKBACK override. These panels require an external bipolar 16 volt power supply.

Timers and Clocks

The DT-3 panel mounted digital timer is complimentary to the timer used in the console meter panel. The START, STOP, HOLD and RESET buttons provide local timer control while the AUTO button is used to link the RESET/START function to the console reset timer bus. This assembly is also available without the AUTO button, or without any of the control buttons for applications requiring just a display remoted from the console.

A panel mounted version of the TD-1 digital time of day clock is also available.

Power Supplies

The 12-volt logic and lamp power supply was designed for large studio systems where the installation of several clocks, timers and other peripherals is simplified by the use of one master power supply.

The bipolar 16-volt supply is used to power the audio circuitry in the full function studio monitor selector panels.

ABX INTERFACES

The basic purpose of logic interface units is to functionally connect the control circuits of the ABX input module to the remote control circuitry of the source equipment (e.g., tape, cartridge, turntable).

The interfaces described below translate the console commands to and from the source equipment by use of relays and/or optical couplers. The use of interfaces provides complete electrical isolation of the control circuits and, therefore, mutual protection from ground loops and potential circuitry failure damage.

Five logic interfaces are available; each is supplied with mating connectors, pins and instructions. Prefabricated and tested control cables are available for the connection of interfaces to console and to most popular brands of source equipment.

CI-2 Interface

CI-2 Interface is designed for use with conventional tape cartridge decks. Each unit contains three sets of circuitry which can control three separate cartridge decks. Each control circuit provides:
- Tape READY status
- START command
- STOP command
- Audio RESET to off at end of cartridge

TCI-2 Interface

TCI-2 Interface is designed for use with the Pacific Recorders & Engineering TOMCAT tape cartridge recorders and players. Each unit contains three sets of circuitry which can control three separate decks. Each control circuit provides:
- Tape READY status
- START command
- Multiple machine sequencing
- Play, secondary, tertiary status output connector
- STOP command
- Audio RESET to off by machine command
- Remote console ON/OFF switch/lamp connector

TT-3 Interface

TT-3 Interface is designed for use with Technics models SP-10MK II and SP-15 servo-driven turntables. Each unit contains two sets of circuitry which can control two turntables. The interface converts the toggle control logic of the turntable to the two command logic of the ABX. Two turntable modification cables with instructions are supplied with this unit. Each control circuit provides:
- Turntable READY status
- START command
- STOP command
- Remote CUE switch/lamp connector

TI-2 Interface

TI-2 Interface is designed for use with reel-to-reel decks. The control outputs are from "C" relay contacts which allow connection to tape machines which utilize normally open or normally closed remote control switching. The unit provides the following:
- Tape READY status
- START command
- STOP command
- Audio OFF at exit of play
- Record mode anti-feedback MUTE
- Remote CUE switch/lamp connector

WL-2 Warning Light Interface

WL-2 Warning Light Interface is designed to translate the 12-volt DC studio and control room warning commands to 120-volt AC warning light systems. The interface consists of two DC controlled solid-state relays, each capable of supplying up to 5 amps into a non-inductive load.
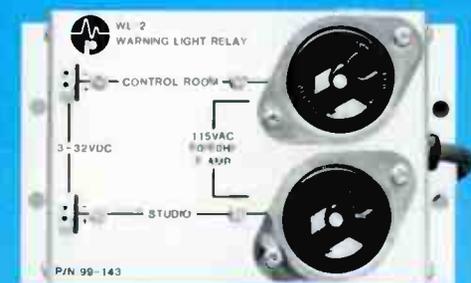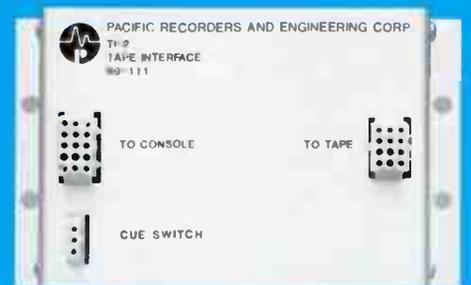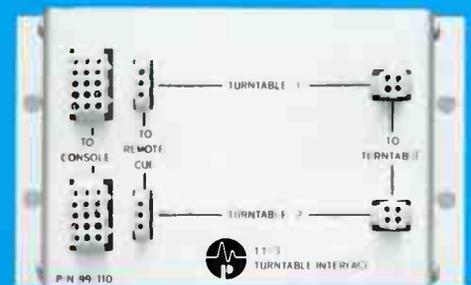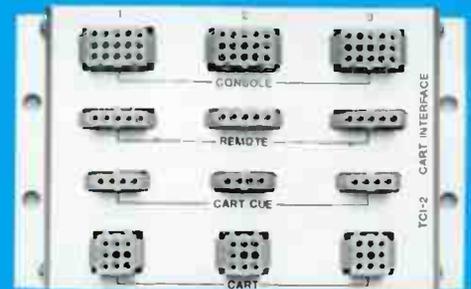
ABX PERFORMANCE SPECIFICATIONS

Microphone Input

Source Impedance	150 ohms
Input Impedance	1000 ohms minimum, balanced
Input Level Range	Adjustable from −60 dBu to −35 dBu
Input Headroom	Greater than 30 dB above nominal input

High Level Inputs

Source Impedance	600 ohms
Input Impedance	Greater than 40K ohms, balanced
Input Level Range	Adjustable from
Line Input	−12 dBu to +8 dBu
Multitrack Input	Adjustable from +4 dBu to +8 dBu
Reverb Return	Adjustable from −15 dBu to +8 dBu
Monitor Input	Nominal +4 dBu/+8 dBu
Patch Input	Nominal −10 dBu
Input Headroom	Greater than 30 dB above nominal input levels

Main Outputs

Load Impedance	600 ohms
Source Impedance	30 ohms
Nominal Output Level	+8 dBm, adjustable to +4 dBm
Maximum Output Level	+28 dBm, 600 ohm load
Line Amplifiers	
Two-mix Module	+26 dBm, 600 ohm load
Multitrack Module	+26 dBm, 600 ohm load
Send Module	+26 dBm, 600 ohm load

Monitor Outputs

Main Outputs

Load Impedance	600 ohms or greater
Source Impedance	30 ohms, unbalanced
Output Level	0 dBu nominal, +20 dBu maximum

Headphone Outputs

Load Impedance	45 ohms or greater
Source Impedance	Less than 4 ohms
Output Level	0 dBu nominal, +20 dBu maximum

Frequency Response

Microphone Input to Program Output	+0 dB, −0.9 dB, 20 Hz to 20 kHz
Line Input to Program Output	+0 dB, −0.8 dB, 20 Hz to 20 kHz

Noise

Microphone Input Amplifier	−127 dBu RMS equivalent input noise, 150 ohm source, 20 kHz bandwidth
Line Input Amplifier	−88 dBu equivalent input noise, 600 ohm source, 20 kHz bandwidth
Output noise with one microphone channel ON fader at −15 dB, input sensitivity at −50 dBu	76 dB below output, reference +8 dB, 150 ohm source, 20 kHz bandwidth
Output noise with one line channel ON, fader at −15 dB, input sensitivity at +8 dBu	80 dB below output, reference +8 dB 600 ohm source, 20 kHz bandwidth
Output noise with no input channels ON	82 dB below output, reference +8 dB, 20 kHz bandwidth

Distortion, T.H.D.

Microphone Input to Program Output	Less than 0.02%, 20 Hz to 20 kHz, −50 dBu input, +8 dBm output into 600 ohm load, 80 kHz meter bandwidth; less than 0.01T at 1 kHz, +28 dBm output
Line Input to Program Output	Less than 0.008%, 20 Hz to 20 kHz, +8 dBu, input, +8 dBm output into 600 ohm load, 80 kHz meter bandwidth; less than 0.01% at 1 kHz, +28 dBm output

Distortion, I.M.

Microphone Input to Program Output	Less than 0.008%, −50 dBu input, +8 dBm output into 600 ohm load; less than 0.01% at +28 dBm into 600 ohm load
Line Input to Program Output	Less than 0.005%, +8 dBm input, +8 dBm output into 600 ohm load; less than 0.01% at +28 dBm into 600 ohm load

Crosstalk

Interchannel Crosstalk	Less than −85 dB at 1 kHz Less than −75 dB at 20 kHz

Notes:

1.) These specifications are for the basic signal paths, per channel, with either or both channels of a stereo pair operating and with 600 ohm loads connected to the program outputs.

2.) 0 dBu corresponds to an amlitude of 0.775 volts RMS regardless of the impedance of the circuit. It is the **same voltage value** as 0 dBm measured in a 600 ohm circuit. This enables convenient level measurement with meters calibrated for 600 ohm circuits.

3.) Noise specifications are for a 26-input console (ABX-26); larger consoles will have slightly reduced signal-to-noise ratios due to increased summing amplifier gain. Noise specifications are based upon a 20 kHz bandwidth; the use of a meter with a 30 kHz bandwidth will result in a noise measurement increase of approximately 1.7 dB.

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