AirWave™

Affordability without compromise.

(a) You have less than $10,000 to spend on a console.

(b) You want the best that money can buy.

This used to be a dilemma. Now it's an easy choice. (c) All of the above.

Introducing AirWave™ from Pacific Research & Engineering. An on-air broadcast console which offers the no-nonsense, no-compromise quality that is our trademark. At a value that fits budgets even as low as $7,000.

How did we do it? It wasn't easy. (Just ask our engineers.) We started with a clean sheet, chose the appropriate features for today's programming, and borrowed heavily from our years of experience.

But we didn't cut corners.

We've retained many of the features you find in our high-end X-class and Mixer-class consoles. Features that competitive consoles don't have. Like *all* electronic audio switching. An exclusive automatic telephone mix system. Gate-array logic control with built-in machine interface. And a UL-registered, rack-mounted, convection-cooled power supply.

The result is a new standard of function and performance in lower cost consoles. It's a design we're proud to put the PR&E name on. And confident to compare feature-for-feature against any other console in its category.

AirWave on-air console *is available in 20-input mainframe (left) and 12-input mainframe (center spread).*

High-Accuracy Clock *Digital time-of-day clock is driven by a temperature-controlled crystal oscillator and may also be slaved to ESE-standard time code.*

Assignable Reset/Restart *Timer is equipped with assignable automatic module reset/restart.*

Centered Layout *Input modules and meter panel displays are centered in the mainframe, so they're right in front of the operator.*

Additional Module Capacity *Blank panels are provided for two 1.5" wide accessory module positions.*

Mic Preamp Module *Accessible via a removable security cover, the module houses five high-performance, transformerless, balanced input and output preamplifiers, each with selectable phantom power.*

Rugged Input Faders *Studio-grade, shielded stereo conductive plastic faders will outlast channel mixers on competitive consoles.*

Steel Mainframe *Provides more structural integrity than hybrid wood and metal.*

Full RFI Shielding *All-steel construction completely encloses the electronics, providing additional shielding from RFI.*

Fault-Tolerant Logic *Input selection and assignment status is maintained during short-term power disruptions.*

Continuous-Mounted Motherboard *The motherboard assembly is continuous-mounted on a formed steel channel, which provides superior support and shielding.*

Quick-release latches allow instant tilt-up access with no fasteners to remove. Release pins built into the hinges even let you easily remove the meter panel completely during installation.
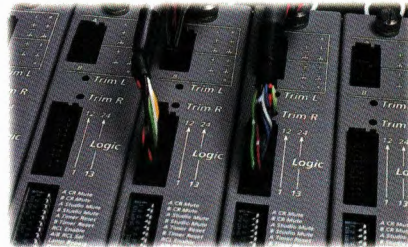
Input module logic set-up switches and gain trim alignment controls are easily accessible under the tilt-up meter panel so you don't have to move modules onto an extender during set-up.
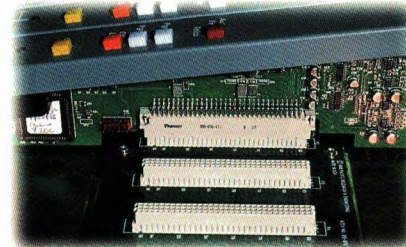
Modules mate to the motherboard with 96-pin gold-plated Euroconnectors, which provide maximum redundancy and low impedance ground and power distribution.
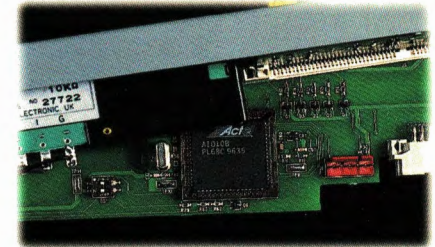
Proprietary gate array logic generates both module control and remote control of connected equipment.

Convection-Cooled Power *Power supply is convection cooled, and the rack-mount chassis does not require extra rack space above and below for flow-through ventilation.*

UL Approved and CUL Registered *Power supply has been tested and certified to UL-laboratory standards. AirWave also carries the CE Mark for acceptance in the EEC.*

Stereo Program Output Module *Distribution amplifiers provide both main and auxiliary outputs for each bus. Main outputs are metered and monitored at the output terminals (not upstream), so you can be sure of console output signal integrity.*

Combined Control Room & Studio Monitor Module *This module has integrated talkback mic and outputs for control room and studio co-host and guest headphone systems.*

Remote Line Selector Module *Remote Line Selector module provides 7 stereo inputs to 2 stereo outputs under the electronic control of two 7-station button arrays. Additional RLS modules can be plugged into the mainframe for recorder input selection, monitor input expansion, etc.*

Telco Input/Output Module (Optional) *Telco module offers automatic Off-line switching, split-mixes for simultaneous recording, and selectable On/Off-line operating modes.*

Long-Life Switches *All button switches are sealed and are selected for extended operating life.*

Recorder Control Module (Optional) *The Recorder Control module provides manual control for reel, DAT and cassette tape decks and can combine start and stop commands from an input module into a single cable to the machine.*

Illuminated Sifam® level meters feature easy-to-read custom PR&E scales calibrated in Volume Units.
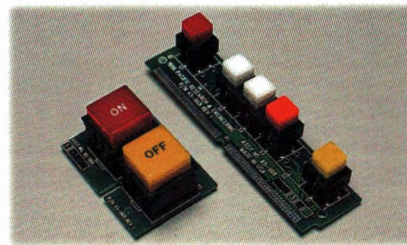
Sealed, illuminated buttons are designed so you can remove a switch assembly without unsoldering, for ease of maintenance.

The digital timer displays the tenth-of-second digit in the Hold and Stop modes, but blanks it when time is running to minimize distraction to the board operator.
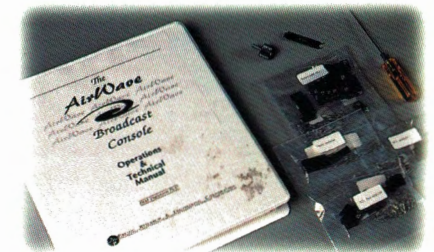
Each AirWave console comes complete with a detailed manual, selected spare parts and special tools.

Input Module

Fool-Proof Connectors *Individual connectors in each connector "group" have unique configurations so it's virtually impossible to accidentally plug an audio signal into a logic connector and damage your circuitry.*

Segregated Signals *Each input, output and logic connection has its own connector, so you won't disable other signals and functions by removing one connector.*

Logic Options

A-Input Logic
Remote input/output enable (A or B exclusive)
Ready lamp bypass
Timer reset/restart
Mute control room
Mute studio
Start/stop commands
Remote On/Off with tally

B-Input Logic
Remote input/output enable (A or B exclusive)
Ready lamp bypass
Timer reset/restart
Mute control room
Mute studio
Start/stop commands
Remote On/Off with tally

Features
Two switchable stereo inputs
Cue (PFL)
Shielded conductive plastic fader
Assignment buttons for Program-1, Program-2 and Telco Off-line

Assignable A/B input control logic.

Automatic timer reset is assignable to either A or B input.

Machine control logic is DC isolated from console ground and power, preventing logic-created ground loops.

Telco Off-line Mix assignment lets you send any combination of selected mic and line inputs to the caller Off-line.

Telco Input/ Output Module

Features
Hybrid input
Output to hybrid
Two-channel, split-channel outputs to recorder
Cue (PFL)
Conductive plastic fader
Assignment/Selection Program-1 or Program-2 (exclusive)
Telco modes On-line, Off-line or Auto (exclusive)

Automatically sends the caller the correct mix, Program-1 or Program-2 or Off-line, as determined by the bus assignment, Telco mode selection and On/Off status of the module.

Split caller/caller foldback mixes for simultaneous two-channel recording without tying up another output bus.

Selectable On-line, Off-line and Auto modes are ideal for talk show, call-in and contest formats.

Telco Modes

On-line mode
Sends the assigned/selected bus, Program-1 or Program-2, to the caller.

Off-line mode
Sends the Off-line bus to the caller.

Auto mode
Automatically switches between the Off-line and On-line (Program-1 or Program-2) feeds to the caller as determined by the On/Off status of the module.

Control Room & Studio Monitor Module

Features
Dual selectors for Program-1, Program-2, Telco Mix and 4 externally-connected signals.

Buffered "direct output" of each selector feeds non-host, guest headphone circuits.

Selection of "Telco Mix" by either selector mutes the respective site's loudspeaker if a microphone source from that site is assigned to the Telco Off-line bus, preventing feedback.

Studio Section

The Studio Section provides level control of the studio monitor speakers, a built-in electret talk-back microphone and a talk back to studio button.

Output	Description
Main	Studio monitor
Headphone	Studio host headphone
Direct	Guest headphones
Warning	Circuit closure and logic command

Control Room Section

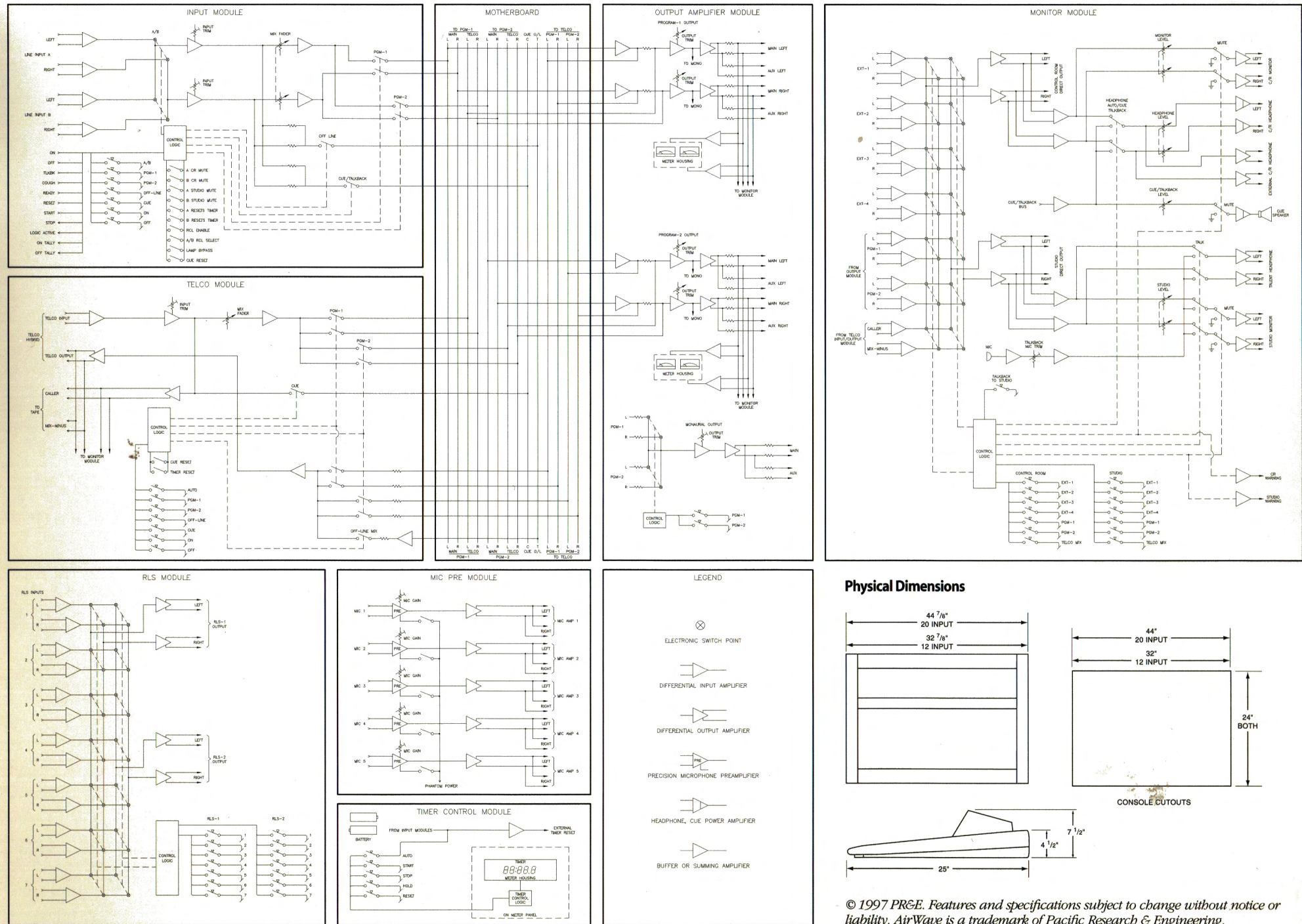*The Control Room Section provides level control of the monitor speakers, operator's headphones and built-in cue speaker.*

Output	Description
Main	Control Room monitor
Headphone	Console operator's head phone jack
Direct	Co-host and/or guest headphones
Cue	Meter panel mounted cue speaker
Warning	Circuit closure and logic command

Block Diagram

INPUT MODULE

MOTHERBOARD

OUTPUT AMPLIFIER MODULE

MONITOR MODULE

TELCO MODULE

RLS MODULE

MIC PRE MODULE

LEGEND

⊗ ELECTRONIC SWITCH POINT

DIFFERENTIAL INPUT AMPLIFIER

DIFFERENTIAL OUTPUT AMPLIFIER

PRECISION MICROPHONE PREAMPLIFIER

HEADPHONE, CUE POWER AMPLIFIER

BUFFER OR SUMMING AMPLIFIER

TIMER CONTROL MODULE

Physical Dimensions

44 7/8"
20 INPUT
32 7/8"
12 INPUT

44"
20 INPUT
32"
12 INPUT

24" BOTH

CONSOLE CUTOUTS

7 1/2"
4 1/2"
25"

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Specifications

Microphone Inputs

Source impedance	150 ohms
Input impedance	5 K ohms minimum, balanced
Input level range	Adjustable from -70 dBu to -30 dBu
Input headroom	Greater than 20 dB above nominal input

High Level Inputs

Source impedance	600 ohms or less
Input impedance	Greater than 20 K ohms, balanced
Input level range:	
Line input module	Adjustable from -10 dBu to +4 dBu
Monitor	+4 dBu
Input Headroom	Greater than 22 dB above nominal input

Main Outputs

Load impedance	600 ohms minimum
Output source impedance	80 ohms, balanced
Nominal output levels:	
Program & Monaural	+4 dBu
Telephone mix-minus	+4 dBu
Tape mix-minus	+4 dBu
Maximum output levels:	
Program & monaural	+26 dBm, 600 ohm load
Telephone mix-minus	+26 dBm, 600 ohm load
Tape mix-minus	+26 dBm, 600 ohm load

Monitor Outputs

Main outputs:	
Load impedance	2.5 K ohms or greater
Source impedance	400 ohms, balanced
Output level	+4 dBu nominal, +29 dBu maximum
Headphone outputs:	
Load impedance	8 ohms or greater
Output level	0 dBu nominal
External headphone outputs:	
Load impedance	600 ohms or greater
Source impedance	400 ohms, balanced
Output level	+4 dBu nominal, +22 dBu maximum

Frequency Response

Mic input to program output	+0, -0.5 dB, from 20 Hz to 20 kHz
Line input to program output	+0, -0.5 dB, from 20 Hz to 20 kHz

Noise

Mic input amplifier	-127 dBu equivalent input noise, 150 ohm source, 20 kHz bandwidth
Line input amplifier	-95 dBu equivalent input noise, 600 ohm source, 20 kHz bandwidth
Output noise with mic channel ON, fader at unity, input line sensitivity at -50 dBu	75 dB below output, reference +4 dBu, 150 ohm source, 20 kHz bandwidth
Output noise with one line, channel ON, fader at unity, input sensitivity at +4 dBu	94 dB below output, reference +4 dBu, 150 ohm source, 20 kHz bandwidth
Output noise with no input channels ON	102 dB below output, reference +4 dBu, 20 kHz bandwidth

Distortion, T.H.D.N.

Mic input to program output	Less than 0.01%, 20 Hz to 20 kHz, -38 dBu input, +18 dBu output into 600 ohm load, 80 kHz meter bandwidth
Line input to program output	Less than 0.005%, 20 Hz to 20 kHz, -38 dBu input, +18 dBu output into 600 ohm load, 80 kHz meter bandwidth Less than 0.003% at 1 kHz

Distortion, I.M.D.N.

Mic input to program output	Less than 0.02%, 20 Hz to 20 kHz, -38 dBu input, +18 dBu output into 600 ohm load
Line input to program output	Less than 0.003%, 20 Hz to 20 kHz, -38 dBu input, +18 dBu output into 600 ohm load

Bus Crosstalk

Program-1 to program-2	Less than -80 dB at 16 kHz
Program-2 to program-1	Less than -80 dB at 16 kHz

Stereo Separation

Program outputs	Less than -55 dB at 16 kHz

Power Requirements

AirWave-12	200 watts @ 117 VAC, +10%, 60 Hz
AirWave-20	340 watts @ 117 VAC, +10%, 60 Hz

Notes

1) These specifications are for the basic signal paths, per channel, with 600 ohm loads connected to the program outputs.

2) 0 dBu corresponds to an amplitude 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 fully-equipped AirWave-20. Noise specifications are based upon a 20 kHz measurement bandwidth; the use of a meter with 30 kHz bandwidth will result in a noise measurement increase of approximately 1.7 dB.