CAUTION! *Before installing any Ivie Technologies Audio Net™ product on the network, make certain that each individual unit has been programmed with its own unique address. See the section of this manual titled "Set Unit Address" on page 9.*

Introduction

The Ivie Technologies 728PW and 730PW Equalizers are 28 band, 1/3 octave equalizers. The 730PW-1 houses a single EQ in a single rack high space, while the 728PW and 730PW-2 house two equalizers in that same single rack high space.. All functions of the equalizers are controllable only via a computer connected to them. Ivie Audio Net™ software and an Ivie 78-232A are required for connection between the computer and equalizer. The 78-232A is an RS-232 to RS-485 adaptor/convertor. This approach provides for tamper resistant operation and can help prevent costly call-backs to equalize the system again.

Audio Connections

The 728PW and 730PW Equalizes are very easy to install in the audio circuit. Please refer to the inside of the rear cover of this manual for wiring information.

Computer System Requirements

The ANSW software is designed to run on an IBM compatible computer that runs Windows™. Although the 728/730PW equalizers and the 802A mixer sections of the ANSW software can be operated without a mouse, a mouse or similar pointing device is highly recommended for use with this program. A serial port is required for the 78-232A adaptor that connects the computer to the units on the Audio Net™ network. *An Ivie Technologies model 78-232A is required to connect the computer to the equalizer.*

System Requirement Summary

IBM PC® or compatible with:
Windows
Serial port (for connection to 78-232A)
Mouse
78-232A Audio Net™ adaptor

Please note: The computer used must have either one serial port and one mouse port, or two serial ports - one for the mouse and one for the mixer connection.

Manual Conventions

Throughout this manual we will be using the expression <CR> (which stands for carriage return). Whenever the symbol <CR> appears, it means, depending on the computer used, that either the "RETURN," "ENTER" or "Carriage Return" key should be pressed.

Bold type is used to indicate commands that are to be entered into the host computer via the keyboard. This bold type will appear along with instructions to type the commands into the computer. Pull down menu items will also appear in bold type.

Software Installation

1) Insert the ANSW software disk into your disk drive.

2) From the **PROGRAM MANAGER** window in Windows, pull down the **FILE** menu and select **RUN**. A RUN window will appear.

3) At the flashing cursor, under the "Command line:" prompt type in either **A:setup <CR>** or **B:setup <CR>** depending upon which drive you are using.

The setup program will create a directory on the hard disk titled "AudioNet" unless given another directory to use. Once installation is complete, the Ivie Icon will appear on the screen. Double clicking on the Ivie Icon will start the Audio Net™ software.

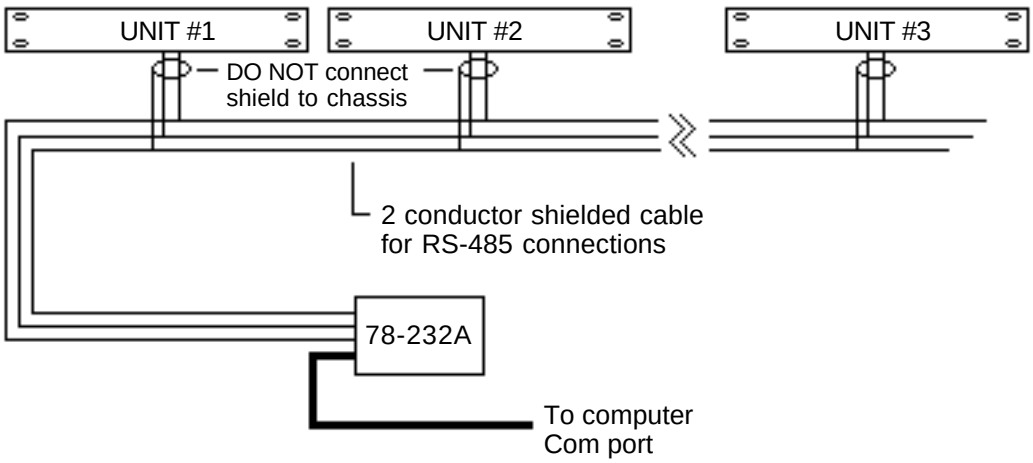
Computer to Equalizer Connections

Audio Net™ Connections

Before any equalizer can be controlled, it must be connected to a computer via the Ivie 78-232A adaptor. *Please note: only the "A" or later version of the 78-232 will work with the equalizer.* This adaptor connects between the computer's RS-232 serial communications port (Com port) and the Audio Net™ connector on the front panel of the equalizer. The Audio Net™ connection can also be made at the Audio Net™ plus and minus terminals located on the rear of the equalizer.

Messages on the Audio Net™ network occur over a multi-dropped, RS-485, Half Duplex network. The network operates synchronously at 9600 Baud, 8 Bit, No Parity with 1 Stop bit. The illustration on the following page shows a typical Audio Net™ system configuration.

RS-485 has many advantages over RS-232. RS-485 is designed for use in systems that require long runs of cable between the computer and other units on the network. Its multi-drop ability allows up to 32 units to be paralleled off one RS-485 driver. Additional units can be paralleled with the addition of another RS-485 driver. If the system will have greater than 32 units on the network please contact the factory for additional information.



Typical Audio Net™ Configuration

Figure 1

78-232A *(Audio Net™ RS-232 to RS-485 Adaptor)*

Connect the 78-232A to the computer using the supplied adaptors as required. The computer end of the 78-232A is a DB9 female connector. This is a 9 pin "D" female connector. If the Com Port on the host computer has a nine pin male connector, then use the 9 pin male to female cable to connect it to the mixer. If the computer has a 25 pin connector, then use the supplied adaptor. Plug the stereo plug end of the 78-232A into the Audio Net™ connector located on the front panel of the equalizer.

Start - Up Options *(Select Initial Unit Type and How Many Units to Poll)*

The Audio Net™ software has several start up options. These options allow selection of whether the 730 equalizer, or the 802A mixer, (or in the future the 784/884) control screen is first displayed. The default display is the equalizer.

The number of units that are polled at start up can be assigned. The default poll is 8 units. It does not make sense to waste time to poll for 50 units when there are only 4 units in the installation. The network is polled whenever the software is first started or upon command from the operator. The polling process locates and identifies all units on the network so that they may be controlled by the software.

These options are selected in the “Command Line” of the program. To edit the “Command Line” click once on the Audio Net ™ Icon so that it is highlighted. Then, under the Program Manager window, pull down **File** menu and select **Properties**. The “Program Item Properties” will be displayed. The Command Line should display something like: C:\IVIE\AUDIONET. Edit this line in order to set the desired options. The following examples should explain what is required.

To display the equalizer screen first, and to poll 8 units, don't change a thing. Leave it as : **C:\IVIE\AUDIONET** (remember that the EQ and a poll of 8 is the default)

To display the equalizer first, and to poll 20 units type: **C:\IVIE\AUDIONET 20** (remember the EQ is the default but we have increased the poll to 20 units.)

To display the 802A mixer first, with a poll of 8 units type: **C:\IVIE\AUDIONET MIX**(remember the default poll is 8 units.)

To display the 802A mixer first, with a poll of 20 units type: **C:\IVIE\AUDIONET 20 MIX**

The rule is that the poll number is first followed by the EQ or MIX commands. After the Command Line has been edited, click on the "OK" button.

Choose the Proper Com Port *(Selecting Serial Com Port 1 or 2)*

The ANSW program will support serial communications ports one and two. The default port is Com port one. The program may be instructed to use Com port two by using a command line parameter.

This option is selected in the "Command Line" of the program. To edit the "Command Line" click once on the Audio Net ™ Icon so that it is highlighted. Then, under the Program Manager window, pull down **File** menu and select **Properties**. The "Program Item Properties" will be displayed. The Command Line should display something like: **C:\IVIE\AUDIONET**. To use Com port two, edit this line so that it reads: **C:\IVIE\AUDIONET Com2**, then click on the "OK" button.

If other command line options are being used , the command line could look like this: **C:\IVIE\AUDIONET 20 MIX COM2** This would mean: Start the program and poll for 20 units then display the 802A mixer screen and route all communications over the Serial com port 2.

Starting the ANSW Program

Double click on the Ivie Technologies Audio Net™ Icon.

Operating the Program *(Running the Program from Windows™)*

Start-up and Automatic Polling

The program will run and display the Ivie Technologies Audio Net™ screen while the computer is busy loading the rest of the program. Once the program is completely loaded, the POLL window will appear. The program will poll all addresses up to the number 8 unless a different poll number has been set in the Command line (see Start-up Options on page 3 for more information).

After the poll has been completed the poll window will contain a listing of all units found on the network during the poll. Click on the drop-down list box to see a listing of the units. When a unit is selected, the poll window will display the name of the unit, the unit type, and the address of the unit.

Selecting the Equalizer Control Screen

After polling has been completed, an individual unit may then be controlled. Close the poll window by pressing the **Esc**. key, or by clicking anywhere off the poll window. A control screen will be displayed. If the equalizer control screen is not displayed, pull down the View menu and select **730Equalizer**. The equalizer control screen will be displayed. *The **730Equalizer** screen works for either the 728PW or the 730PW equalizer.*

Selecting Which Equalizer to Control

All equalizers on the network can be controlled from the **730Equalizer** control screen. To select which equalizer will be controlled, activate the pull-down list box located near the center top of the screen directly under the words "Controlling Equalizer". To activate the pull-down list click on the down arrow on the right side of box. A list of all equalizers on the network will be displayed. Select the equalizer to be controlled by clicking on the name of the desired equalizer. The screen will then display the current settings of the selected equalizer.

Setting the Low and High Cut Filters

All Ivie equalizers have 12 dB/octave low and high cut filters. Each of these two filters has eight cut-off frequencies. Select the filter to be controlled by either clicking on it with the mouse or by using the **TAB** key. Then click on the down arrow on the right side of the box. The available cut-off frequencies will be displayed. Drag to the desired cut-off frequency to select it. If a mouse is not being used, use the up and down cursor keys to select the desired filter frequency.

Setting the Individual 1/3 Octave Filters

Each individual 1/3 octave filter is adjustable over a range of ±10 dB in 0.5 dB increments. Select which filter level is to be adjusted by either clicking on the filter control, or by using the **TAB** key (or use the left/right cursor keys) to highlight the filter control. Note that the box above each control displays that filter's level setting. This level box will be highlighted in yellow when its associated filter is selected. The filter frequency label directly below each filter will be highlighted in red when its associated control is selected.

The filter level is adjusted by using the mouse to click on the up/down arrows on the control. The mouse can also adjust the level by clicking and holding the left mouse button on the slider, and then moving the control. The up/down cursor keys can also be used to adjust the levels of the control. The quickest adjustments can be made using the left/right cursor keys to select the filter and the up/down

cursor keys to adjust the filter level.

Output Gain Control

The output gain control has a range of zero to plus 12 dB. The output gain control is selected by either clicking on it with the mouse or by using the **TAB** key. The output gain level is adjusted by using the mouse to click on the up/down arrows on the control. The up/down cursor keys can also be used to adjust the levels of the control.

Presets *(730PW Equalizers Only. The 728PW has no Presets)*

CAUTION! *Changing from one preset to another without saving the current preset will cause any changes made to that preset to be lost. To SAVE the current preset, pull down the Preset menu and select "Save Current Preset.*"

The 730PW Equalizer has 9 presets (0-8), while the 728PW Equalizer has no presets. Presets can be activated either via the control screen or via a hardware contact closure on the rear panel of the equalizer. Each preset stores all parameters of the equalizer, i.e. all 28 1/3 octave filter settings, the output gain level, the low and high cut filters.

To activate a preset via a contact closure, simply connect the desired preset connector to preset common as shown below:

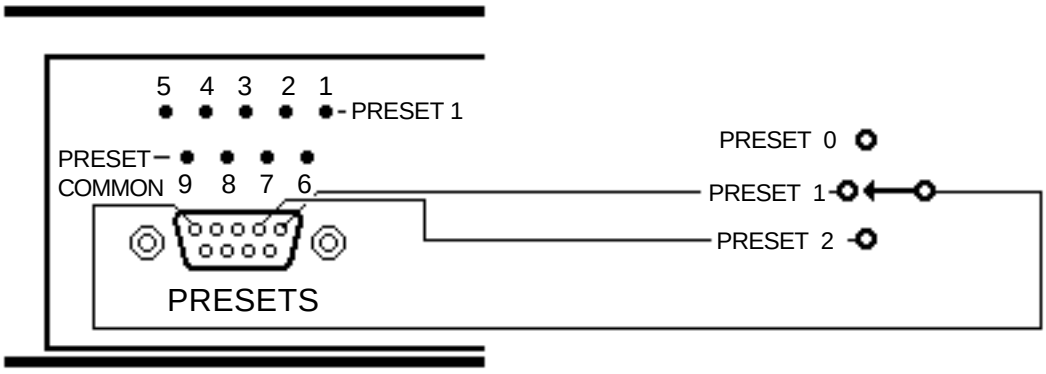


Figure 2

Presets are selected by connecting the desired preset connector to preset common. Only one preset at a time may be selected. *Note that Preset 0 is selected when no other preset is activated.*

If more than one contact closure is activated at a time, the equalizer will respond to the highest numbered preset. Example: If presets 1 and 4 are both activated via a rear panel contact closure, preset number 4 will be the active preset.

A preset is easily activated from the control screen. Click on the desired preset with the mouse, or use

the **TAB** key to select the preset. The preset is immediately activated whenever it is selected. Presets can also be selected/activated by using the menu. Pull down the Preset menu and then select the desired preset.

Preset Conflicts

Preset conflicts between software and hardware follow a simple rule. *The last activation of a preset is the winner.* If preset 2 is activated by a contact closure and then a software command activating preset 4 is received, preset 4 will be active. If the contact closure on preset 2 is opened and then closed while preset 4 is still active from the software command, preset 2 will be active. It is the last activation or change in status that determines which preset is active.

Mute

The Mute button allows the output of the equalizer to be completely muted. This can be very handy during the equalization process.

In/Out

This switch allows the equalizer to be placed in or out of the circuit. This provides for easy in/out comparisons of the equalization. This switch only affects the settings of the 28 1/3 octave filters. When the switch is pressed, or set to OUT, all filters are set to zero or flat. The low cut, high cut, and output gain controls are not affected. The annunciator window above the switch will display the message "Filters By-passed."

Pull Down Menus

File Menu Listing

Load EQ Settings from Disk

All settings of the equalizer can be loaded from a disk into the equalizer, assuming, of course, that the settings had been previously saved to a disk. After selecting this menu item, a prompt will appear requesting the name of the file to be loaded.

Save EQ Settings to Disk

All settings of the equalizer can be saved to disk. These settings can be saved as a record of the equalization for a specific job. A prompt will appear asking for a file name to be assigned. The file will be saved with a “DAT” (for data) extension.

Poll

This will cause a poll to be made of the entire network. This should be done whenever a unit is added to or deleted from the network. The poll does not affect the network in any way. It simply updates the Audio Net™ program as to what units are currently on the net.

Exit

Ends the program and Exits back to the main screen.

Edit Menu Listing

Copy EQ Configuration

This command “copies” the current settings of the current equalizer preset so that they may be “pasted” into another equalizer or another preset of the same equalizer. The following parameters are copied: 28 -1/3 octave filters, low cut filter, high cut filter, and output gain level.

This is a very handy tool when setting up a large system. Once an EQ curve is established in one room, it can be copied and then pasted into another room as a rough EQ for the new room.

Paste EQ Configuration

This command “pastes” parameters into the currently selected equalizer preset that have been "copied."

EQ Name...Enter/Edit

The Audio Net™ software allows each equalizer on the network to be given a meaningful name. This makes it much easier and very intuitive to select and work with equalizers. An equalizer with the name “North Exhibit Hall” is much more meaningful than EQ at address number 5.

To give an equalizer a name, select the EQ Name...Enter/Edit menu item. A box will appear with the current or default name of the equalizer. Type in the desired name and press the OK button. To exit without making any changes, press the cancel button.

Preset Name...Enter/Edit

The Audio Net™ software allows each preset in an equalizer to be given a meaningful name. This makes it much easier and very intuitive to select and work with presets. A equalizer preset with the name “Music playback EQ” is much more meaningful than a preset named “Preset number 5.”

To give a preset a name, select the Preset Name...Enter/Edit menu item. A box will appear with the current or default name of the preset. Type in the desired name and press the OK button. If exiting without making any changes is desired, press the cancel button.

Reset Sliders

This is a simple command that sets the 28, 1/3 filter sliders to zero, or "flat." The low cut, high cut, and output gain levels are NOT affected by this control.

Set Start-up Password

The Audio Net™ software can be password protected. There is one password for the main software program.

Upon selecting this menu item, the prompt “ENTER A NEW PASSWORD" will appear. If the program is not currently password protected, a new password will be allowed to be entered . If the program already has a password and that password is to be changed, then the existing password must be entered before the new password can be entered.

Once a password has been entered, the program will prompt for a password every time it is started.

Set Unit Address

*Every unit must have an address assigned to it **before** it is placed on the network!* Each unit must have its own unique address. If two different units have the same address it will cause problems on the network. The factory STRONGLY recommends documenting all addresses and referring to that document whenever working with addressing of units.

A unit cannot be programmed with an address while it is connected to the network. The unit must “stand alone,” that is, it must be the only unit connected to the computer at the time its address is assigned.

The 728PW, 730PW-1 and 730PW-2 ALWAYS take two addresses, an even number address and an odd number address. This is because two equalizers can be housed in a single rack unit. This means that an equalizer will always require two addresses. If there is only one equalizer in the single rack unit (730PW-1), the address of that unit will be the even address. This means that the odd address will be unused. *This unused address cannot be given to any other unit on the network.*
If the programmer tries to assign an address of “3” to an equalizer, the software will inform him that it is setting two addresses to “2” and “3.” If he tries to assign an address of “2” to an equalizer, the software will inform him that it is setting the two addresses to “2” and “3.” It just makes sense to think of an equalizer rack unit as having two addresses, an even and an odd, and the first address is always even. If there is a second equalizer in the rack unit, it will have an odd address.

TO SET AN ADDRESS
1) Make certain that the equalizer is NOT CONNECTED TO ANY OTHER UNIT.
2) Connect the equalizer to the computer via the 78-232A.
3) Under the EDIT menu pull down and select Set Unit Address
4) Double check the address numbers that will be assigned to be certain that they do not conflict with existing addresses already assigned on the network.
5) At the prompt type in an even number for the address. Remember that two addresses will automatically be assigned to the equalizer; an even and an odd. Click on the OK button.
6) The software performs a poll looking for multiple units on the network. If it finds multiple units it will abort the address setting procedure. If the poll finds only one unit on the network it will then set the addresses of the equalizer and then check those addresses by polling them.
7) The equalizer can now be connected to the network.

Reset ALL

This command sets all controls to default settings. The 28, 1/3 octave filters are set to zero or flat. The low cut filter is set to 10 Hz. The high cut filter is set to 32kHz. The output gain level is set to zero.

Presets Menu Listing *(730PW Equalizers Only)*

Presets 0-9

Presets 0 through 9 can be activated by selecting the desired preset.

Save Current Preset

Changes can be made to presets while in a preset. However these changes will be lost immediately upon selecting another preset unless the current preset has been saved. This command will save any changes that have been made to the preset.

View Menu Listings

730 Equalizer

This command will display the control screen for the equalizers on the net.

784P Mixer

This command will display the control screen for all 784P/PW and 884PW mixers on the net.

802A Mixer

This command will display the control screen for all 802A mixers on the net.

Audio Net™

This command will display the Audio Net™ screen for all units on the net. All units on the network will be listed in the pull-down Audio Net™ list box.

EQ Input/Output Level

This command displays a pop-up window containing a bar meter which indicates the input or the output level of the equalizer. The meter has push button switches for selecting either input or output for level monitoring.

Audio Net Listing

This command displays a window which can list all of the Audio Net™ units on the network, whether equalizers, mixers or other types of Audio Net™ units.

DOS 784P-884PW Mixer

This command loads the DOS software control screen for the 784 and 884 series matrix mixers.

Modem Menu Listing

Display Modem Window

This command displays a pop-up window through which commands to a modem may be sent.

Front Panel

Front Panel User Controls

The equalizer has one front panel user control. This control is recessed to prevent accidental activation. This push button control affects both equalizers simultaneously. The control adjusts the the level of the 31.5 Hz filters. Each push of the button adjusts the filter level by 0.5 dB in level.

The first push decrements the current level setting by 0.5 dB. The next push of the button increments the current level setting by 0.5 dB. Alternate button pushes increment and decrement the level of the 31.5 Hz filter by 0.5 dB.

Front Panel Indicators

The equalizer front panel has five LEDs. The red LED indicates that the equalizer is receiving power. There are four other LEDs two for the "Even" equalizer and two for the "Odd"equalizer. Each equalizer has a "Clip" LED and a "Signal Presence" LED.

The "Clip" LED will illuminate whenever any signal stage within the equalizer is being overdriven. Clipping may occur due to a very high input signal level. Clipping may also occur due to excessive boost in equalization. If sustained clipping occurs try reducing the input signal level.

Front Panel Audio Net™ Connector

Located on the left side of the front panel is the Audio Net™ connector. This connector is paralleled with the two Audio Net™ terminals on the rear of the equalizer. This connector allows easy connection of the 78-232A computer to equalizer interface.

Rear Panel

Equalizer Bypass/In-Circuit Switch

There is only one control located on the rear panel, the equalizer BYPASS/IN-CIRCUIT. Normally this switch should be set to the IN-CIRCUIT position. In this position all program material will be routed through the equalizer.

When the switch is set to the BYPASS position, the program material will NOT be routed through the equalizer. In the BYPASS position the input and output terminals are connected together. The signal completely bypasses the equalizer.

Ground Link

The ground link terminal connects the audio ground of the equalizer to the chassis ground of the metal enclosure. Normally this link is left in place.

The power supply for the equalizer has a 3-prong, grounded plug. The ground prong of the plug should never be "lifted" or isolated from ground. Should the equalizer need to be isolated from ground

the ground link can be removed. Normally the Audio ground terminal is then "referenced" (connected) to another ground point somewhere in the system.

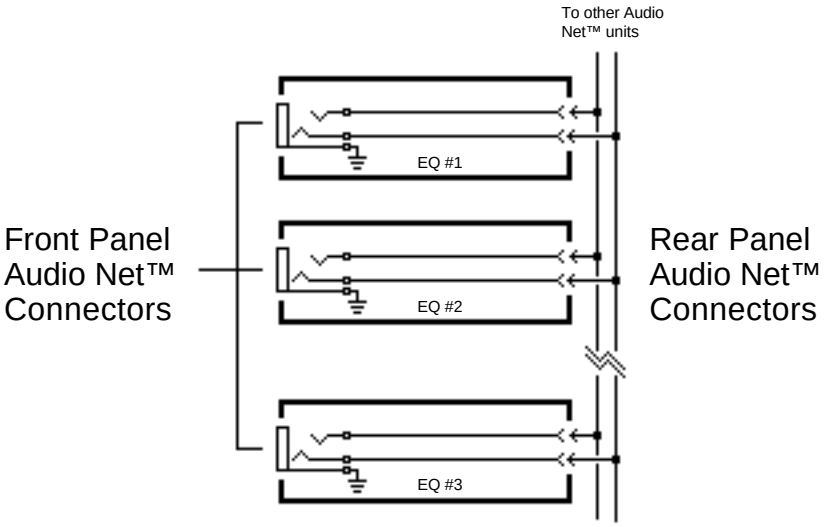
The equalizer connection diagram, located on the inside of the rear cover of this manual, illustrates how the Ground Link terminals on multiple units could be connected to minimize "ground loops."

Preset Connectors *(730PW Equalizers Only)*

Refer to the inside rear of cover of this manual for connection information on activating presets. A discussion of Presets and how to activate them is found on page 6 of this manual under the title, "**Presets**."

Rear Panel Audio Net™ Connectors

These two connections are paralleled with the front panel Audio Net™ connections. If multiple Audio Net™ units are installed then these terminals are used to parallel all units together.



Each Audio Net™ unit has two Audio Net™ connectors; one on the front panel and one on the rear panel. They are connected together in parallel. If all units have their rear panel connectors wired together in parallel, then plugging into any one of the front connectors will allow all units to be controlled from that single connection.

Figure 3

Specifications:

Frequency Response: 20Hz - 20kHz (flat setting)

Dynamic Range: Greater than 100dB

Recommended Average Operating Level: 0dBu (.775 volts)

Maximum Operating Level: +18dBu into 600 ohm or greater load, balanced or unbalanced

Distortion: Less than 0.05% THD

Input Circuit: Active servo balanced differential. Can operate unbalanced with no change in gain change

Input Impedance: 60 kΩ balanced, 20 kΩ unbalanced

Input Common Mode Rejection Ratio: Greater than 85dB at or below 1kHz, greater than 65dB at 10kHz

Output Impedance: 102 ohms balanced, 51 ohms unbalanced

Gain: Adjustable from 0dB to +12dB in 0.5dB steps

Control Centers: 28 1/3 octave filters on I.S.O. standard center frequencies from 31.5Hz to 16kHz

Frequency Tolerance: +/- 5% of center frequency

Low Cut Filter: 12dB/octave slope, adjustable from 10Hz to 160Hz in 8 steps

High Cut Filter: 12dB/octave slope, adjustable from 6kHz to 32kHz in 8 steps

Clip indication: Front panel LED and Computer display

Signal presence indication: Front panel LED begins to illuminate at approx. -18 dBu

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