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Model #341
Dual 15 Band 2/3 Octave Graphic Equalizer

Model #351
31 Band 1/3 Octave Graphic Equalizer

Model #355
Dual 31 Band 1/3 Octave Graphic Equalizer

User's Guide

#341
Dual 15 Band 2/3 Octave Graphic Equalizer
#351
31 Band 1/3 Octave Graphic Equalizer
#355
Dual 31 Band 1/3 Octave Graphic Equalizer

341-5004-102
M871Y0019H01

General Overview

Model #351 - Single channel 31 band 1/3 octave graphic Equalizer - Features: constant Q circuitry with a 3% center frequency accuracy, selectable boost/cut range of 6dB or 12dB, active balanced and unbalanced input and output connections, variable High pass (low cut) and Low pass (high cut) filters, variable input level control, clip level indicators, ground lift switch and selectable line voltage switch.

Model #341 - Dual channel 15 band 2/3 octave graphic Equalizer - Features: constant Q circuitry with a 3% center frequency accuracy, selectable boost/cut range of 6dB or 12dB, active balanced and unbalanced input and output connections, variable input level control, clip level indicators, ground lift switch and selectable line voltage switch.

Model #355 - Two channel 31 band 1/3 octave graphic Equalizer - Features: constant Q circuitry with a 3% center frequency accuracy, selectable boost/cut range of 6dB or 12dB, active balanced and unbalanced input and output connections, variable High pass (low cut) and Low pass (high cut) filters, variable input level control, clip level indicators, ground lift switch and selectable line voltage switch. 2U steel chassis.

Power Connections

The equalizer has an internal power supply which is designed to operate from 95 to 130VAC at 50/60Hz or from 190 to 250VAC at 50Hz. Power consumption is 12 watts. Make sure the line voltage switch is set to the proper setting before plugging the unit into a mains socket.

Never operate this piece of equipment with the ground pin removed. If the cord becomes cracked or broken, discontinue use until you can have it replaced.

Installation

The #341 and #351 occupy 1U rack space. The #355 is 2U. They are intended for installation in standard 19" equipment racks. Depth is 8.5". Weight is 4.5 lbs. (2.5kg) for the #341 and #351. Weight is 9 lbs.(4/1kg) for the #355.

Input and Output Connections

The inputs and outputs are paralleled connections. The XLR and 1/4" TRS connectors are actively balanced. The XLR connections are: Pin 1 =ground, Pin 2=Hot (+), and Pin 3= Cold(-). The 1/4" TRS connections are: Tip =Hot (+), Ring= Cold(-), and Sleeve = ground. To use the XLR or 1/4 jacks with unbalanced cables, Pin 2 of the XLR or the Tip of the 1/4" connector should be the hot (+) connection and Pin 1 of the XLR or the sleeve of the 1/4" connector should be the ground connection. The RCA jacks are unbalanced.

Signal Levels

The #341, #351 and #355 are designed to work with a variety of signal levels, When setting operating levels, start with all controls centered (Level and equalizer bands). The Level control covers a wide range and can easily accommodate -10 and +4 signal levels.

Chassis Grounding

The 341, #351 and 355 are equipped with a rear panel ground lift switch. If you experience hum or buzz in your system, move this switch to the "lift" position **only after** checking all connections and other pieces of equipment in your system. **Note: always turn down your amplifiers before changing the ground lift switch !** Make sure all pieces of equipment are properly connected to earth ground either through their AC power cords or their chassis grounds.

Operating Instructions

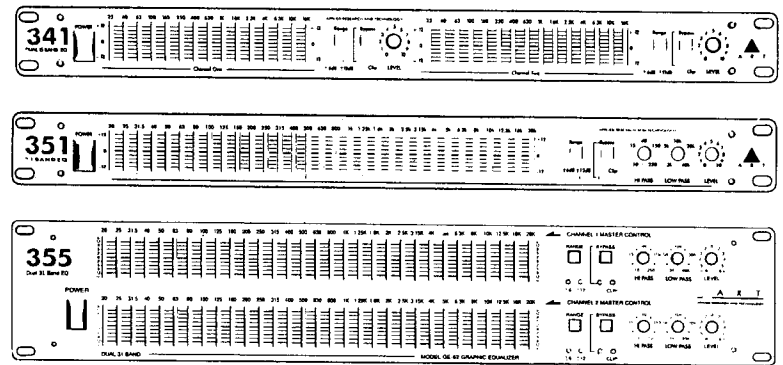
Before starting to use your equalizer there is some informa-

tion you should know and procedures you should follow. Your equalizer is equipped with a bypass switch. The bypass switch, when activated, lights the LED and cancels all equalization settings while allowing signal to flow through the unit at unity gain.

A range control switch is provided which allows you to set the maximum boost or cut for each band of equalization to either 6dB or 12dB. If you apply too much gain to the input signal (either through boosting frequencies or turning the level control up too far), the clip LED will light. The clip LED will light at 5dB before clipping occurs. It is fine if the clip light flickers occasionally. If the clip light is on continuously you must readjust the level control.

Here are some tips to help you with your initial setup:

1. Set the level control(s) to their center position.
2. Bypass the equalizer (the LED will light).
3. Set all frequency controls to their center position.
4. Select the 6dB range setting (green LED will light).
5. Apply signal to your system.
6. Take the unit out of bypass (LED turns off).
7. If the Clip light is on, turn down the level control.
8. Start using the equalizer to shape your sound.
9. If you do not have enough gain for your needs, switch the range to the 12dB setting.
10. If the Clip LED lights continuously while you are applying EQ, turn down the level control until the Clip LED lights only occasionally.



Front Panel Controls

Power Switch:

Applies and removes power from the equalizer. Always turn on the equalizer *before* turning on power amps and speakers. Turn off the equalizer *after* turning off power amps and speakers.

Filter Level Controls:

Each of the sliders adjust the boost or cut (either 6dB or 12dB) of the selected frequency. The center detente position is grounded for flat response.

Filter Range Switch and Indicator:

The gain range of the filter sliders is switchable (as a group) from +/- 6dB to +/- 12dB. A green LED lights when the 6dB range is selected. A Yellow LED will light when the 12dB range is selected.

Bypass:

If bypassed, the red bypass LED will illuminate indicating the channel or unit is in bypass mode. When bypassed, the input signal is routed directly to the output jacks (often called a hard-wire bypass). Use the bypass mode to compare equal-

ized and unequalized material, or to bypass the unit in the event of power loss.

Clip LED

This LED will light when any section of the equalizer is within 5dB of clipping. Occasional flickering of the Clip LED is acceptable, but if it remains on continuously you should turn down the level control or reduce the output level of the preceding component to avoid audible distortion.

Hi Pass Filter (HPF): (#351 and #355 only)

The Hi pass filter rolls off (decreases) lower frequencies. This is useful for decreasing rumble or low frequency hum from a signal. Its range is adjustable from 10Hz to 250Hz. Frequencies below this setting are rolled off, while frequencies above are unaffected.

Low Pass Filter (LPF): (#351 and #355 only)

The Low pass filter rolls off (decreases) higher frequencies. This is useful for reducing hiss or sibilance from a signal. Its range is adjustable from 3kHz to 40kHz. Frequencies above this setting are rolled off, while frequencies below are unaffected.

Level Control

This control sets the signal level coming into the equalizer. Its 12 o'clock position (" 5 ") is unity gain (no boost or cut). If the Clip LED is lit continuously, turn down this control until it only flickers occasionally.

Rear Panel Controls

Power Cord:

This cord is used to connect AC power to your equalizer. Never use a damaged or cut power cord. Never use with the ground pin removed.

Fuse Holder:

The fuse holder contains the primary AC fuse. Only replace with the same type if necessary (0.6 amp). If ever the fuse continues to blow after replacing, discontinue use of the equalizer have serviced by qualified personnel.

AC Voltage Selector:

This switch should rarely (if ever) need to be changed. Serious damage may occur to your equalizer (or yourself) if this switch is in the wrong position when plugged in. Your equalizer has been set for country of destination at the factory. In the event that you need to change the AC voltage setting, confirm the line voltage and polarity and set the switch *before* plugging in the unit.

Ground Lift Switch:

This switch is used to disconnect the signal ground from the mains and chassis earth ground. If it is determined that the equalizer is the cause of hum or buzz in your system due to a ground loop, move this switch to the "lift" position.

1/4" TRS Input and Output Jacks:

The 1/4" jacks are actively balanced and are wired: Tip = hot (+), Ring = cold (-), and Sleeve = ground.

XLR Input and Output Jacks:

The XLR jacks are actively balanced and are wired: Pin 1 = ground, Pin 2 = hot (+), and Pin 3 = cold (-).

RCA Input and Output Jacks:

The RCA jacks are unbalanced. The tip is hot (+) and the sleeve is ground (-).

Note: *While you can use any input jack with any output jack, only one set of these connectors is to be used at a time.*

Applications

The #341, #351, and #355 equalizers may be used wherever modification of the frequency contour of a sound is needed. A graphic equalizer is a powerful tool for solving a number of audio problems and creating interesting textures.

PA Systems:

Patch the EQ between your mixing console and power amps to allow you to alter the overall mix to better match your environment. Use the #341, #351, or #355 between your monitor mixer and monitor power amps to aid in the removal of feedback inducing frequencies.

Mixing Boards:

Patch into a channel insert to EQ one channel or track individually.

Instrument Equalization:

Run your instrument directly into the equalizer to enhance its sound before reaching a power amplifier or instrument amplifier.

Amplifier Effects Loop:

Patch the EQ into the effects loop of an instrument amplifier or between a preamp and power amp to have precise control over the complete sound.

Warranty and Service Information

Limited Warranty

Warranty service for this unit will be provided by Applied Research and Technology, Inc. in accordance with the following warranty statement.

Applied Research and Technology, Inc. (A R T) warrants to the original purchaser that this product is free from defects in workmanship and materials for a period of **one year** from the original date of purchase. A R T will, without charge, repair or replace, at its option, defective product or component parts upon prepaid delivery to the factory service department or authorized service center, accompanied by proof of purchase date in the form of a valid sales receipt.

EXCLUSIONS: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. This warranty is void if the serial number is altered, defaced or removed.

A R T reserves the right to make changes in design and make additions or improvements upon this product without any obligation to install the same on products previously manufactured.

A R T should not be liable for any consequential damages, including without limitation damages resulting from the loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific rights and you may also have other rights which vary from state to state.

For units purchased outside the United States, service will be provided by an authorized distributor of A R T products.

Service

The following information is provided in the unlikely event that your unit requires service. Use this procedure to return units in the United States only. For service outside the United States, please contact your authorized A R T distributor.

- 1) Be sure the unit is the cause of the problem. Check to make sure the unit has power supplied, all cables are connected correctly, and the cables themselves are in working condition.
- 2) If you find the unit to be at fault, write down a description of the problem, including how and when the problem occurs.
- 3) Call the factory for a Return Authorization (RA) number.
- 4) Pack the unit in its original carton or reasonable substitute. The packing box is not recommended for a shipping carton. Put the packaged unit in another box for shipping. Print the RA number clearly under the address.
- 5) Include with your unit: a return shipping address (we cannot ship to a P.O. Box), a copy of your purchase receipt, a daytime phone number and the description of the problem.
- 6) Ship the unit to:
Applied Research and Technology, Inc.
215 Tremont Street
Rochester, NY 14608
Atten: Repair Department
R.A.# _____
- 7) Contact our Customer Service department at 716/436-2720 for your Return Authorization number or questions regarding your repair. Customer Service hours are Monday through Friday 9:00AM to 5:00PM Eastern time.

Specifications:

Frequency Bands:	2x15, 2/3 octave, ISO spacing 1x31, 1/3 octave, ISO spacing 2x31, 1/3 octave, ISO spacing
Filter Type:	Constant Q - 3% center accuracy
Slider travel:	20mm w/ positive center detente
Range:	+/-6dB or +/-12dB selectable
Input connections:	Active balanced XLR and 1/4"TRS XLR pin 2/ 1/4" tip = Hot (+) Unbalanced RCA
Input Impedance:	20k ohms (bal.), 15k ohms (unbal)
Max. Input level:	+22dBm
Output connections:	Active balanced XLR and 1/4"TRS XLR pin 2/ 1/4" tip = Hot (+) Unbalanced RCA
Output Impedance:	Typ. <150 ohms
Max. Output level:	+18dBm (bal.), +22dBm (unbal.)
High Pass (#351/355):	10Hz to 250Hz, 12dB/oct
Low Pass (#351/355):	3kHz to 40kHz, 12dB/oct
Frequency Response:	20Hz to 20kHz, +0.5dB
THD + Noise:	.01%
Signal to Noise ratio:	-94dB
Channel Separation:	>50dB
Power:	95-130VAC, 50/60Hz 190-250VAC, 50Hz
Power Consumption:	12 watts
Size:	1.75"H x 19" W x 8.5" D(341/351) 3.5"Hx19"Wx8.5"D(355)
Weight:	4.5lbs. (2.5kg)-(341/351) 9 lbs. (4.1kg) - (355)