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DIGIMATE® 610 MODULAR 6 CHANNEL AMPLIFIER

Installation and Operation Manual

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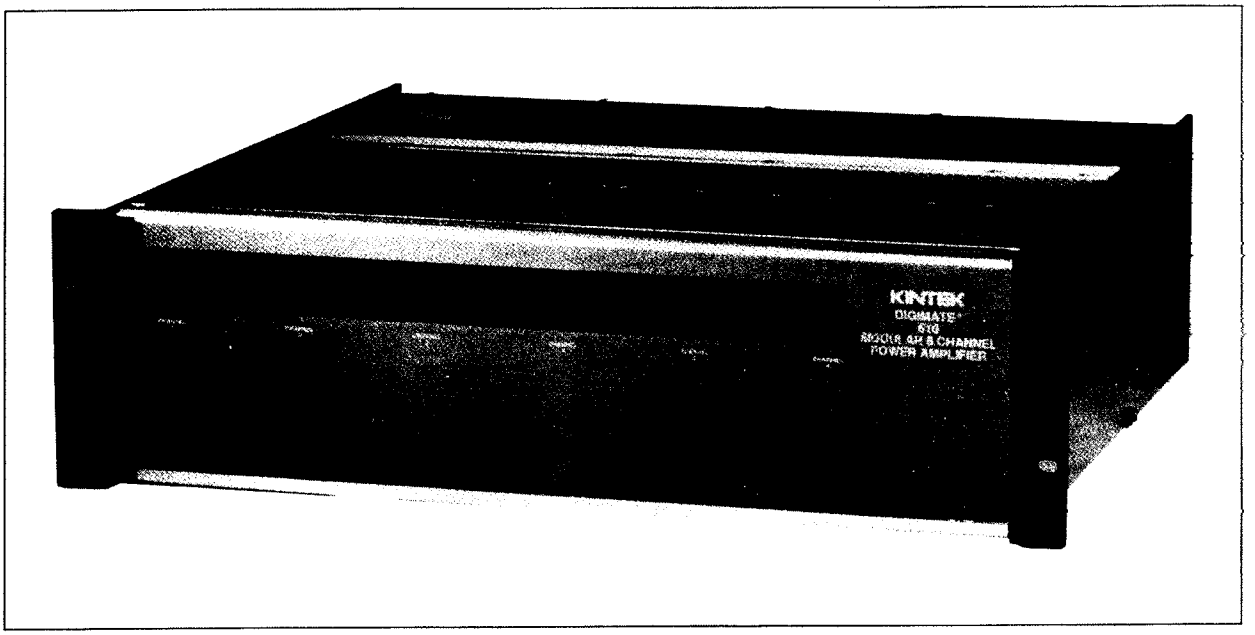
DIGIMATE® 610

Modular 6 Channel Amplifier



- ***Plug-in power modules***
- ***Quiet, convection cooled design***
- ***Power On or Off speaker protection***
- ***Signalgard for continuous output***

The Digimate® 610 answers the call for reliable high-power multichannel power amplification for cinema, concert sound and demanding home theatre applications.

Each module provides 125 Watts into 8 Ohms or 200 Watts into 4 Ohm. Modules can be bridged to provide 400 Watts into 8 Ohms.

The six plug-in power amp modules are easily accessed via a pull-down front panel. Each module features front panel signal present LED, input limit LED, power present LED and a mute switch.

The Digimate® 610 uses field proven, wide dynamic range circuitry that complements high quality analog or digital audio sound sources. It features the exclusive Signalgard output stage monitor to assure power transistors always remain within their Safe Operating Area (SOA). Signalgard reduces gain when an excessive signal condition is detected and adds up to 18 dB of compressed audio guard band when the amplifier is overdriven and provides high levels of undistorted power under all signal conditions.

The Digimate® 610 Modular Amplifier features balanced differential input circuits to minimize common mode noise and eliminate ground loops. Connections are via XLR, phone or barrier strip.

Other professional features include an anti-thump circuit to protect loudspeakers upon start up or power down and DIP switches for user-selectable gain setting. Each amplifier module is also provided with a remote gain adjust control port.

A heavy duty mechanical chassis, state-of-the-art convection cooling, oversized power supply capacitors and conservatively rated power components combined with Signalgard protection make this an amplifier exclusively designed for high performance and reliable use.

KINTEK®

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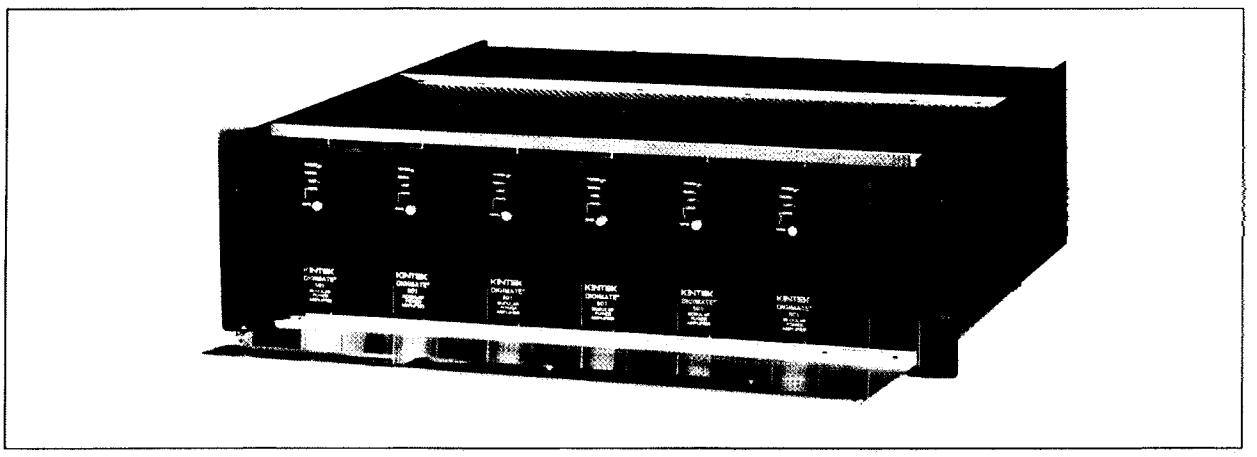
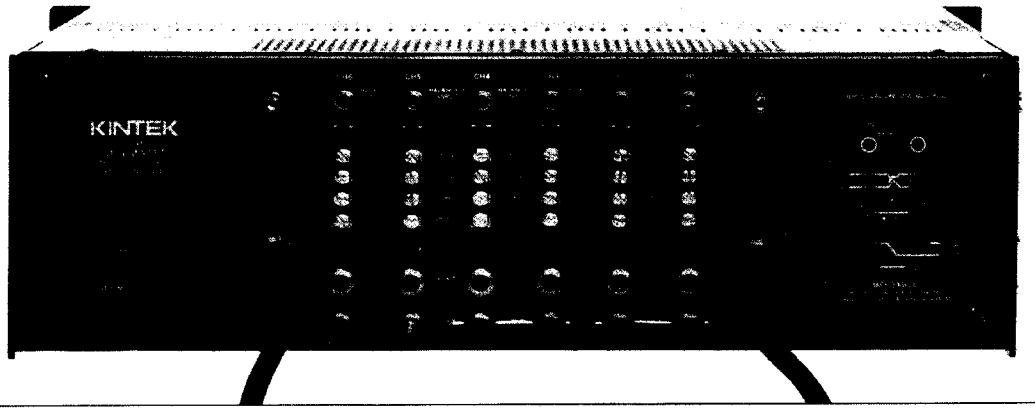
DIGIMATE® 610

Specifications



Dimensions:	19" w x 5 1/4" h x 16" d
Shipping Weight:	57 lbs.
Power Bandwidth:	2 Hz - 30 kHz
Rated Power Output per channel into 8 Ohms:	125 Watts‡
Rated Power Output per channel into 4 Ohms:	200 Watts‡
Rated Power Output Bridged Mode into 8 Ohms:	400 Watts‡
Noise:	−68 dBv
Dynamic Range:	98 dB into 8 Ohms
THD:	.08%
Input Impedance:	200k Ohms, Balanced
Input for rated output @ 8 Ohms:	1.6V @ 26 dB gain setting
Input Connectors:	XLR, phone, barrier
Output Connectors:	5 way binding posts
Rise and fall time:	2 microseconds
Slew Rate:	15 V/uS
Channel Separation:	90 dB
Remote Gain Adjust:	1 dB/V, .25 dB/V
Gain Set:	11 dB - 26 dB in 1 dB steps
Power Requirements:	120/240 Volts, 50/60 Hz, 19.5 Amps @ 4 Ohms



Warranty and Repair: All equipment manufactured by Kintek carries a limited warranty against defects in material and workmanship for two years from the date of purchase.
‡Individual channel power output measured to rated output at 120 Volts power line input.

Specifications are subject to change without notice.

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WARRANTY INFORMATION

Equipment manufactured by KINTEK carries a limited warranty against defects in materials and workmanship for a period of two years from the date of purchase. Kintek will, at its option, repair or replace defective components provided the faulty equipment is shipped prepaid to Kintek with a Return Authorization number. Defects caused by modifications or misuse, or other damage caused by improper packing are not covered by this limited warranty.

Manufactured under one or more of the following patents

U.S. 3,681,618
3,714,462
4,404,427
Canada 1,153,701
Other patents pending

Digimate® 610 Modular 6 Channel Amplifier

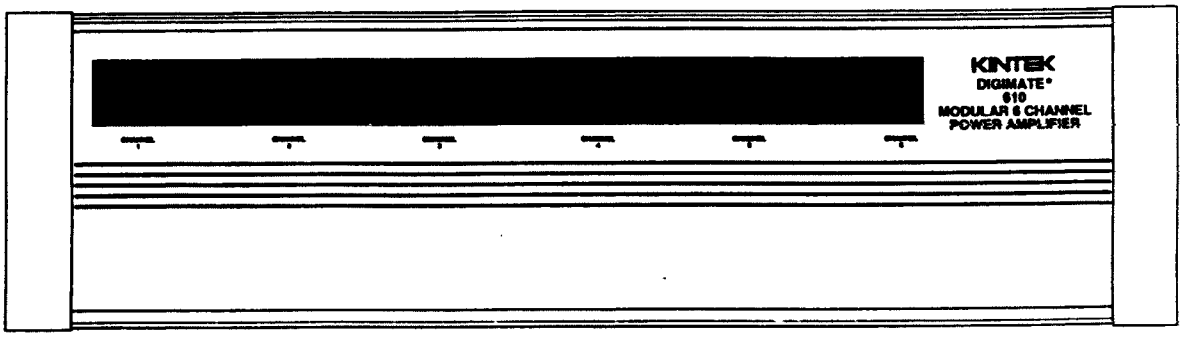
Overview:

* 6 Plug-in power modules
* 6 x 125W/ch @ 8 Ohms, 6 x 200W/ch @ 4 Ohms, 3 x 400W Bridged @ 8
* Quiet, convection cooled design
* Loudspeaker protection circuitry
* Safe Operating Area Protection
* Dual power transformers

The six plug-in power amplifier modules are easily accessed via a pull-down front panel. Each module features front panel signal present LED, output limit LED, power present LED and a mute LED and switch.

The Digimate 610 uses field proven, wide dynamic range circuitry that complements high quality analog or digital audio sound sources. Balanced differential input circuits minimize common mode noise and eliminate ground loops. Connections are via barrier strip terminals or phono jacks.

Other professional features include an anti-thump circuit to protect loudspeakers upon start up or power down and gain setting switches to accommodate professional or consumer line levels.



Specifications:

Dimensions:	*19" W x 5 1/4" H x 16"D*
Shipping Weight:	*57 lbs*
Power Bandwidth:	*2Hz - 30kHz*
Rated Power Output per channel into 8 Ohms:	*125 Watts ‡*
Rated Power Output per channel into 4 Ohms:	*200 Watts ‡*
Rated Power Output Bridged Mode into 8 Ohms:	*400 Watts*
Noise:	*-68dBv*
Dynamic Range:	*98dB into 8 Ohms*
THD:	*.08%*
Input Impedance:	*200k Ohms, Balanced*
Input for rated output @ 8 Ohms:	*1.6V @ 26dB gain setting*
Input Connectors:	*phono, barrier*
Output Connectors:	*5 way binding posts*
Rise and fall time:	*2 microseconds*
Slew Rate:	*15V/uS*
Channel Separation:	*90dB*
Gain Set:	*17dB - 32dB in 1 dB steps*
Power Requirements:	*120/240 Volts, 50/60 Hz, 19.5 Amps @ 4 Ohms 6 channel simultaneously.*

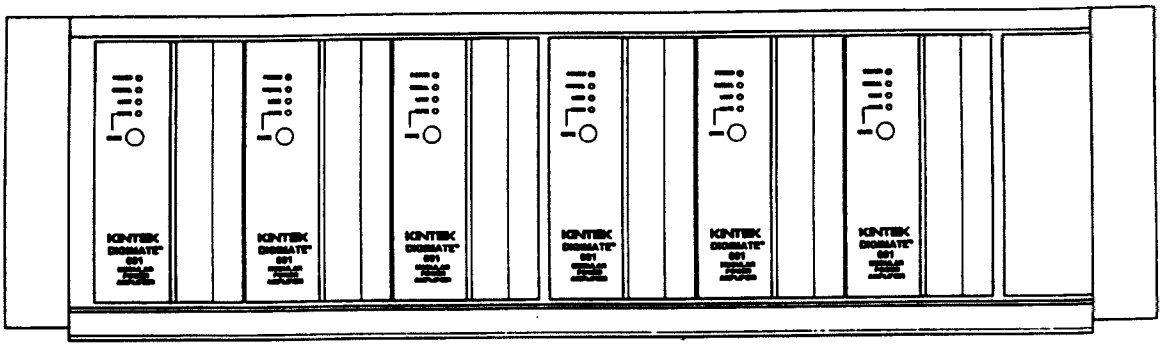
Digimate® 610 Modular 6 Channel Amplifier

About Kintek Power Ratings:

Kintek rates power amplifier output according to EIA Standard RS-400 - sections 2.2 and 3.1.1, a procedure for continuous average power measurement.

According to this procedure, each amplifier module is operated at 1/3 power with a sine wave input for 1 hour into the minimum specified load impedance to cause maximum transistor and heat sink temperature rise. Then the amplifier is operated at its maximum unclipped output level for 10 minutes and the maximum rms voltage measured. From this voltage measurement and the load impedance the maximum rms wattage is calculated.

The resulting wattage rating is therefore a true, long term maximum power rating - a power level that the amplifier can be expected to deliver for extended time periods. Other power amplifiers manufacturers use measurement methods which appear to indicate high power output levels, but these ratings are often only instantaneous measurements and do not include the rigorous preheating qualification of EIA RS-400.



Modularity:

The unique modular design of the Kintek D610 is a distinct advantage to service personnel. Should a power amplifier channel need to be repaired, simply open the front panel, unplug the module to be serviced and replace with a spare. Exercise caution as modules can become quite warm to the touch depending on signal conditions, installation location and load.

SOA Protection:

Kintek Digimate power amplifiers include Safe Operating Area protection for output transistors. This technique monitors current flow through, and voltage across the output transistors and adjusts signal levels to prevent transistor failure.

Program Limiters:

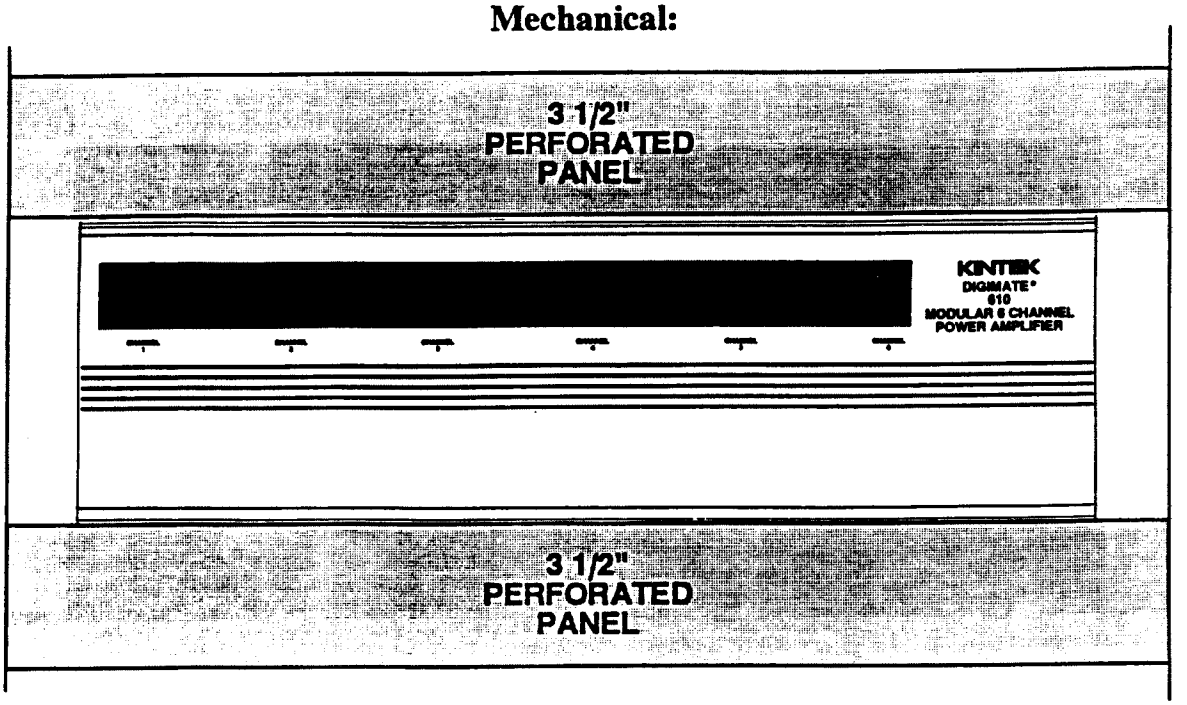
Kintek uses patented gain control circuitry to prevent power amplifier signal clipping that can destroy high frequency loudspeaker drivers. A soft-knee limiter adds about 18dB of guard band gain reduction when the D610 is overdriven. Distortion is prevented and audiences are unaware of the limiter action.

Anti-thump Circuit:

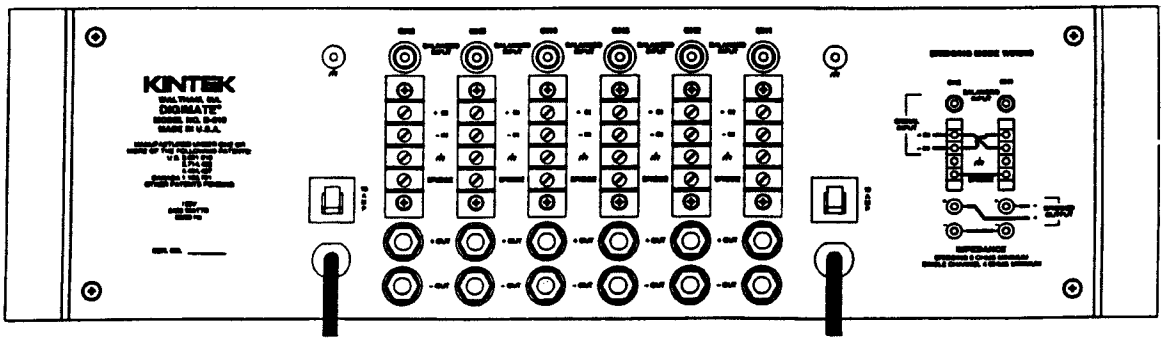
The D610 includes a start up and power down anti-thump circuit to eliminate annoying and potentially damaging loudspeaker thumps.

Digimate® 610 Modular 6 Channel Amplifier Installation

Mechanical:



The Digimate 610 is convection cooled and requires adequate airflow to operate properly. When installing the amplifier in the equipment rack be sure to leave 2 rack spaces (3 1/2") between the D610 amplifier and equipment above or below it. Kintek recommends using perforated rack panels above and below the D610 rather than solid panels that reduce airflow.



AC Power Connection:

The D610 requires a 110 Volt/60Hz or 240 Volt/50Hz source of power to operate. Current draw is 19.5 Amps at 4 Ohms. Provide a separate 20 Amp circuit for each D610 in an installation. Be sure to plug in both power cords of the D610 to insure proper operation.

Digimate® 610 Modular 6 Channel Amplifier Installation

Input Connections:

The D610 is equipped with balanced inputs accessible via barrier strip terminals or floating phono jacks. Audio source devices with balanced output terminations may be connected directly to the D610:

Connect source (+) output terminal to the D610 (+) input terminal on the barrier strip or center terminal of the D610 phono jack. Connect source (-) output terminal to the D610 (-) input terminal on the barrier strip or outside terminal of the D610 phono jack.

Connect an 18 gauge or larger ground wire between the source component ground terminal and signal ground on the D610.

Singled ended source components may be connected to the D610; at the source end of the signal cable, connect shield and (-) conductor to source signal ground. Connect (+) conductor to source signal output. At the D610 end of the signal cable, connect (+) conductor to (+) input terminal and (-) conductor to (-) input terminal. Do not connect the signal cable shield to the D610 amplifier.

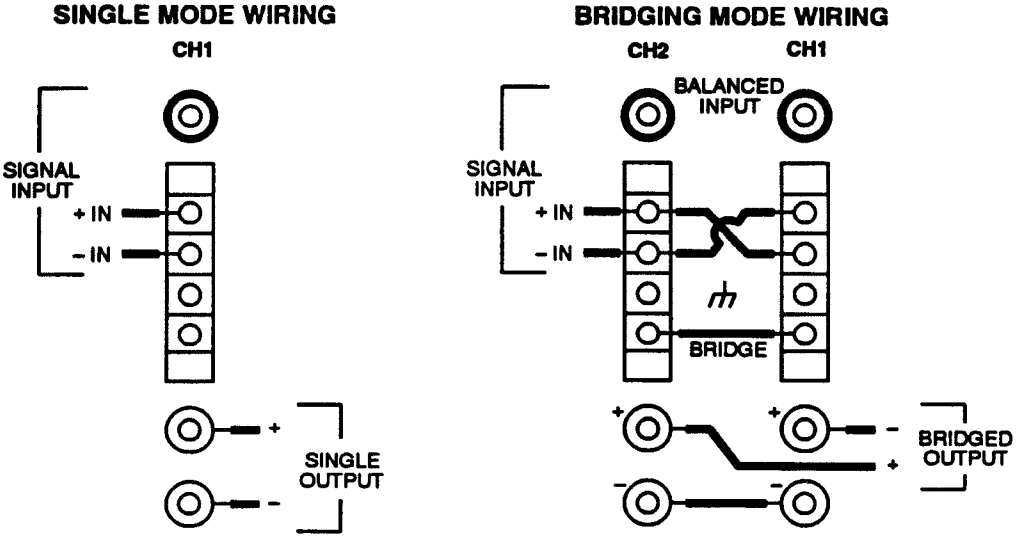
Output Connections:

The D610 may be operated as six independent amplifiers providing 125 Watts rms into 8 Ohms or 200 Watts rms into 4 Ohms. Alternatively, the D610 may be operated in bridge mode to provide three 400 Watt into 8 Ohm amplifiers.

For six channel operation, connect the loudspeaker load to the binding posts provided, (see diagram at lower left).

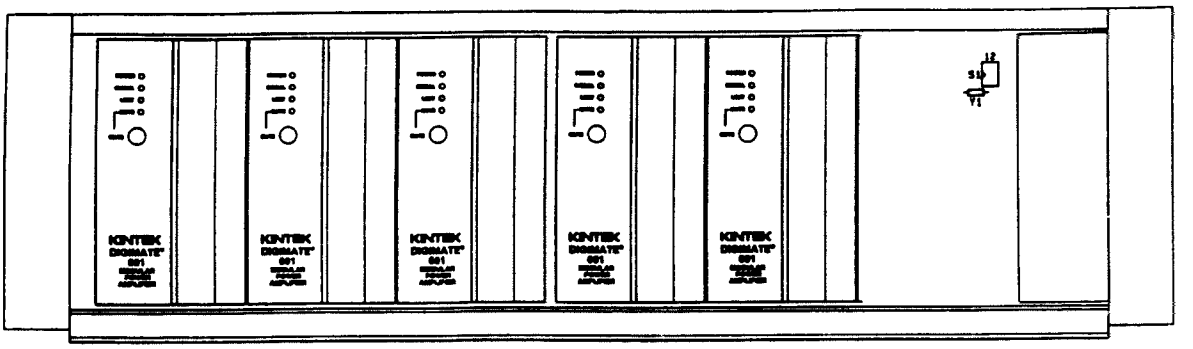
Bridge Mode:

For installations with higher output power requirements two D610 modules may be operated in bridge mode. Be sure to invert the polarity of the bridged inputs and add the bridge mode jumpers as shown,(see diagram at lower right).



Digimate® 610 Modular 6 Channel Amplifier Installation

Amplifier Ground Mode Switch:



The D-610 mother board is equipped with a two-pole DIP switch that provides three signal/power ground connection options, (see diagram for dip switch location):

* 1. Signal ground connected to power ground (Factory Setting).
2. Signal ground connected to power ground through Y1(100 Ohm resistor).
3. Signal ground floating with respect to power ground.

(see chart below)

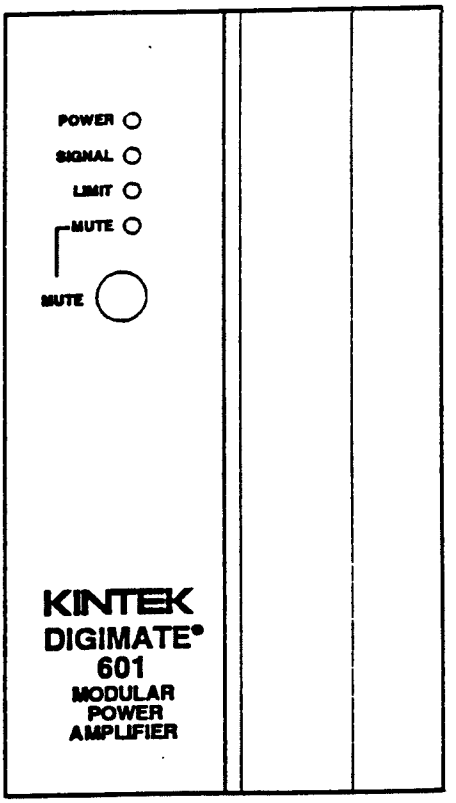
D-610 GROUND MODE CHART

	1	2
*	ON	ON
	OFF	ON
	OFF	OFF

* FACTORY SETTING

Digimate® 610 Modular 6 Channel Amplifier Operation

Module Front Panel:



Module Features:

Power present LED indicates that both the + and - regulated supplies are working.

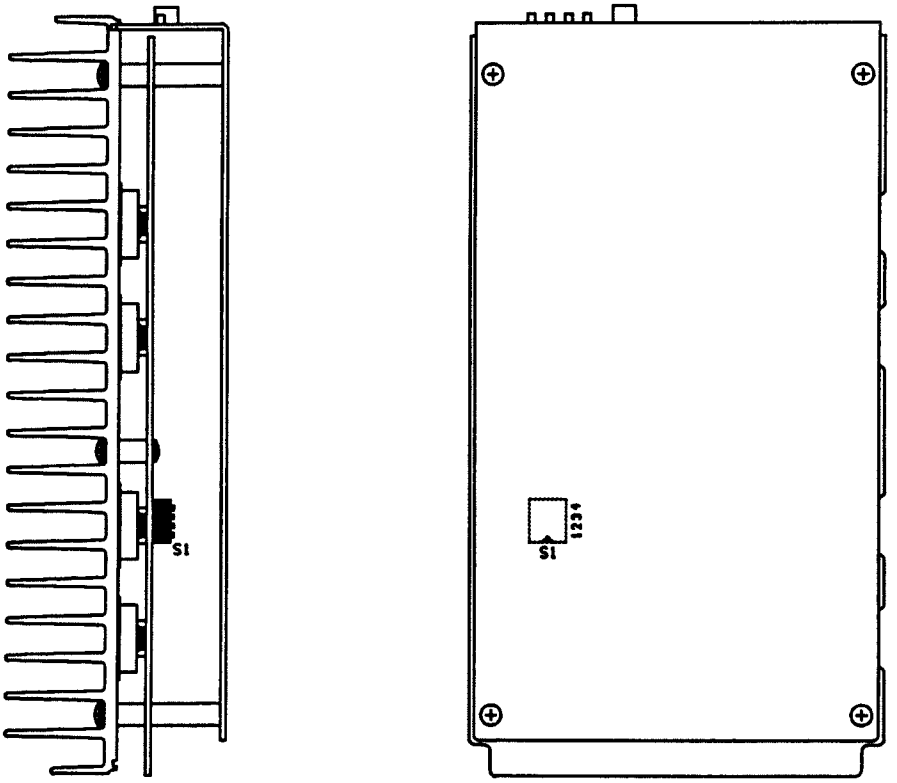
Signal Present LED indicates the presence of a signal above -60dBv at the input.

Output Limit Led indicates the signal level has exceeded the threshold designed to anticipate clipping distortion and the D610 gain has been momentarily reduced.

Mute switch may be used to silence an amplifier module for test purposes.

Digimate® 610 Modular 6 Channel Amplifier Operation

Gain Adjustment:



The D-610 is shipped from the factory with a voltage gain of 26dB. This is a common figure and will work well with most professional signal level (+4dBu) sources and typical speaker loads. If necessary, the D-610 gain may be raised or lowered. Refer to the diagram below.

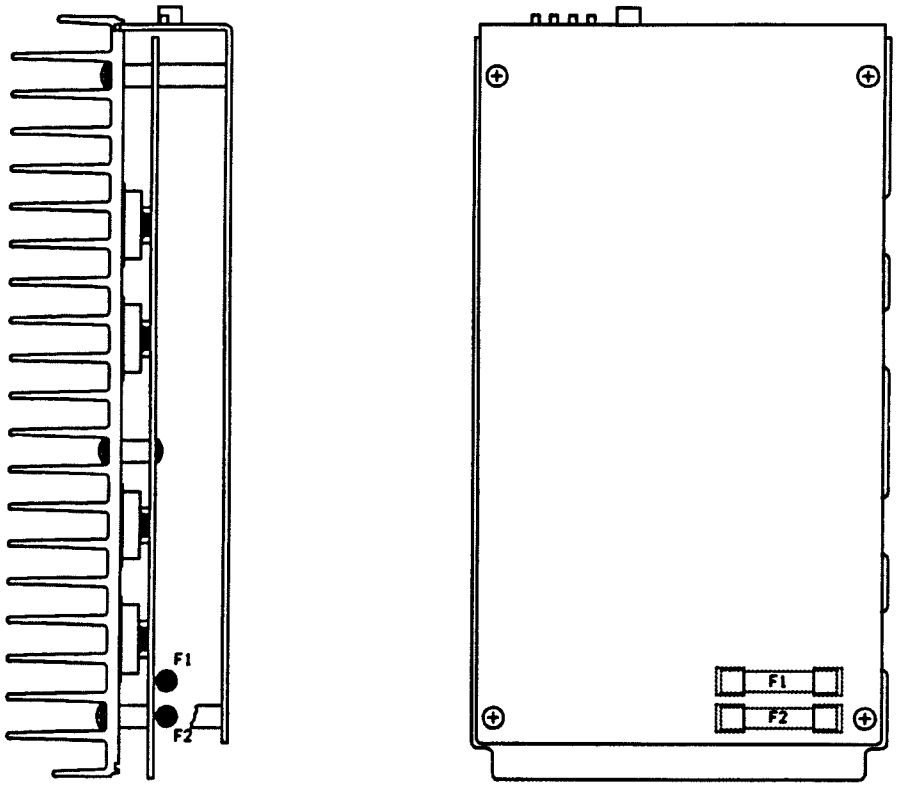
D-610 GAIN CHART

dBV	(S1 SWITCH NUMBER) 1	2	3	4
17	ON	ON	ON	ON
18	ON	ON	ON	OFF
19	ON	ON	OFF	ON
20	ON	ON	OFF	OFF
21	ON	OFF	ON	ON
22	ON	OFF	ON	OFF
23	ON	OFF	OFF	ON
24	ON	OFF	OFF	OFF
25	OFF	ON	ON	ON
* 26	OFF	ON	ON	OFF
27	OFF	ON	OFF	ON
28	OFF	ON	OFF	OFF
29	OFF	OFF	ON	ON
30	OFF	OFF	ON	OFF
31	OFF	OFF	OFF	ON
32	OFF	OFF	OFF	OFF

* FACTORY SETTING

Digimate® 610 Modular 6 Channel Amplifier Troubleshooting

Module Power Supply Fuses:



The D-610 module is provided with two fuses to protect individual module power supplies from overload damage and also isolate module DC supply problems from the main transformer. If a module "Power Present" LED is not lit, remove the module from the frame and check for blown fuses. Before replacing a failed fuse be sure to check for and remove any excessive load conditions, (shorted output or loudspeaker under 4 Ohms) at the amplifier output.
(see diagram for fuse location).

Fuse Rating:

10 AMP SLO/BLO

Digimate® 610 Modular 6 Channel Amplifier Troubleshooting

NO OUTPUT IN LEFT THREE OR RIGHT THREE CHANNELS: The D-610 uses two separate power supplies the left supplies power to left three modules and right supplies power to right three modules.

- Be sure all amplifier modules are plugged in fully.
- Be sure both power cords of the D610 are plugged into the AC line, only three of the six amplifiers will operate with a single power cord connected.
- Check the circuit breakers on the back of the unit, if one of these is tripped only three of the six amplifiers will operate, (turn off power before resetting circuit breakers).

LOW OUTPUT IN ONE CHANNEL: The D610 is designed to drive 4 Ohm loads at high power for extended periods of time. If you experience low output volume be sure the load is at least 4 Ohms, this is potentially a problem in multi-speaker theatrical surround arrays where the series/parallel connection is mis-wired and results in a load impedance of less than 4 Ohms.

- Check loudspeaker series/parallel wiring.

NO OUTPUT IN ONE CHANNEL:

- Be sure that module is not in mute, (IN = mute) .
- Be sure amplifier module is plugged in fully.
- Check "Signal Present" LED if not lit check wire connections to amplifier and processor.
- Check "Power Present" LED if not lit remove module, (CAUTION: If amplifier has been in operation, modules can be hot) see "Module Power Supply Fuses" for instructions.

60Hz HUM:

- Some installations may require a different signal ground to power ground connection than what was preset at the factory.
- Turn off power, remove module #6, (CAUTION: If amplifier has been in operation, modules can be hot) see "amplifier ground mode switch" for instructions.

REPLACING A MODULE: If a power amplifier module is determined to be faulty, (no "Power Present" LED, distorted or weak output).

- Carefully pull the module from the D-610 frame and replace with a spare, (CAUTION: If amplifier has been in operation, modules can be hot).

CONSTANT PROGRAM LIMITING: If the "LIMIT" LEDs are lit and there is a noticeable difference in auditorium audio level wile the feature is running.

- Other units in the rack may be giving off heat also and you may have to assess mechanical installation for better air flow, (see "mechanical installation").
- Open front panel to help air flow across module front panels for short term, (CAUTION: If amplifier is in limit operation conditions, modules are hot).