INGRAM ENGINEERING

MPA575

Microphone Signal Processor

Pre-amplifier, Equalizer, Compressor

Owner's Manual

July 2014

Table of Contents

Table of Figures

INTRODUCTION

Welcome, and congratulations on your interest in the MPA575 Microphone Signal Processor! It has been crafted to provide the extremely high quality audio and a simple user interface that requires minimal effort to optimize.

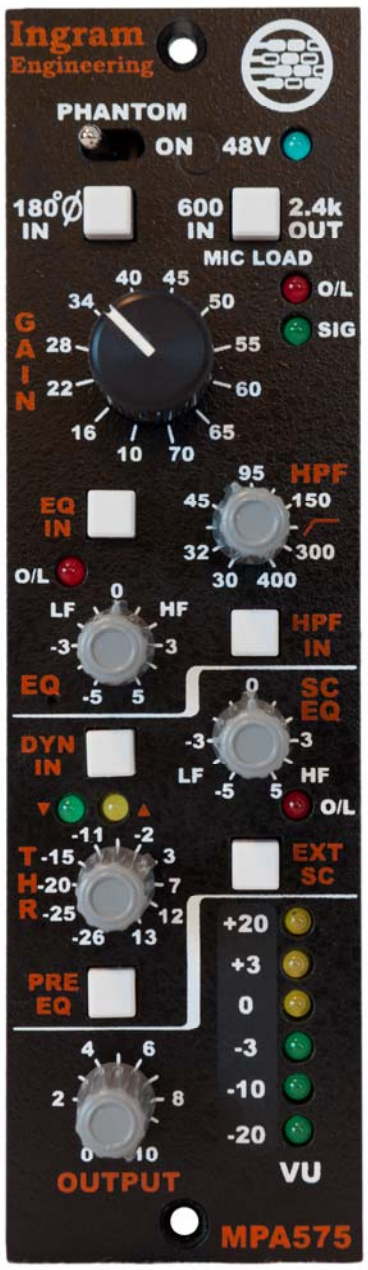
The manual is arranged to first introduce the features and provide a means to properly capture audio within minutes via a Quick Start Guide. Subsequent manual sections provide additional explanations, technical information and specifications.

The MPA575 features a lightly colored transformer coupled discrete microphone pre-amplifier, program dependent soft knee compressor with auto make-up gain, a unique see-saw EQ with combined low and high frequency control that allows broad frequency response adjustments with a single control knob, and a High Pass (Low Cut) filter with variable cutoff frequency. A high current buffer provides electronic balancing, isolation and capability to drive capacitive loads. Together, they form a mini channel strip that performs all essential analog signal processing functions needed before committing audio to a recording medium.

The MPA575 is engineered to take care of all complicated switching functions and gain adjustments behind the scenes so that the recording Engineer can concentrate on the music. As the mic load impedance setting is changed or the EQ and compressor are switched in and out, the gain stages are automatically adjusted so that the MPA575 gain is constant, within just a few tenths of a dB. Therefore, A-B audio quality comparisons when changing settings is extremely easy and more informative.

Long, trouble-free lifetime is ensured by the use of highest quality, long life caps and pots. Audiophile grade components are used throughout.

FRONT PANEL FEATURES



Phantom Power Toggle Switch

Phase Invert

Gain in dB

EQ In / Out Switch

Main Audio Path EQ Rotate CCW for LF Emphasis; Rotate CW for HF Emphasis

Compressor In / Out Switch

Comp Activity LEDs Yellow = 1 dB Gain Reduction

Comp Threshold in dBu

Place the Compressor Pre-EQ (In) or Post-EQ (Out)

Output Level

Impedance Presented to Mic

Overload LED Lights at 1% THD

Signal LED Lights at -30 VU Input

High Pass Filter Variable from 30 Hz to 400 Hz

High Pass Filter In / Out Switch

Internal Compressor Side Chain EQ. Rotate CCW to Trigger Comp on LF; Rotate CW to Trigger Comp on HF

External Compressor Side Chain EQ loopthru Button In = External EQ

VU Meter

Figure 1: Front Panel Features

QUICK START GUIDE

Optimizing the MPA575 settings involves five easy steps:

1. Disengage the EQ and HPF.
2. Increase the Gain stepped switch until the red O/L LED lights infrequently, then reduce the stepped switch by one step.
3. If the compressor is used, first adjust the Side Chain (SC) EQ to position 0 for flat frequency response.
4. Adjust the compressor Threshold for infrequent lighting of the yellow activity LED.
5. Adjust the Output Level pot until the signal level being provided to subsequent equipment is appropriate.

Once these basic steps have been taken, the timbre may be tweaked by experimenting with the Mic Load setting, the main EQ, High Pass Filter, the Compressor threshold, and the compressor Side Chain (SC) EQ.

It is worth noting that extra effort has been made for the MPA575 design to automatically hold the total gain constant to within +/- 0.2 dB as the Mic Load switch is changed and as the EQ is switched in and out. This allows easy A/B auditions of different mic loads and EQ settings under controlled conditions, rather than having loudness differences obscure true differences in timbre.

The Compressor side chain EQ can have a surprising effect on the compressed audio timbre. The side chain EQ uses the same design as the Main EQ, but the side chain EQ is used only to trigger the Compressor gain reduction, not equalize the Main audio path. As such, when the side chain EQ is set to emphasize certain frequencies, those frequencies are compressed more than the others. For example, a sibilant voice or instrument with excessive high frequency content can be selectively compressed by turning the side chain EQ clockwise past the center position. High frequencies are compressed, and low frequencies are allowed to pass with little compression. The amount of compression can be set by adjusting the Threshold level.

Another useful feature to experiment with is the Compressor Pre- Post-EQ button. This button allows you to choose whether to place the Main EQ before the Compressor or after the Compressor. This way, the Main EQ can be used as a tool to only equalize the music (Compressor Pre-EQ), or can be used as a tool to affect to which frequencies compression is applied as well as to equalize the Main audio path (Compressor Post-EQ).

BLOCK DIAGRAM

A block diagram of the MPA575 is shown below.

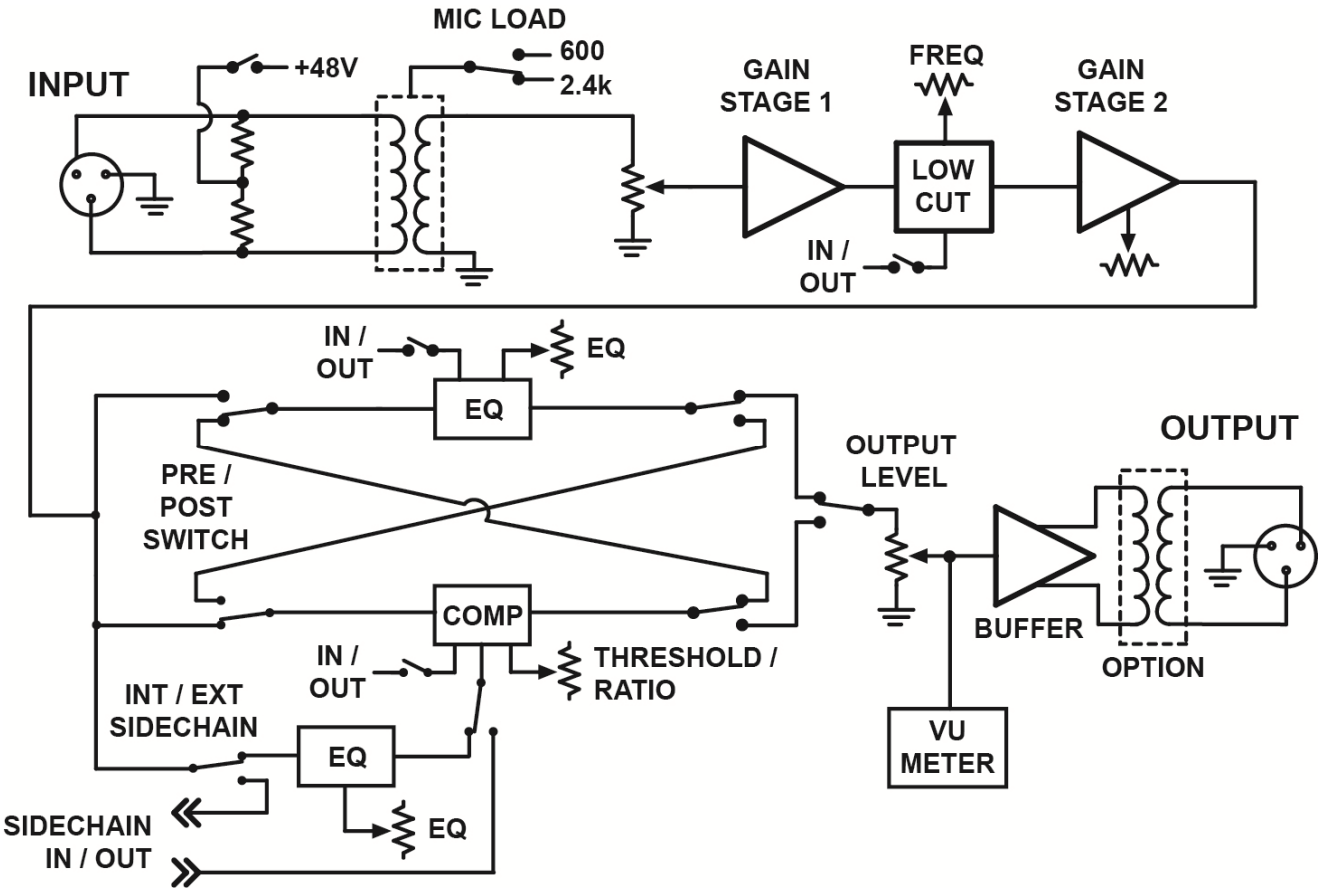


Figure 2: Block Diagram

EDGE CONNECTOR PIN ASSIGNMENTS

Power, ground and audio signal interface to the MPA575 is through the edge card connector at the rear of the module. Assignments of the edge card connector pins follow:

Pin 1	Chassis Ground
Pin 2	Output, Balanced, Positive
Pin 3	No Connection, reserved for OPT-B
Pin 4	Output, Balanced, Negative
Pin 5	Audio Ground
Pin 6	Reserved for Compressor Link Connection
Pin 7	Ext Comp Side Chain Filter Send, OPT-A (1/4" Ring)
Pin 8	Input, Balanced, Negative
Pin 9	Ext Comp Side Chain Filter Receive, OPT-A (1/4" Tip)
Pin 10	Input, Balanced, Positive
Pin 11	Mix Buss Send from Output, Positive
Pin 12	+16V DC
Pin 13	Power Ground
Pin 14	-16V DC
Pin 15	+48V DC

Figure 3: Edge Connector Pin Assignments

OPT-A lines in Pins 7 and 9 are used to route the Compressor side chain signal to an external filter. This path is connected only when the front panel "EXT SC" button is pushed in.

When enabled, the Mix Buss send is connected to the Output, Balanced, Positive path. To enable the Mix Buss send, a miniature slide switch on the module PCB must be properly set. The module cover must be removed to access the slide switch. The slide switch is located next to the PCB edge connector. Switch #1 controls the Mix Buss connection. Additional information about this feature is in the **INSTRUCTIONS FOR USE** section.

SAFETY INSTRUCTIONS

1. **Read Instructions**
   All the safety and operation instructions should be read before this product is operated.

2. **Retain Instructions**
   The safety and operating instructions should be kept for future reference.

3. **Heed Warnings**
   All warnings on the product and in these operating instructions should be followed.

4. **Follow Instructions**
   All operating and other instructions should be followed.

5. **Water and Moisture**
   This product should not be used near water or in environments with very high humidity or with condensation.

6. **Heat**
   This product should be situated away from heat sources such as radiators or other devices that product heat.

7. **Power Sources**
   This product should be connected to a power supply only of the type described in these operation instructions or as marked on this product.

8. **Object and Liquid Entry**
   Care should be taken so that objects do not fall into and liquids are not spilled into the inside of this product.

9. **Damage Requiring Service**
   This product should be serviced only by qualified service personnel when:
   a. Objects have fallen, or liquid has spilled into the product; or
   b. The product has been exposed to rain; or
   c. The product does not appear to operate normally or exhibits a marked change in performance; or
   d. The product has been dropped, or its chassis damaged.

10. Servicing

The user should not attempt to service this product beyond those means described in this operating manual. All other servicing should be referred to the Ingram Engineering Service Department.

11. Compatible Microphone Cables

To prevent hazard or damage, ensure that only microphone cables and microphones designed to IEC 268-15A are connected. Specifically, phantom power positive voltage should be supplied through a 6.81k Ohm resistor to XLR pin 2 and through a second 6.81k Ohm resistor to XLR pin 3. Phantom power negative should be connected to XLR pin 1.

Warning – To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

INSTRUCTIONS FOR USE

1. Installing the MPA575 in a Rack

RACK POWER MUST BE OFF BEFORE INSTALLING THE MPA575. The module design is not warrantied for damage that occurs when it is inserted or removed from a rack with power applied.

2. Module Warm Up

After power up, please allow approximately 2 minutes time for component warm up and stabilization time before beginning critical listening or recording.

3. Microphone Impedance Selector

The balanced microphone input uses an input transformer for smooth tonal character, high CMRR, RF interference rejection, optimum noise performance and best impedance termination over a wide range of microphone types. The transformer turns ratio can be switched to realize different impedances presented to the microphone. The microphone load can be chosen as 600 Ohms or 2.4k Ohms. Timbre can be affected by the load presented to the microphone, so the microphone impedance selector may be used as a tool to color the audio so that it matches the recording situation. The 600 Ohm impedance setting shows darker timbre, while the 2.4k Ohm settings increase the brightness and neutrality. Some microphone manufacturers have explicit requirements for the load presented to the microphone, so the MPA685 impedance selector can also be used to guarantee that the microphone manufacturer's requirements are met.

The MPA575 is designed to provide the input transformer, and therefore the mic, with constant impedance load, independent of any pre-amp settings, therefore guaranteeing consistent and excellent transient, frequency and phase response, load impedance and noise matching. When switching between the impedance settings, the MPA575 automatically adjusts the gain so the two impedance settings are level matched. The MPA575 input impedances have been carefully optimized to maintain pure, transient response and therefore the best quality for any microphone output impedance. Outstanding results are realized using any microphone, from the low output impedance Neumann KM184 to the high output impedance Audio-Technica AE2500 (dynamic capsule), with ribbon mics like the Royer 121 and with condensers like the AKG C414.

4. Adjusting the Audio Input Level

After audio connections are made and the audio source is supplying signal, adjust the "Input" knob until the Overload LED ("O/L" on the front panel) lights infrequently, then, decrease the Input knob by one step. This maximizes the dynamic range of the audio and also realizes good MPA575 audio quality. Minimum of 5dB headroom is realized by following this procedure. For maximum linearity, the Overload LED should never light. However, because the pre-amp distortion curve versus input level increases gradually, infrequently lighting the Overload LED with audio peaks still realizes good quality. As always, your ears are the best guide for how high the input signal can be set. The Overload LED lights when THD reaches 1%.

The Input section stepped switch functions as a combined attenuator / gain control. When the switch is adjusted between "10" and "34" on the front panel, the switch is in attenuator mode, and the gain of the amplifier stages is constant. When the switch is adjusted between "34" and "70" on the front panel, the switch is in gain mode, the attenuator is removed from the circuit and the pre-amp gain is varied. The following graph shows the changes in total pre-amp gain versus each stepped switch setting.

Sixty dB adjustment range is provided, and dynamic range can be maximized with one simple procedure for any signal level.

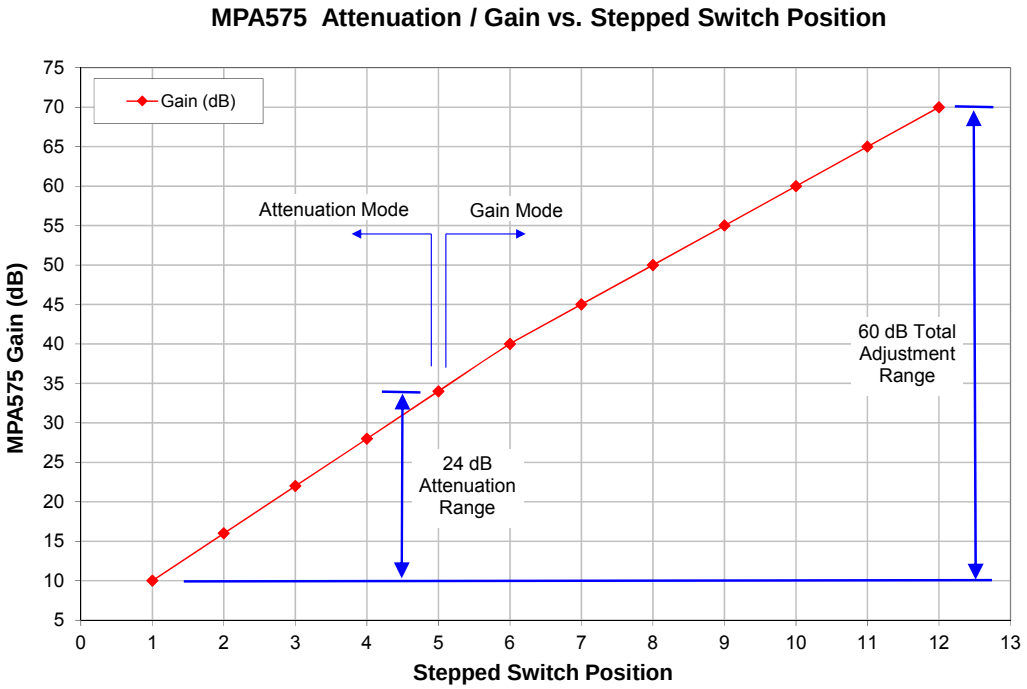


Figure 4: Attenuation or Gain vs. Stepped Switch Position

5. Overload LEDs

The Overload LEDs (O/L) are triggered by fast responding peak detector circuits. The LEDs first begin to illuminate at ~1% THD and remain on for levels above the trigger point. The Overload detection circuitry accurately tracks the 1% THD threshold to frequencies higher than 20 kHz.

If the input stepped switch is adjusted one step below the setting that occasionally lights the Overload LED, a minimum 5dB of headroom before ~1% distortion is realized, and dynamic range is maximized. If higher headroom is desired, the input stepped switch may be adjusted lower.

The Overload LED on the Main audio path provides accurate indication no matter whether the EQ or Compressor is On or Off.

Overload LEDs are also included for the Main EQ and side chain EQ paths since both of those filters boost as well as cut the audio levels. If the EQ or side chain Overload LEDs light, then rotate the filter adjustment knob towards center position to reduce peaking, or reduce the stepped switch until the Overload LEDs do not light.

6. +48V Switch

+48V phantom power can be applied to microphones by flipping the toggle switch to the right. The +48V LED lights when the phantom power is On. When on, +48V phantom power is applied to both positive and negative balanced microphone input connections.

7. Phase Invert

With the Phase Invert switch pushed in, the audio signal is inverted at the pre-amplifier output.

8. Equalizer

The Equalizer (EQ) is a combined low / high frequency EQ that acts much like a frequency response see-saw, with the pivot point set at 1.2 kHz. Broad and musical adjustments of the audio spectrum can be made using the EQ. As the adjustment knob is rotated counter clockwise, low frequencies are emphasized and high frequencies are attenuated. As the knob is rotated clockwise, low frequencies are attenuated and high

frequencies are emphasized. The EQ is hardwire bypassed when the EQ is switched off using the front panel push button.

9. High Pass (Low Cut) Filter

A push button on the front panel engages or disengages the High Pass Filter (HPF). The HPF attenuates low frequencies when engaged. The filter applies a 6dB / octave cut to frequencies below the indicated frequency when activated. The cutoff frequency can be varied from 30 Hz to 400 Hz.

10. Compressor

The compressor is a program dependent feed forward design with a simple user interface for controlling dynamics. The front panel Threshold (THR) knob not only controls the compressor threshold, but also controls compression ratio and make-up gain. Attack and release times are program dependent and automatically configured. The compressor has a soft-knee characteristic and compression ratios of 1.2:1 to greater than 20:1, depending on how far above compressor threshold the audio is driven. When working the compressor threshold in combination with the pre-amp gain adjustments, a very wide range of dynamic control can be implemented, from subtle and light compression to nearly limited response. Makeup gain is automatically changed as the compressor threshold is changed so that a relatively constant average program level is realized. An internal MPA575 low / high frequency EQ is dedicated to the compressor path and is used as a side chain filter. For more extreme side chain possibilities, the side chain path is also routed to the 500-series API[1] "Option" or Radial Engineering "Omniport"[1] output so that an external filter may be used instead of the internal EQ. The entire compressor path and side chain can be bypassed when not in use.

The compressor front panel LEDs indicate when the signal level is below or above compression threshold. The Green LED indicates signals below threshold and the Yellow LED indicates when the signal is above threshold. The Yellow LED first lights when 1dB compression is achieved and remains lit as long as the signal is above threshold.

The front panel compressor silkscreen level is expressed as dBu, and is referenced to the output level that would result if the compressor was off and the output pot was set

[1] API is a trademark of Automated Processes, and Omniport is a trademark of Radial Engineering and their appearance here in no way alters their ownership of same.

for maximum level. When the compressor is on, the output level changes because the compressor has automatic make-up gain. Because of this, and because the output pot may be set to any arbitrary position, it is impossible to predict what the true output level would be, so the reference described above is used since threshold level can be known under these conditions.

For example, the threshold can be set to +3dBu, and 1dB compression is realized at an uncompressed output level of +3dB, assuming the output pot is at maximum. Compression increases as audio levels increase above the +3dBu threshold used in this example. The automatic make-up gain feature increases the MPA575 gain so that the subjective loudness of the compressed signal is approximately equal to the non-compressed loudness, and easy A/B comparisons of the audio quality can made.

11. Using the Compressor Side Chain Filter

An internal MPA575 low / high frequency EQ is dedicated to the compressor path and is used as a side chain filter. For more extreme side chain possibilities than are offered with the see-saw type filter internal to the MPA575, an external side chain filter can be used. For example, filters with high-Q boost or notch capability can be used to target narrow frequency ranges that need compression more than the overall spectrum.

The "EXT SC" front panel button is used to select internal or external side chain filter. When the button is Out, the internal filter is used, and when In, the signal is routed to an external filter.

The external side chain path is routed to the 500-series API "OPT-A" or Radial Engineering "Omniport" output, module edge connector Pins 7 and 9, and these can be used with rack units that have the API "Option" or Radial Engineering "Omniport" 1/4" rear panel input/output.

The rack unit OPT-A / Omniport 1/4" jack Ring is connected to edge connector Pin 7, and serves as the output from the MPA575 module.

The 1/4" jack Tip is connected to edge connector Pin 9, and serves as the input from an external filter to route the signal back into the MPA575.

The following block diagrams show signal routing for internal and external side chain filter use. For simplicity, the diagrams show the signal flowing through the compressor first, then to the main EQ, but the main EQ can actually be placed before or after the compressor by using the "PRE EQ" front panel push button.

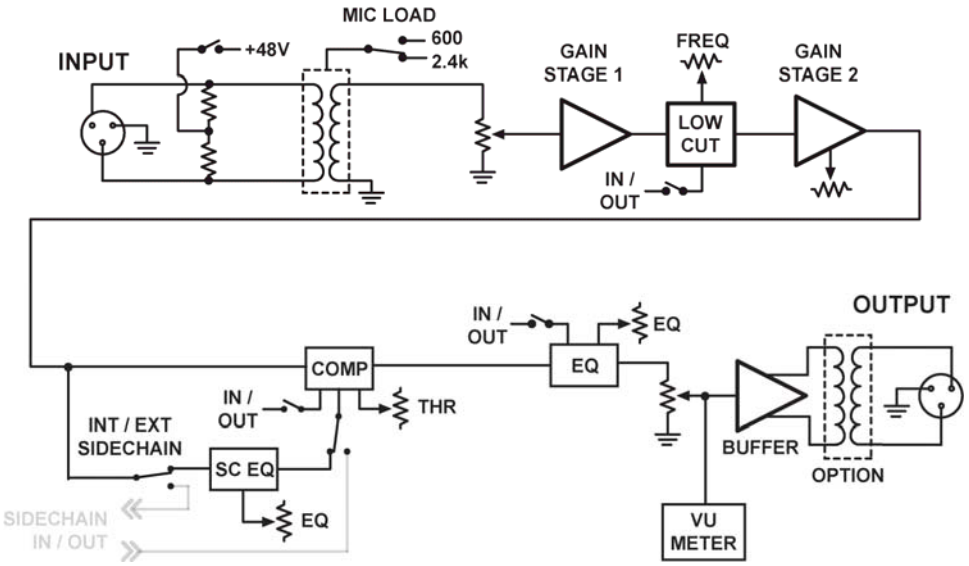


Figure 5: MPA575 with Internal Side Chain Filter

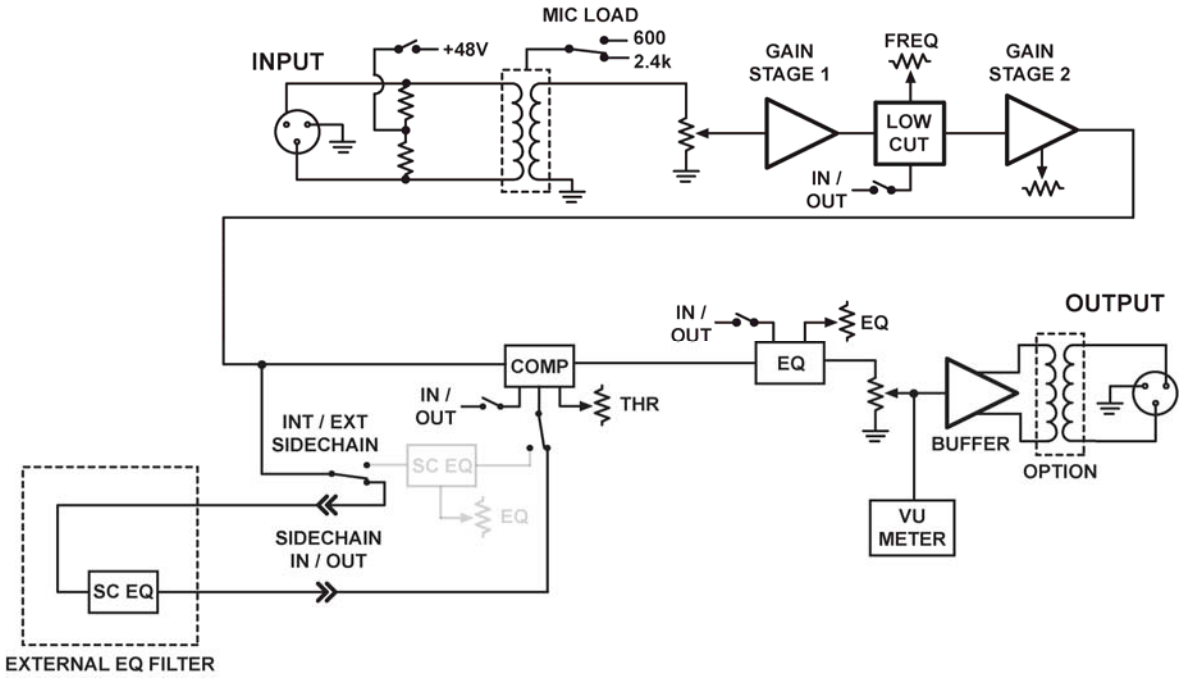


Figure 6: MPA575 with External Side Chain Filter

12. Adjusting the Output Level

Use the "Output" knob to adjust the audio level so that it is compatible with the level specifications of the tape machine, processing gear or A/D connected to the pre-amp output.

The Output level pot can be used in conjunction with the stepped Input switch to set the overall MPA575 gain to any value. For applications where 0 dB gain is desired, many settings can achieve this, but two simple methods are listed below for convenience:

Method 1: Set the stepped switch to '34'; set the Output pot to '1'
Method 2: Set the stepped switch to '10'; set the Output pot to '6.2' (approximate)

A high current buffer provides electronic balancing, isolation and capability to drive capacitive loads. The output buffer of the pre-amp can handle any signal level the input sections can produce, so the increasing the Output knob to its maximum level does not degrade the audio quality. This is true for any Input section settings.

13. Using the MPA575 Line Mode

Some applications require an impedance higher than the 600 or 2.4k Ohms presented by the MPA575 in standard operating mode. Prime examples of this are using the MPA575 as a line-level device for post processing or re-amplifying recorded signals. Most modern equipment can drive loads as low as 2.4k Ohms, but for those cases where higher MPA575 input impedance is desired, the MPA575 can be configured to present either a 2.9k or 11k Ohm load instead of 600 or 2.4k Ohm load. The same front panel switch that changes the load between 600 and 2.4k Ohms is used to switch between 2.9k and 11k Ohm load when the MPA575 is in Line mode.

Line mode is activated by using a slide switch accessible after the module cover is removed. After the cover is removed, a small set of slide switches near the edge connector is visible. Locate switch #4 and slide it to the Off position to activate Line mode. Replace the module cover. The MPA575 is shipped with Mic mode active.

When the MPA575 is in Line mode, the input attenuator is disabled. The attenuator is controlled by the stepped switch, and is active when the switch is in the positions labeled 10, 16, 22 and 28. Because the attenuator is inactive in Line mode, the MPA575 gain is at its minimum and is constant for stepped switch positions 10, 16, 22, 28 and 34.

Overall gain is reduced in Line mode, so constant gain of 21dB is realized for stepped switch positions 10, 16, 22, 28 and 34. Gain is increased as the stepped switch is

increased above 34. Max MPA575 gain in Line Mode is 57dB, and is realized with the stepped switch at fully clockwise position.

The following photographs show the location of the slide switch relative to the edge connector and show a Line mode switch close-up.

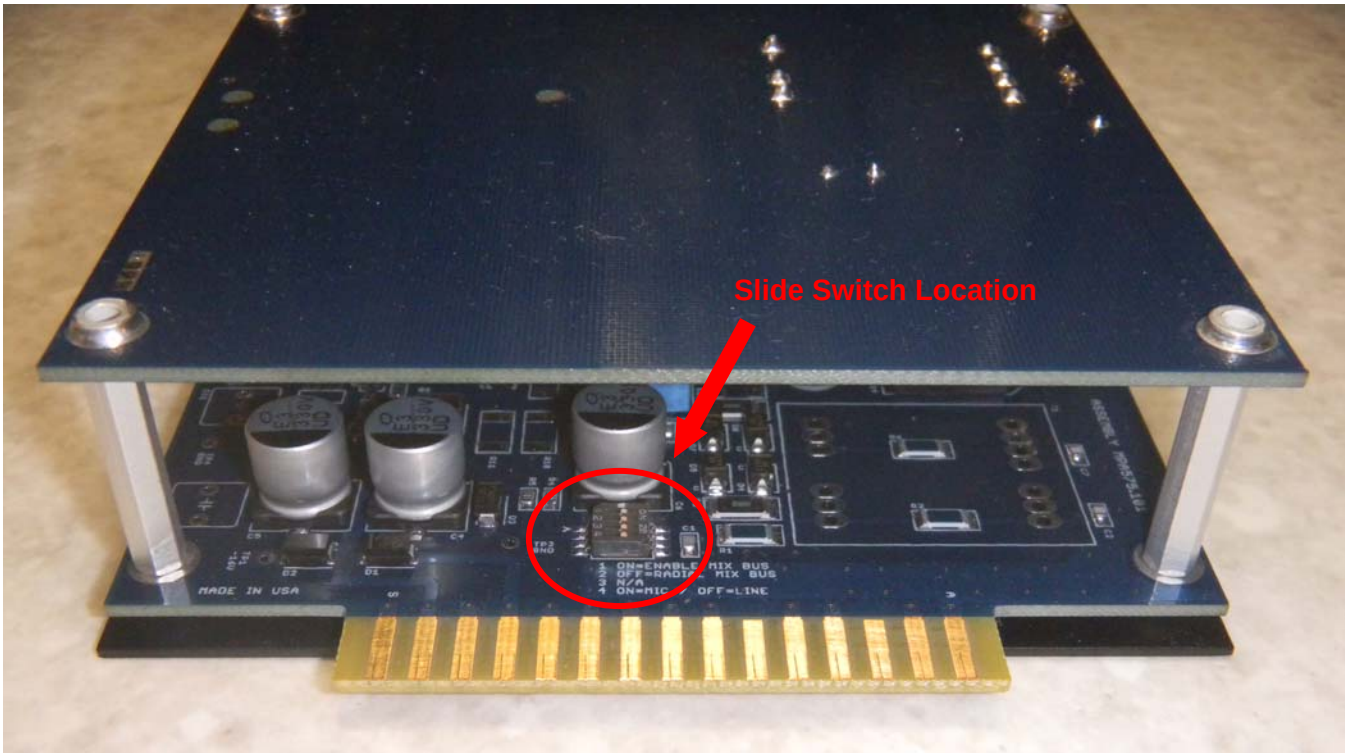


Figure 7: Line Mode Slide Switch Location

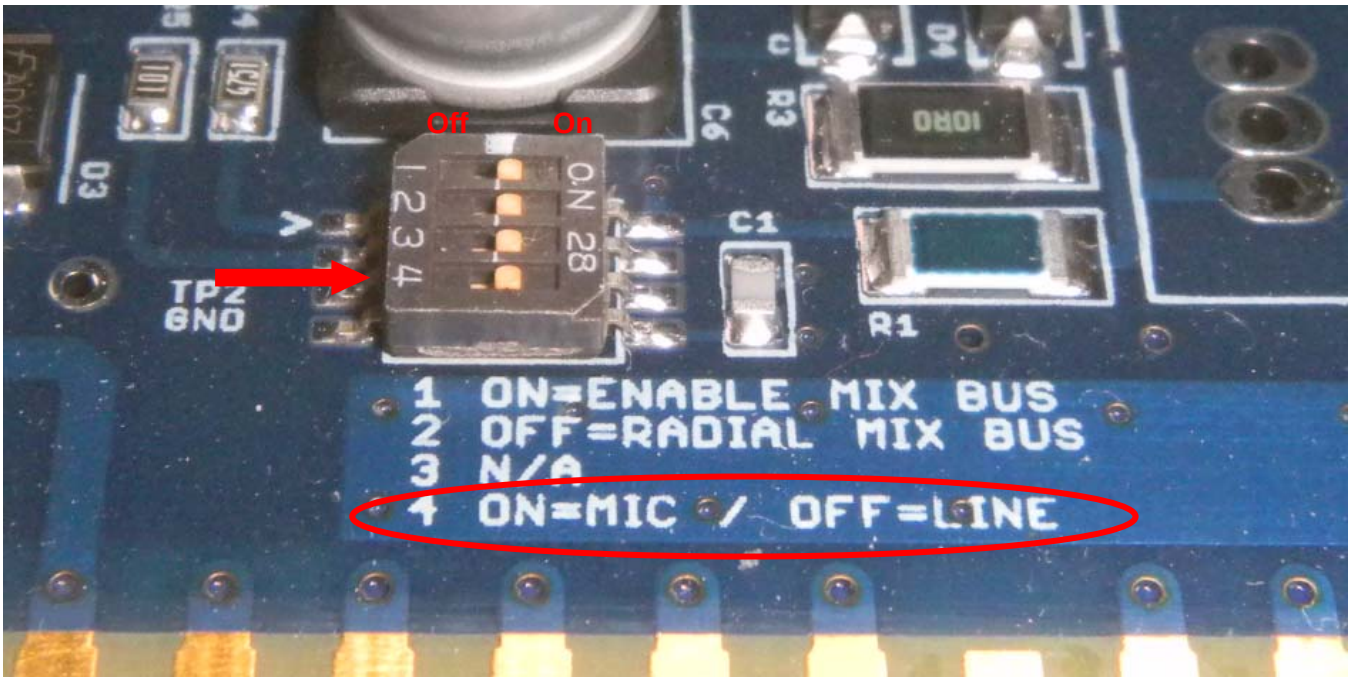


Figure 8: Line Mode Slide Switch Close-Up

14. Mix Bus Settings

Pin 11 of the edge card connector is specified in the VPR[1] Alliance 500 Specification for use as a Gain Trim Resistor. However, current usage by racks being sold in the marketplace is for a mix bus for summing 500-series module outputs. The MPA575 takes advantage of this usage.

The MPA575 has a slide switch that is used for enabling or disabling the Mix Buss option. When disabled, the MPA575 output is disconnected from the Mix Bus on Pin 11. For most applications, it is acceptable to always leave the Mix Buss enabled and therefore connected to Pin 11. The MPA575 is shipped with the Mix Bus enabled.

To access the slide switch used for enabling/disabling the Mix Bus, remove the cover and locate the small slide switch next to the edge card connector. The following photograph shows a close-up of the slide switch.

[1] VPR is a trademark of Automated Processes Incorporated, and it's appearance here in no way alters their ownership of same.

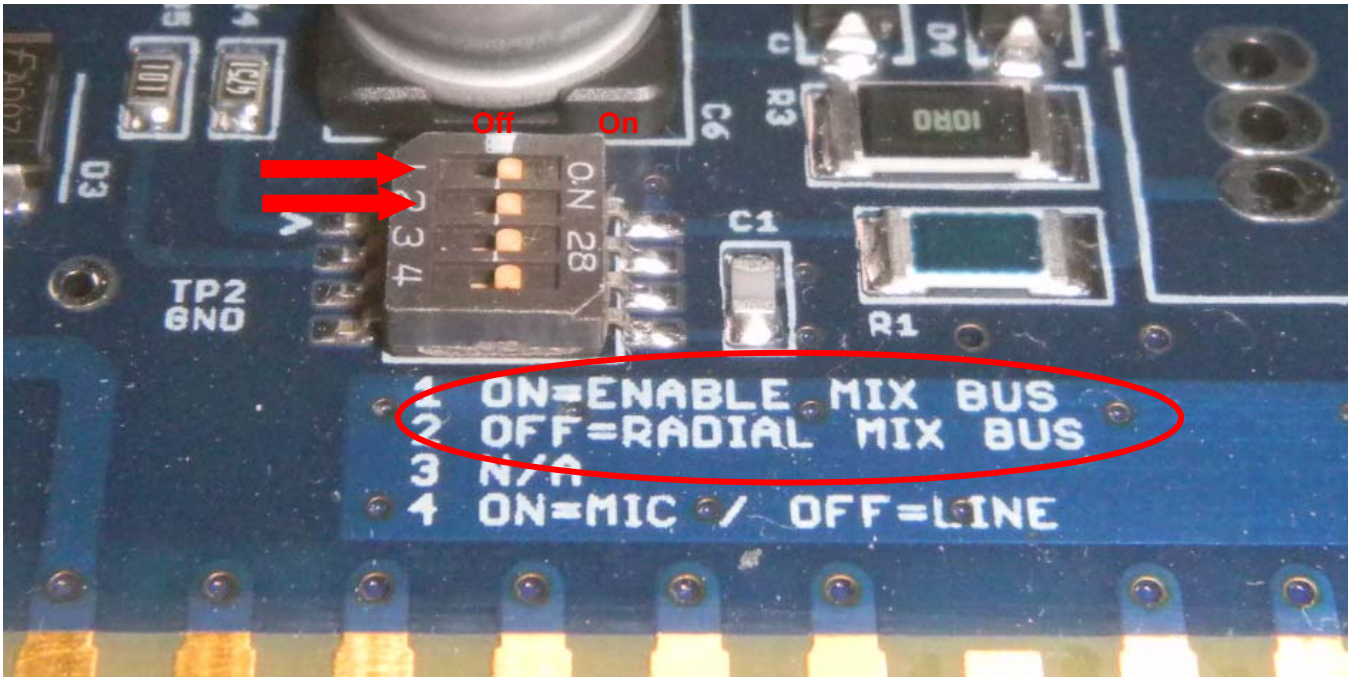


Figure 9: Slide Switch Showing Mix Buss Switch Assignment

The mix bus can be configured as a typical low impedance (~10 Ohms) output for driving high impedance mix buss inputs. The MPA575 is configured in this mode when shipped from the factory. This configuration realizes the following equivalent block diagram:

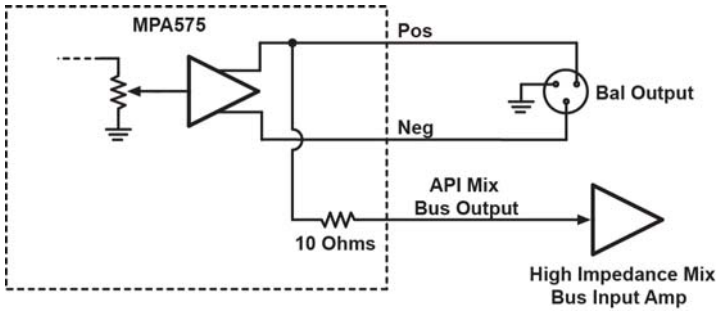


Figure 10: Standard Mix Bus Configuration (Switch #2 On)

The mix bus can also be configured as specified in the Radial Workhorse-OS Datasheet as an inverting summing node of the mix bus. This configuration realizes the following equivalent block diagram:

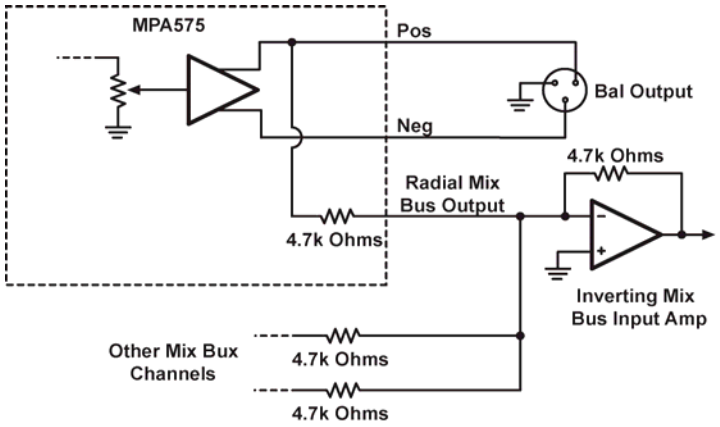


Figure 11: Radial Inverting Summing Node Mix Bus Configuration (Switch #2 Off)

To switch between the low output impedance mix bus option and the Radial summing node option, simply slide switch #2 to the proper location.

AUDIO SPECIFICATIONS

(T_A=+25°C unless otherwise noted)

Parameter	Min	Typ	Max	Unit	Comments
MPA575 Input Impedance					
Low Setting		600		Ω	Mic Mode
High Setting		2.4k		Ω	Mic Mode
Low Setting		2.9k		Ω	Line Mode
High Setting		11k		Ω	Line Mode
Nominal Gain vs Input Stepped Switch		10		dB	Step Position 1, Fully CCW
Mic Mode		16		dB	Step Position 2
		22		dB	Step Position 3
		28		dB	Step Position 4
		34		dB	Step Position 5
		40		dB	Step Position 6
		45		dB	Step Position 7
		50		dB	Step Position 8
		55		dB	Step Position 9
		60		dB	Step Position 10
		65		dB	Step Position 11
		70		dB	Step Position 12, Fully CW
Nominal Gain vs Input Stepped Switch		21		dB	Step Position 1, Fully CCW
Line Mode		21		dB	Step Position 2
		21		dB	Step Position 3
Note that the attenuator is disabled		21		dB	Step Position 4
in Line Mode, and Gain is constant		21		dB	Step Position 5
for stepped switch positions 1 - 5		27		dB	Step Position 6
		32		dB	Step Position 7
		37		dB	Step Position 8
		42		dB	Step Position 9
		47		dB	Step Position 10
		52		dB	Step Position 11
		57		dB	Step Position 12, Fully CW
Frequency Response	<10		>100k	Hz	±3.0 dB, Equalizers and Compressor Off

Parameter	Min	Typ	Max	Units	Comments
Total Harmonic Distortion + Noise, Min					<10 Hz to 22 kHz BW, 150 Ohm Source, 2.4kHz Input Impedance, 1kHz
+10 dBu Output		0.002		%	
Noise, Input Referred					<10 Hz to 22 kHz BW, No Weighting, 150 Ohm Source, 1kHz, EQ and Compressor Off
		-123		dBu	2.4k Hz Input Impedance
		-125		dBu	600 Hz Input Impedance
Overload Circuit LED Threshold		1.0		%	LED illuminates at 1.0% THD
Max Input Level		+15		dBu	Mic Mode
		+5		dBu	Line Mode
Max Output Level		+25		dBu	with < 1.0% THD, 1kHz, 100k Ohms Load Impedance
Equalizer					Main Audio Path Equalizer
See-Saw Pivot Frequency		1.2		kHz	
Low Frequency Cut		-5		dB	
Low Frequency Boost		+12		dB	
High Frequency Cut		-6		dB	
High Frequency Boost		+16		dB	
High Pass Filter Adjustment Range	30		400	Hz	Typical -3dB Cutoff Frequency
Compressor					
Threshold Range	-30		+13	dBu	
Compression Ratio	1.2 : 1		20 : 1	dB	
Attack Time		5		mS	Settling to Within 1dB for 10dB Compression
Release Time		15		mS	Settling to Within 1dB for 10dB Compression

ENVIRONMENTAL SPECIFICATIONS

Parameter	Min	Typ	Max	Unit	Comments
Operating Temperature	0		85	°C	
Humidity	30		80	%	Non-condensing

CARE AND MAINTENANCE

1. **Cleaning**

   Avoid solvents or chemicals that may dissolve the silkscreen text on the front and back panels.

TROUBLESHOOTING

1. **Power does not turn on**

   First verify that power is being applied to the module by engaging the Compressor function. It has a Green LED that illuminates when the Compressor is on but below threshold. If this LED does not come on, verify that the 500-rack has power applied and is switched on. Check the rack AC fuse.

2. **Microphone Input Audio Sounds Distorted**

   If this is the desired effect, congratulations – you are on your way! If distortion is not desired, follow the trouble shooting tips below.

   Disengage the Equalizer and Compressor. Check to see if the Red pre-amplifier O/L LED is illuminated. If so, decrease the step switch position by one or more increments until the Red O/L LED is not illuminated. If the audio is still distorted, check the MPA575 input impedance and change it to the 2.4k Ohms position if it is not already in this position. Some microphones require a higher impedance load to operate without distortion at high levels.

   Distortion can also occur if the Equalizer boost is excessive. If distortion is still audible, use the Equalizer adjustment knob to see if distortion is due to over-boosting the Equalizer. The Red Equalizer O/L LED should never light. The Equalizer circuit realizes significant amplification when at its maximum, and this circuit can overload, even when the pre-amplifier circuit does not. If the Equalizer is overloading, simply decrease the amount of boost or decrease the input stepped switch by one or more increments.

   Any compressor can produce distortion artifacts at certain settings. If undesirable distortion occurs when the Compressor is engaged, increase the Threshold to realize

less compression, or change the side chain Equalizer from boost mode to flat response. If an external side chain equalizer is used, check the gain of the external equalizer and check the amount of frequency boost is being utilized. The external side chain equalizer could potentially distort for excessive boost, and this may cause artifacts with the MPA575 Compressor.

3. **Compressor Internal Side Chain Equalizer Does Not Function**

   The compressor has an option to use an external side chain equalizer, which is enabled if the "EXT SC" front panel push button is pressed in. If the internal side chain Equalizer does not function, check the position of the EXT SC button and verify it is in the Out position.

4. **Hum or Buzz is Audible**

   Check the integrity of the microphone and output cables. If the 500-Series rack includes a ground lift for the balanced audio cable, try lifting the ground. Check the integrity of the 500-Series rack power supply.

CONTACT INFORMATION

Ingram Engineering
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Phone +1 (678) 685-9838
URL: http://ingramengineering.net
Email: information@ingramengineering.net

WARRANTY INFORMATION

Ingram Engineering warrants all materials, workmanship and proper operation of this product for a period of three years from the original date of purchase. If any defects are found in the materials or workmanship or if the product fails to function properly during the applicable warranty period, Ingram Engineering, at its option, will repair or replace the product. This warranty applies only to equipment sold and delivered by Ingram Engineering or its authorized dealers. Original purchase receipts showing date and location of purchase must be presented at the time of submission for warranty work.

Failure to register the product will not void the three year warranty.

Service and repairs of Ingram Engineering products are to be performed only at the factory OR at an authorized Ingram Engineering Service Center. Unauthorized service, repairs, or modification will void this warranty. To obtain repairs under warranty, you must have a copy of your sales receipt from the store where you bought the product. It is necessary to establish purchase date and thus determine whether or not your Ingram Engineering product is still under warranty.

To obtain factory service:

Call Ingram Engineering at 678-685-9838 9 AM to 5 PM Monday through Friday (East Coast Time) to get a Return Authorization (RA). Products returned without an RA number will be refused.

Pack the product in its original shipping carton. If you do not have the carton, just ask for one when you get your RA number, and we'll send a shipping carton to you. Please seal the product in a plastic bag.

Also include a note explaining exactly how to duplicate the problem, a copy of the sales receipt showing price and date, and your return street address (no P.O. boxes or route numbers, please). If we cannot duplicate the problem or establish the starting date of your Limited Warranty, we may, at our option, charge for service time.

Ship the product in its original shipping carton, freight prepaid to:
Ingram Engineering Service Department
926 Bruce Circle
Atlanta, Ga. 30316 USA

IMPORTANT: Make sure that the RA number is plainly written on the shipping carton.

To obtain service from an Authorized Ingram Engineering Service Center:

Call Ingram Engineering at 678-685-9838, 9 AM to 5 PM Monday through Friday (East Coast Time) to receive: 1) The name and address of your nearest Authorized Ingram Engineering Service Center and 2) A return authorization (RA). You must have an RA number before taking your unit to a service center.

Make sure that you have a copy of your sales receipt from the store where you bought the product. If you can't find it, the Authorized Service Center may charge you for repairs even if your Ingram Engineering product is still covered by the Three Year Limited Warranty.
Make sure the problem can be duplicated. If you bring your Ingram Engineering product to an Authorized Service Center and they can't find anything wrong with it, you may be charged a service fee.

If the Authorized Ingram Engineering Service Center is located in another city, pack the product in its original shipping carton.

Contact the Authorized Ingram Engineering Service Center to arrange service or bring the Ingram Engineering product to them.

Ingram Engineering and Authorized Ingram Engineering Service Centers reserve the right to inspect any products that may be the subject of any warranty claims before repair or replacement is carried out. Ingram Engineering and Authorized Ingram Engineering Service Centers may, at their option, require proof of the original date of purchase in the form of a dated copy of the original dealer's invoice or sales receipt. Final determination of warranty coverage lies solely with Ingram Engineering or its Authorized Service Centers.

Ingram Engineering products returned to Ingram Engineering and deemed eligible for repair or replacement under the terms of this warranty will be repaired or replaced within sixty days of receipt by Ingram Engineering. Ingram Engineering may use refurbished parts for repair or replacement of any product. Products returned to Ingram Engineering that do not meet the terms of this Warranty will be repaired and returned C.O. D. with billing for labor, materials, return freight, and insurance. Products repaired under warranty at the factory will be returned freight prepaid by Ingram Engineering to any location within the boundaries of the USA.

Ingram Engineering warrants all repairs performed for 90 days or for the remainder of the warranty period. This warranty does not extend to damage resulting from improper installation, misuse, neglect or abuse, or to exterior appearance. This warranty is recognized only if the inspection seals and serial number on the unit have not been defaced or removed.

Ingram Engineering assumes no responsibility for the quality or timeliness of repairs performed by Authorized Ingram Engineering Service Centers.

This warranty is extended to the original purchaser and to anyone who may subsequently purchase this product within the applicable warranty period. A copy of the original sales receipt is required to obtain warranty repairs.

This is your sole warranty. Ingram Engineering does not authorize any third party including any dealer or sales representative, to assume any liability on behalf of Ingram Engineering or to make any warranty for Ingram Engineering.

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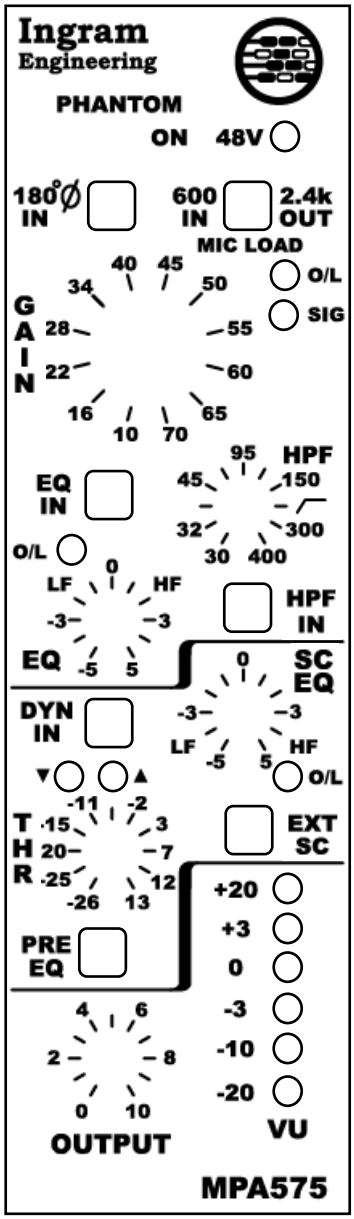
MPA575 MICROPHONE SIGNAL PROCESSOR RECALL SHEET



Notes:

NOTES:

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