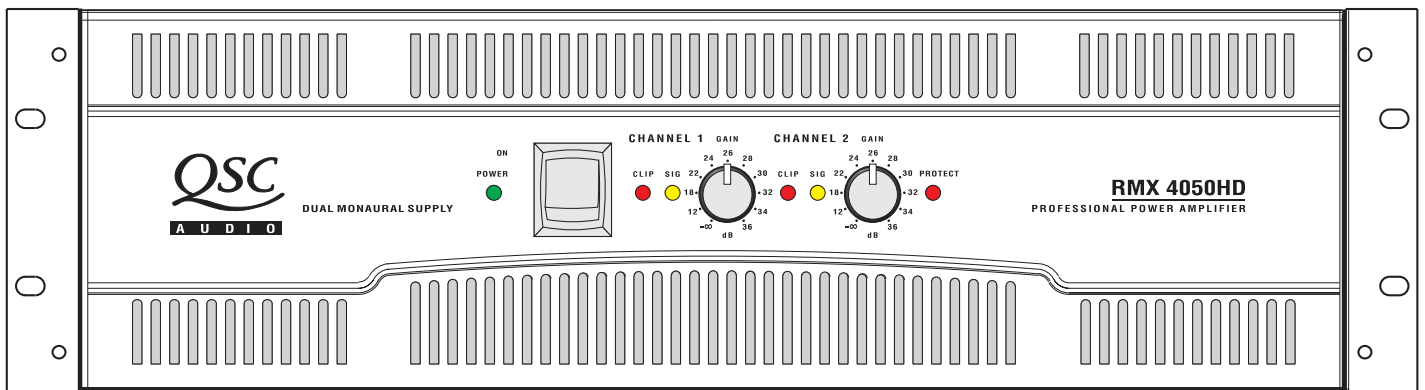




# RMX 4050HD and RMX 5050

User Manual



TD-000109-00 rev.E

# Important Safety Precautions & Explanation of Symbols



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous” voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in this manual.



The lightning flashes printed next to the output terminals of the amplifier are intended to alert the user to the risk of hazardous energy. Output connectors that could pose a risk are marked with the lightning flash. Do not touch output terminals while amplifier power is on. Make all connections with amplifier turned off.



**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.**



**WARNING: To prevent fire or electric shock, do not expose this equipment to rain or moisture.**

This amplifier has a serial number located on the rear panel.  
Please write this and the model number down and keep them for your records.  
Keep your purchase receipt. It is your proof of purchase.

Serial Number: \_\_\_\_\_  
Date of Purchase: \_\_\_\_\_  
Purchased From: \_\_\_\_\_

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## INTRODUCTION

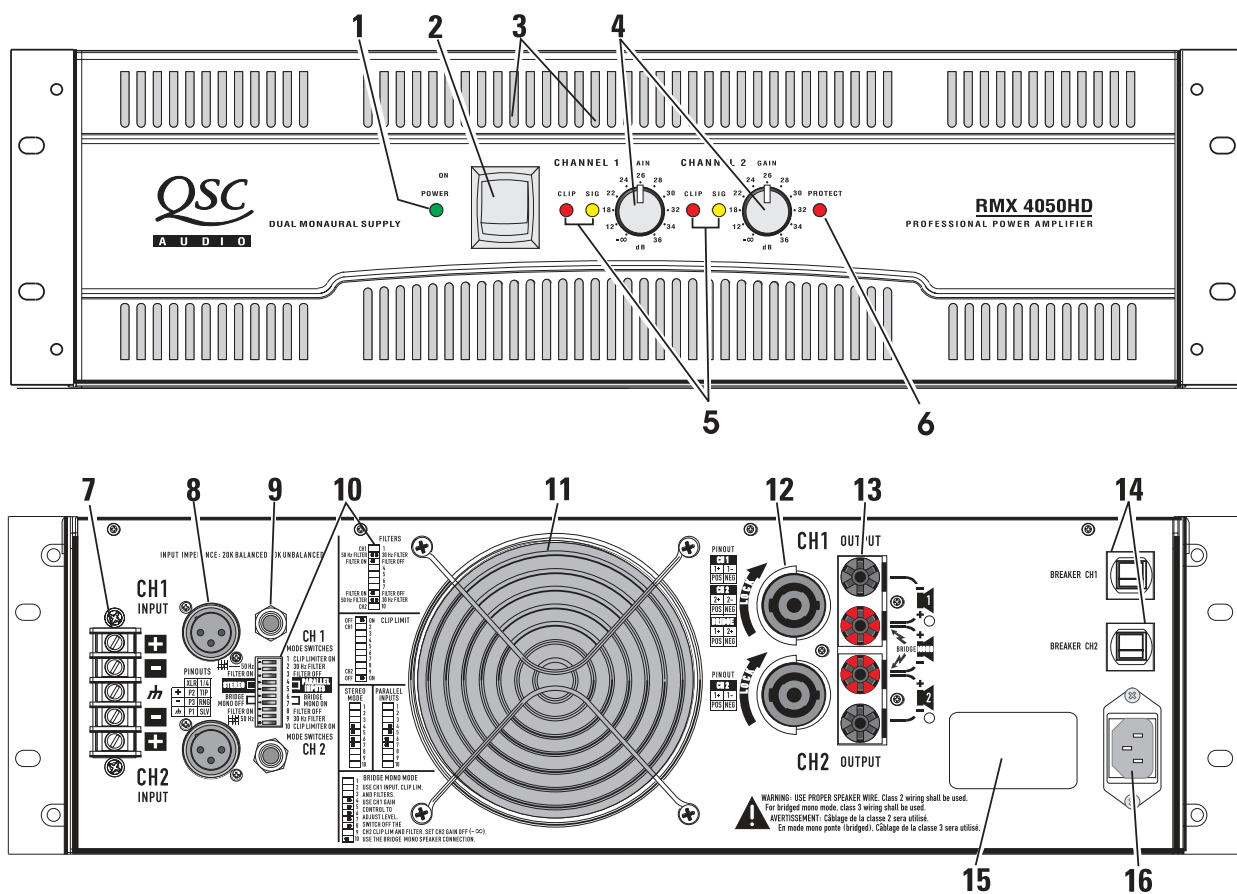
Thank you for purchasing this QSC power amplifier. Please read the following directions to obtain the best results.

### Key Features

- 2 channels
- XLR, TRS, and barrier strip screw terminal input connectors
- Speakon® and binding post output connectors
- Each channel has independent Clip Limiter and Low Frequency Filter (30 or 50 Hz)
- Stereo, Bridge Mono, and Parallel modes of operation
- QSC reliability
- Complete amplifier protection

## CONTROLS, CONNECTORS & FEATURES

(RMX 4050HD shown, RMX 5050 similar)



- |                                   |  |
|-----------------------------------|--|
| 1- Power On indicator             | 9- TRS (1/4") input connectors             |
| 2- Power switch                   | 10- Mode switches and settings             |
| 3- Cooling air exhaust vents      | 11- Cooling air inlet vents                |
| 4- Gain controls                  | 12- Speakon output connectors              |
| 5- Clip and Signal indicators     | 13- Binding post output connectors         |
| 6- Protect mode indicator         | 14- AC circuit breakers                    |
| 7- Barrier strip input connectors | 15- Serial number label                    |
| 8- XLR input connectors           | 16- IEC power inlet (power cord connector) |

## UNPACKING

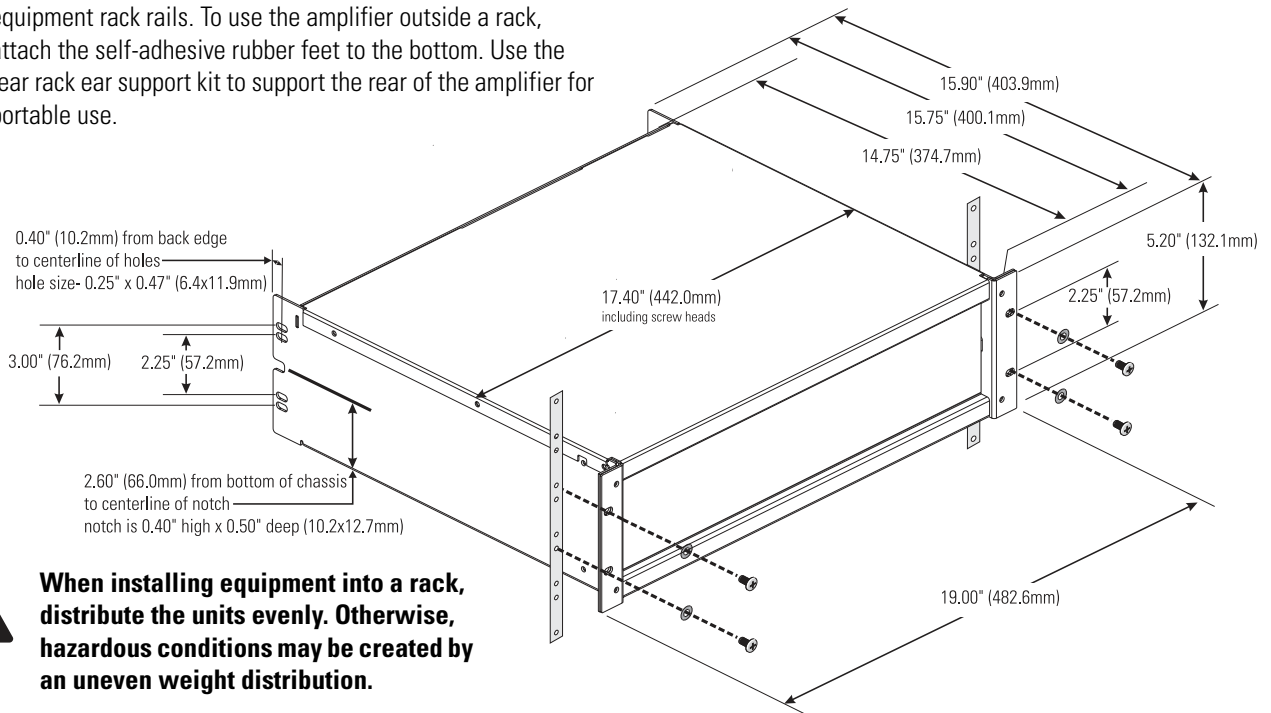
Factory packed carton contains:

- RMX amplifier
- User's manual
- Adhesive rubber feet (for non-rack mount applications)
- Rear rack ear mounting kit
- IEC-type detachable power cord

Use the same type carton when shipping the amplifier.

## RACK MOUNTING

Use four screws and washers to mount the amplifier to the equipment rack rails. To use the amplifier outside a rack, attach the self-adhesive rubber feet to the bottom. Use the rear rack ear support kit to support the rear of the amplifier for portable use.



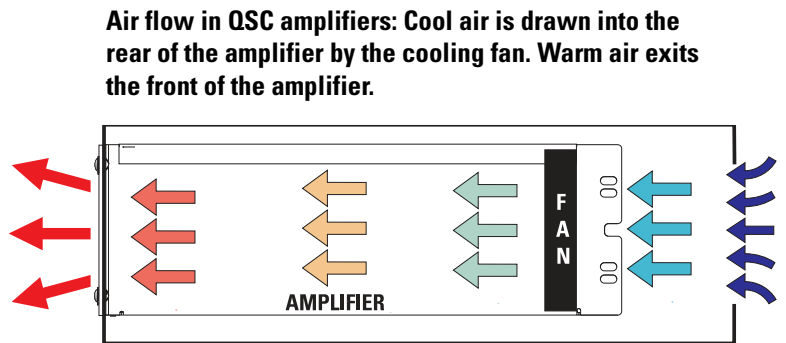
**When installing equipment into a rack, distribute the units evenly. Otherwise, hazardous conditions may be created by an uneven weight distribution.**

## COOLING

Air flows from the rack, into the back of the amplifier, and out the front. This keeps the rack cool. The fan automatically runs faster when the amp is working hard.



**Do not block the front or rear air vents!**



**Air flow in QSC amplifiers: Cool air is drawn into the rear of the amplifier by the cooling fan. Warm air exits the front of the amplifier.**

## AC MAINS

Connect AC power to the IEC socket on the back of the amplifier. NOTE: Turn off the AC power switch before connecting AC power.



**The correct AC line voltage is shown on the serial number label, on the rear panel. Connecting to the wrong line voltage may damage the amplifier or increase the risk of electric shock.**

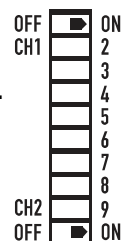
## SETTING THE MODE SWITCHES

The RMX 4050HD and RMX5050 have Mode switches for Stereo, Parallel, or Bridge Mode. Additionally, each channel has independent Clip Limiting and Low Frequency (LF) Filtering.

## SETTING CLIP LIMITERS

Each channel has a Clip Limiter with its own on-off switch. The limiter only responds to actual clipping, and automatically compensates for load and voltage variations. Clip limiting is generally recommended, especially to protect high frequency drivers.

**Set switch to the right to use Clip Limiting. Switch 1 controls Channel 1. Switch 10 controls Channel 2.**



## SELECTING STEREO, PARALLEL, OR BRIDGE MODE

The amplifier can be set for normal Stereo operation, Parallel input Mode, or Bridge Mono Mode.

**Stereo Mode-** Each channel remains independent. The amplifier may be used for two different signals.

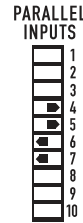
**Parallel Mode -** This setting connects both inputs together. One signal feeds both channels. Each channel's Gain control and loudspeaker connection remain independent.

**Bridge Mode-** This setting combines both channels into a single channel with twice the output power. Use only the first channel's input and Gain control. Set the second channel's Gain control at minimum. The load must be rated for the higher output power, and is connected as shown in the Outputs section.

 **Do not connect different inputs to each side of a channel pair when operating in Parallel or Bridge Mode.**



**Stereo Mode - Switches 4, 5, 6 and 7 are all set to the LEFT position.**



**Parallel Mode - Switches 4, and 5, are set to the RIGHT position. Switch 6 and 7 are set to the LEFT position.**



**Bridge Mode- Switches 4, 5, 6, 7 and 8 are all set to the RIGHT position and Switch 10 is set to the LEFT position.**

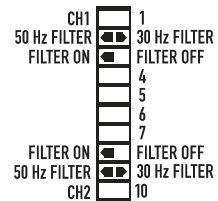
## SETTING LOW FREQUENCY FILTERS

Each channel has a 12dB per octave Low Frequency Filter to prevent cone overexcursion, making more power available for the loudspeaker's rated frequency range. This reduces distortion and prevents amplifier overload.

The Filter should only be turned off for driving subwoofers with special low frequency capability. Otherwise, unless you have filtering in the signal path preceding the amplifier, use the Low Frequency Filter. The loudspeaker's documentation will specify the low frequency limit.

Each channel has its own switches for LF Filter on/off and frequency selection.

**Channel 1 uses switches 2,3. Channel 2 uses switches 8,9. Switches 3 and 8 turn the LF Filter ON. Switches 2 and 9 select 30Hz or 50 Hz.**



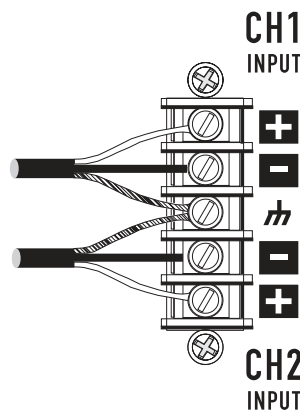
## BARRIER STRIP INPUTS

Each channel has a balanced 3-terminal input. Wiring is connected with simple hand tools, and inputs can be changed quickly.

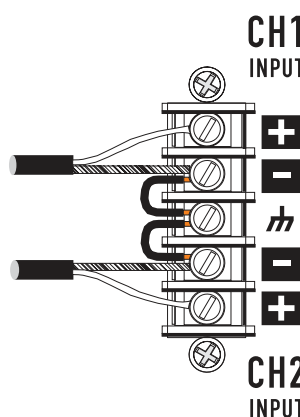
The input impedance is 20k ohm balanced or 10k ohm unbalanced.

Balanced connections are recommended to reduce AC hum and interference, especially with long cable runs. Unbalanced connections may be suitable for short cables. The signal's source impedance should be less than 600 ohms.

If unbalanced connections are required, connect a jumper wire between the minus (-) terminal and the ground terminal. Then connect the input signal to the positive (+) terminal and the shield to the minus or ground terminal.



**Balanced inputs: Strip the wires ¼ inch (6 mm) and connect to the terminals as shown. Be sure to tighten the screws firmly.**



**Unbalanced inputs: Strip the wire ¼ inch and connect a jumper wire between the minus (-) terminal and the ground terminal. Then connect the input signal to the positive (+) terminal and the shield to the minus or ground terminal, as shown. Be sure to tighten the screws firmly.**

## XLR and TRS (1/4") INPUTS

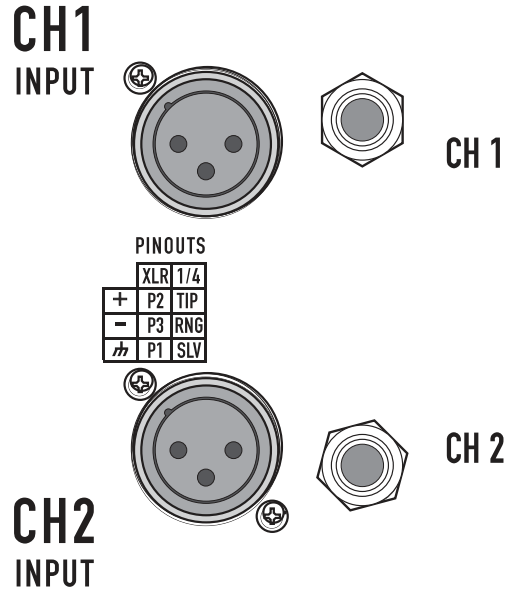
Each channel has a balanced 3-terminal XLR and TRS input. Inputs are connected with standard cables and can be changed quickly. Pinouts are marked on the rear panel and shown in the illustration.

The input impedance is 20k ohm balanced or 10k ohm unbalanced.

Balanced connections are recommended to reduce AC hum and interference, especially with long cable runs. Unbalanced connections may be suitable for short cables. The signal's source impedance should be less than 600 ohms.

Unbalanced TRS connectors (2-terminal) automatically connect the minus (-) terminal to ground when inserted.

INPUT IMPEDANCE: 20K BALANCED 10K UNBALANCED



## OUTPUTS

Wiring connections are shown on the back of the chassis.

### **BINDING POST OUTPUTS**

Stereo and Parallel Mode: Wire as shown by loudspeaker symbols 1 and 2.

Bridge Mode: Wire as shown by Bridge Mono loudspeaker symbol.

### **SPEAKON OUTPUTS**

Each channel accepts a normal 2-wire cable. In addition, Channel 1 accepts 4-wire cables for single cable stereo or bi-amp connection.



**OUTPUT TERMINAL SAFETY WARNING! Do not touch output terminals while amplifier power is on. Make all connections with amplifier turned off. Risk of hazardous energy!**

**Stereo and Parallel Mode-** Connect each loudspeaker to its own channel of the amplifier, as shown on the left side of the chassis label. The Mode configuration switches must be set for Stereo or Parallel Mode.

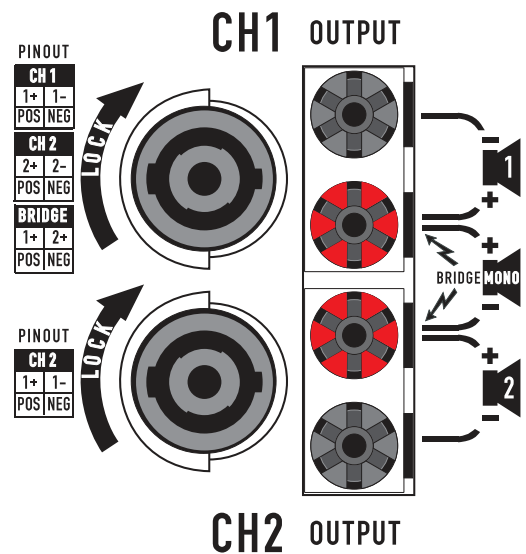
**Bridge Mode-** Bridge Mode configures the channel pair to drive a single audio circuit. The Mode configuration switches must be set for Bridge Mode. Connect the load as shown on the right side of the binding posts or to the left on Channel 1's Speakon. 4 ohms is the minimum impedance for Bridge Mode use.



**Do not use less than 4 ohm load in Bridge Mode! Note polarity of connection for Bridge Mode.**



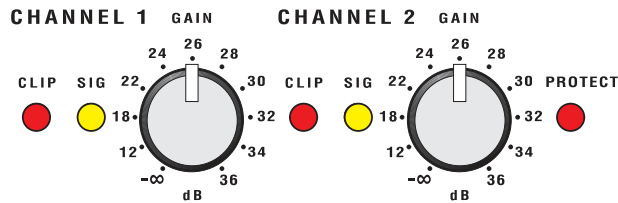
**OUTPUT WIRING WARNING: CLASS 2 WIRING SHALL BE USED. FOR BRIDGED MONO MODE, CLASS 3 WIRING SHALL BE USED.**



## **LED INDICATORS**

The LED indicators can be used to monitor system operation and identify common problems.

### **Indicators and Gain controls.**



**POWER:** A single green indicator, on left side of AC power switch.

**Normal indication:** AC switch ON: indicator will illuminate.

**If no indication:** Check AC power cord and AC outlet. Check rear panel circuit breakers.

**CLIP:** red, to the left of each Gain control.

**Normal indication:** illuminates whenever the amplifier is driven beyond full power. The LED's brightness indicates the amount of distortion. Distortion that causes only brief flashing may not be audible. During muting, the indicator fully illuminates. This occurs during normal "On-Off" muting.

**Abnormal indication:**

- Bright red illumination while the amp is being used indicates either thermal muting or a shorted output.
- If the amplifier overheats, the fan will run at full speed, and operation should resume within one minute. Allow the fan to run, and make sure the amplifier ventilation is adequate.
- A shorted or overloaded output circuit will cause excessive Clip flashing and possible overheating.
- If distortion is audible without a Clip indication, the problem is either before or after the amplifier. Check for damaged speakers or overloaded signal source. The amplifier Gain control should be in the upper half of its range to prevent input overload.

**SIGNAL:** yellow, to the left of each Gain control.

**Normal indication:** illuminates when the input signal exceeds -35 dB. As signal approaches full power, the indicator will illuminate continuously.

**If no indication:** check Gain settings and increase Gain if necessary. Check input connections and audio source for signal. If the Clip indicator illuminates with little or no Signal indication, check the output wiring for shorts.

**Abnormal indication:** If the Signal indicator illuminates with no signal input, there may be system oscillations or some other malfunction. Disconnect the load and fully reduce the Gain. If the signal indicator remains on, the amp may need servicing.

**PROTECT:** red, on the right side of Gain control group.

**Normal indication:** illuminates when the amplifier goes into protective muting. Under normal operation, this indicator will not be illuminated.

**Abnormal indication:** If the Protect indicator illuminates, the amplifier is in protective muting. Leave the Power On to allow the fan to cool the amplifier. Check the rear panel circuit breakers; if either is tripped, reset it by pushing on the center of the control. When the amplifier has cooled sufficiently, the Protect indicator will extinguish and normal operation will resume.

**Note! If both rear panel circuit breakers are tripped, the Protect indicator will not be illuminated.**

## **GAIN CONTROLS**

Turn the Gain controls clockwise to increase Gain and counter-clockwise to decrease Gain. At the maximum setting, the voltage Gain of the amplifier is +36 dB. The RMX 4050HD will produce 800 watts into 8 ohms when driven with a 1.26V input signal. The RMX 5050 produce 1050 watts into 8 ohms when driven with a 1.42V input signal.

The Gain controls are marked in dB of gain. Settings should normally be made within the upper half of the adjustment range. The range below 22 dB should not be used for normal program levels, as the input headroom could be exceeded, but can be used for testing at reduced levels. At the minimum setting, the signal is completely cut off.

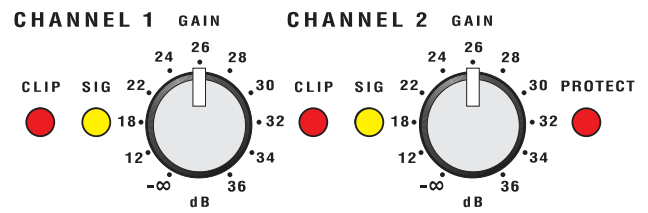


**Continuous operation at high power may trigger the thermal protection circuitry, shutting down the amplifier and fully illuminating the Protect indicator. Operation will resume after the amplifier has cooled down sufficiently.**



**Note! If both rear panel circuit breakers are tripped, the Protect indicator will not be illuminated.**

### **Gain controls and indicators.**



## **WARRANTY INFORMATION & HOW TO CONTACT QSC**

**Warranty** (USA only; other countries, see your dealer or distributor)

### **Disclaimer**

QSC Audio Products, Inc. is not liable for any damage to speakers, or any other equipment that is caused by negligence or improper installation and/or use of this amplifier product.

### **QSC Audio Products 3 Year Limited Warranty**

QSC Audio Products, Inc. ("QSC") guarantees its products to be free from defective material and / or workmanship for a period of three (3) years from date of sale, and will replace defective parts and repair malfunctioning products under this warranty when the defect occurs under normal installation and use - provided the unit is returned to our factory or one of our authorized service stations via pre-paid transportation with a copy of proof of purchase (i.e., sales receipt). This warranty provides that the examination of the return product must indicate, in our judgment, a manufacturing defect. This warranty does not extend to any product which has been subjected to misuse, neglect, accident, improper installation, or where the date code has been removed or defaced. QSC shall not be liable for incidental and/or consequential damages. This warranty gives you specific legal rights. This limited warranty is freely transferable during the term of the warranty period.

Customer may have additional rights, which vary from state to state.

In the event that this product was manufactured for export and sale outside of the United States or its territories, then this limited warranty shall not apply. Removal of the serial number on this product, or purchase of this product from an unauthorized dealer, will void this limited warranty.

Periodically, this warranty is updated. To obtain the most recent version of QSC's warranty statement, please visit [www.qscaudio.com](http://www.qscaudio.com).

Contact us at 800-854-4079 or visit our website at [www.qscaudio.com](http://www.qscaudio.com).



# SPECIFICATIONS

<b>Output Circuit Type</b>	complementary bipolar output with multi-step high efficiency circuit		
<b>Output Power in watts</b>		<b>RMX 4050HD</b>	<b>RMX 5050</b>
FTC: 20 Hz to 20 kHz, 0.1% THD both channels driven	8 ohms	800	1050
	4 ohms	1300	1600
	2 ohms	1600	2000
EIA: 1 kHz, 0.1% THD both channels driven	8 ohms	850	1100
	4 ohms	1400	1800
	2 ohms, 1% THD	2000	2500
Bridged Mode at 0.1% THD	8 ohms, 20 Hz to 20 kHz	2600	3200
	8 ohms, 1 kHz	2800	3600
	4 ohms, 1 kHz, 1% THD	4000	5000
<b>Input Sensitivity for rated power into 8 ohms</b>		1.25 Vrms	1.42 Vrms
<b>Input Impedance</b>	20 k ohm balanced, 10 k ohm unbalanced		
<b>Voltage Gain</b>	64x (36 dB) for 8 ohm load		
<b>Dynamic Headroom at 4 ohms</b>	2 dB		
<b>Distortion, SMPTE</b>	<0.02%		
<b>Frequency response at 1 watt</b>	20 Hz to 20 kHz, 8 ohms, LF Filter bypassed: +0, -1 dB 5 Hz to 50 kHz, 8 ohms, LF Filter bypassed: +0, -3 dB		
<b>Damping Factor</b>	>250, 8 ohm load		
<b>Noise (unweighted)</b>	100 dB below rated output from 20 Hz to 20 kHz, 8 ohm load		
<b>Controls</b>	Front Panel- AC power switch, CH1 Gain control, CH2 Gain control Rear Panel- 10-pole DIP switch featuring LF Filter on/off, LF Filter 30/50 Hz, Clip Limiter on/off controls for each channel and switches for selecting Stereo, Parallel, or Bridge Mode. Push-button circuit breaker for each channel.		
<b>Connectors</b>	Inputs: XLR female, TRS (1/4-inch), and barrier-strip screw terminals provided for each channel Outputs: binding posts and Speakon outputs (CH1 Speakon wired for bi-amp connection)		
<b>LED Indicators</b>	Power "on", green; Protect, red; Signal -35 dB, yellow (1 each channel); Clip, red (1 each channel)		
<b>Cooling</b>	continuously variable speed fan, rear to front airflow		
<b>Amplifier Protection</b>	short circuit, open circuit, thermal, ultrasonic, and RF protection; stable into reactive/mismatched loads		
<b>Load Protection</b>	turn-on and turn-off muting, DC fault output crowbar		
<b>Power Requirements</b>	100, 120, or 240 Volts AC ( $\pm 10\%$ ) 50-60 Hertz		
<b>Circuit Breakers</b>	<b>RMX 4050HD:</b> two (one for each channel): 100 and 120 V models: 15 amp / 230 V models: 8 amp <b>RMX 5050:</b> two (one for each channel): 100 and 120 V models: 20 amp / 230 V models: 10 amp		
<b>AC Connection</b>	detachable 3-conductor grounded, Class 1 type		
<b>Current Consumption at 120V (in amperes) at typical/full/maximum output power (idle current= 1 amp)</b>		<b>RMX 4050HD</b>	<b>RMX 5050</b>
	8 ohms	typical= 6.4, full= 12.5, maximum= 25.5	typical= 8.7, full= 17.0, maximum= 34.4
	4 ohms	typical= 10.0, full= 20.1, maximum= 42.2	typical= 13.9, full= 26.9, maximum= 56.4
	2 ohms	typical= 14.5, full= 30.6, maximum= 65.7	typical= 18.9, full= 38.0, maximum= 84.7
	<small>Current Consumption Notes: Typical- 1/8 power, pink noise, represents typical program with occasional clipping. Full- 1/3 power, pink noise, represents severe program with heavy clipping. Maximum- continuous sine wave at 1% clipping.</small>		
<b>AC Inlet:</b>	IEC 6032 C13		IEC 6023 C19
<b>Supplied Cord Set</b>	120V: 8ft (2.5m), NEMA 5-15 plug		120V: 8ft(2.5m), NEMA 5-20 plug
	230V: 8ft(2.5m), CEE7/7 plug		230V: 8ft(2.5m), CEE7/7 plug
<b>Weight</b>	68 lb. (30.8 kg) net, 77 lb. (34.9 kg) shipping		75 lb. (33.1 kg) net, 87 lb. (37.2 kg) shipping
<b>Dimensions</b>	19.0" wide x 5.2" (3RU) high x 15.9" deep (482x132x404mm)		

**Specifications are subject to change without notice.**



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