

# USER GUIDE

## CRS1K/2K/4K/8K

Scan for Specifications












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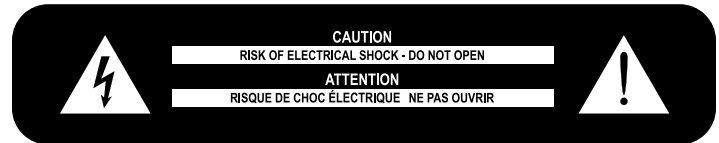
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# IMPORTANT SAFETY INSTRUCTIONS





















## COMMON SYMBOLS AND MEANINGS

-  THE TRIANGLE WITH THE LIGHTNING BOLT IS USED TO ALERT THE USER TO THE RISK OF ELECTRIC SHOCK.
-  THE TRIANGLE WITH THE EXCLAMATION POINT IS USED TO ALERT THE USER TO IMPORTANT OPERATING OR MAINTENANCE INSTRUCTIONS.
-  THE CE-MARK INDICATES THE COMPLIANCE OF THE PRODUCT TO ALL THE APPLICABLE EUROPEAN DIRECTIVES
-  SYMBOL FOR EARTH/GROUND CONNECTION.
-  SYMBOL INDICATING THAT THE EQUIPMENT IS FOR INDOOR USE ONLY.
-  SYMBOL FOR CONFORMITY WITH DIRECTIVE 2012/19/EC OF THE EUROPEAN PARLIAMENT ON WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE).

-  THIS EQUIPMENT SHALL BE MOUNTED AT A MAXIMUM HEIGHT OF 6.5 FT.
-  THE MANUFACTURER CANNOT BE HELD RESPONSIBLE FOR DAMAGES CAUSED TO PERSONS, THINGS OR DATA DUE TO AN IMPROPER OR MISSING GROUND CONNECTION.
-  IT IS ABSOLUTELY NECESSARY TO VERIFY THESE FUNDAMENTAL REQUIREMENTS OF SAFETY AND, IN CASE OF DOUBT, REQUIRE AN ACCURATE CHECK BY QUALIFIED PERSONNEL.




## SAFETY WARNINGS

-  OPERATING TEMPERATURE RANGE: 32°F TO +122°F - DERATING ABOVE 95°F.
-  STORAGE RELATIVE HUMIDITY RANGE: 10% TO 85% HUMIDITY (NON CONDENSING).
-  DO NOT USE THE UNIT AT ALTITUDES ABOVE 6500 FT.
-  DO NOT USE THE UNIT IN TROPICAL ENVIRONMENT.
-  TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT ATTEMPT TO OPEN ANY PART OF THE UNIT. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
-  CONNECTION TO THE MAINS SHALL BE DONE ONLY BY A ELECTROTECHNICAL SKILLED PERSON ACCORDING TO THE NATIONAL REQUIREMENTS OF THE COUNTRIES WHERE THE UNIT IS SOLD.
-  DO NOT USE THIS AMPLIFIER IF THE ELECTRICAL POWER CORD IS FRAYED OR BROKEN.
-  TO AVOID ELECTRICAL SHOCK, DO NOT TOUCH ANY EXPOSED SPEAKER WIRING WHILE THE AMPLIFIER IS OPERATING.
-  DO NOT SPILL WATER OR OTHER LIQUIDS INTO OR ON THE AMPLIFIER.
-  THIS DEVICE MUST BE POWERED EXCLUSIVELY BY EARTH CONNECTED MAINS SOCKETS IN ELECTRICAL NETWORKS COMPLIANT TO THE IEC 364 OR SIMILAR RULES
-  DISCONNECT THE AC MAINS SOURCE BEFORE ATTEMPTING TO CLEAN ANY PART OF THE AMPLIFIER
-  COASTAL SOURCE SUGGESTS TO PLUG THE CRS SERIES INTO A 15 A RATING, C OR D CURVE, BREAKER
-  OUTPUT TERMINALS ARE HAZARDOUS: WIRING CONNECTION TO THESE TERMINALS REQUIRES INSTALLATION BY AN INSTRUCTED PERSON AND THE USE OF READY MADE LEADS.
-  **CLASS 3 WIRING** PROPERLY FIT THE AC MAINS PLUG TO THE AMPLIFIER INLET. BEFORE POWERING THIS AMPLIFIER, VERIFY THAT THE CORRECT VOLTAGE RATING IS BEING USED.
-  TAKE CARE TO LOCK THE OUTPUT TERMINAL BEFORE SWITCHING THE DEVICE ON.
-  VERIFY THAT YOUR MAINS CONNECTION IS CAPABLE OF SATISFYING THE POWER RATINGS OF THE DEVICE.
-  NO NAKED FLAME SOURCES SUCH AS LIGHTED CANDLES SHOULD BE PLACED ON THE AMPLIFIER.
-  IT IS HIGHLY RECOMMENDED TO UNPLUG THE OUTPUT CONNECTORS BEFORE PROCEEDING WITH THE SELF CHECK PROCEDURE
-  THE TESTING SIGNALS MIGHT CAUSE LOUDSPEAKER IMPAIRMENTS.
-  TO PREVENT INJURY, THIS APPARATUS MUST BE SECURELY RACK MOUNTED IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS.


Please read and keep all safety and use instructions.

This product is intended for installation by professional installers only! This document is intended to provide professional installers with basic installation and safety guidelines for this product in typical fixed-installation systems. Please read this document and all safety warnings before attempting installation.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this equipment near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over. 
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

## WARRANTY AND TECHNICAL SERVICE

This product is covered by a limited warranty.

-  This Coastal Source product contains no user-serviceable parts. All warranty repairs must be carried out by Coastal Source. Contact Coastal Source For Ordinary And Extraordinary Maintenance. To learn more about warranty terms and conditions, visit [coastalsource.com/warranty](https://coastalsource.com/warranty). For any service related inquiry, please visit [coastalsource.com/warranty](https://coastalsource.com/warranty)

# PRELIMINARY OPERATIONS

## Package list

The box contains the following:

- 1x CRS amplifier.
- 1x Phoenix MC 1,5/4-ST-3,81 - 1803594 plug
- 2x Phoenix MC 1,5/12-ST-3,81 - 1803675 plug
- 1x Pair RCA Input Adapter Cables
- 1x Phoenix PC 5/8-STF1-7,62 - 177891 plug
- 3x IEC power cord
- 1x Quick Start guide

## Location

- Install your CRS Amplifier in well ventilated rack cabinets.
- Secure both front and rear brackets to the rack.
- Connect the AC Mains connector to a circuit breaker.
- Install the amplifier far from EMF emitting devices.
- Avoid placing the amplifier close to heat generating sources.

## Cooling

The ventilation openings must not be impeded by any item, keep a distance of at least 50 cm from the front and rear ventilation openings of the amplifier.

CRS amplifiers implement a forced-air cooling system to maintain constant operating temperatures. Air enters from the front panel, exiting at the back of the amplifier.

The cooling system features variable-speed DC fans controlled by the heat sink mounted sensors. This ensures that fan noise and internal dust accumulation are kept to a minimum.

In the rare event of overheating, sensing circuits shut down all channels until the amplifier cools down to a safe operating temperature. Normal operation is resumed automatically without the need for user intervention.

CRS amplifiers can be stacked one on top of the other, leave one rack unit empty every four to guarantee adequate air flow.

## Cleaning

Use a dry cloth for cleaning the chassis and the front panel. Air filter cleaning should be scheduled in accordance with the dust levels in the amplifier's operating environment.

In order to clean the vent filters remove the front cover by firmly gripping the outermost silver panels and pull them outwards

Use compressed air to remove the dust from filters, or wash it with clean water (let the filter dry thoroughly before reinstalling them).

## AC Mains Supply

CRS amplifiers implement an universal switching mode power supply with power factor correction operating in the range from 100 VAC up to 240 VAC  $\pm$ 10%.

AC mains connection is in the rear panel through the IEC C20 inlet, the approved power cord is provided.

## Switching the amplifier On and Off

Once properly powered (power cord inserted, sectioning breaker closed), the system can be either ON or in STANDBY mode depending on its state at latest power off.

In order to toggle the amplifier between ON and STANDBY keep pressed the power button for 3 seconds. Please consider that the operating condition can be modified by the REMOTE ON and REMOTE OFF configuration.

## Energy Save

The Smart Rails Management technology implemented in the power supply unit allows to reduce the power consumption when the input signal falls under a defined threshold.

When On, Energy Save is active on each channel independently.

If the signal is missing for more than 30 minutes on all channels, the auto standby is applied and the main PSU is turned off to further save energy. Normal operation is resumed in a matter of milliseconds when an incoming signal is detected.

In order to activate the Energy Save feature, operate the NRG SAVE dip switch on the rear panel.

## Breaker Save

This feature may be activated when the power grid is unable to provide enough current to continuously drive the loads, or when the number of amplifier connected to the same outlet is such that one can reach the critical power absorption of the line.

When activated, the Breaker Save halves the maximum continuous current absorption from the mains. This slightly reflects on the overall performance of the system, reducing the available output power.

In order to activate the Breaker Save feature, locate the BRK SAVE switch on the rear panel.

## Remote On/Off

Remote ON/OFF is available through the dedicated terminals on the rear panel.

Both terminals respond to the differential voltage between the contacts: a voltage difference in the range 5 VDC - 24 VDC triggers the control. Any voltage exceeding 28 VDC may damage the input circuitry.

The couple of terminals act depending on the actual state of the amplifier, in accordance with the following table.

REMOTE ON	REMOTE OFF	AMPLIFIER STATE
Vdiff $\geq$ 5V	Any	Force Turn ON
Vdiff < 3V	Vdiff $\geq$ 5V	Force Turn OFF
Vdiff < 3V	Vdiff < 3V	No Change (Keep either standby or in current state)

## Gain selection

The CRS amplifiers can operate with different gain applied to the input signal. This feature is designed to match the voltage of the input signal.

A proper combination of the position of two GAIN switches on the rear panel sets the operating gain of the amplifier

# CONNECTIONS

## Signal Grounding

There is no ground switch or terminal on the CRS amplifiers. The unit's signal grounding system is automatic. In order to limit hum and/or interference entering the signal path, use balanced input connections.

In the interests of safety, the unit **MUST** always operate with electrical safety earth connected to the chassis via the dedicated Protective Earth  $\oplus$  wire.

## Analog Audio Input connections

Analog input connections are made via the Phoenix MC 1,5/6-ST-3,81 5447900 connector.

## Remote Level adjustment

The level of each channel can be remotely adjusted by means of a linear 10 k $\Omega$  potentiometer connected to the input LEVEL connector.

When the CH1 MSTR switch is in the OFF position the remote level potentiometers work independently on each separate channel.

When the CH1 MSTR switch is in the ON position the remote level potentiometer of channel 1 acts as a master level, controlling the volume of both channels.

The remote level controls are in series with the level adjustment knobs in the front panel.

## Digital Audio Input connection

CRS1K/2K/4K/8K amplifiers feature AES67 and accept two input streams from the dedicated audio over IP port. Cabling must comply to TIA/EIA-568-B and adopt the T568B scheme pinout.

## Ethernet connection

The port labelled Ethernet is designed to remotely control the amplifier via an Ethernet connection through a personal computer and Powersoft ArmoníaPlus software.

Powersoft recommend the use of Ethernet Cat5 straight through – patch – cables with pin/pair assignments TIA/EIA-568-B, i.e. T568B.

## Output connections

Output connections are made via the Phoenix PC 5/4-STF1-7,62 177859 port.

Any mixed configuration of low and high impedance output loads can be made: in order to set the load configuration, each channel is provided with four DIP switches.

## Hi-Z 70V/100V operations

Any channel of can drive 70V/100V (Hi-Z) distributed line loudspeakers. In order to connect any channel's output to a 70V/100V line, the rear panel DIP switch corresponding to the channel must be set.

Coastal Source recommends to use the built-in HPF (High Pass Filter) when the amplifier is set to drive a distributed line to prevent loudspeaker transformer saturation, which can considerably degrade sound performance. The HPF can be activated by means of the DIP switch corresponding to the channel, two cutting frequency are available 35 Hz and 70 Hz.

## Diagnostics - GPO - Alarms

CRS amplifiers provide a pair of paralleled general purpose output connections per channel: one Normally Open  $\oplus$  NO and one Normally Closed  $\oplus$  NC.

The connections are available on the back panel via the 6-pin Phoenix MC 1.5/6-ST-3.81 5447900 connector.

When the amplifier is in normal operating condition the NO contacts are closed, whilst the NC contacts are open, and vice-versa.

These contacts are used to report potentially dangerous faults or generally unsafe operation conditions by toggling alarm switches relative to the following events, and any fault preventing the normal operation of an output channel:

No AC mains (i.e. system shutdown);

Thermal stress: the system temperature is too high and the thermal protection is engaged;

Short circuit in output wiring: either the loudspeaker or the line is in short;

Amplifier is in Standby

## Self Check

The self check procedure tests the amplifier status and reports the user in case of failures.

After few minutes, at the end of the self check procedure, a combination of lit LED in the LED panel provides information about the amplifier status.

In order to exit the self check test and resume normal operations, press once the self check push button **6**.

*If self check cannot be started because of a fault, the check LED will blink fast, whilst a reassuring slow blink is an indication of a completed self check procedure.*

## Pilot Tone monitoring

The detection of a mismatch in the input pilot tone parameters (frequency and voltage level) can be used to trigger the backup policy and activate an alert through the general purpose output switch.

The output pilot tone detection relies on an external signal passing through the amplifier or the internal post DSP pilot tone generator; in both cases any mismatch between the detected signal and the set thresholds triggers the general purpose output switches.

## NETWORKING

CRS amplifiers support star network topology via the Ethernet port and AES67 dedicated AoIP port.

### Signal Grounding

Factory default network settings are DHCP/AutoIP.

In order for the amplifier to self-configure when connected to an existing LAN or PC. Fixed IP policy can also be adopted and configured through ArmoníaPlus.

If a DHCP server is not active within the network, the amplifier platform initiates a stateless address auto-configuration (i.e. Zero-configuration networking methodology – Zeroconf): it self assigns a local numeric network address (of the type 169.254.x.y – 172.31.\*.\* for the secondary network if present – with a subnet mask 255.255.0.0) and automatically distributes and resolves the host names of the networking devices.

Both Armonia and the CRS must belong to the same subnet. If a DHCP server is present on the network and a CRS amplifier is in AUTO IP, networking may become unstable.

*As a rule of thumb, turn the DHCP server on before connecting the amplifiers.*

IP addressing of a CRS amplifier is established during the bootstrap: when the amplifier discovers a DHCP server on the network during the startup, it negotiates the networking parameters. If the CRS does not reveal a DHCP server on the network during the startup, it set itself in AUTO IP mode.

## ARMONÍAPLUS

ArmoníaPlus is the default configuring interface that allows system setting and customization of the CRS amplifiers.

Armonía can be installed on a PC running Windows (XP SP3 and higher).

Download ArmoníaPlus for free from the dedicated website: <https://coastalsource.com/outdoor-audio/armoniaplus>

### Input selection and Backup Policy

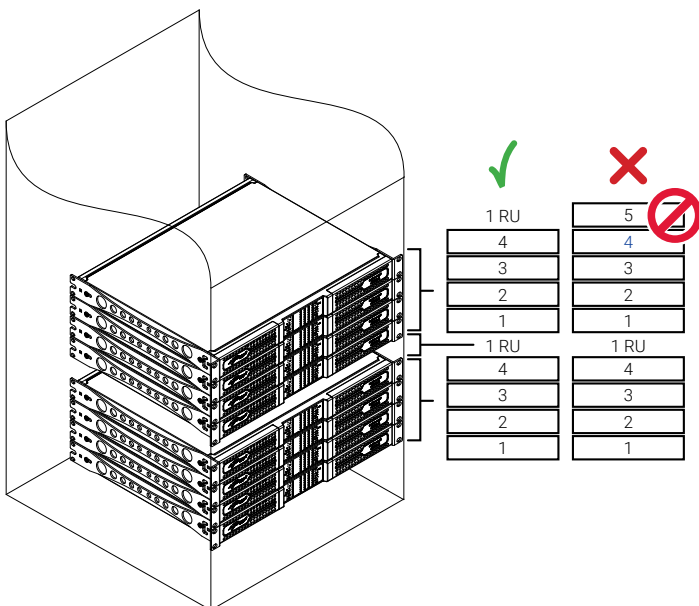
In CRS it is possible to select among two input signal sources per channel: analog and AES67 streams. ArmoníaPlus software provides an interface to select the input source.

Furthermore CRS amplifiers implement a backup policy aimed to improve reliability against signal fault. By assigning a bus priority to the two different input sources per channel, the system is able to automatically switch to a reliable input connection in case of signal drop or pilot tone mismatch.

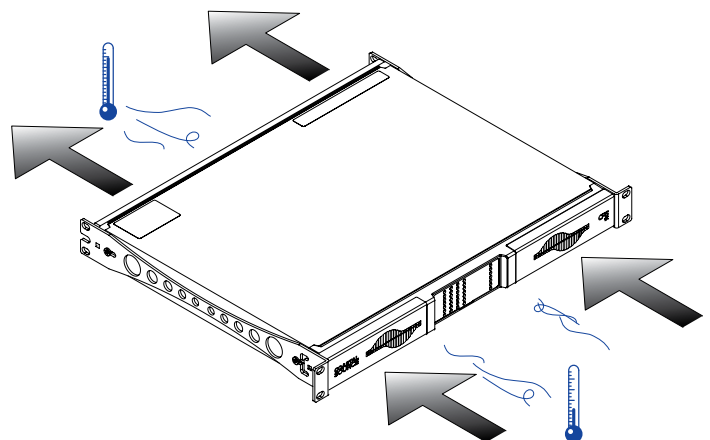
### Output Load monitoring

Through the ArmoníaPlus software it is possible to set the thresholds on the load impedance, at given frequency, that trigger the general purpose output of any channel in CRS amplifiers.

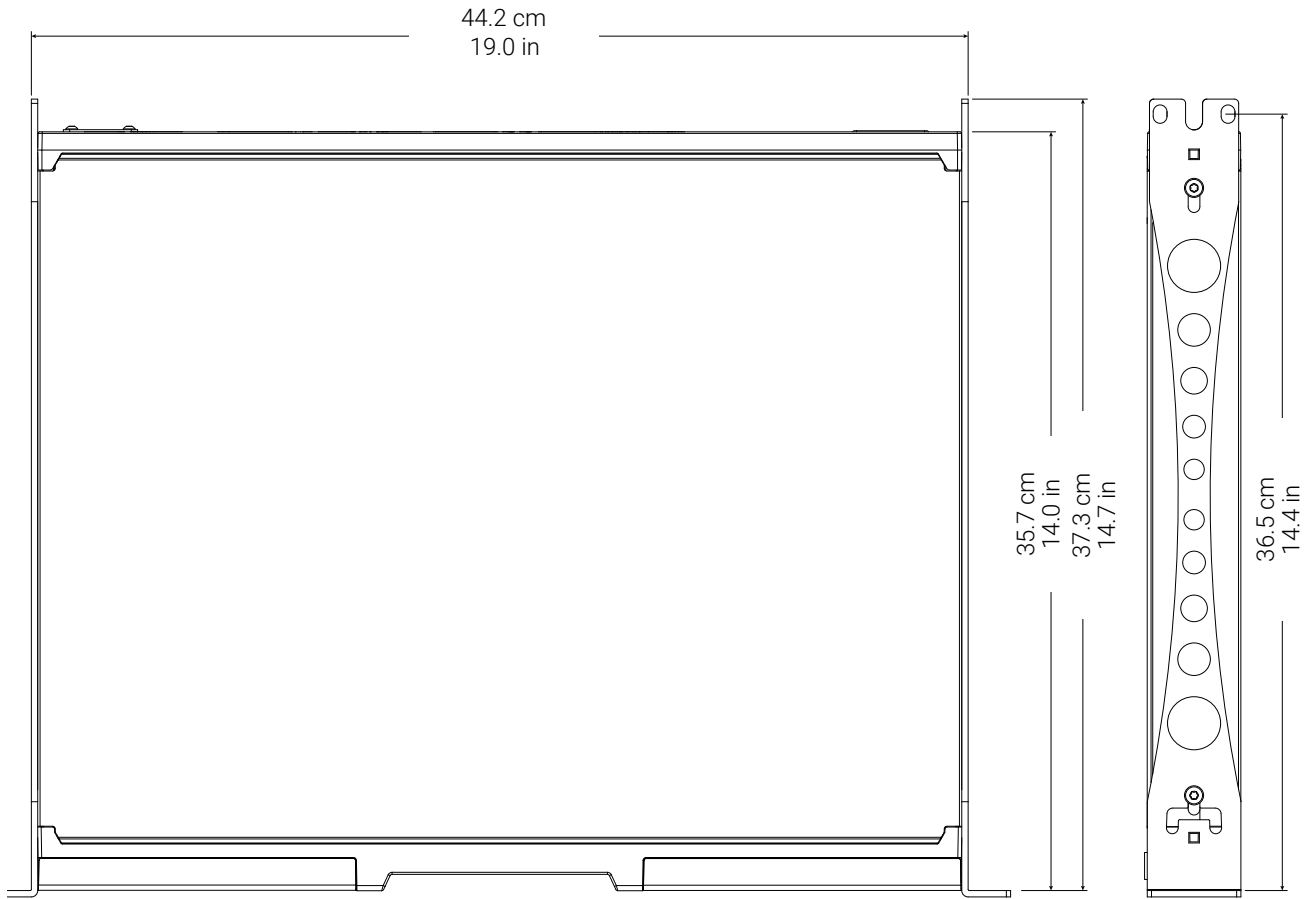
### Location



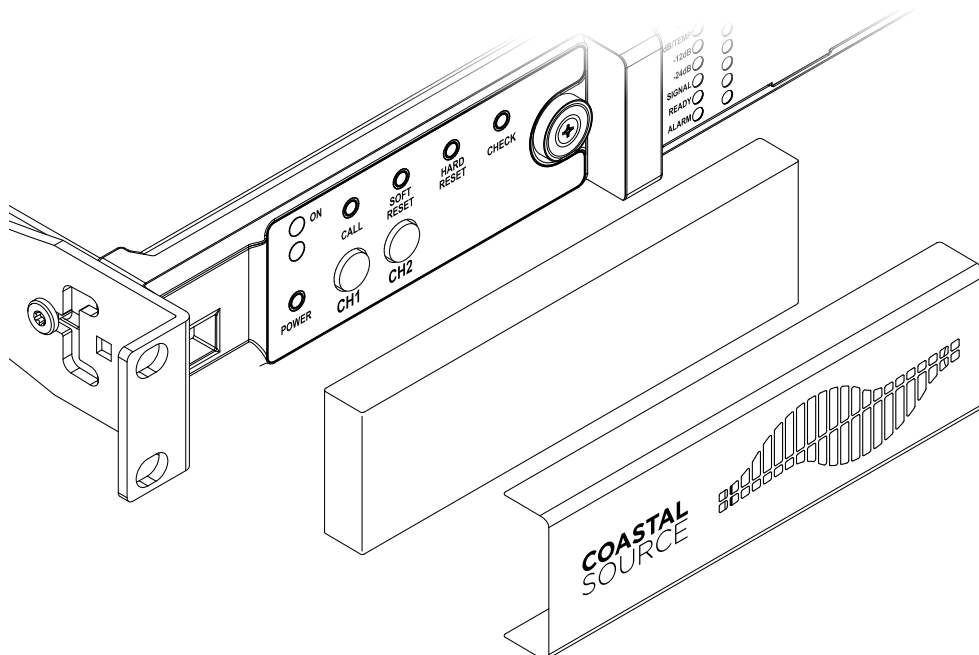
### Cooling



## Dimensions

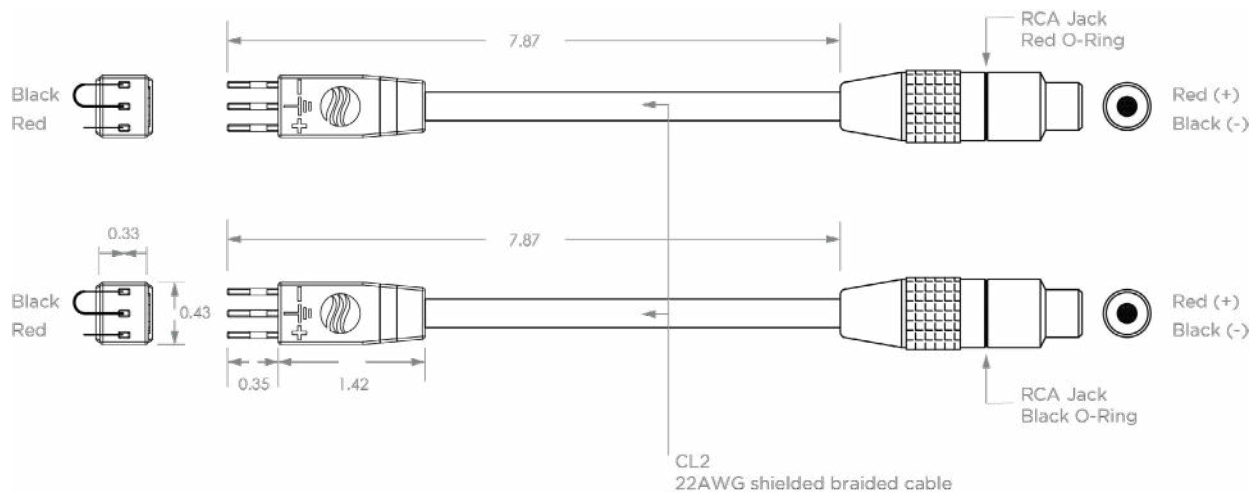


## Exposing the Control Panel



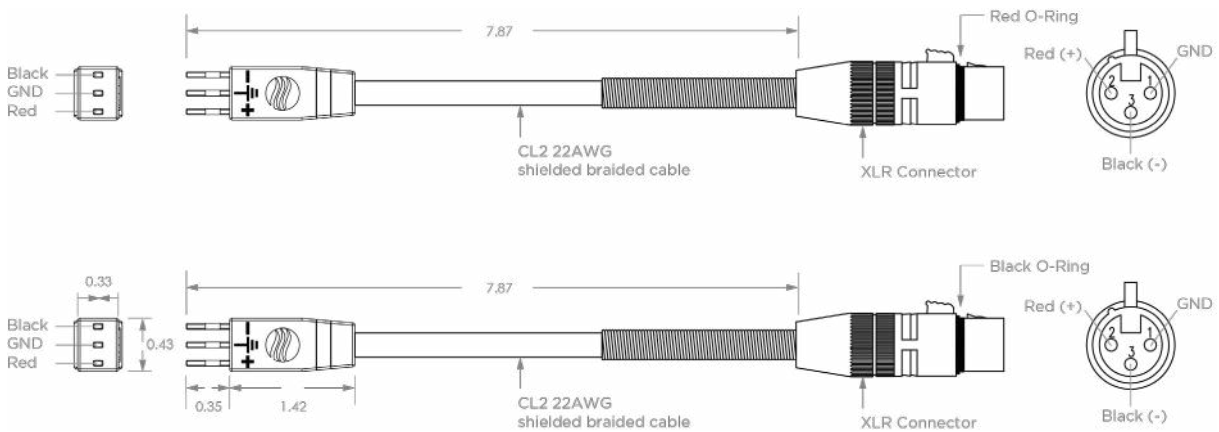
## RCA INPUT CABLE ADAPTERS

1 pair included with each CRS Amplifier



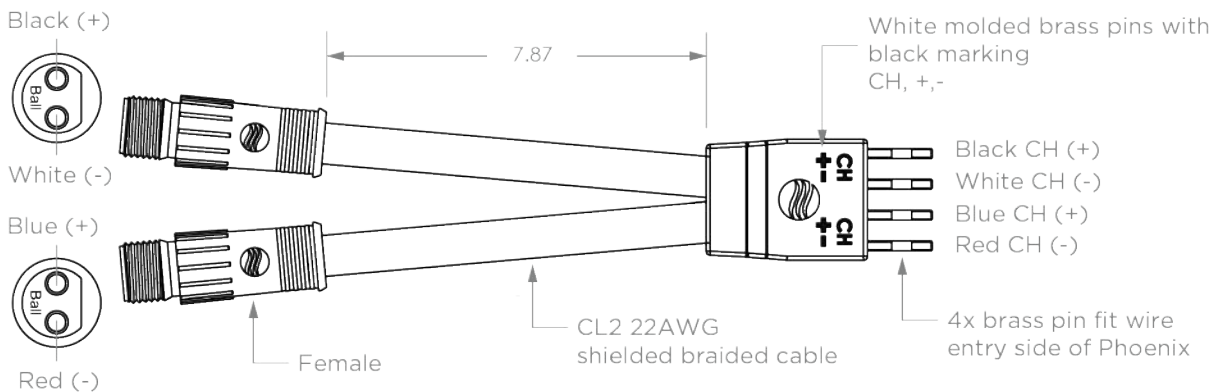
## XLR INPUT CABLE ADAPTERS

sold separately (in pairs) for balanced inputs



## CC OUTPUT CABLE ADAPTERS

sold separately (in pairs) for Coastal Connector outputs



# 12V POWER TRIGGER SETUP

## 1 Standby Mode

With your CRS amplifier plugged in and turned on, press and hold the power button to put the amplifier into standby mode. Once in standby mode, the EQ meters will flash orange at 6 dB/Temp.

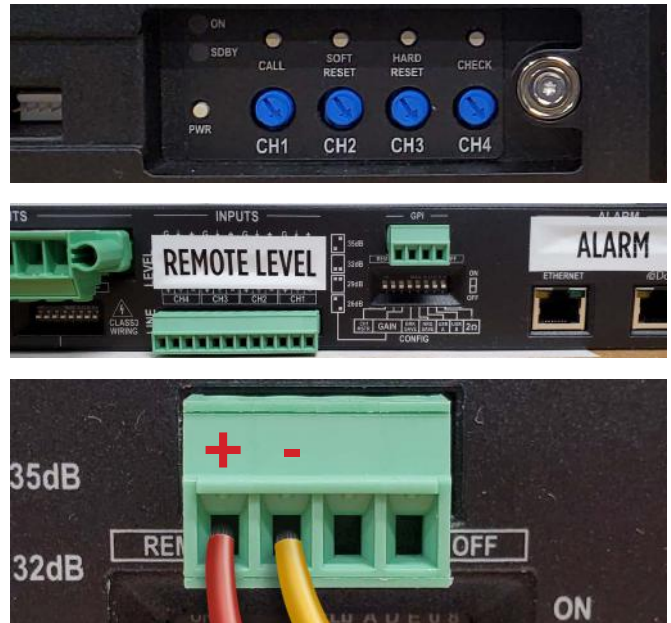
Note: to access these controls, remove magnetically attached faceplate and foam.

## 2 Wiring

With the CRS amplifier in standby, you can wire in your trigger using the phoenix connector on the rear panel of the amplifier.

Use the left two terminals of the phoenix connector. Since this is a DC connection, it is essential to use the proper polarity. In this connector, the left-most terminal is positive.

With the connection now complete, the amplifier will turn on when it detects power via the trigger.

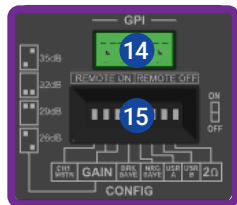


**Input section**

- 12 Remote Level connector
- 13 Line Input connector

**Input**

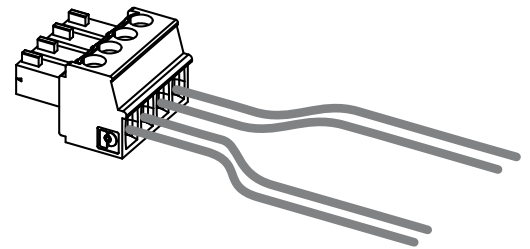
**Remote Level**



**Remote On/Off - Configuration dip switches**

- 14 Remote On/Off connector (Phoenix MC 1,5/4-ST-3,81 1803594)
- 15 System Configuration dip switches

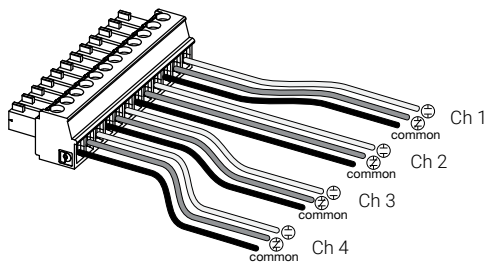
Remote On/Off



Input Gain Selection				CH1 Master	BRK Save	NRG Save	USR A	USR B	2 Ω*
26 dB	29 dB	32 dB	35 dB	1	4	5	6	7	8
2-3	2-3	2-3	2-3	1	4	5	6	7	8

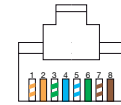
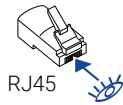


**Alarm**  
GPO/Alarm connector



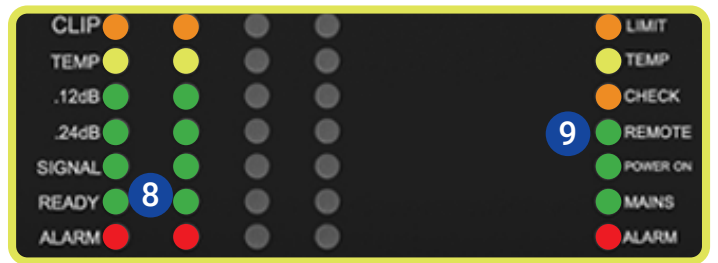
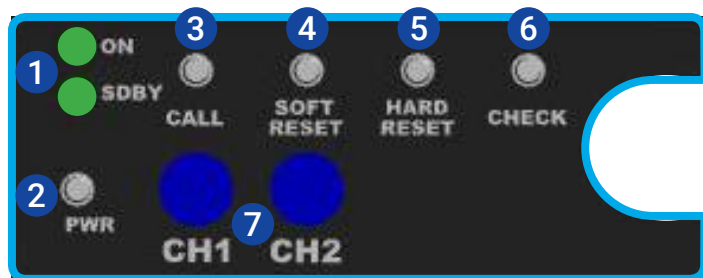
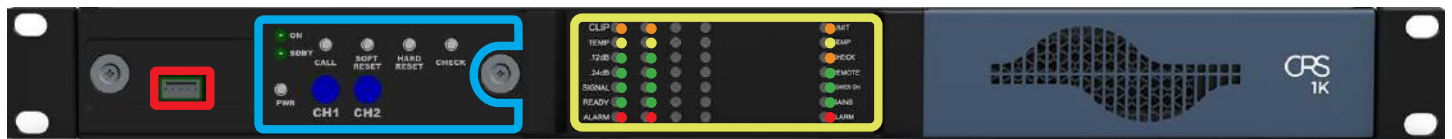
### Ethernet and AES67 ports

- 16 Ethernet port (RJ45)
- 17 AES67 port (RJ45) - DSP+D & DSP+ versions only



Color code (TIA/EIA-568-B)		Pin
	ORANGE / WHITE	1
	ORANGE	2
	GREEN / WHITE	3
	BLUE	4
	BLUE / WHITE	5
	GREEN	6
	BROWN / WHITE	7
	BROWN	8

## Front Panel



### Control Panel

- 1 Operating Mode LEDs (ON/STANDBY)
- 2 Power pushbutton
- 3 Armonía Callback pushbutton
- 4 Soft Reset pushbutton
- 5 Hard Reset pushbutton
- 6 Self Check pushbutton
- 7 CH1, CH2, CH3, CH4 attenuators

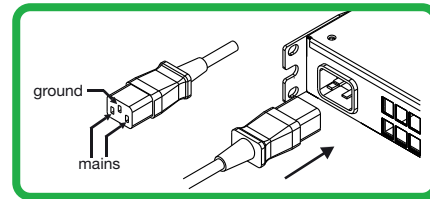
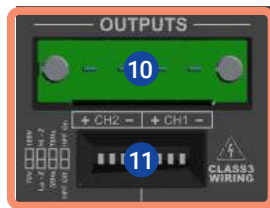
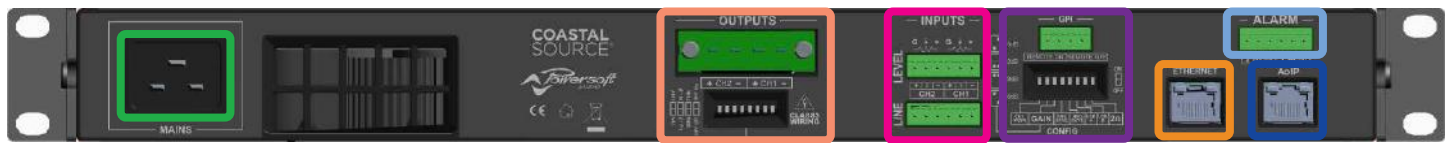
### LED Panel

- 8 Channel Status LED meters
- 9 System Status LEDs

### Serial Port

Reserved for service operations.

# Rear Panel

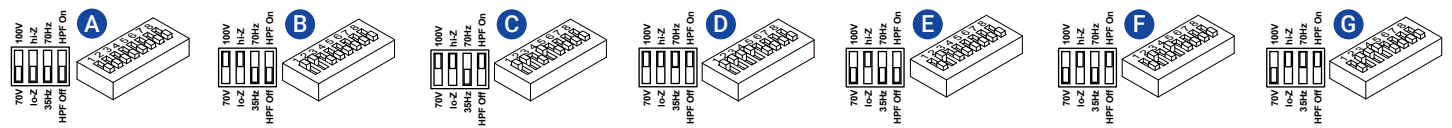
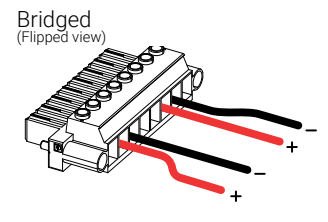
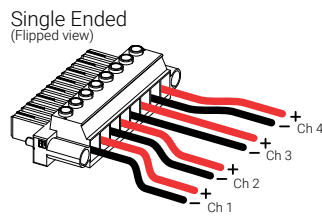


**Output section**

- 10 Output connector
- 11 Output configuration Dip Switches

**AC Mains Connector**  
IEC C19

	Low-Z	High-Z	100V	70V	HPF @ 35 Hz	HPF @ 70 Hz
A	•					
B		•	•			
C		•	•		•	
D		•	•	•		•
E		•		•		
F		•		•	•	
G		•		•		•



# LED CHARTS

## LED Bars, signal metering

8

Color	Signal Metering	WARNINGS	
		Lighting	Description
ORANGE	Clipping *DSP+D User Limiter	—	—
YELLOW	-6dB	SOLID ON	Thermal warning Thermal protection engaged
		FLASHING	Auto Standby
GREEN	-12dB	—	—
GREEN	-24dB	—	—
GREEN	-60dB	SOLID ON	Signal presence
		BLINKING	Channel muted
GREEN	—	SOLID ON	Channel ready
RED	—	SOLID ON	Channel fault <sup>1</sup>

<sup>1</sup> Red LED lights on in case of any kind of channel fault that prevents the normal channel operating.

Lighting	Timings	Description
FLASHING	100 ms ON 900 ms OFF	
BLINKING	500 ms ON 500 ms OFF	

## Control Panel

Label	Label	Type	Action	Description
2	POWER	Pushbutton	keep pressed for 3 seconds	Toggle system ready/standby mode
3	CALL	Pushbutton	press	Highlight the amplifier in the Armonia workspace
4	SOFT RESET <sup>1</sup>	Pushbutton	keep pressed for 3 seconds	Reset network parameters to factory default
5	HARD RESET <sup>1</sup>	Pushbutton	keep pressed for 3 seconds	Reboot the system
6	CHECK	Pushbutton	keep pressed for 3 seconds	Start the self-checking procedure*
7	CH1 <sup>2</sup>	Potentiometer	turn counter-clockwise	Attenuate the output level of the signal on channel 1
	CH2 <sup>2</sup>	Potentiometer	turn counter-clockwise	Attenuate the output level of the signal on channel 2

The push-buttons are disabled when connected to Armonia.

1. Keep pressed both the SOFT RESET button and the HARD RESET button for at least 3 seconds to completely reset the amplifier to its factory default configuration (this won't delete any preset stored in the internal memory).

2. The potentiometer is in series with the remote level control so it can be used to limit the output volume regardless to any remote adjustment.


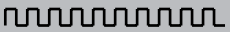

\*Press again to resume normal operations

## LED Bar, system status

9

Color	Name	WARNINGS	
		Lightning	Description
ORANGE	LIMIT	FLASHING	Breaker Save Enabled
		SOLID ON	Breaker Save limiting power draw
YELLOW	TEMP	SOLID ON	Thermal warning Thermal protection engaged
		SOLID ON	System self checking
ORANGE	CHECK	BLINKING	Self check completed
		FAST BLINKING	Self Check Unavailable
		SOLID ON	Connected to Armonia Pro Audio
GREEN	REMOTE	OFF	Not connected to Armonia Pro Audio
		SOLID ON	System ready
GREEN	POWER ON	OFF	System off
		SOLID ON	AC mains voltage within the operating range
GREEN	MAINS	OFF	Undervoltage
		FLASHING	Over/Undervoltage Warning
		FAST BLINKING	Overvoltage
		BLINKING	Mains FUSES blown
RED	ALARM	SOLID ON	PSU fault! OR Critical Faults

<sup>1</sup> Red LED lights on in case of any kind of PSU fault that prevents normal operating.

Lighting	Timings	Description
FLASHING	100 ms ON 400 ms OFF	
FAST BLINKING	100 ms ON 100 ms OFF	
BLINKING	500 ms ON 500 ms OFF	

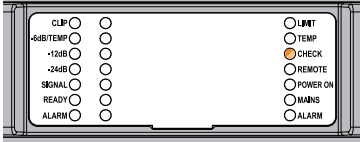
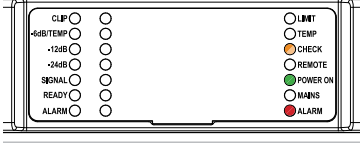

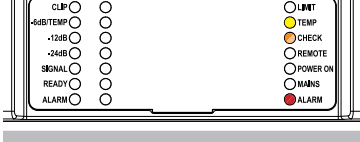



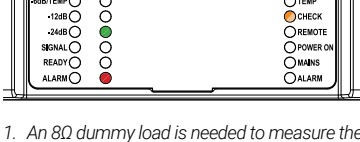
## Operating mode LEDs

1

Color	Name	OPERATING MODE	
		Standby	Power On
GREEN	POWER ON	—	SOLID ON
ORANGE	STANDBY	SOLID ON	—
ORANGE	AUTO STANDBY	BLINKING	—
ORANGE	ERROR CODE	BLINK COUNTER	—

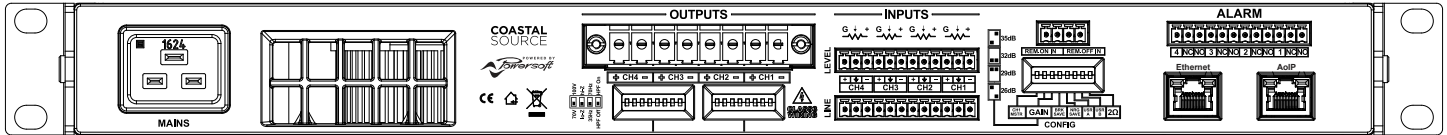
## Self Check

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	System OK.
	Power supply fault
	AC Mains voltage out of range (over/under voltage)
	PSU temperature out of range
	Fan Error
	Channel# Output Waveform non-conformity
	Channel# Temperature out of range
	Channel# Output current measurement non-conformity <sup>1</sup>

<sup>1</sup> An 8Ω dummy load is needed to measure the output current. If the dummy load is not applied the system reports a fault.

# SPECIFICATIONS



Channel Handling		
Number of output channels	4 Hi-Z or Lo-Z (bridgeable per ch. pair)	Phoenix PC 5/8-STF1-7,62
Number of input channels		
Analog	4	Phoenix MC 1,5/12-ST-3,81
AES67	4	1 x RJ45

Audio	CRS1K	CRS2K	CRS4K	CRS8K	
Input sensitivity @ 8 Ω with 26 dB Gain	2.48	3.54	4.91	5.72	Vrms
Input sensitivity @ 8 Ω with 29 dB Gain	1.76	2.51	3.48	4.06	Vrms
Input sensitivity @ 8 Ω with 32 dB Gain	1.24	1.78	2.46	2.86	Vrms
Input sensitivity @ 8 Ω with 35 dB Gain	0.88	1.26	1.74	2.03	Vrms
SNR (20 Hz - 20 kHz @ 8 Ω - Typical)	104	108	110	112	dB(A)
Max input level	20 dBu				
Frequency Response	20 Hz - 20 kHz ±1.0 dB, 1 W @ 8 Ω				
Crosstalk (1 kHz)	typical -70 dB				
Input impedance	20 kΩ balanced				
THD+N (from 0.1 W to Half Power)	< 0.1% (typical < 0.05%)				
SMPT E IMD (from 0.1 W to Half Power)	< 0.1% (typical < 0.05%)				
Slew Rate	> 50 V/μs @ 8 Ω, input filter bypassed				
Output impedance at 100 Hz	26 mΩ				

DSP	
AD converters	24 Bit Tandem™ @ 48 kHz typical 125 dB-A Dynamic Range - 0.005 % THD+N
DA converters	4 Bit Tandem™ @ 48 kHz typical 117 dB-A Dynamic Range - 0.003 % THD+N
Sample rate converter	24 Bit @ 44.1 kHz to 96 kHz typical 140 dB Dynamic Range - 0.0001 % THD+N
Internal precision	32 bit floating point
Latency	2.5 ms fixed latency architecture
Memory/Presets	49 amplifier snapshots, virtually unlimited speaker presets
Delay	2 s (input) + 100 ms (output) for time alignment
Equalizer	Raised-cosine, custom FIR, parametric IIR: peaking, hi/lo-shelving, all-pass, band-pass, band-stop, hi/lo-pass
Crossover	linear phase (FIR), Butterworth, Linkwitz-Riley, Bessel: 6 dB/oct to 48 dB/oct (IIR)
Limiters	TruePower™, RMS voltage, RMS current, Peak limiter
Damping control	Active DampingControl™ and LivImpedance™ measurement

Environmental	
Operating temperature range	0°C to +50°C (derating above 35°C)
Storage relative humidity range	10% to 85% humidity (non condensing)

Output Stage	CRS1K	CRS2K	CRS4K	CRS8K	
per channel @ 8 Ω (symmetrical)*	250	500	1000	1600	W
per channel @ 4 Ω (symmetrical)*	250	500	1000	2400	W
per channel @ 2 Ω (symmetrical)*	330	660	1250	1800	W
@ 4 Ω Bridged (symmetrical)*	660	1320	2500	3600	W
@ 8 Ω Bridged (symmetrical)*	500	1000	2000	4800	W
@ Hi-Z distributed line 100 V (symmetrical)*	250	500	1000	2000	W
@ Hi-Z distributed line 70 V (symmetrical)*	250	500	1000	2000	W
per channel @ 8 Ω (asymmetrical)**	1000	1100	1100	1800	W
per channel @ 4 Ω (asymmetrical)**	1000	1400	2200	3500	W
per channel @ 2 Ω (asymmetrical)**	1000	1320	1500	1800	W
@ Hi-Z distributed line 100 V (asymmetrical)**	1000	1250	1800	3000	W
@ Hi-Z distributed line 70 V (asymmetrical)**	1000	1400	1750	2100	W
Maximum unclipped output voltage @ 8 Ω	70 V <sub>peak</sub>	100 V <sub>peak</sub>	139 V <sub>peak</sub>	175 V <sub>peak</sub>	
Maximum output current	33 A <sub>peak</sub>	45 A <sub>peak</sub>	45 A <sub>peak</sub>	55 A <sub>peak</sub>	

\*: All channels driven with the same burst power  
 \*\*: Maximum power-sharing capacity per channel

Power & Thermal		CRS1K	CRS2K	CRS4K	CRS8K			
@ 115 V	Idle	Power	31.1	31.1	31.3	34	W	
		Current Draw	0.45	0.45	0.47	0.56	A <sub>rms</sub>	
	1/8 Max Power @ 4Ω	Thermal Loss	106	106	107	116	BTU/h	
		Power	227	405	823	1702	W	
	@ 230 V	1/8 Max Power @ 4Ω	Current Draw	2.1	3.7	7.7	15.6	A <sub>rms</sub>
			Thermal Loss	261	360	760	1713	BTU/h
@ 230 V	Idle	Power	31.5	31.5	31.6	34	W	
		Current Draw	0.25	0.25	0.27	0.37	A <sub>rms</sub>	
	1/8 Max Power @ 4Ω	Thermal Loss	107	107	108	117	BTU/h	
		Power	251	405	840	1676	W	
	@ 230 V	1/8 Max Power @ 4Ω	Current Draw	1.4	2.1	4.3	8.2	A <sub>rms</sub>
			Thermal Loss	344	360	818	1624	BTU/h
Power supply		Universal regulated switch mode with PFC, SRM						
Nominal voltage (±10%)		100-240 VAC @ 50-60Hz						
Operating Voltage		90-264 VAC						
AC Mains connector		IEC C20 inlet (20 A max) region-specific power cord provided						

Typical use case power consumption is expected to be at least 20% lower (likely more than 50% lower)

Networking	
Standards compliance	auto-sensing Fast Ethernet (IEEE 802.3u, 100 Mbit/s)
Supported topologies	Star
Remote interface	ArmoniaPlus™, Powersoft Cloud

Construction	
Dimensions	19.0 x 1.75 x 14.1 in
Weight	15.4 lbs (7 kg)

Data subject to change without notice