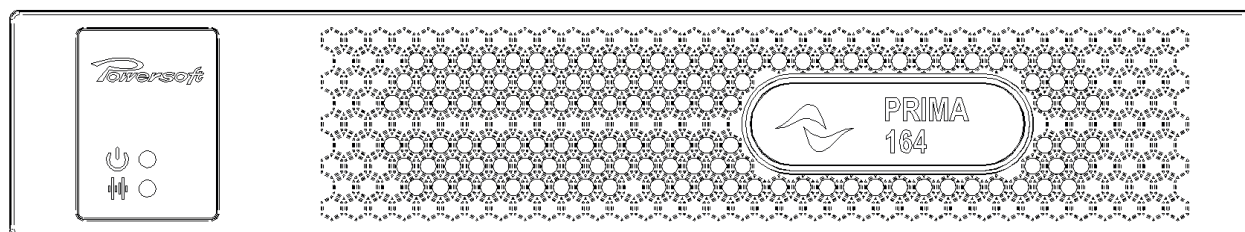




PRIMA

USER GUIDE

PRIMA 164
PRIMA 324



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 WITH ALL 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).

Safety Warnings

-  OPERATING TEMPERATURE RANGE: 0°C TO +55°C (DERATING ABOVE 35°C).
-  STORAGE RELATIVE HUMIDITY RANGE: 10% TO 90% HUMIDITY (NON CONDENSING).
-  DO NOT USE THE UNIT AT ALTITUDES ABOVE 2000 M.
-  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 QUALIFIED ELECTRICIAN 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 WITH IEC 364 OR SIMILAR RULES
-  DISCONNECT THE AC MAINS SOURCE BEFORE ATTEMPTING TO CLEAN ANY PART OF THE AMPLIFIER
-  THE BREAKER MUST SUPPORT 160 VA PER UNIT. MAXIMUM: 7 PRIMA UNITS AT 115 V / 10 A, OR 14 PRIMA UNITS AT 230 V / 10 A.
-  OUTPUT TERMINALS ARE HAZARDOUS: WIRING CONNECTION TO THESE TERMINALS REQUIRES INSTALLATION BY AN INSTRUCTED PERSON AND THE USE OF READY-MADE LEADS.
-  **CLASS2 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.
-  WARNING TO PREVENT INJURY, THIS APPARATUS MUST BE SECURELY ATTACHED TO THE FLOOR/ WALL/RACK IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS.
-  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.



CAUTION

RISK OF ELECTRICAL SHOCK - DO NOT OPEN

ATTENTION

RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

警告

触电危险 - 不要打开



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 Powersoft product contains no user-serviceable parts. All warranty repairs must be carried out by a certified technician operating in a Powersoft Authorized Service Centre.

Contact the authorized service center for routine and extraordinary maintenance. To learn more about warranty terms and conditions, visit powersoft.com/warranty
For any service-related enquiry, please visit powersoft.com/en/product-repair/

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INTRODUCTION

Welcome

Thank you for choosing the Powersoft PRIMA amplifier.

The PRIMA Amplifier is a power amplifier suitable for installations where a high-quality power amplifier is needed. This document provides comprehensive installation instructions, details the key features and offers guidelines for the operation and maintenance of the PRIMA amplifier. For further inquiries or assistance, contact your Powersoft local dealer or a specialized technical support representative.

The information contained in this guide applies to all PRIMA amplifier models, namely PRIMA 164 and PRIMA 324. The table below summarises the key aspects of the PRIMA amplifier:

Model	Inputs	Outputs	Total Power	Power per channel @ 4 Ω (symmetrical)	Power per channel @ 4 Ω (maximum power sharing capability)
PRIMA 164	4	4	160 W	40 W	110 W
PRIMA 324	4	4	320 W	80 W	220 W



Features Summary

PRIMA amplifier series

The PRIMA Series includes four-channel models, with total power of 160W and 320W suitable for a variety of small-to medium-scale fixed installations, all in a consistent half rack-unit form factor.

Power Sharing

As for other Powersoft amplifiers, PRIMA series features power sharing capability. Each output can deliver up to 70% of the rated power when asymmetrically loaded, ensuring high versatility during system design and specification. Additionally, each output can drive 25/70/100V and low impedance loudspeakers down to 2 ohms seamlessly, with automatic output mode configuration.

Auto Setup

The Auto Setup feature automatically measures the impedance curve of connected speakers, applying gain, limiter and a high-pass filter for each different channel impedance, to safeguard system performance.

Energy Saving Modes

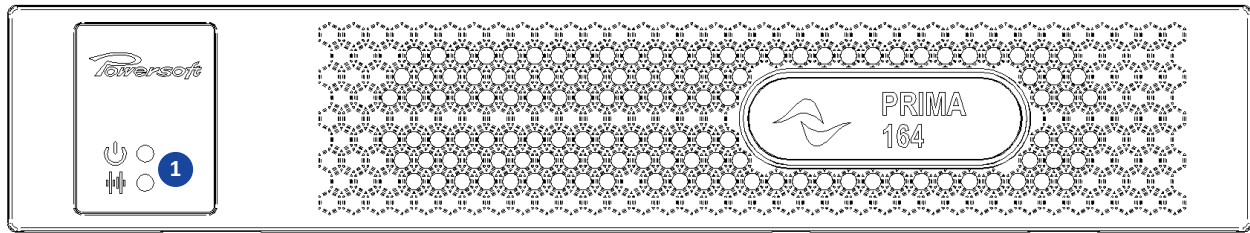
Automatic energy-saving functionalities allow lower consumption states for all PRIMA models.

The Eco Mode allows turning off each output channel independently when audio is not passing, minimizing energy consumption. Channels are individually and instantaneously turned on as soon as a signal is detected, without impacting audio performance.

The Auto Standby Mode puts the amplifier into standby mode after 10 minutes of no audio in any of the amplifier channels, lowering the energy consumption even more than the Eco Mode. The entire amplifier is instantaneously turned on as soon as signal is detected in any channel.

OVERVIEW

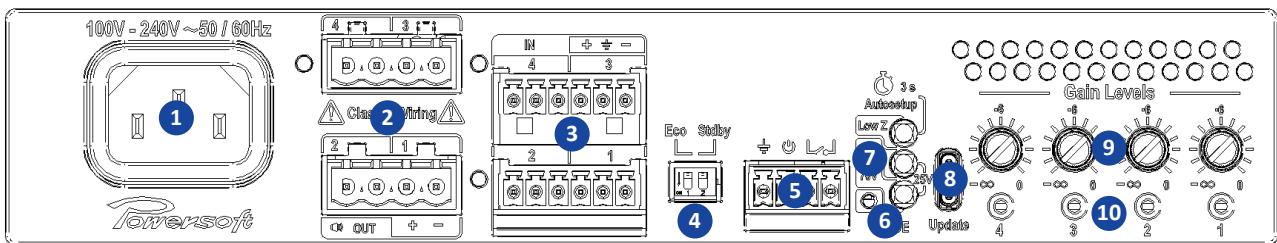
Front Panel



1. RGB LEDs indicators for amplifier global status and signal.

See appendix for detailed LEDs behavior

Rear Panel



1. AC Mains Input
2. Amplifier Outputs
3. Analog Inputs
4. Dip-switches for lower consumption:
 - Eco Mode on/off
 - Auto Standby on/off
5. GPIO connector:
 - Ground
 - GPI standby pin
 - Contact closure
6. MODE button for operations
7. RGB LEDs indicators:
 - Lo-Z and Auto Setup
 - 100V
 - 70V and Factory Reset
 - 25V is indicated by the combination of the 100V and 70V LEDs
8. USB Type C port for firmware update
9. Channels gain control
10. RGB LEDs indicators for output signal status

See appendix for detailed LEDs behavior

INSTALLATION

PRIMA amplifier features a compact form factor (½ rack unit width), which makes it particularly suitable for a variety of installation options, from rack cabinets to desktop mounting.

Unboxing & mounting

PRIMA amplifier has been completely tested and inspected before leaving the factory. Carefully inspect the shipping package before opening it, and then immediately inspect your new product. If you find any damage, immediately notify the reseller.

The package contains:

- 1x PRIMA amplifier
- 1x Safety Warning and Regulations sheet
- 1x AC Mains cable
- 1x Euroblock connectors kit
- 2x Wall-mount accessories
- 4x Adhesive rubber feet
- 1x QR code linking to the online user guide

PRIMA amplifier can be installed in three different ways, depending on the requirements of the system and on the available space: it may be placed on a flat surface for desk top operation, secured to a wall by means of the wall-mount kit supplied in the box, or installed in a 19" rack cabinet using the optional rack tray accessory.

The four adhesive rubber feet supplied in the box shall be applied to the bottom side of the chassis only when the unit is to be installed in desktop placement or in wall mounting configuration.

Rubber feet application

The bottom side of the chassis features four dedicated round-shaped guides, which match the shape of the foot and define its correct position. The feet provide proper grip on desktop installations and prevent any play between the wall and the amplifier in wall mounting, ensuring a secure and stable installation.

To apply the rubber feet, proceed as follows:

1. Place the amplifier upside down on a clean and protected surface, taking care not to damage the front and rear panel.
2. Clean the four dedicated guides on the bottom side of the chassis with a dry, lint-free cloth to remove dust and grease, ensuring proper adhesion.
3. Peel off the protective film from each rubber foot and firmly apply it inside one of the four dedicated round-shaped guides on the bottom side of the chassis, pressing for a few seconds to ensure proper adhesion.
4. Return the amplifier to its operating position.

Desktop placement

For temporary setups or stand-alone use, PRIMA amplifier can be simply placed on a flat, stable and horizontal surface, such as a desk or a table. The four adhesive rubber feet, applied as described above, ensure proper grip on the supporting surface and minimize mechanical vibrations transmitted to the unit.

When using the amplifier in desktop configuration, observe the following recommendations:

- Place the amplifier on a rigid, level surface able to support its weight.
- Leave adequate clearance around the unit to allow proper air circulation through the ventilation openings. Do not obstruct the side vents.
- Avoid stacking other equipment directly on top of the amplifier.
- Keep the unit away from heat sources, direct sunlight and liquids.

Wall Mounting

PRIMA amplifier can be secured to a wall by means of the wall-mount kit included in the box. The kit consists of two brackets that fasten to the bottom side of the chassis, allowing the unit to be permanently installed in fixed-installation scenarios.

To mount the amplifier on a wall, proceed as follows:

Important: ensure that the chosen position allows access to the rear panel for cabling, dip-switch configuration and firmware update operations, and that the front-panel LEDs remain visible for monitoring purposes.

1. Disconnect the amplifier from the AC mains and remove all signal and output cables before starting the procedure.
2. Place the amplifier upside down on a clean and protected surface.
3. Fasten the two wall-mount brackets to the bottom side of the PRIMA amplifier using the screws provided in the kit, aligning them with the dedicated threaded inserts, as illustrated on Figure 1. Make sure the brackets are oriented coherently with the desired mounting position.
4. Before mounting the unit on the wall, ensure that the adhesive rubber feet have been applied, as described in the relevant section.
5. Identify the final mounting location on the wall. The surface shall be solid and able to support the weight of the amplifier together with the connected cables.
6. Mark the position of the fixing holes on the wall using the brackets as a template, then drill the holes and insert suitable wall plugs (not included). The choice of screws and plugs depends on the type of wall and is the responsibility of the installer.
7. Secure the amplifier to the wall by tightening the screws through the bracket slots, indicated by the arrows in Figure 2. Verify that the unit is firmly fixed and that no play is present.
8. Reconnect signal, output and AC mains cables, taking care to leave adequate strain relief and to avoid mechanical tension on the connectors.

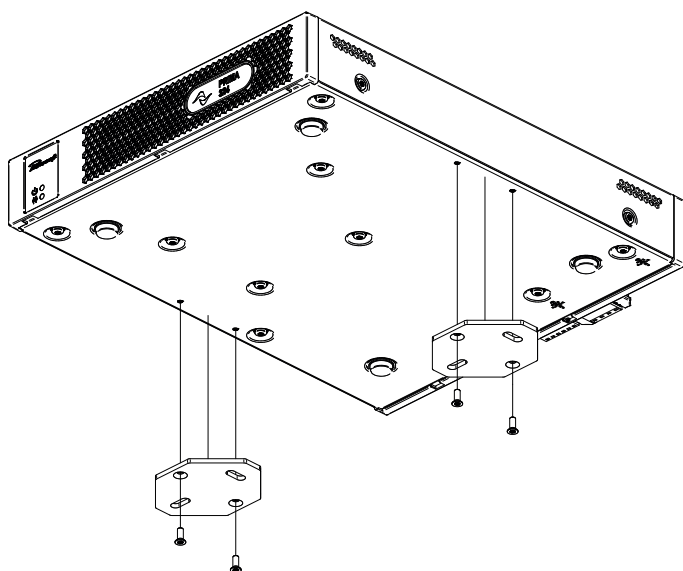


Figure 1 - Fixing the wall-mount brackets

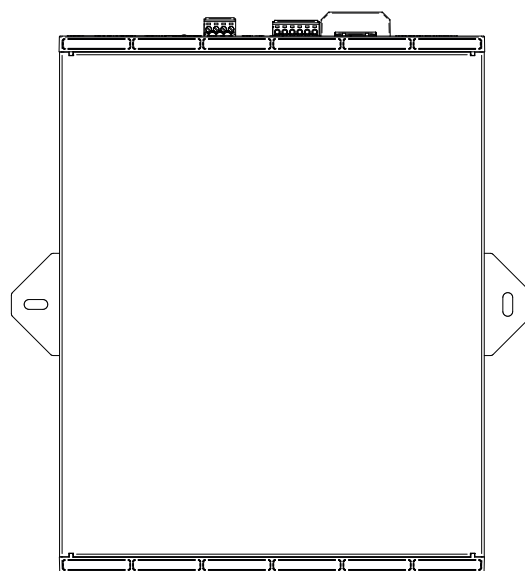


Figure 2 - Wall-mount brackets slots

Rack Mounting

PRIMA amplifier can be installed in a standard 19" rack cabinet by means of the dedicated multipurpose rack tray, available as an optional accessory and not included in the amplifier box. The rack tray occupies a single rack unit (1RU) and supports two alternative configurations: two PRIMA amplifiers installed side by side, or a single PRIMA amplifier installed in the central position.

The multipurpose rack tray features a set of through-holes aligned with the same threaded inserts used for the wall-mount brackets on the bottom side of the chassis. These through-holes allow the amplifier to be fixed to the tray from below, using the screws supplied with the wall-mount kit.

To install the amplifier on the rack tray, proceed as follows:

1. Disconnect each amplifier from the AC mains and remove all signal and output cables before starting the procedure.
2. Place the rack tray on a flat working surface, with the front side facing the operator.
3. Identify the desired configuration: side-by-side installation when two PRIMA amplifiers mounting is required, or central installation of a single PRIMA amplifier.
4. Position each PRIMA amplifier on the tray so that the threaded inserts on the bottom side of the chassis are aligned with the through-holes of the tray, as illustrated in Figure 3 and 4.
5. From the bottom side of the tray, fasten each amplifier to the tray using the screws supplied with the wall-mount kit, driving them into the same threaded inserts used for the wall-mount brackets.
6. If a second PRIMA amplifier is to be installed in side-by-side configuration, repeat the previous steps on the opposite side of the tray. A maximum of two PRIMA amplifiers can be installed on a single rack tray.
7. Insert the assembled tray into the 19" rack cabinet and secure it to the rack rails using the standard rack screws.
8. Reconnect signal, output and AC mains cables, leaving adequate slack at the rear of the rack to allow service operations.

Note: the screws used to fasten PRIMA amplifier to the multipurpose rack tray are the same ones supplied with the wall-mount kit. Make sure to retain them after unboxing if rack installation is planned.

Important: the multipurpose rack tray is the only accessory approved by Powersoft for rack installation of PRIMA amplifier. The use of non-approved mounting solutions may compromise mechanical stability and thermal performance.

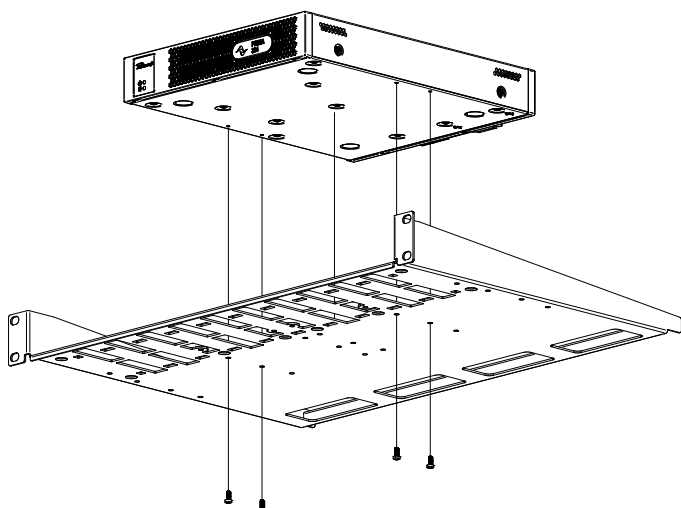


Figure 3 - Single unit mounting option

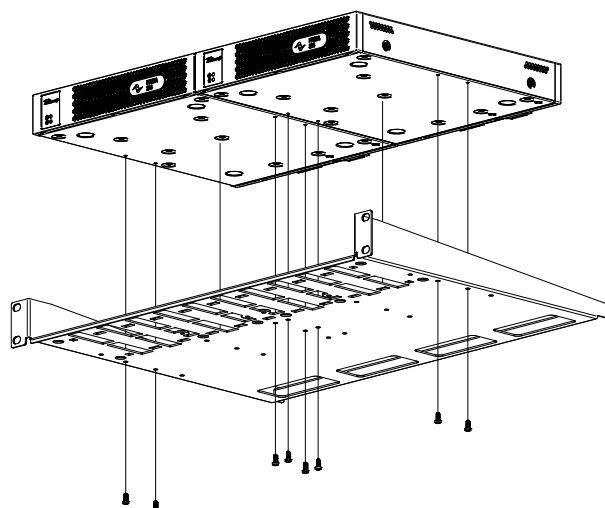


Figure 4 - Side-by-side mounting option

Wiring

Input

Phoenix BCP-381- 6 GN

Output

Phoenix MSTB 2,5/ 4-ST-5,08

Mains

IEC C14

GPIO

Remote Standby

The Remote Standby input can be exploited to remotely put the amplifier into standby mode. This can be achieved by supplying the input standby pin with 5Vdc. An external device can supply the +5Vdc signal to put the amplifier into standby mode, provided that the Ground is connected between the amplifier and an external device.

Fault Notification Output (contact closure - CC)

The CC output on PRIMA amplifiers can be used for fault notification purposes. The contact is designed to be in the closed position while the amplifier is in normal operating conditions. However, it will switch to the open position when the amplifier is turned off or when a fault is detected that prevents the amplifier from functioning properly.

The alarm that triggers the CC output can be any of the alarms described in the table below:

Alarm	Description	Priority Level	Hierarchy
Hardware Fault (Global)	Any non-output-channel related fault or condition preventing normal amplifier operation, that requires servicing.	0	Global status
Over Temperature Fault	When amplifier is muted due to temperature above operating limits.	10	Global status
Mains Alarm	When mains are detected but value is out of the operative range.	30	Global status
Hardware Fault (Output)	Any output-channel related fault or condition preventing normal amplifier operation, that requires servicing.	40	Output status
Short Circuit Protection	When a specific amplifier output is in protection due to short-circuit detected.	50	Output status
HF Protection	Channel is muted due to excessive high frequency output voltage.	60	Output status
Glitch Detected	A glitch was detected due to processing overload or other general firmware issue. The amplifier must be rebooted to resolve this alarm.	95	Global status

CONFIGURATION

The only configuration expected for PRIMA amplifier is to set the correct impedance load on each line. This calculation can be performed equally on all amplifier channels selecting the desired value of impedance, or automatically exploiting the Auto Setup function, that is able to compute the correct values for each different impedance line; see **Operation** section of this manual for more details on how to perform Auto Setup.

PRIMA amplifier routing does not need to be configured. Its fixed matrix, diagonal, allows each input to be sent to each relative output.

The lower consumption modes, useful for an eco-friendly use of the device, can be enabled or disabled from the amplifier's rear panel dip-switches.

Standby and Eco Mode

The PRIMA amplifiers are able to operate in three modes: Powered, Standby, and Eco.

The Powered mode is enabled by default and allows the amplifier to be fully powered, operational, and ready to produce audio through its outputs. The other two modes, Standby and Eco, may be enabled as needed.

Standby Mode

PRIMA amplifiers provide a standby mode which allows saving the most energy while still ensuring short wake up times. There are two methods to enable Standby mode:

- Putting the Standby dip-switch in the ON position causes the amplifier to go into standby automatically after 10 minutes without any signal in all channels. After going into standby, it is possible to remove it by sending a signal in at least one channel or turning off the Auto Standby function (dip-switch in the off position).
- By amplifier Standby pin: Applying and maintaining a differential voltage on the standby pin on the amplifier's rear panel. Note that the amplifier cannot be removed from standby as long as a differential voltage is applied to the amplifier Standby pin. The differential voltage to be applied can be in a range between 3V and 12V, while to remove it, it is necessary to apply a voltage lower than 2V or simply stop supplying voltage.

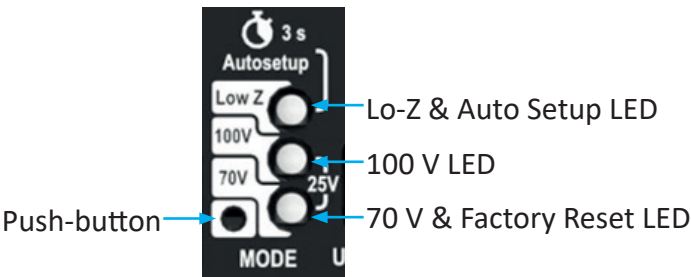
Eco Mode

PRIMA amplifiers have an energy-saving feature called Eco Mode. This feature allows each output channel to be automatically turned off when no audio is passing through, minimizing energy consumption. When audio is detected, the channels will be instantly turned on without affecting audio performance. Eco Mode is enabled by setting its corresponding dip-switch to the ON position. When in the on-position, the Eco mode activates after 10 minutes without any signal, for each output channel.

When the output channel has been in Eco Mode, it can be brought back to full operational mode either by having a signal present in the respective matrix output channel or by disabling the entire functionality (dip-switch in off position).

OPERATION

This chapter aims to describe the operation that can be performed on PRIMA amplifiers, via local interface. The MODE section present on the rear panel of PRIMA amplifier shall be used to perform push-button operations and gives indication on the impedance modality of the amplifier.



The table below summarizes the behavior associated with push-button operations and MODE LEDs.

Duration	Action	State During Press	State After Release	Result/Notes
Short Press (<1s)	Impedance Mode Selection (100V)	No change	Lo-Z ○ 100V ● 70V ○	Selects 100V mode, auto-adjust gain/HPF/limiters
	Impedance Mode Selection (70V)	No change	Lo-Z ○ 100V ○ 70V ●	Selects 70V mode, auto-adjust gain/HPF/limiters
	Impedance Mode Selection (25V)	No change	Lo-Z ○ 100V ● 70V ●	Selects 25V mode, auto-adjust gain/HPF/limiters
	Impedance Mode Selection (Lo-Z)	No change	Lo-Z ● 100V ○ 70V ○	Returns to Lo-Z Mode (factory default), auto-adjust gain/HPF/limiters
3s, <6s	Autosetup	After 3s: Autosetup LED + Signal LED Steady ●	On release (within 3s): Autosetup LED + signal LED + channel under measurement blink ●	Autosetup runs. Channel measured: ● = success ●/● (blinking) = error If any error occurs, autosetup, signal, and channel LEDs blink ● and ●. On success for all channels, impedance LEDs illuminate with the impedance found, other LEDs return to their original state.
10s, <14s	Factory Reset	After 10s: Reset LED + status LED + signal LED steady ○	On release (within 4s): Reset LED + status LED + signal LED blink ○	Returns to factory defaults: Lo-Z: ●, other impedance LEDs are off. If not released within 4s, no action taken.

Impedance Selection

PRIMA amplifiers can work in both Lo-Z and Hi-Z independently. By default, all channels are set to Lo-Z, but it is possible to change the impedance of all channels together by selecting the desired impedance value via push-button with a short press (<1sec) (see the table above for more details). From the factory setting, on the first press the 100V mode will be selected for all channels, 100V LED illuminates green; on the second press, the 70V mode will be selected for all channels, 70V LED illuminates green; on the third press, the 25V mode will be selected for all channels, 100V and 70V LEDs illuminate green. On the fourth press, the amplifier returns to its default mode, i.e. all channels will be set to low impedance.

In order for the PRIMA amplifier to work correctly in mixed systems, it will be necessary to perform the Auto Setup operation, as described in the next section.

Auto Setup

PRIMA amplifiers feature an Auto Setup function, capable of setting a Butterworth filter with a slope of 18dB per octave based on the impedance, and a peak limiter and correct gain for each line.

The Auto Setup operation shall be performed in case of mixed systems, i.e. some lines need to work on High impedance and some others in Low impedance mode.

The steps for the Auto Setup procedure are presented below.

1. Mixed system: If any lines operate in high impedance, select the required Hi-Z value before starting the Auto Setup operation, by short-pressing the MODE button (<1 s) until the desired value is chosen. Skipping this step causes the high impedance channel's measurement to fail.
2. Start: Press and hold the rear button for more than 3 s. The Auto Setup LED turns purple and remains purple for 3 further seconds.
 - Release while purple: Auto Setup starts.
 - Hold >6 s and release afterwards: operation is canceled; LEDs return to their previous state.
3. In progress: the front Signal LED, the Auto Setup LED, and the LED of the channel under measurement blink purple.
4. Per-channel result:
 - Pass: channel LED turns green.
 - Fail: channel LED alternates purple/red. After the full run, if any channel failed, the Auto Setup LED and signal LED also blinks purple/red until Auto Setup operation is repeated or the unit is rebooted.
 - Channel inactive: if a channel had no signal prior to Auto Setup, its LED remains off.
5. Completion on all channels successful:
 - Where there is signal presence, channel LEDs are green.
 - The Mode LEDs corresponding to the detected impedance(s) light green, and impedance selection via short press on the mode button is disabled.

Please Note: Following an Auto Setup operation, impedance selection is disabled. To restore this functionality, a Factory Reset must be performed, returning the amplifier to its default configuration (all channels set to Lo-Z).

Factory Reset

A Factory Reset can be performed via push-button. A Factory Reset returns the amplifier to its original, default settings.

To perform the reset:

1. Press and hold the push-button for a time between 10 and 14 seconds. After 10 seconds all LEDs turn off, except for the Factory Reset LED that illuminates white, indicating that the reset procedure can be initiated.
2. Release the button within the specified time frame (e.g., within 3 seconds of the LED turning white) to confirm the Factory Reset; if the button is held too long (beyond 4 seconds), the reset is canceled.
3. Once the procedure is successful, the LED will blink white, then return to their default state, indicating that the amplifier has been restored to factory settings.

Important: Performing a Factory Reset erases all custom configuration settings related to the impedances selected or detected via Auto Setup. The amplifier will need to be reconfigured with the impedances needed, to ensure proper system operation.

Channels Gain



PRIMA amplifiers offer four gain trimmers that adjust the level of each amplifier channel.

Their range varies from $-\infty$ to 0 dB, with a half-scale of -6 dB.

Their primary purpose is to balance the levels across the amplifier's channels. Accordingly, they should be employed during initial commissioning; thereafter, level adjustments should be performed at the program source or at the upstream processor, where applicable.

MAINTENANCE

This section provides guidance on performing maintenance tasks for the PRIMA amplifier. In the event of a configuration issue or the need to restore factory-default settings, refer to the Operation section of this manual for detailed instructions on executing the reset procedure.

Updating firmware

Firmware updates for the PRIMA amplifiers can be conducted via the USB-C port on the amplifier’s rear panel. A USB-C flash drive containing the new firmware file is required for the update. Insert the USB flash drive into the USB port with the amplifier either powered off or on. If the amplifier was previously on, disconnect the amplifier from its power source and then reconnect it. When the amplifier is powered on, the file is detected and loaded into the amplifier’s internal memory automatically. During the firmware update sequence the amplifier rear panel and front panel LEDs indicate the update status, as described in the tables below

Action in time sequence	Rear LEDs								Front LEDs	
	Lo-Z LED		100V LED		70V LED		CH LEDs		STATUS,SIGNAL LEDs	
USB dongle is being accessed		yellow		yellow		yellow		white		white
LOG downloading success		off		green		off		white		white
LOG downloading fail		off		red		red		white		white
Update error		off		off		red		white		white
Update blocked, action needed*		off		off		yellow		white		white
Update correctly in progress		off		off		cyan		white		white

**in case the 70V LED turns on yellow during the firmware update procedure, it will be necessary to remove the dongle to complete the update procedure.*

At the end of the new firmware download (bootloader finishes):

	Rear LEDs								Front LEDs			
	Lo-Z LED		100V LED		70V LED		CH LEDs		STATUS LED		SIGNAL LED	
Success		white		white		white		white		green		white
Fail		white		white		white		white		red		white
Inconsistency		white		white		white		white		yellow		white

Once successful, the front and rear panel LEDs come back to their previous status (the status they were before performing the firmware update procedure).

LEDS BEHAVIOR

Front panel LEDs

The front panel LEDs are, from top to bottom, status and signal.

The status LED gives information on the global status of PRIMA amplifier; the signal LED is for input signal presence and output limiting indication.

Please refer to the following tables for a detailed description of the color coding associated with each LED.

Status LED Color 	Lighting	Condition/Operation	Description
 OFF	-	• Amplifier unpowered • Auto Setup in progress	Indicates amplifier is not powered or that the Auto Setup operation is in progress.
 Green	Steady	Amplifier on, in normal operation	The amplifier is powered and functioning correctly without any alarms or ongoing procedures.
 Red	Blinking	Alarm Condition	A fault or error has been detected; the amplifier may require attention or troubleshooting.
	Steady	Severe Hardware Fault	If status LED is steady red and signal LED blinks red, the amplifier is blocked and requires service.
 Yellow	Blinking	Warning	The system has detected a non-critical condition; user intervention may be required if it persists.
 White	Steady	• Booting • Factory Reset ready • Firmware update in progress	Appears during booting, after holding the mode button for 10 seconds for factory reset or during a firmware update procedure.
	Blinking	Factory Reset in progress	Continues blinking while the device is resetting.
 Blue	Steady	Standby	The auto standby is active or the amplifier is put on standby via GPI.
 Purple	Blinking	Firmware Beta Version	If blinking with a special pattern indicates a Beta Firmware is running.

Signal LED Color 	Lighting	Condition/Operation	Description
 OFF	-	• Amplifier unpowered/Standby • No input signal is present and no channel faults	Indicates amplifier is not powered, in standby or there isn't input signal.
 Green	Steady	Input signal presence	Indicates input signal is present, with no faults.
 Red	Blinking	Input clip	Indicates some input signal is clipping.
	Steady	Severe Hardware Fault	If signal LED blinks red and status LED is steady red, the amplifier is blocked and requires service.
 Yellow	Blinking	Limiting in one or more channels	Amplifier is actively limiting output on one or more channels to prevent damage or distortion.
 White	Steady	• Booting • Factory Reset ready • Firmware update in progress	Appears during booting, after holding the mode button for 10 seconds for factory reset or during a firmware update procedure.
	Blinking	Factory Reset in progress	Continues blinking while the device is resetting.
 Blue	Steady	Auto Setup ready	The Auto Setup procedure can be initiated.
 Purple	Blinking	• Auto Setup in progress • Firmware Beta Version	The amplifier is performing the Auto Setup procedure or if blinking with a special pattern indicates a Beta Firmware is running.
 Purple/Red	Blinking	Auto Setup failed	Indicates an error occurred during the Auto Setup operation.

Channel LEDs

The rear panel channel LEDs are for channels signal presence and output status.

Status LED Color		Lighting	Condition/Operation	Description
	OFF	-	• Amplifier unpowered/Standby • No output signal is present and no channel faults	Indicates amplifier is unpowered, in standby or no signal is present on that channel and there are no channel faults.
	Green	Steady	• Output signal presence • Auto Setup Successful	Indicates output signal is present on that channel, with no faults. During Auto Setup procedure, indicates the success of the calculation on that channel.
	Red	Blinking	Output Fault	Indicates any output-related fault.
	Yellow	Steady	Output Limiting	Amplifier is actively limiting output on one or more channels to prevent damage or distortion.
	White	Steady	Booting	Appears during booting procedure.
	Purple	Blinking	Auto Setup in progress	The amplifier is performing the Auto Setup procedure on that channel.
	Purple/Red	Blinking	Auto Setup failed	Indicates an error occurred on that channel during the Auto Setup operation.



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