L1 Dual Monaural Line Preamplifier

User Manual

Dear Valued Customer,

We are honored that you chose the L1 Dual Monaural Line Preamplifier. Our team made every effort to design and manufacture this top quality versatile and future-proof product and is proud to present it to you. We hope your L1 preamplifier will bring you uncountable hours of emotion from your music collection.

But before you embark on your musical journey, we kindly request your attention to the information contained in this manual. The L1, as you will discover in the following pages, is a Swiss precision product designed for ultimate performance and flexibility. However, reaching sonic excellence requires your unit to be setup and operated correctly and this what this manual is all about. If you have any questions or require assistance, please don't hesitate to contact your authorized dealer.

We hope you will enjoy your L1 preamplifier for many years.

The Concert has just begun...

Cossy F. 

Heeb T. 

Table of contents

1 Introduction

CH products are designed and manufactured in Switzerland by CH Precision Sàrl. We use fully discrete, fully balanced, fully complementary, ultra-short signal path circuits – but we combine them with sophisticated software control, monitoring and protection to ensure the highest possible levels of performance, operational consistency and versatility.

As a result, your L1 offers a number of operational features that are unique and probably unfamiliar. For that reason it is essential that you fully understand every aspect of the L1's operation if you are to enjoy its maximum possible performance.

Please also note that the L1 can be used as a single chassis, a true monaural twin-chassis and with or without additional X1 power supplies, allowing one, two, three or four-box configurations. The basic instruction for handling and placing units is identical in all cases. Configuring multi-box systems will be covered in the appropriate section of this manual.

1.1 Global audio options

- Mute
- Absolute phase polarity
- Mono mode
- Balance / channel gain (up to 6dB of gain on either channel in 0.5dB steps)
- Maximum starting volume / global volume limit
- L1 internal stages calibration

1.2 Input-specific options

- Input configuration: active, hidden or bypass
- Input coupling: direct coupled or blocking capacitor
- Input impedance: high (94kΩ/47kΩ) or low (600Ω/300Ω)
- Input gain: ±6dB in 0.5dB steps
- Input calibration
- Input renaming

1.3 More user configurable options

- Display: color, content and brightness
- Define shortcut functions
- Network configuration
- Firmware version and update

1.4 Chassis configurations/extension

As well as being highly configurable in terms of inputs and operation, a single L1 chassis can also be expanded into a multi-box True Monaural preamplifier. This topology offers increased performance but also increased versatility.

- **Dual monaural:** In this configuration, a single L1 is used to hold the two channels (Left and Right, Center and Sub or Left and Right surround). Two boards are fitted inside its chassis, each one independently processing a single channel. The mains power supply section is common to both the board, however separate dedicated DC regulation circuits are provided to each board.

- **True monaural:** In this configuration, two L1s are used to hold a single channel each (Left resp. Right, Center resp. Sub or Left resp. Right surround). One board is fitted inside each chassis, each L1 processing a single audio channel. In this configuration, the entire power supply of the L1 is dedicated to one channel, further enhancing the system performances.

- **True monaural extended:** The configuration is identical to the True Monaural configuration, with the addition of a second board in each chassis. The two boards in a chassis work together, as if it was only one board with twice as many inputs (and outputs). This configuration will be used when more inputs are required than the amount a single board can provide.

For ultimate results, one/two X1 External Power Supply unit(s) can be connected to the L1(s) in all the above configurations, adding a second stage of power supply regulation to the preamplifiers, further improving the system performances.

1.5 The purpose of this manual

This manual will lead you through each step of the installation and set up procedure, in a clear and logical sequence. Although the operation and options might seem complex, they will quickly become second nature. But because of the sheer range of options available it is easy to overlook something unless you approach set up and configuration in a systematic way. If you take the time to follow the manual, it will ensure that you become completely familiar with the L1's many options and that your preamplifier delivers the best possible performance.

2 Setting up your L1

2.1 Safety notice

Make sure to observe the following rules:

- Always handle with care. The L1 unit is very heavy, so have someone help you when moving it around. Improper handling of the load could lead to risk of injury.
- Install your L1 player on a stable base.
- Do not install your L1 unit near water.
- Do not expose the unit to any kind of liquid.
- Do not install in direct sun light or near any heat source such as radiators or other sources of significant heat.
- Do not install in a confined space and make sure sufficient air can flow around the unit.
- Do not operate under high ambient temperatures (>35°C) or with extremely high humidity (>85%) such as in humid cellars.
- Only use options and accessories specified or recommended by the manufacturer.
- Do not open the unit nor try to service it by yourself. Do not try to install any option board by yourself. Always refer to a qualified technician for service, maintenance or upgrades. Failure to do so will void the unit's warranty.

In Denmark: Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord.

In Finland: Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan.

In Norway: Apparatet må tilkoples jordet stikkontakt.

In Sweden: Apparaten skall anslutas till jordat uttag.

2.2 Changing fuses and operating voltage

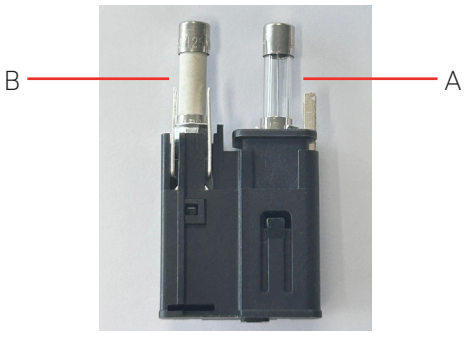
The information in this chapter conforms to the latest revision of the product.
If the fuses on your machine are reversed, please keep the initial position of the fuses.

- To change the fuses, switch off the L1 and remove the power cable.
  The fuse holder is located to the right of the IEC power input. See diagram on page 10 (Arrow 18)

Fuse values vary with operating voltage:

230VAC – Fuse A : T50mA/250Vac. Fuse B : T1.6A/250Vac

100/115VAC – Fuse A : T100mA/250Vac. Fuse B : T3.15A/250Vac

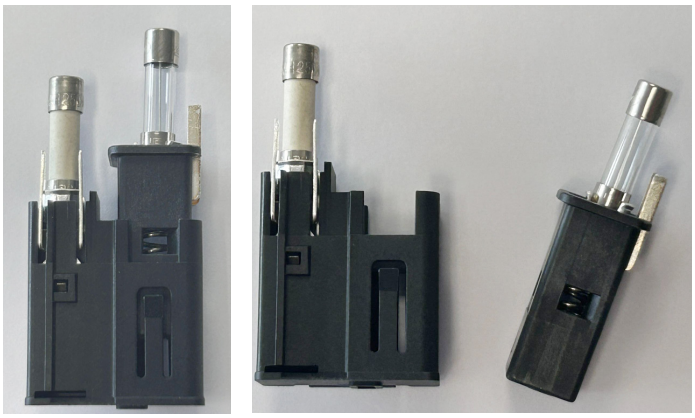


- Never change the selectable voltage during operation.
  To change operating voltage, switch off the L1 and remove the power cable.

Before changing the operating voltage first check the local voltage.

To change the operating voltage, remove the fuse holder from the L1 chassis.

Fuse B (see picture above) is located in a sleeve that can be slid out of the body of the fuse holder: by turning the sleeve and reinserting it, the orientation of the contact pins is altered, switching the operating voltage. The selected voltage will appear in the small window in the base of the fuse holder.



Make sure that if required, you change the fuse values to match the new voltage (as above).

You can now reinsert the fuse holder.

2.3 Mains supply

Make sure to use a fully grounded AC power cord (one with three terminals – live, neutral and ground).
Make sure that the mains voltage selection of the unit matches your local mains voltage.

Make sure your L1 is disconnected from the AC supply/wall socket in the following cases:

- When making connections (we also recommended disconnecting the rest of the system from the AC supply when installing signal and speaker cables).
- When cleaning.
- During thunder storms.
- When left unused for a long period.
- Ensure that the AC supply socket to which the unit is connected is accessible.

2.4 Unpacking

The L1's carton is large and contains both the component and all of its accessories. You will need an open, preferably carpeted area in which to unpack it. Please also ensure that the rack or support space on which the L1 will be placed has been cleared and cleaned before you start. At this point it is also worth ensuring that the connectors on any interconnect cables are cleaned and that the power to your system is turned off. The carton consists of an inner box and outer sleeve.

- Once you open the inner box, remove the top layer of white foam packaging. Inside you will see the component chassis and various accessories.
- With a helper, carefully lift the L1 out of the box and place it to one side. Then carefully remove the plastic bag in which it is sealed.
- Remove the small, brown Accessory Pack and place it with its unit. Also remove the power cord and suction cup and the four leveling/grounding spikes (inserted into the lower foam block).
- We recommend storing the Accessory Pack in a readily accessible place, so don't put it back in the cartons with the plastic bag when resealing it.

2.5 Package contents

Your L1 should arrive in a substantial carton. Once unpacked this carton and packaging materials should be stored safely in case you ever need to transport your unit. When moving or transporting the L1 unit, this should always be done in the original packaging.

The carton should contain:

- The L1 preamplifier
- Four two-part a hardened aluminum/polymer spikes
- A suction cup (used to remove the four top covers)
- An accessory box containing:
  - an infrared remote control
  - a spike adjustment screwdriver
  - a Torx T-10 screwdriver
  - four support discs
  - four stacking caps
  - a USB stick containing the latest CH Precision firmware

In case of damage to the L1 chassis or missing components, please contact your authorized dealer immediately. If your L1 unit is still very cold from transport, please let it warm up to room temperature in order to avoid condensation developing inside it.

2.6 Placing your L1 and installing the spikes

Before positioning your L1, it is worth taking the time to make a few preliminary decisions.

- Decide how many (and which) inputs you will use. Familiarizing yourself with (and making a note of) their position on the rear panel will be extremely useful when you come to actually make connections and allocate / configure those inputs.
- Decide whether you will use the CH Precision supplied leveling / grounding spikes.
- If you do plan to use the CH spikes, use the blue suction cup to remove the four circular covers in the top plate of each unit. Gently insert the hardened aluminum composite spikes into each exposed shaft and use the short red screwdriver to turn them enough to engage the threads at the bottom of each spike. Each internal thread is coated with a thin layer of grease during assembly to prevent galling between it and the aluminum spike, but adding a thin coating of grease to each thread before insertion is still a good idea, making adjustment easier and more precise.
- Do not screw the spikes in too far at this point or they will protrude from the feet and potentially damage the supporting surface. Do not replace the top-caps yet.
- Check that the voltage selector switch on the unit is set to the correct local voltage and that the power switch is off (the 0 side depressed).

Now you are ready to place your L1. The chassis is heavy and the feet are fitted with rubber rings to protect the supporting surface, which makes it hard to slide the unit. Having a partner to lift and help place the chassis will make things considerably easier.

- The L1 is supplied with a set of four support discs. These have a groove machined in the upper face that fits over the rubber ring in the underside of each foot. Lift each corner of the chassis in turn and position the disc beneath each foot. (Using an AirWedge or similar lifting bladder will make this considerably easier.) The groove that interfaces with the rubber ring will ensure that the footer disc stays in place if you slide the unit.

- As well as making the units easier to position, the support discs can also offer a superior interface between the grounding spikes and the supporting surface. The spikes are designed to drain internally generated energy away from sensitive circuitry and into a dispersive support structure, but if the supporting surface is extremely hard or forms an impedance mismatch with the spike tips, the material and footprint of the support discs can function as a lossy mechanical buffer, easing the passage of mechanical energy out of the unit. As a rule, the support discs work well with very hard surfaces, but results will vary with system and supporting surface. Once set up and warmed up, compare the sound of the unit(s) with and without the discs in place.
- Use the red screwdriver to wind down each four spikes until you feel that they touch the surface underneath. You will feel a slight resistance due to the chassis' weight. Then turn each spike by the same amount, for instance one more full turn. This should ensure that the load is evenly applied on all four spikes.
- It is worth using a spirit level to ensure that the L1 is perfectly level. If it is not, adjust the spikes with the screwdriver. Once this is done, simply check that all four spikes show the same resistance to turning. This means that the spikes are rigidly coupled to the supporting discs and equally loaded.
- Replace the top caps, using the suction cup to ensure that they are screwed tightly into place.

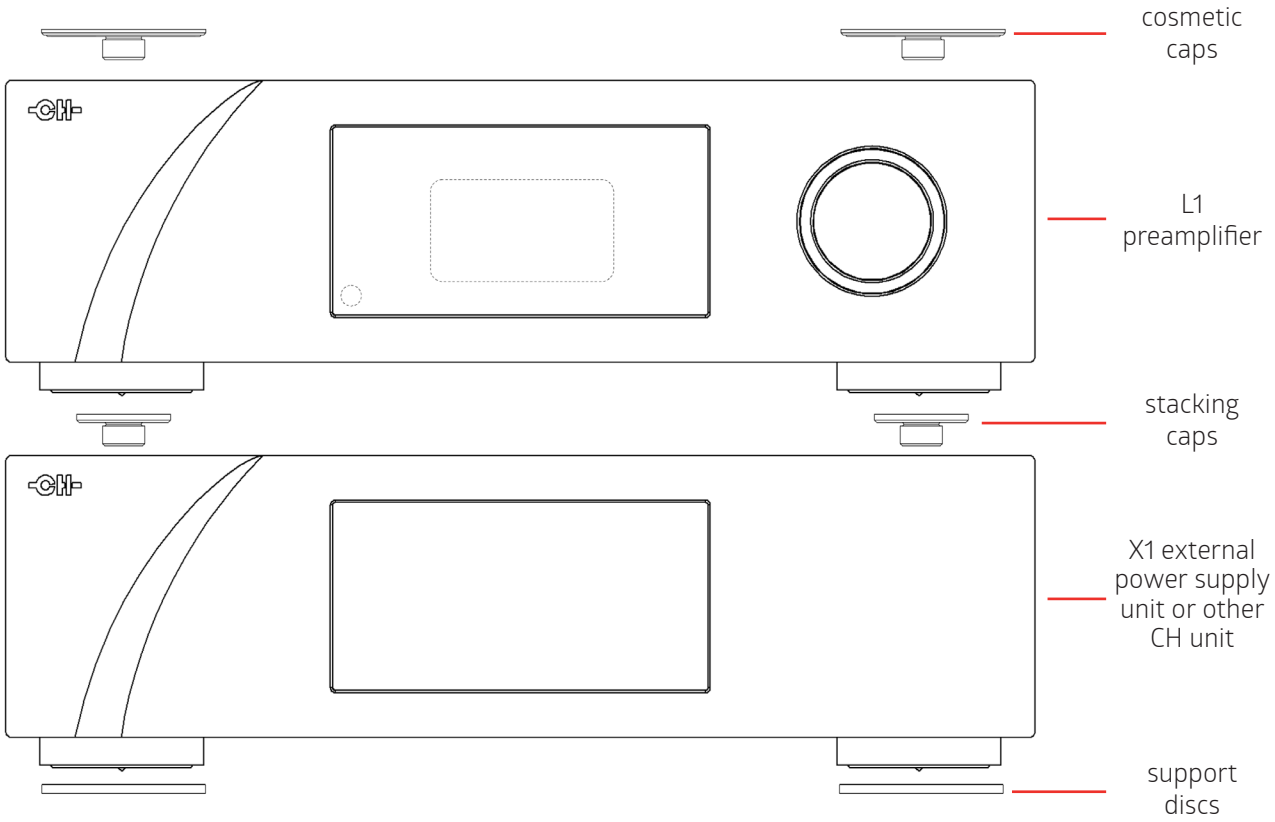
2.7 Stacking the L1 (or not)

Also included in the accessory packs is a set of stacking caps. These polymer inserts allow owners to stack the L1 chassis on top of other CH 1 Series components. The spikes and interface caps will ensure mechanical grounding of the stacked chassis. However, this will inevitably compromise performance to some extent and should only be done when space is at an absolute premium.

The optimum support for any CH unit is to mechanically ground it to a stable, dispersive structure, either using the supplied spikes or an after-market solution. But if lack of space absolutely mandates the stacking of CH components, then using the supplied spikes and stacking caps will provide the best possible solution. The stacking caps simply screw into the top of the spike wells in the lower unit(s), taking the place of the cosmetic caps. When a second unit is stood on top of them, its spikes can be wound down into the wells in the caps, providing a stable, safe and easily managed stacking option that improves mechanical termination and satisfies aesthetic and practical considerations.

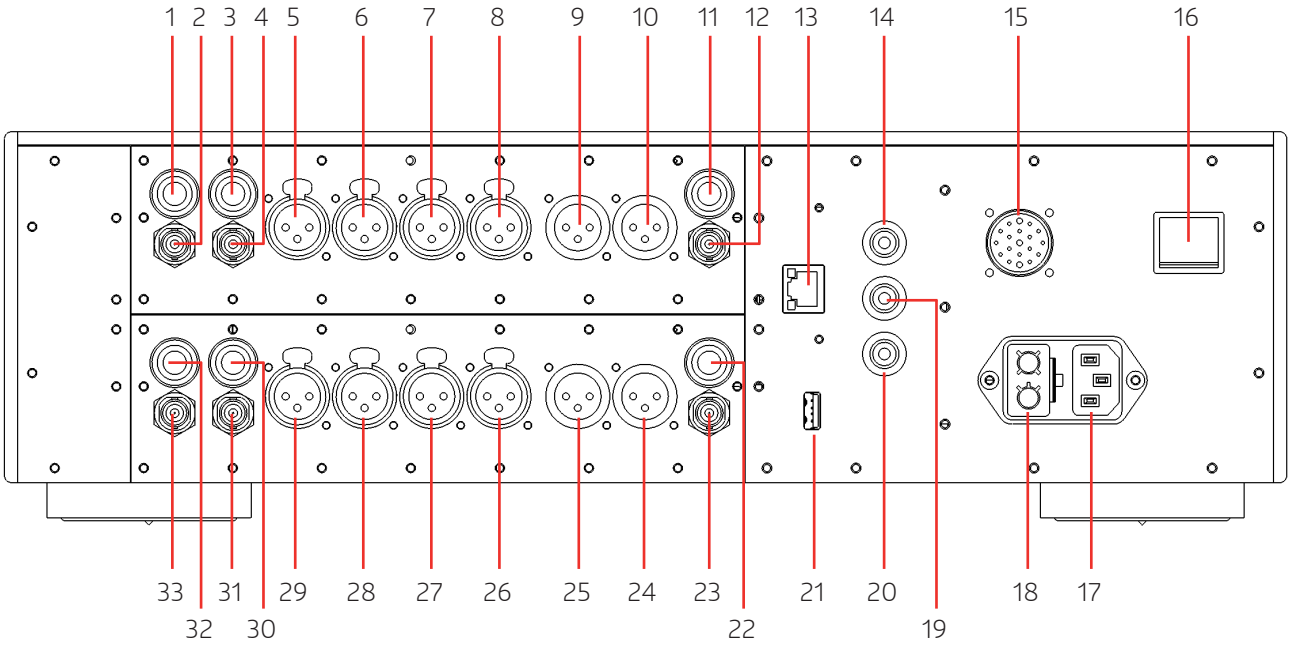
Make sure that you retain the cosmetic top caps and store them safely as you may well require them in the future if (or rather, when) your system or circumstances change.

Stacking the L1 (or not)



2.8 Connections

With the L1 unit(s) placed and levelled, you are now ready to connect your signal cables.
The rear panel layout is shown below:



L1 audio unit rear panel connections

(1) RCA 1 left input
(2) BNC 1 left input
(3) RCA 2 left input
(4) BNC 2 left input
(5) XLR 1 left input
(6) XLR 2 left input
(7) XLR 3 left input
(8) XLR 4 left input
(9) XLR 1 left output
(10) XLR 2 left output
(11) RCA left output
(12) BNC left output
(13) Ethernet port for command interface
(14) Signal ground (analog GND) socket
(15) Multi pin socket for X1 power supply only
(16) Power on/off switch
(17) Power cord socket
(18) Fuses and voltage selector
(19) Signal ground (analog GND) socket. Place the ground lift jumper in the lower position, between (19) and (20), to connect signal ground (analog GND) to earth (digital GND). Keep it in the upper position, between (14) and (19), to store it
(20) Chassis earth (digital GND) socket.
(21) USB socket for software upgrades only
(22) RCA right output
(23) BNC right output
(24) XLR 2 right output
(25) XLR 1 right output
(26) XLR 4 right input
(27) XLR 3 right input
(28) XLR 2 right input
(29) XLR 1 right input
(30) RCA 2 right input
(31) BNC 2 right input
(32) RCA 1 right input
(33) BNC 1 right input

You will note that as well as the array of conventional inputs and outputs, there are a number of other sockets available which are used for control and update functions.

2.9.1 USB port

The USB port is not a digital audio input. It is dedicated to upgrading the firmware of the L1. Do not use it for any other purposes. For more information please refer to the firmware update instructions in the dedicated chapter of this manual.

2.9.2 Ethernet port

The Ethernet port is used for two closely related functions.

- Connection to a local network router will allow control of the L1, its functions and configuration through the CH Control App, loaded on an Android device.
- In True Monaural, multi chassis configurations, the connection to an Ethernet network allows the two separate audio chassis to communicate in a Master/Client relationship, so that control settings track each other.
- In a situation where a True Monaural, multi-chassis L1 is not connected to a network, an RJ45 Mirror lead connected between the two audio units will allow control synchronicity. In this case, select 'Direct-Link' in the 'Network / IP Settings' menu of both audio units.

2.9.3 Local area network considerations

We strongly recommend that you construct a dedicated local network for both music streaming and system control functions. It can be operated from locally located network switches, galvanically isolated from your main household network using affordable and readily available optical converters. This will improve the responsiveness of your setup, and keep as much high frequency noise out of your precious audio setup as possible.

2.9.4 Ground lift jumper

The grounding switch allows owners to combine or separate the signal and chassis ground. In a complete CH system, this allows you to configure a single point, star grounding arrangement for the signal grounds. It can also prove useful in a situation where ground-loops generate hum.

2.9.5 Inputs

- Make sure that the L1 is switched off and disconnected from the wall socket.
- Connect each pair of source interconnects to the input you have chosen. On a single chassis L1 the left inputs are the top sockets and the right inputs are the lower ones. In a four-chassis, True Monaural set up, you will connect the left inputs to one chassis and the right inputs to the other.
- You have four balanced XLR inputs, two RCA and two BNC inputs per channel (or twice as many in a dual-audio chassis True Monaural Extended configuration, where each separate channel chassis carries two input cards).
- The inputs are all numbered. When making connections, ensure that you note which source is connected to which input, so that you can identify each one correctly in the configuration menu. You can later give a more meaningful name to the L1 inputs that are connected to a source component, and hide the ones you won't use for now.

2.9.6 Outputs

- The L1 is equipped with two pairs of balanced XLR and single pairs of RCA and BNC outputs. This provides plenty of flexibility to connect your power amplifiers, even for bi-amplification.
- The connection of the L1 to your system will depend on the number (and type) of amplifiers you are using. Please see the configuration diagrams on the System Topology Sheet.
- If you need additional outputs, then the four-chassis extended configuration will provide twice the number.

2.9.7 AC Power

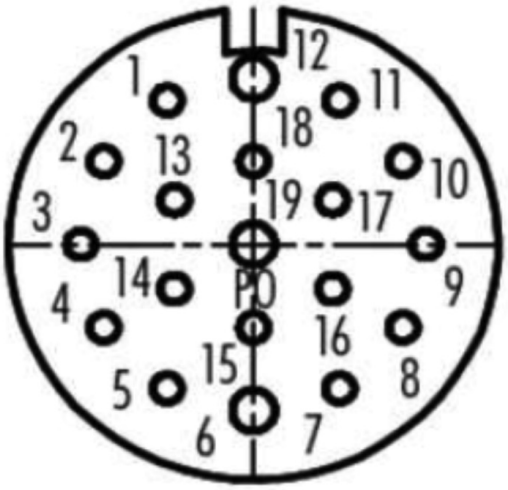
- With all the signal inputs and outputs connected, you can now turn on the rear panel power switch on the L1 and switch the unit on. You should see the red bar in the CH logo in the top-left corner of each front panel illuminate.
- Please note that **if you are using an X1 external power supply, you will still need to connect the IEC power cord to the L1**, as this supplies power for the control circuitry.
- Please note that if you are using an X1 external power supply, you must connect the umbilical lead between the L1 and the X1 **before turning on either unit**. Failure to do so could result in damage to either or both units.

Your L1 is now in standby mode and ready to be turned on and configured.

3 External power supply connector

The external power supply connector allows you to add the optional CH Precision X1 power supply to your L1 to further enhance performance. When the X1 is used, it completely replaces the L1's internal power supply, minimizing noise, reducing the noise-floor and increasing dynamic range and audio quality. With the X1 connected, the (small) standby transformer of the L1 remains active to ensure the unit's wake up functionality, so the power cord must be left in place.

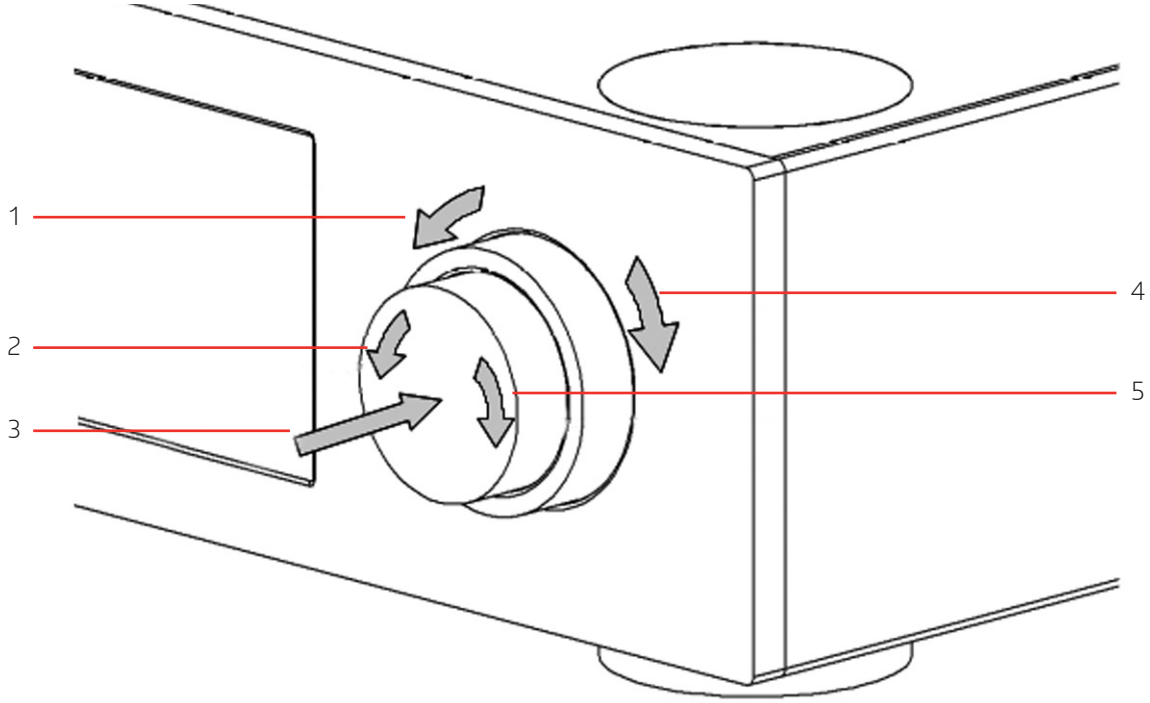
	X1 Voltage	Power Max
Pos.1	+8V Digital	20W
Pos.2	-8V Digital	20W
Pos.3	GND Digital	–
Pos.4	-8V Analog	20W
Pos.5	-19V Analog	40W
Pos.6	GND Digital	–
Pos.7	+19V Analog	40W
Pos.8	+8V Analog	20W
Pos.9	+11.7V Digital	40W
Pos.10	+5.5V Digital	55W
Pos.11	+3.4V Digital	75W
Pos.12	GND Digital	–
Pos.13	GND Digital	–
Pos.14	Command	–
Pos.15	+10.5V Analog	50W
Pos.16	Command	–
Pos.17	GND Digital	–
Pos.18	+8V Digital	20W
Pos.19	GND Analog	–



Front view

4 How to configure and operate your L1

Your L1 is controlled via the provided infra-red remote control, the dual rotary knob to the right-hand side of the display, or via the CH Control App. If the L1 is not detected by the CH Control Android app yet, the initial set up should be done using the rotary control knob.



User control knob movements

1. External ring rotate Left [<<E]
2. Central ring rotate Left [<<C]
3. Central knob push. There are two types of push: Normal Push [NP] and Long Push [LP]
4. External ring rotate Right [E>>]
5. Central ring rotate Right [C>>]

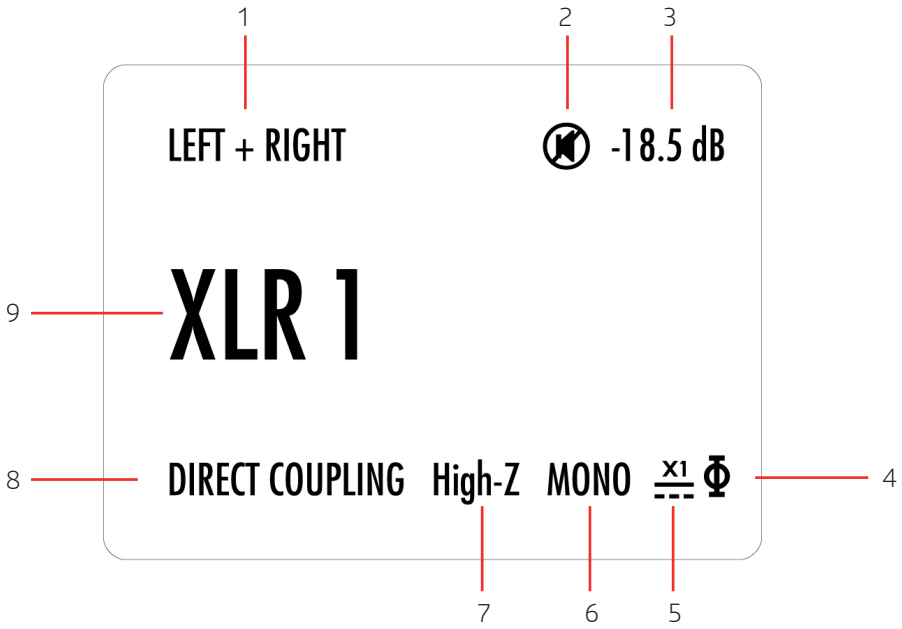
In use, your L1 has two operating modes: Normal mode and Menu mode.

4.1 Control actions in normal mode

In general use, the rotary control allows you to switch the L1 on and off, select inputs or short-cut functions and adjust the volume level.

4.1.2 To turn on the L1

With the unit in standby, use a short press on the central knob [NP]. The red bar LED in the CH logo will start to flash and the display will start to operate.



Normal mode display elements

(1) Handled channel (in true monaural) or channel pair (in dual monaural)
(2) Mute indication. If the 🔇 symbol is present, the output is muted
(3) Volume
(4) Polarity (phase) indication. If the Φ symbol is present, polarity is reversed
(5) External power supply indication. When an external power supply is connected and engaged, X1 symbol is displayed and internal power supply is turned off
(6) Monaural mode indication. If MONO is displayed, content of both channel are summed up (L+R) and output on both L and R output
(7) Impedance termination indication. High-Z is displayed when no termination resistor is engaged, 600 or 300 Ohm when a termination resistor is activated
(8) Input coupling state. Direct coupling means there is absolutely no capacitor in the signal path, DC blocking means the selected input goes through a high performance polypropylene capacitor
(9) Input source name. Each input source can be renamed through L1's menu

4.1.3 To select an input

Rotate the outer ring left [<<E] or right [E>>]. The display will show the selected input.

4.1.4 To alter volume

Rotate the central knob left [<<C] or right [C>>]. The display will give a numerical and graphical readout of volume level.

4.1.5 To engage shortcuts (mute, balance, phase, etc.)

Use repeated Short pushes on the central knob [NP] to cycle through shortcut options. Display will show selected shortcut function:

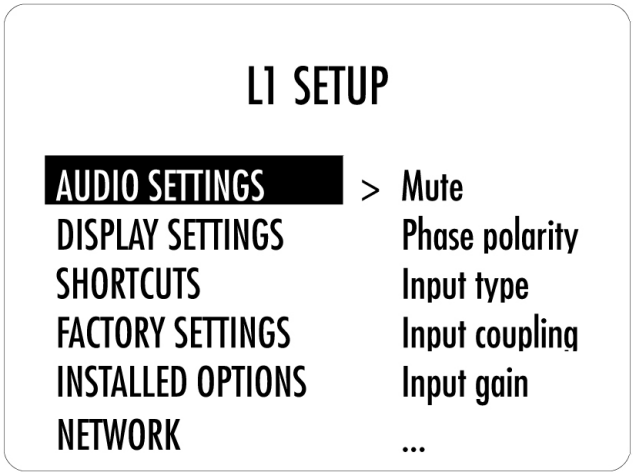
Rotate control knob left [<<C]/[<<E] or right [C>>]/[E>>] to alter shortcut parameter – mute/unmute etc. Note that the current input is automatically pre-selected for all input-specific parameters that are configured through a shortcut.

4.1.6 To enter menu

After the last shortcut, comes a screen labeled Detailed Setup. **With the display showing Detailed Setup, rotate either the central or external control right [C>>]/[E>>] to enter Menu Mode.**

4.2 Navigating the setup menus

Once in Menu Mode, the various menu options are shown on the display and navigated using the central control knob.



L1 set up screen items

The display shown above is the main Menu, with the various sub-menus shown in the left column and the parameters adjustable in the selected menu (in this case the Audio Settings menu) in the right column.

- Rotating the central knob moves the menu selection up and down the left column of the screen (the selected sub-menu/parameter is highlighted). As each sub-menu/parameter is selected, the options available will be shown in the right column.
- Once the correct menu/parameter has been selected, a short push on the central knob [NP] or [E>>] will enter that selection. Once you have navigated to the correct menu and set the required parameter, another short push on the central knob [NP] will store that setting.

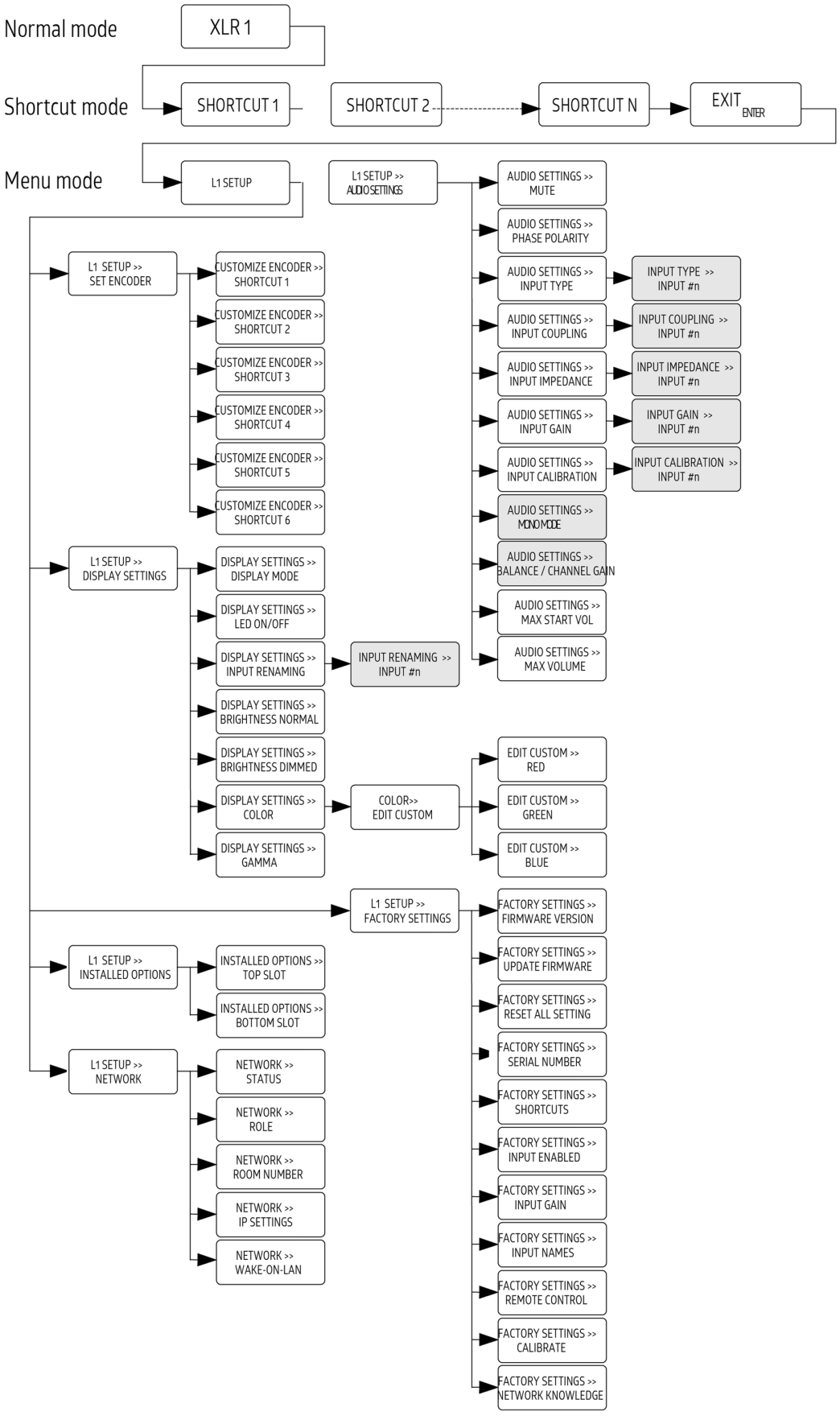
Note that some parameters are input-specific, while others are global. For instance, you can individually adjust the input gain or coupling (direct or cap) of each L1 input, while the absolute phase polarity is a global parameter.

4.3 Menu options

If you study the menu tree laid out below, you can see the various options and where to find them. It may looks confusing to start with, but it soon becomes clear and easy to navigate.

Below the menu tree is a list of the various sub-menu options and their significance. These options are the key to configuring your L1 to deliver the best performance, tailored user interface and coupling with your system. It is worth studying the various options and their importance, as they will directly affect your enjoyment of your system.

L1 preamplifier menu structure



4.3.1 Global audio settings

- Mute
  Mutes or unmutes the audio output.
- Phase polarity
  Allows you to reverse the absolute phase of the audio output.
- Channel mode
  Left and right input signals can be summed together to generate a monaural signal. Default value of this parameter is stereo. Obviously, this feature is not available with a four chassis, True Monaural L1 setup, as there is no easy way to combine the monaural channels of the left and right L1 chassis.
- Balance / Channel gain
  6 dB of L/R balance control in 0.5 dB steps for an L+R dual monaural L1.
  ±6 dB of left, right, left surround, right surround, center or sub channel gain for other L1 configurations (either True Monaural or surround channel configuration)
- Maximum start volume
  Upon startup, the L1 normally resumes operation at its previous volume level. This setting allows you to limit the start up level to avoid bad surprises, in case the L1 was previously used at a very high volume level.
- Maximum volume
  User-configurable absolute volume limit for the L1 (-30dB to 0dB in 10dB steps, or no limitation – up to +18dB).

4.3.2 Input-specific audio settings

- Input type
  Selects whether the selected input is a standard (volume controlled), hidden or By-passed (processor) input. Hidden outputs will be removed from the source switching cycle so that only active sources appear.
- Input coupling
  Sets individual coupling type (DC or AC) for each input.
  DC coupling delivers superior stability, dynamics and sound-staging. AC coupling prevents DC noise entering the L1 from a source connected to that input – useful for blocking DC generated by tubes during their warm up cycle for instance.
- Input impedance
  Sets individual impedance termination per input.
  High impedance (47kΩ for single-ended inputs, 94kΩ for balanced inputs) means the input won't draw any current from the upstream device's output, delivering the best possible resolution and dynamics.
  600Ω (300Ω for single-ended inputs) means a termination resistor is activated, increasing the noise immunity of the interconnect while drawing a bit of current from the upstream device's output. This eliminates induced noise at the cost of dynamic range and precision.
- Input gain
  Sets input gain for each individual input, ±6dB in 0.5dB steps.
  Allows owners to equalize volume levels for different inputs and set system gain for optimum dynamic performance.
- Input calibration
  Analyzes the DC output level of upstream devices to best adapt the L1's DC-cancellation scheme.

4.3.3 Display settings menu

- Input name
  Each input can be allocated a specific name or identifier, up to 12 letters or numerals long. Text is entered using the rotary control. Scroll through the alpha/numeric listing until you have the letter, number, space or punctuation required. A short press [NP] saves that selection and shifts the cursor to the next space. Don't forget to save the name with a short press [NP] when complete. Alternatively, you may want to rename your L1 inputs directly from the Android CH Control App.
- Display mode
  Allows the user to choose what information is displayed and whether the display remains on or switches off after a short time. Options are volume readout scale, general status display or Off.
- Front LED
  Allows the user to turn the red power LED off when the units are active rather than in standby.
- Display brightness and gamma
  Allows you to set the brightness of the display in operating mode (10 – 100%), and to fine tune the high brightness gamma curves to perfectly match the brightness and color or other displays.
- Display brightness (dimmed)
  Allows you to set the brightness of the display when dimmed between operations (10 – 30%), and to fine tune the low brightness gamma curves to perfectly match the brightness and color or other displays.
- Display color
  Lets the user select display color from a choice of seven standard shades or a user defined RGB color.

4.3.4 Shortcut menu

The L1 allows you to establish up to six shortcuts, taking you directly to almost any parameter in any menu. The L1 is pre-programmed with Mute and Phase Polarity as shortcuts one and two. After scrolling through the latest shortcut, the next screen that the L1 displays is the entry port to the L1 menu. It reads Detailed Setup.

4.3.5 Network menu

- Status
  Shows a list of compatible devices detected on the LAN.
- Role
  When physically connected to a network, the L1 can ignore this network (offline) or connect to it as being the master (it will transmit infra-red received commands to all compatible client units) or as a client (it will ignore remote control commands and receive commands from the master device).
  This networking facility allows information sharing among CH products (such as sound level for multichannel configurations).
- Room number
  Defines the room in which room the L1 is for multi-room applications.
  This prevents CH Precision units connected to the same network but located in different systems/rooms to interact with each other.
- IP settings
  Auto should be selected if the L1 is connected to a router with DHCP server feature.
  More advanced settings are available if needed.

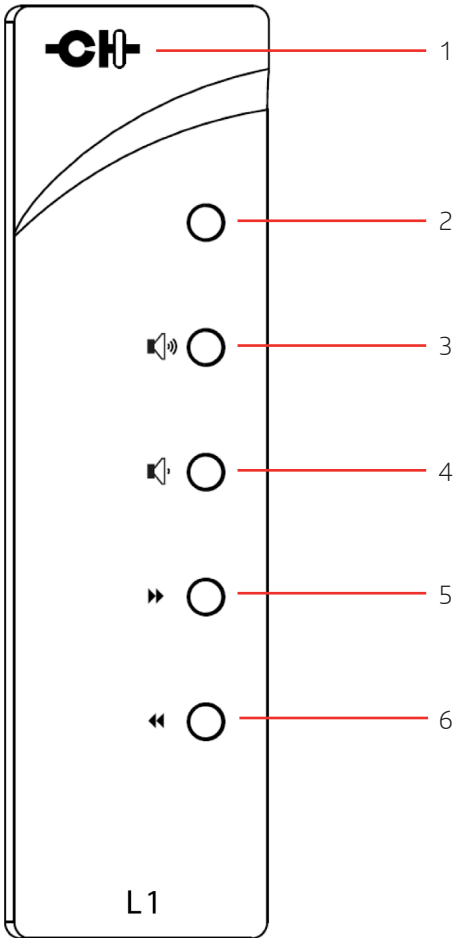
- Wake-on-LAN
  If No is selected, the L1 can't be woken up by the app. Standby mode will consume less than 0.5W.
  When Only if PoE is selected, the L1 can only be woken by the app if connected to a Power-over-Ethernet switch. Standby mode will draw less than 0.5W from the mains plug.
  If Yes is selected, the L1 can always be woken up by the app. Standby mode will draw less than a couple of watts from the mains plug.
- Power off command
  If Yes is selected, the L1 will enter standby mode when it receives a Power Off command from the LAN. It will remain on if No is selected. This is useful if you want to keep your L1 on even when you turn off the rest of your system.
- Network knowledge
  The L1 keeps track of all discovered devices, in order to turn them on if it is set as a Power Master. If the audio system evolves, the list of devices can be cleared by this function.

4.3.6 Factory settings menu

- Firmware version
  Indicates the version of the firmware that the L1 is currently running. Periodically check CH Precision's website to see if a newer version is available. It could add new features or correct bugs.
- Update firmware
  Selecting Update launches the L1 firmware update process. A USB flash disc drive with a valid set of firmware must be inserted in the A-shaped USB port. Please report to the corresponding section of this manual for more detail on firmware update procedure.
- Factory reset
  Resets all parameters to their default factory values. This can be useful if you made some changes that you don't know how to revert. Note that it is also possible to reset small subsets of parameters to their default values from other locations in the menu tree.
- Serial number
  Displays the serial number of your L1. This serial number is also written on a sticker at the back of your L1.
- Installed options
  Lists the hardware configuration of your L1.
- Calibrate
  Launch automated self-calibration to measure and compensate for DC at all stages of the L1 signal path.
  This calibration process is conducted at the CH Precision factory prior to packing any L1.
  In order to avoid overriding these factory measured values with inaccurate ones, the L1 must be powered for at least 1 hour before this function is available, to ensure the L1 is warmed up and all internal stages have stabilized.
- Remote control codes
  Selects the set of infra-red RC5 commands that the L1 will respond to. Pre1 is the standard RC5 Preamplifier set, Pre2 is an alternate RC5 Preamplifier set (Pre1 corresponds to the set of commands the L1 remote control sends by default and Pre2 to the set of commands the C1 remote control sends by default).
  When 'None' is selected, the L1 cannot be controlled by an infrared remote control.

4.4 Handheld remote control

The L1 preamplifier is delivered with an infra-red remote to drive the unit's basic operational functions.
The provided remote control is not intended to be used to configure the unit. It can be magnetically attached to the front edge of the side panels on the L1 preamplifier for storage.



(1) Remote control activity LED
(2) Mute [NP] / Standby [LP] button
(3) Volume up [NP] / fast volume up [LP] button
(4) Volume down [NP] / fast volume down [LP] button
(5) Next input [NP] / absolute phase inversion [LP] button
(6) Previous input [NP] / absolute phase inversion [LP] button

L1 preamplifier infra-red remote control

4.4.1 Batteries

If the Remote Activity LED fails to light then you will need to change the batteries in the handset.
The back cover can be removed using the Torx T-10 screwdriver supplied in the accessory pack.
The remote takes two AAA batteries.

Warning: Do not ingest battery, Chemical Burn Hazard

The remote control supplied with this product contains a coin / button cell battery.
If that battery is swallowed, it can cause severe internal burns in just 2 hours and could lead to death.
Keep new and used batteries away from children.
If the battery compartment does not close securely, stop using the product and keep it away from children.
If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.

5 Firmware update

5.1 Preparing the USB stick

The firmware of all the CH Precision units can be updated using the USB port located at the back of the unit. Before starting the firmware update, it is necessary to load a USB stick with files containing the new firmware. Use a FAT32 formatted USB 2.0 stick. Please note that some USB sticks might not be detected by the L1 USB port. CH Precision recommends the use of the USB sticks that is delivered in the accessory pack of the unit. The following procedure describes how to load the USB stick with the correct files:

1. Download the latest L1 firmware file from www.ch-precision.com.
2. Decompress the .zip file and copy the decompressed files to the root of your USB stick.

Make sure all the files are present at the root of your USB stick, and that only one version of these files is present. Any missing file will make the firmware update procedure fail, while multiple versions of the same unit's firmware can lead to unstable L1 behavior after update.

5.2 Updating the unit's firmware

1. Perform the operations described in section 4.1.
2. Connect the USB stick to the USB port located at the back of your L1 preamplifier.
3. Navigate to the FACTORY SETTINGS menu and select the UPDATE FIRMWARE item.
4. Start the Firmware Update process by pushing the encoder button. Please note that the unit can perform several resets (the display briefly turns off and on) during the procedure.
5. Once the firmware update is complete, the unit automatically goes into Standby mode. The front red logo LED will switch from flashing mode to on mode. Remove the USB stick and turn the unit on. The new firmware is now active. To verify that the firmware update was effective, navigate to the FACTORY SETTINGS menu and select the FIRMWARE VERSION item. The displayed firmware revision should match the firmware revision on the files copied to the USB stick.

Note: The firmware update process lasts 5-10 minutes, **do NOT interrupt it!**

When performing a firmware update, do NOT press or turn any of the unit's front panel button/encoder, do NOT unplug the unit from the AC wall socket and do NOT turn the mains power switch off. Interruption of the firmware update procedure may result in corrupted firmware and a malfunctioning unit. In case something went wrong during a firmware update and the unit is malfunctioning, apply the emergency firmware update procedure described in the next section.

5.3 Emergency firmware update procedure

Perform the following Emergency Firmware Update procedure if your unit doesn't power up normally.

1. Perform the operations described in section 4.1.
2. Power the unit off (back panel mains power switch to OFF on the power supply unit).
3. Push the central knob and keep it pushed while powering up the unit (back panel mains power switch to ON). Keep the central knob pushed in for a couple more seconds after turning the unit on.
4. The unit performs the emergency firmware update. Once the operation is complete, the unit automatically goes into Standby mode. Remove the USB stick and turn the unit on. The new firmware is now active. To verify that the firmware update was effective, navigate to the FACTORY SETTINGS menu and select the FIRMWARE VERSION item. The displayed firmware revision should match the firmware revision on the files copied to the USB stick .
5. If the emergency firmware update procedure fails, try the same procedure again using a different USB stick. If the failure persists, turn off your unit and contact your authorized dealer for assistance.

Note: The emergency firmware update procedure lasts 5-10 minutes, **do NOT interrupt it!**

6 Troubleshooting

Never try to reconnect an umbilical power cable or the mains power cable while your L1 is not fully off. If any power cable gets disconnected by mistake while your L1 is on, just let it safely automatically turn off. Do not try to interfere with the emergency power down procedure of the device. Then wait a couple of minutes before plugging the umbilical power cables back.

Error	Action
No power	Check the mains power cable is firmly attached. Check the power switch at the back of the unit is in the on position. Check the mains fuses on the back of the unit
No sound (general)	Check that your source is playing Check that your amplifier is turned-on and speakers are connected Check that the L1's volume setting is not too low Check that the correct input is selected on your L1
No sound ("🔇" is displayed)	Your L1 is muted (display area 4 🔇 must be off for the unit to output signal). Unmute using first RC button
Lost in the settings?	Restore factory settings and start your setup again
Software update fails	Try Emergency Software Update procedure If it fails, download the latest L1 firmware from www.ch-precision.com, prepare a software update image on the provided FAT32 formatted USB stick and follow the Emergency Software Update procedure again
USB flash drive for firmware update is not detected by L1	Please try another brand of USB flash drive (e.g. Sandisk or the provided stick).

If the error cannot be corrected using the information from the above table, disconnect the unit from AC wall socket and from the rest of your system and contact your authorized dealer for assistance.

7 Specifications

General

User control	Dual concentric rotary knob with push function, CH Control Android app
Display	800×480 24bits RGB AMOLED
Power supply	Selectable 100V, 115V or 230V AC, 47Hz to 63Hz
Power consumption (Standby)	<0.5W
Power consumption (Normal)	55W
Operating conditions:	Temperature: +5C to +35C, humidity: 5% to 85% (no condensation)
Storage conditions:	Temperature: +5C to +45C, Humidity: 5% to 85% (no condensation)
Dimensions (W x D x H)	440mm x 440mm x 120mm (main body) 440mm x 470mm x 132mm (overall including connectors and feet)
Weight:	20kg
Firmware update / Control	USB port for firmware update / Ethernet based system control

Analog inputs

Balanced inputs	4x XLR connectors per board, 94kΩ or 600Ω load (user selectable)
Single-ended inputs	2x RCA connectors per board, 47kΩ or 300Ω load (user selectable) 2x BNC connectors per board, 47kΩ or 300Ω load (user selectable)
Maximum input level	+26dBu (16Vrms) balanced, +20dBu (8Vrms) single-ended

Analog outputs

Balanced outputs	2x XLR connectors per board
Single-ended outputs	1x RCA connector per board, 1x BNC connector per board
Maximum output level	+29dBu (16Vrms) balanced +23dBu (8Vrms) single-ended
Volume control range	-100dBu to +18dBu in 0.5dB steps
Frequency response (-3dB point)	DC-1MHz
Signal to Noise Ratio (SNR, unweighted)	130dB, unity gain and at maximum input
Total Harmonic Distortion + Noise (THD+N)	<0.001%, 1kHz, unity gain
Output noise	-112dBu (1.8µVrms) balanced, -115dBu (1.3µVrms) single-ended

Remote control

Remote control type	Infrared. Uses RC5 codes. Range: 10m (line of sight)
Remote control batteries	2x AAA type

Design and Specifications are subject to change without notice. Weight and dimensions are approximate. Illustrations are informative only and may differ from the actual production model.
Enclosure designed by Mana Ishoni.

FCC-Notice

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- adjust or relocate the receiving antenna
- increase the separation between the equipment and the receiver
- connect the equipment into a mains outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced ratio/TV technician for help

Disposal – Environmental care

Directive 2002/96/EG of the European Parliament requires consumer electro-technical appliances to be disposed separately and have to be indicated with the following symbol. Should you dispose this component please do so in conformity with local and global legal and environmental regulations and according to best practices. We strongly encourage you to recycle any batteries used with this component.

Enclosure designed by Manuela Federica Krebser

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