

CA40

COMPACT AMPLIFIER

AV Integration Micro-amplifier

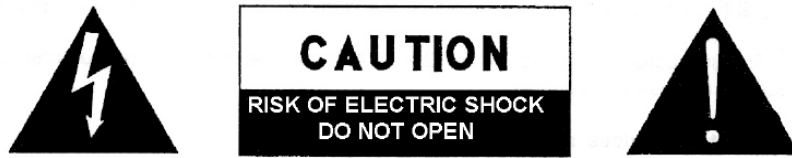


USER MANUAL

INDEX

1. IMPORTANT REMARK.....	3
2. IMPORTANT SAFETY INSTRUCTIONS.....	3
3. IMPORTANT NOTE.....	5
4. COMPLIANCE WITH INTERNATIONAL STANDARDS.....	5
5. INTRODUCTION.....	6
5.1. <i>Main characteristics.....</i>	6
6. INSTALLATION.....	7
6.1. <i>Location and assembly.....</i>	7
6.2. <i>Mains connection.....</i>	7
6.3. <i>Audio input connections.....</i>	8
6.4. <i>Audio output connections.....</i>	9
6.5. <i>Remote control options.....</i>	9
7. OPERATION AND USAGE.....	11
7.1. <i>Start up and default mode.....</i>	11
7.2. <i>Special active source selection mode and setting adjustments.....</i>	11
7.3. <i>AUTO STANDBY Function.....</i>	13
7.4. <i>LED indicators.....</i>	14
7.5. <i>Micro switches on the rear panel.....</i>	15
7.6. <i>Lock mode.....</i>	16
7.7. <i>Restore default settings and update firmware.....</i>	16
8. CLEANING.....	16
9. DIAGRAMS and LIST OF FUNCTIONS.....	17
10. BLOCK DIAGRAM.....	18
11. CONFIGURATION DIAGRAM.....	18
12. TECHNICAL CHARACTERISTICS.....	19
13. CA-NET RS-232 Remote Control Protocol.....	20

1. IMPORTANT REMARK




WARNING: SHOCK HAZARD - DO NOT OPEN
AVIS: RISQUE DE CHOC ÉLECTRIQUE - NE PAS OUVRIR



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



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

WARNING (If applicable): The terminals marked with symbol of “” may be of sufficient magnitude to constitute a risk of electric shock. The external wiring connected to the terminals requires installation by an instructed person or the use of ready-made leads or cords.

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

WARNING: An apparatus with Class I construction shall be connected to a mains socket-outlet with a protective earthing connection.

2. IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with 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 (including amplifiers) 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 the plugs, convenience receptacles, and at the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug the apparatus during lightning sorts or when unused for long periods of time.
13. Refer all servicing to qualified 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.
14. Disconnecting from mains: When switching off the POWER switch, all the functions and light indicators of the unit will be stopped, but fully disconnecting the device from mains is done by unplugging the power cable from the mains input socket. For this reason, it always shall remain easily accessible.
15. Equipment is connected to a socket-outlet with earthing connection by means of a power cord.
16. The marking information is located at the bottom of the unit.
17. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on apparatus.

NOTE: *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.*



WARNING: This product must not be discarded, under any circumstance, as unsorted urban waste. Take to the nearest electrical and electronic waste treatment centre.

NEEC AUDIO BARCELONA, S.L. accepts no liability for any damage that may be caused to people, animal or objects due to failure to comply with the warnings above.

3. IMPORTANT NOTE

Thank you for choosing our Ecler **CA40 Integration Micro-amplifier!**

It is **VERY IMPORTANT** to carefully read this manual and to fully understand its contents before any connection in order to maximize your use and get the best performance from this equipment.

To ensure optimal operation of this device, we strongly recommend that its maintenance be carried out by our authorised Technical Services.

All ECLER products are covered by warranty, please refer to www.ecler.com or the warranty card included with this product for the period of validity and conditions.

4. COMPLIANCE WITH INTERNATIONAL STANDARDS

The CA40 micro amplifier complies with the following international standards:

- EN55103-1 Electromagnetic Compatibility.
Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use
Part 1: Emission
- EN55103-2 Electromagnetic Compatibility.
Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use
Part 2: Immunity
- EN60065 Audio, video and similar electronic apparatus. Safety requirements
Complying with the requirements of directives 73/23/EC and 2004/108/EC

5. INTRODUCTION

The CA40 is a very small stereo amplifier with numerous remotely controlled functions (RS-232 serial port, infrared receiver, 0-10 VDC remote control port), and is ideal for integrating audiovisual applications with other devices: educational classes, meeting rooms and multimedia presentations, business premises, etc.

5.1. Main characteristics

- 2 x 20 W RMS @ 4 amplifier Ω
- Universal external power source
- AUTO STANDBY function: in the absence of an audio signal the unit automatically goes into *STANDBY* mode, minimising power consumption
- Lightweight, silent, high-performance amplifier (fan-free convection cooling)
- Suitable for stereo, parallel, and bridged mono operation
- 1 balanced microphone input, with high quality preamplifier, *Phantom* power supply, noise gate and “talkover” function or priority over the rest of the input
- 2 stereo lines (not balanced)
- 2-band independent tone control (Bass, Treble) for the microphone in-jack and 1&2 line-in connection.
- Auxiliary output for liaison with other amplifiers or external audio devices
- Local control by digital rotary knob (“encoder”)
- Remote control by infrared remote control
- Remote control by WpaVOL or WpaVOL-SR (0-10 VDC) wall panel
- RS-232 control port
- MUTE port to silence the entire unit by closing external contact

6. INSTALLATION

WARNING: Non-compliance with the instructions or neglecting warnings may cause malfunction or even damage the unit:

1. Avoid turning on the device without the speakers connected to its outputs and without having previously set the volume/gain controls to minimum level.
2. Always use shielded cables to make connections between devices.
3. In an amplifier, avoid placing the speaker output cables close to other signal cables (micro, line...). This may cause the system to oscillate, damaging the amplifier and speakers.

6.1. Location and assembly

The CA40 is suitable for installation on a wall or under a surface (table, shelf, cupboard, etc.), thanks to its design and layout of its connectors, controls and LED indicator lights.

6.2. Mains connection

The amplifier is powered by alternating current through its external power source: 100-240 VAC and 50-60 Hz.

This apparatus must be earthed through its mains cable (earth resistance, $R_g = 30 \Omega$, or lower). The atmosphere should be as dry and dust free as possible. Do not expose the unit to rain or water splashes. Do not place liquid containers or incandescent objects like candles on top of the unit.



Should any work or connection / disconnection task be done, always disconnect the unit from the mains supply. There are no elements that can be manipulated by the user inside the amplifier.

To avoid buzzing, do not allow the power cable to intertwine with the shielded cables that transport the audio signal.

6.3. Audio input connections

The CA40 accepts two types of signals in its input channels:

- Microphone (**MIC**): has a balanced Euroblock or jack type connection, ready to accept a signal level between -20dBV y -50dBV, with adjustable sensitivity with the ADJ control

NOTE: the microphone input has a phantom power supply to power condenser microphones, activated by internal bridge ([see section 11. CONFIGURATION DIAGRAM](#)).

- Line signals (**LINE 1, LINE 2**): they have unbalanced minijack or double RCA type stereo connections. They are prepared for input of between -6dBV and 0dBV, with input sensitivity that can be adjusted by internal port ([see section 11. CONFIGURATION DIAGRAM](#)). You can connect signals from CD players, radio tuners, mixing consoles, media players, the audio outputs of PCs and tablets, etc. to these connections.

NOTE: Turntables CANNOT BE CONNECTED directly to this device because none of the inputs have an RIAA preamp.

The CA40 has the following operating modes according to the input sources selected as active:

- **LINE 1:** only LINE 1 input is sent to the mix bus to be amplified and delivered to the L and R OUT outputs
- **LINE 2:** only LINE 2 is sent to the mix bus to be amplified and delivered to the L and R OUT outputs
- **MIC:** only microphone (MIC) input is sent to the mix bus to be amplified and delivered to the OUT L and R outputs
- **LINE 1 + MIC:** the LINE 1 and MIC inputs are mixed, amplified and delivered to the L and R OUT outputs. If the TALKOVER function is active, the microphone signal attenuates to that of the line when it exceeds the activation threshold
- **LINE 2 + MIC:** the LINE 2 and MIC inputs are mixed, amplified and delivered to the L and R OUT outputs. If the TALKOVER function is active, the microphone signal attenuates to that of the line when it exceeds the activation threshold

Select one of the 5 work modes in special selection mode with the rotating knob on the front ([see section 7.2. Special selection mode of active sources and adjusting settings for details of the full procedure](#)).

6.4. Audio output connections

The amplified output (**OUT L** and **R**) have Euroblock connectors.

The connection cable that connects the CA40 connectors and the speakers should be good quality, with a suitable cross section and as short as possible.

The outputs can operate in stereo mode, mono (same signal L+R and both channels) or bridge (signal L+R amplified by both channels linked as one). These are selected using the micro switches **STEREO-BRIDGE-MONO** on the rear panel ([see section 9. DIAGRAMS and LIST OF FUNCTIONS for more information](#)).

In bridge mode, the output signal connection is made through the positive terminals of each of the L and R connectors, the positive terminal corresponding to the L channel of bridge.

Remember that the minimum work impedance for the amplifiers in mono or stereo mode is 4Ω , and when working in bridge mode it is 8Ω . For correct operation of the CA40, under no circumstances must you work with impedances lower than those specified above.

Attention: in bridge mode only the terminals indicated on the serigraph on the equipment must be used for connecting the speakers.

Additionally, the CA40 has an unamplified auxiliary output (**AUX OUT**) which makes it possible to connect it to amplifiers or with other external devices. The auxiliary output **AUX OUT** has a line level signal (0dBV) which is an unamplified replica of the signal delivered to the terminals **OUTPUT L y R**.

6.5. Remote control options

- **REMOTE** port: the RJ-45 **REMOTE** type connector allows the connection of a WpaVOL or WpaVOL-SR (control 0-10 VDC) wall control panel to adjust the general output volume and/or to select one of the five active work source modes (LINE 1, LINE 2, MIC, LINE 1 + MIC, LINE 2 + MIC). The connection is made by a standard CAT5 cable between the WpaVOL or WpaVOL-SR wall panel and the REMOTE CA40 connector.
- Because there is a CA40 Wpa type control as well as other types of control (front knob, infrared control and serial port control) the most recent adjustments by any of these methods will prevail. For example, if an active source is selected and/or a volume adjustment is made using the WpaVOL-Sr wall panel connected to the **REMOTE** port, and then these settings are adjusted using the front control, the adjustment made with the frontal control will prevail. In this case, when the wall panel position is adjusted again, the CA40 will change to the values indicated, and so on and so forth.

- **MUTE** port: The **MUTE** connector makes it possible to connect a power free contact to totally silence the CA40 if an external device works on it (example: a emergencies and centralised evacuation warning system).
- **RS-232** port: the serial communication port **RS-232** allows remote management of the CA40 from a computer or external control system supporting this protocol. See the **CA-NET** protocol manual for detailed information on the connection and syntax of the commands supported. The connection has the following specifications:
 - Baud rate: 9600 (fixed, without auto negotiation)
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: None

WIRING RS-232 – DB9	
RS-232 CA40	DB9
Tx	Pin 2 (RxD)
Rx	Pin 3 (TxD)
Gnd	Pin 5 (Signal Gnd)

- Receiver **IR**: the built-in IR receiver gives general volume control of the CA40 and its **MUTE ON / OFF** function from the **REVO-IR** remote control included with the unit.

7. OPERATION AND USAGE

7.1. Start up and default mode

Start up the CA40 by connecting the equipment to an external power source to which the **DC 24V** connector of the CA40 has already been connected. The LED indicator **ON/STBY** immediately lights up on the front panel. We recommend you turn on all the devices in the following order: sound sources, mixer, equalisers, active filters and processors and, finally power amplifiers. Powering off should be done by following the exact reverse sequence. Following this order, the introduced noise due to turning on or switching off the devices will not affect those further on in the chain and will be inaudible.

The system defaults to volume adjustment mode. In this mode, the **VOL/MUTE** knob on the front panel acts on the general output volume of the CA40. This controller has a maximum of 64 steps between the unit's minimum and maximum volume. When turned, it will adjust the volume while the LED **LEVEL** light is flashing. When the controller is turned to the left or to the right, this flashes while the output volume increases or decreases. The light stops flashing when it reaches either end of the scale and it is no longer possible to increase or decrease the volume of the unit.

Quickly press the **VOL/MUTE** controller to activate/deactivate the mute function of the unit (**MUTE ON/OFF**). The **MUTE** LED lights when the mute function is activated.

If you adjust the volume using the infrared remote control, the LED **LEVEL** y **MUTE** visual indicators are exactly the same as those seen when adjusting these with the knobs on the front panel.

7.2. Special active source selection mode and setting adjustments

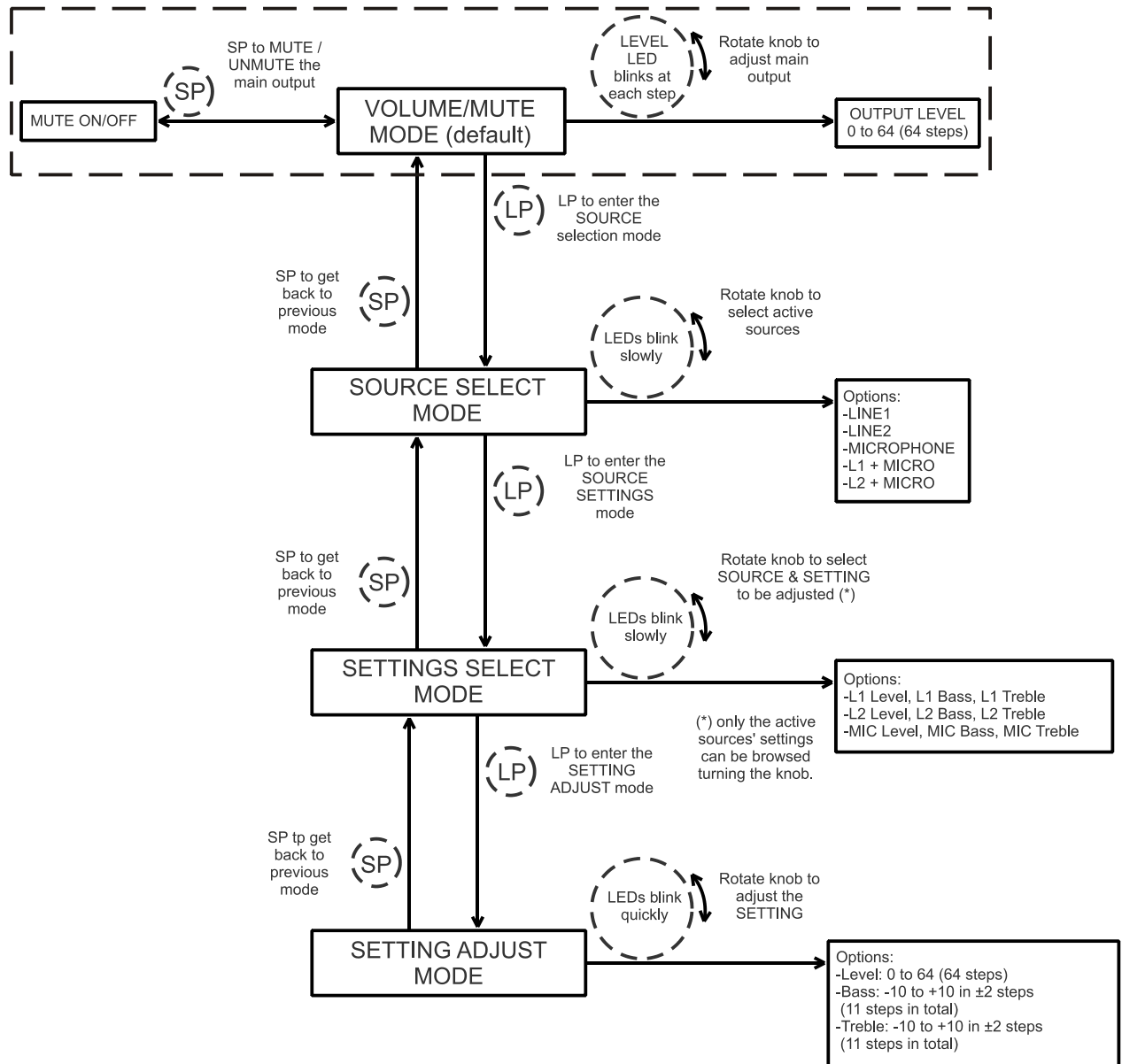
Use the knob on the front panel to access special modes for selecting active sources and adjusting levels and equalization (bass and treble). You can access these modes by holding in the knob for a certain time and then turning it. By adjusting the level of each source you can mix the signal from the microphone and another line, and the result of this mix will be controlled by the general output volume of the unit together, in other words, respecting the levels of each source.

The full procedure for accessing and operating in these special modes and the options available in each are set out in the following graph:

CA40 adjustments with front knob browser

SP: Short Press (press the VOL/MUTE knob briefly, less than 0,5 s)

LP: Long Press (press & hold the VOL/MUTE knob more than 2,5 s)



Notes:

1. If the device is in special mode for 10 seconds and the front knob is not touched, the equipment automatically reverts to VOL/MUTE mode.
2. In tone control mode, when you turn the knob in either direction it flashes fast while the gain of the affected tone increases. When either end of the scale is reached (-10 ó +10dB) or when it goes through the centre point (0dB) it flashes more slowly.

7.3. AUTO STANDBY Function

The **AUTO STANDBY** function (idle or low consumption mode) means you can install the CA40 in inaccessible places and leave the device connected to the mains power supply indefinitely because when no signal is detected, it automatically goes into standby mode, saving energy.

To enable **AUTO STANDBY** use the micro switch with the same name on the rear panel of the unit ([see section 9. DIAGRAMS and LIST OF FUNCTIONS](#)). When activated, if there is no audio signal in any of the inputs (or the signal is very weak, below the activation threshold), the CA40 automatically goes into STANDBY mode, and the **ON/STBY** on the front panel of the device goes orange. When a valid audio signal is detected in any of the inputs, the CA40 leaves standby mode and starts operating normally again and the **ON/STBY** LED goes green.

When you enable **AUTO STANDBY** mode with the micro switch (position **ON**) one of two things happens:

- a) There is NO audio signal in the inputs. Result: the amplifier immediately goes into AUTO STANDBY mode
- b) There is an audio signal in the inputs. Result: the amplifier stays active

When the amplifier goes into **AUTO STANDBY** mode, all the LED indicators go out with the exception of **ON/STBY**. If the amplifier is in STANDBY mode and you turn the **VOL/MUTE** knob to adjust the volume or activate the MUTE function, the LED lights will come on for a short time then go out again. Remember that the first acting on the VOL/MUTE knob, this will only reset the LED indicators, and will not change any of the settings.

When the unit is a special mode (source selection or setting adjustment) the LED indicators will not go out even if the amplifier is in **AUTO STANDBY** mode.

7.4. LED indicators

- **SP:** The signal presence or **SP** LED indicator shows that there is a signal in the amplifier input. This lights up when the input level reaches the established detection threshold.
- **CLIP:** The saturation or **CLIP** LED indicator comes on when the signal delivered to the speakers is close to the amplifier's clipping or saturation level. Input signals should be set to ensure the **CLIP** (saturation or cut off) indicators never stay on, but that they do so at most to the beat of the lowest sound frequencies. Otherwise the amplified signal will be distorted with low quality and low intelligibility.
- **MUTE:** This lights up when the **MUTE** function is active (silent mode)
- **ON/STBY:** the green light comes on when the equipment is in normal operating mode and it goes orange when it is in standby or low consumption mode (STANDBY).
- **LEVEL:** This flashes when you adjust the general level of the device. It also lights up during special adjustment modes, input levels ([see section 7.2. Special active source selection mode and setting adjustments](#))
- **BASS:** This lights up during special adjustment modes bass frequencies ([see section 7.2. Special active source selection mode and setting adjustments](#))
- **TREBLE:** This lights up during special adjustment modes, treble frequencies ([see section 7.2. Special active source selection mode and setting adjustments](#))
- **LIN 1, LIN 2, MIC:** These light up during special modes, selection of active sources and adjustments ([see section 7.2. Special active source selection mode and setting adjustments](#))

7.5. Micro switches on the rear panel

- **REMOTE:** Turn on (ON) the remote control from the WpaVOL or WpaVOL-SR wall panel connected to the REMOTE port.
- **NOISE GATE:** Turn on (ON) or turn off the noise gate function for the microphone input. When this function is active the microphone input is muted whilst there is no signal above the function activation threshold, so the equipment rejects background noise captured by the microphone connected to it.
- **TALKOVER:** (ON) or off according to the priority of the microphone over the line inputs. When the TALKOVER function is on, the microphone signal will attenuate to the line selected (LINE 1 or 2) when the activation threshold set is reached.
- **AUTO STANDBY:** Switch the AUTO STANDBY function on (ON) or off. When the function is on, the CA40 will automatically go into STANDBY or low consumption mode in the absence of audio signals in its inputs.
- **BRIDGE / MONO (y STEREO):** Select the work mode of the amplified outputs of the unit:
 - **BRIDGE y MONO OFF:** Work in stereo mode L / R
 - **BRIDGE ON** (and **MONO** in **ON** or **OFF**, indistinctly): Work in bridge mode, amplifying the L+R signal through both channels together as a single amplifier with joint power.
 - **BRIDGE OFF y MONO ON:** Work in MONO mode, both channels independent and each of them amplifying the L+R signal.

7.6. Lock mode

To switch the CA40 lock mode on or off hold in the VOL/MUTE control for 10 seconds from the VOL/MUTE mode. The LED SETTING indicators will flash 3 times to indicate that lock mode is now on. When in lock mode the device cannot be managed using the VOL/MUTE control (it will flash three times to show that it is in that mode when you turn the knob). This will protect the equipment from unwanted handling until it is restored to normal operation after holding the VOL/MUTE control in for a further 10 seconds (the LED SETTING indicators will flash twice to show that the lock mode is off).

Note: once lock mode is activated it will stay activated even when the equipment is turned off and on again. It will stay in lock mode until the VOL/MUTE control is held in for 10 seconds again.

7.7. Restore default settings and update firmware

If you would like to restore the CA40 to factory settings, follow this procedure:

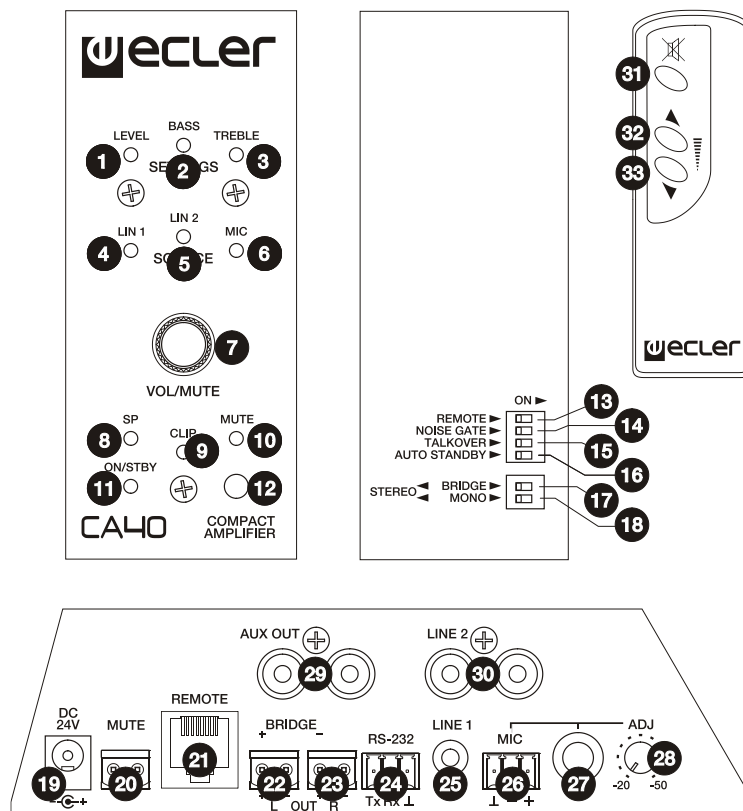
1. Switch off the equipment then press and hold the knob in.
2. Switch the unit back on without releasing the knob. The MUTE LED indicator will flash.
3. Wait a few seconds and then switch the CA40 off again.
4. The next time you turn it on, the factory settings will be in the memory.

Note: for instructions on how to update the unit's firmware, see the product web page at www.ecler.com, where you will find the update software utility and instructions on how to proceed.

8. CLEANING

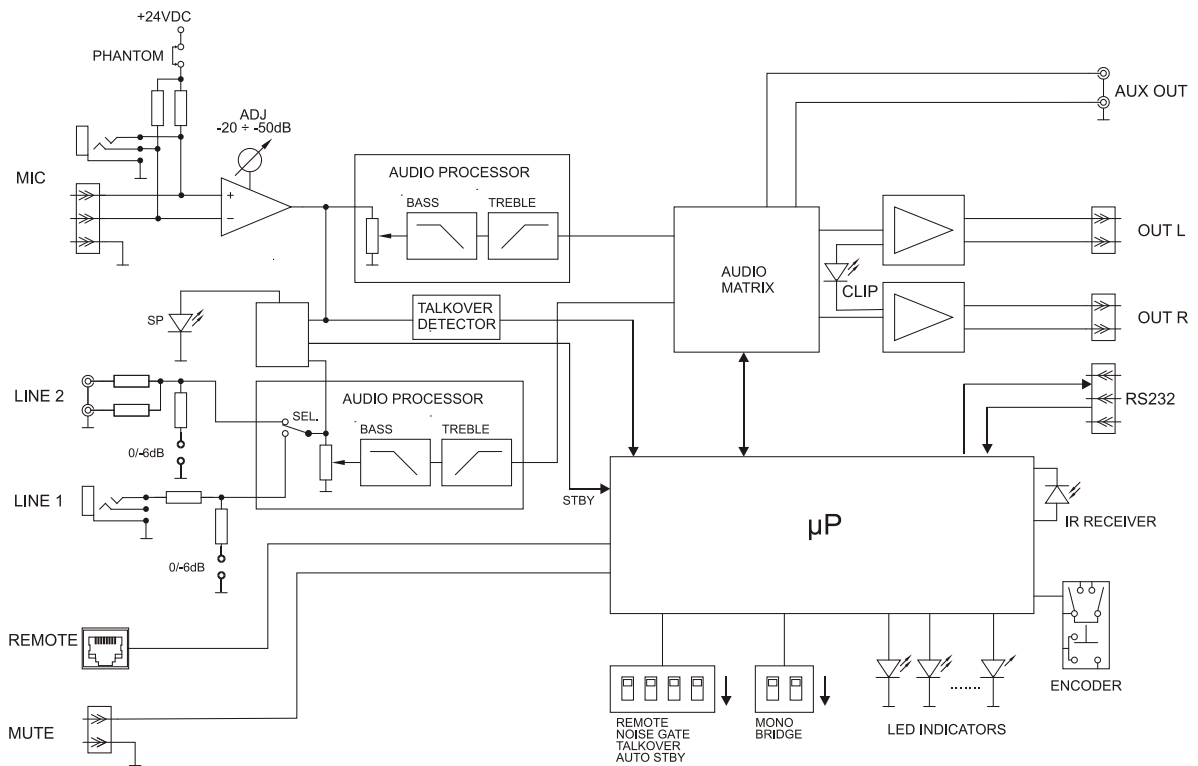
The CA40 must not be cleaned with solvents or abrasive substances which may damage the prints. Clean using a cloth moistened in water and a neutral liquid detergent, then dry with a clean cloth. Under no circumstances allow water to enter any of the orifices in the equipment.

9. DIAGRAMS and LIST OF FUNCTIONS



- | | |
|---|---|
| 1 LEVEL indicator light | 18 MONO / STEREO micro switch |
| 2 BASS indicator light | 19 DC24V power connector |
| 3 TREBLE indicator light | 20 MUTE remote control |
| 4 LIN 1 indicator light | 21 RJ-45, REMOTE connector |
| 5 LIN 2 indicator light | 22 OUT L amplified output |
| 6 MIC indicator light | 23 OUT R amplified output |
| 7 VOL/MUTE knob | 24 Remote control by protocol CA-NET, RS-232 |
| 8 SP input signal presence indicator light | 25 Mini jack input line, LINE 1 |
| 9 CLIP indicator light | 26 Microphone input, MIC |
| 10 MUTE indicator light | 27 Microphone jack, MIC |
| 11 ON/STBY on or standby indicator light | 28 MIC input sensitivity setting |
| 12 REMOTE, remote control receiver | 29 AUX OUT |
| 13 REMOTE micro switch | 30 RCA input line, LINE 2 |
| 14 NOISE GATE micro switch | 31 Mute key |
| 15 TALKOVER micro switch | 32 Volume up key |
| 16 AUTO STANDBY micro switch | 33 Volume down key |
| 17 BRIDGE / STEREO micro switch | |

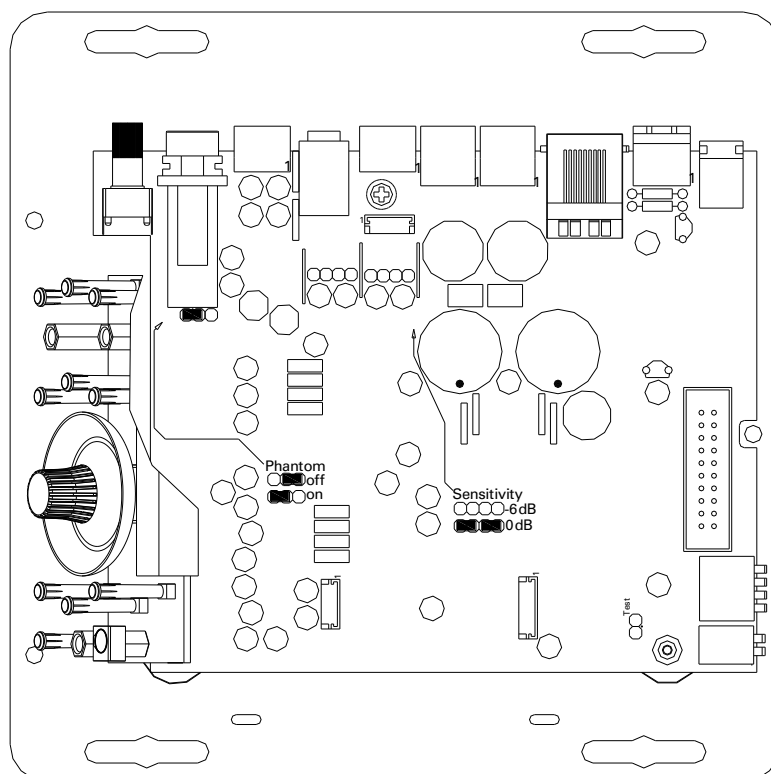
10. BLOCK DIAGRAM



11. CONFIGURATION DIAGRAM

JUMPERS FACTORY ADJUST

Phantom ON
Sensitivity -6dB



12. TECHNICAL CHARACTERISTICS

CA40

Power		
STEREO	2x18W@4Ω 1% THD 2x22W@4Ω 10% THD 2x10W@8Ω 1% THD 2x12W@8Ω 10% THD	
MONO	-	
BRIDGE	1x36W@8Ω 1% THD 1x44W@8Ω 10% THD	
Frequency response	20Hz - 50kHz (-3dB)	
THD+Noise @ 1kHz Full Pwr. SPKR OUT	< 0.15%	
THD+Noise AUX OUT	< 0.02%	
Channel crosstalk @ 1kHz	>55dB	
Inputs Sensitivity nom/Impedance:		
LINE 1	0dBV (-6dBV*)/>8kΩ	
LINE 2	0dBV (-6dBV*)/>8kΩ	
MIC (BAL)	-20 to -50dBV/>1kΩ	
CMRR		
MICRO (BAL)	>65dB @ 1kHz	
High Pass Filter		
	-	
Outputs Level/Minimum Load		
AUX OUT	>-6dBV/10kΩ	
Tone control (LINE & MIC)		
BASS	100Hz ±10dB	
TREBLE	6KHz ±10dB	
Signal Noise Ratio		
LINE	>85dB	
MIC (BAL)	>65dB	
Talkover		
TIME	2 Sec.	
DEPTH	-30dB	
Microphone Noise Gate	40dB below max.	
Phantom voltage	+24VDC/10mA max.*	
RS-232		
BAUD RATE	9600 (fixed)	
DATA	8 bits	
PARITY	NONE	
STOP BITS	1	
FLOW CTRL	NONE	
ANALOGUE REMOTE (0-10V. based)	Volume & Input selection	
INFRARED REMOTE	Volume & Mute	
Mains (using Meanwell GS60A24-P1J)	100-240VAC + External PSU 24VDC	
Power consumption		
pink noise, 1/8 power	21VA / 7W	
pink noise, 1/3 power	32VA / 13W	
Stand By (time 2 minutes)	<3W	
General		
Dimensions WxDxH	155x155x45mm	
Weight	650g	

*Internally selectable **Software selectable

13. CA-NET RS-232 Remote Control Protocol

The built-in RS-232 port in the rear panel of the CA and DAM series devices allows for an external device communication via a serial connection. This kind of connection uses a syntax which is very similar to the one used in the Ecler TP-NET protocol: it lets a client device get from and/or set the values of several parameters of a CA / DAM device (for instance, the CA40 digital amplifier, like volumes, mutes, equalisation tones, etc).

The RS-232 serial communication must fulfil the following specifications:

Baud rate:	9600 (fixed, no auto-negotiation)
Data bits:	8
Parity:	None
Stop bits:	1
Flow control:	None

It's not allowed to have more than one simultaneous access from several clients to the same CA / DAM device using the RS-232 connection.

The protocol is simple and direct, syntax-friendly, making it easy to read, write and modify the generated code. It is based on messages with no begin delimiter: each message is self-delimited by the RS-232 packet size, which is defined with a maximum of **80 ASCII characters**, and always including the character **LF (0x0A)** at the end of each message. All the messages must be written in **CAPITAL LETTERS**.

To let some control systems (like EXTRON®, CRESTRON®, AMX®, RTI®, VITY®, MEDIALON®, etc.) process the messages more easily, the CA / DAM device adds the character **LF (0x0A)** at the end of each message it sends. This way the client of the CA / DAM device can buffer the received messages to process them, when required. The CA / DAM device can also handle several messages received in a single RS-232 packet by using the **LF** delimiter.

The available messages are built with one or more fields separated with blank spaces (= blank space):

<TYPE> [PARAM1] [PARAM2] [PARAM3] [PARAM4][LF]

The first field (**TYPE**) defines the **message type** and then, the required parameters for it (each kind of message requires a given number of parameters). The field **TYPE** can have these values:

- **GET**
- **SET**
- **DATA**
- **ERROR**

At the end of this document, you'll find a table including all the available messages and their parameters for each model of CA-NET compatible device.

The **GET & SET** messages can be sent from the client (control system) to the CA / DAM device. The **DATA & ERROR** messages can just be sent from the CA / DAM device to the client.

The **SET** messages coming from a client device don't have an automatic acknowledgement with a **DATA** message sent from the CA / DAM device after it has processed the **SET** command. The client must update the values itself, sending the needed **GET** message to ask for a parameter's value when it requires confirmation from the device. On the other hand, when a local control in the CA / DAM unit occurs (for instance, using the front panel controls or an infrared remote control), the CA / DAM device will automatically send the associated **DATA** command via its RS-232 interface, to keep synchronisation with the client device.

NOTES for CA40:

- A couple of special parameters for the **GET** and **SET** commands would require a detailed explanation:
 1. **AUTOLOAD_PRESET1**: its value (ON/OFF) defines whether preset number 1 must be recalled or not each time the CA device is powered ON, defining this way the default working mode at startup
 2. **PANEL_LOCKED**: its value (ON/OFF) defines whether the front panel controls (the rotary encoder in the case of the CA40) is enabled (PANEL_LOCKED=OFF) or disabled (PANEL_LOCKED=ON) for local management of the device. (see the CA40 user manual for further details)
- The numerical values are always integer numbers without **comma** or **dot** symbols
- **<Input Name>** are text strings (without blank spaces) that identify an audio input of a CA device:
 - For the CA40, there are 5 possible Input Names:
 - LINE1
 - LINE2
 - MICRO
 - LINE1_AND_MICRO
 - LINE2_AND_MICRO
- **<Preset Number>** is a numerical value that identifies one available Preset stored in the device's memory. It can be within the [1..5] range.
- **<Volume Level>** are numerical values in the [0..64] range that define values in a scale equivalent to [-inf...Maximum_Volume] in 1.25 dB steps.

- **<Tone Level>** are numerical values in the [-10...10] range that define values in a scale equivalent to [-10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10] dB. If the numerical value is not in this list, the unit will reply with an error message.
- **<Increment Value>** are numerical values in the [0...64] range that define a value in a scale equivalent to [Increment Value]x(1.25) dB, used to increase or decrease the current absolute value of a level.
- **<Threshold Level>** the allowed numerical values in this field are just 3 [20, 25, 30]. It defines a value in a scale equivalent to [20, 25, 30] dB below the nominal level value for a given audio input. If the numerical value is not in this list, the unit will reply with an error message.
- **<Depth Level>** the allowed numerical values in this field are just 4 [20, 30, 60, 80]. It defines a value in a scale equivalent to [20, 30, 60, 80] dB. If the numerical value is not in this list, the unit will reply with an error message.
- **<Attack Time Value>** the allowed numerical values in this field are just 4 [50, 100, 200, 300]. It defines a value in a scale equivalent to [50, 100, 200, 300] milliseconds. If the numerical value is not in this list, the unit will reply with an error message.
- **<Release Time Value>** the allowed numerical values in this field are just 5 [300, 500, 1000, 2000, 3000]. It defines a value in a scale equivalent to [300, 500, 1000, 2000, 3000] milliseconds. If the numerical value is not in this list, the unit will reply with an error message.
- **<Remote Select Value>** are text strings (without blank spaces) that identify the function of the analogue (0 – 10 VDC) remote control selector connected to a physical “REMOTE” port in the device.
 - In the case of the CA40, there are just two possible string values for this parameter:
 - INPUTS
 - PRESETS
 - *In the CA40, a single REMOTE port admits the connection of a WpaVOL-SR unit, which has a volume control knob and a 5-position rotary switch, or selector. The selector can be used in any of these two modes:*
 - *INPUTS: to select the active audio source(s) (LINE1, LINE2, MICRO, LINE1_AND_MICRO or LINE2_AND_MICRO).*
 - *PRESETS: to recall any of the 5 presets in the memory of the unit, which store the full configuration of the unit, including volumes, EQ, etc.*
 - *The factory default working mode of the selector is **INPUTS**, and it can just be modified to **PRESETS** by means of an RS-232 connection.*

- **<Zone>** are text strings (without blank spaces) that identify a zone where the command will operate.
 - ZA (output labeled as ZA or L)
 - ZB (output labeled as ZB or R)
- **<Micro Name>** are text strings (without blank spaces) that identify the MIC inputs in the unit.
 - MICRO1
 - MICRO2
- **<Output Mode>** are text strings (without blank spaces) that identify the amplifier's output working mode.
In the CA40 there are just three possible values for this parameter:
 - STEREO
 - MONO
 - BRIDGE
- **<Zone Label>** is a text string that contains the customized name for a zone. The maximum length for this string is 17 characters, being ignored those exceeding this limit. Blank characters are not allowed. A valid example: [MAIN_HALL](#)
- **<Display Mode>** are text strings (without blank spaces) that identify the LCD display working mode.
 - ON
 - DIMMED
 - OFF
- **<Contrast Level>** are numerical values in the [0...100] range that define the LCD display contrast level.
- **<Assign Value>** are text strings (without blank spaces) that identify the Talkover / Pager function assignment for a MIC input towards the device's outputs.
 - OFF
 - ZA
 - ZB
 - ZA-B
 - PAGER
- **<Priority>** is a numerical value that defines the Talkover function priority of one MIC input in front of the other inputs in the unit.
- **<Error ID>** is a numerical value for an error code.
- **"<Error Description>"** is a text chain inside double quotation marks, containing an error description.

CA40 AMPLIFIER

TYPE	PARAM1	PARAM2	PARAM3	PARAM4	DESCRIPTION
GET	ALL				Dumps current device status (with DATA messages)
	PRESET_NUMBER				Gets the current PRESET number
	OUTPUT_MODE				Gets the current amplifier OUTPUT MODE
	INPUT				Gets the current active INPUTs
	MUTE				Gets the current MUTE status
	MASTER_VOL				Gets the current MASTER VOLUME
	LINE1_VOL				Gets the current LINE1 VOLUME
	LINE2_VOL				Gets the current LINE2 VOLUME
	MICRO_VOL				Gets the current MICRO VOLUME
	LINE1_BASS				Gets the current LINE1 BASS LEVEL
	LINE2_BASS				Gets the current LINE2 BASS LEVEL
	MICRO_BASS				Gets the current MICRO BASS LEVEL
	LINE1_TREBLE				Gets the current LINE1 TREBLE LEVEL
	LINE2_TREBLE				Gets the current LINE2 TREBLE LEVEL
	MICRO_TREBLE				Gets the current MICRO TREBLE LEVEL
	GATE				Gets the current NOISE GATE ON/OFF status
	GATE_THRESHOLD				Gets the current NOISE GATE THRESHOLD LEVEL
	TALKOVER				Gets the current TALKOVER ON/OFF status
	TALKOVER_THRESHOLD				Gets the current TALKOVER THRESHOLD LEVEL
	TALKOVER_ATTACK				Gets the current TALKOVER ATTACK TIME
	TALKOVER_RELEASE				Gets the current TALKOVER RELEASE TIME
	TALKOVER_DEPTH				Gets the current TALKOVER DEPTH (attenuation)
	REMOTE				Gets the current REMOTE ON/OFF status
	REMOTE_SELECTOR				Gets de current REMOTE SELECTOR function
AUTO_STANDBY				Gets the current AUTO STANDBY ON/OFF status	
AUTOLOAD_PRESET1				Gets the current AUTOLOAD_PRESET1 at Startup function	
PANEL_LOCKED				Get the current PANEL_ LOCKED (front knob) status	

	INFO_MODEL				Gets the Device model name
	INFO_VERSION				Gets the current Firmware Version
SET	LOAD_PRESET	<Preset Number>			Recalls and activates a PRESET
	SAVE_PRESET	<Preset Number>			Saves the current PRESET
	INPUT	<Input Name>			Sets the current active INPUT(s)
	MUTE	ON/OFF			Sets the current MUTE status
	MASTER_VOL	<Volume Level>			Sets the current MASTER VOLUME
	LINE1_VOL	<Volume Level>			Sets the current LINE1 VOLUME
	LINE2_VOL	<Volume Level>			Sets the current LINE2 VOLUME
	MICRO_VOL	<Volume Level>			Sets the current MICRO VOLUME
	LINE1_BASS	<Tone Level>			Sets the current LINE1 BASS LEVEL
	LINE2_BASS	<Tone Level>			Sets the current LINE2 BASS LEVEL
	MICRO_BASS	<Tone Level>			Sets the current MICRO BASS LEVEL
	LINE1_TREBLE	<Tone Level>			Sets the current LINE1 TREBLE LEVEL
	LINE2_TREBLE	<Tone Level>			Sets the current LINE2 TREBLE LEVEL
	MICRO_TREBLE	<Tone Level>			Sets the current MICRO TREBLE LEVEL
	GATE_THRESHOLD	<Threshold Level>			Sets the current NOISE GATE THRESHOLD LEVEL
	TALKOVER_THRESHOLD	<Threshold Level>			Sets the current TALKOVER THRESHOLD LEVEL
	TALKOVER_ATTACK	<Attack Time Value>			Sets the current TALKOVER ATTACK TIME
	TALKOVER_RELEASE	<Release Time Value>			Sets the current TALKOVER RELEASE TIME
	TALKOVER_DEPTH	<Depth Level>			Sets the current TALKOVER DEPTH (attenuation)
	MASTER_VOL_INC	<Increment Value>			Increments the current MASTER VOLUME
	MASTER_VOL_DEC	<Increment Value>			Decrements the current MASTER VOLUME
	REMOTE_SELECTOR	<Remote Selector Value>			Sets de current REMOTE SELECTOR function
	AUTOLOAD_PRESET1	ON/OFF			Sets the current AUTOLOAD_PRESET1 at Startup function
	PANEL_LOCKED	ON/OFF			Sets the current PANEL_ LOCKED (front knob) status
DATA	PRESET_NUMBER	<Preset Number>			Shows the current PRESET
	PRESET_DONE				Shows that the last SET LOAD_PRESET n command has been processed: the preset is loaded and active

OUTPUT_MODE	<OutputMode>			Shows the current amplifier OUTPUT MODE (MONO/STEREO/BRIDGE)
INPUT	<Input Name>			Shows the current active INPUT(s)
MUTE	ON/OFF			Shows the current MUTE status
MASTER_VOL	<Volume Level>			Shows the current MASTER VOLUME
LINE1_VOL	<Volume Level>			Shows the current LINE1 VOLUME
LINE2_VOL	<Volume Level>			Shows the current LINE2 VOLUME
MICRO_VOL	<Volume Level>			Shows the current MICRO VOLUME
LINE1_BASS	<Tone Level>			Shows the current LINE1 BASS LEVEL
LINE2_BASS	<Tone Level>			Shows the current LINE2 BASS LEVEL
MICRO_BASS	<Tone Level>			Shows the current MICRO BASS LEVEL
LINE1_TREBLE	<Tone Level>			Shows the current LINE1 TREBLE LEVEL
LINE2_TREBLE	<Tone Level>			Shows the current LINE2 TREBLE LEVEL
MICRO_TREBLE	<Tone Level>			Shows the current MICRO TREBLE LEVEL
GATE	ON/OFF			Shows the current NOISE GATE ON/OFF status
GATE_THRESHOLD	<Threshold Level>			Shows the current NOISE GATE THRESHOLD LEVEL
TALKOVER	ON/OFF			Shows the current TALKOVER ON/OFF status
TALKOVER_THRESHOLD	<Threshold Level>			Shows the current TALKOVER THRESHOLD LEVEL
TALKOVER_ATTACK	<Attack Time Value>			Shows the current TALKOVER ATTACK TIME
TALKOVER_RELEASE	<Release Time Value>			Shows the current TALKOVER RELEASE TIME
TALKOVER_DEPTH	<Depth Level>			Shows the current TALKOVER DEPTH (attenuation)
REMOTE	ON/OFF			Shows the current REMOTE ON/OFF status
REMOTE_SELECTOR	<Remote Selector Value>			Shows de current REMOTE SELECTOR function
AUTO_STANDBY	ON/OFF			Shows the current STANSBY ON/OFF status
AUTOLOAD_PRESET1	ON/OFF			Shows the current AUTOLOAD_PRESET1 at Startup function
PANEL_LOCKED	ON/OFF			Shows the current PANEL_LOCKED (front knob) status
INFO_MODEL	<Device Model>			Shows the Device Model
INFO_VERSION	<Firmware Version>			Shows the current Firmware Version
ERROR	<Error ID>	"<Error Description>"		Informs about an error

All product characteristics are subject to variation due to production tolerances. **NEEC AUDIO BARCELONA S.L.** reserves the right to make changes or improvements in the design or manufacturing that may affect these product specifications.

For technical queries contact your supplier, distributor or complete the contact form on our website, in [Support / Technical requests](#).

Motors, 166-168 08038 Barcelona - Spain - (+34) 932238403 | information@ecler.com | www.ecler.com