

# LINEAR ACOUSTIC® ARC

## Television Loudness Processor



## INTRODUCTION

Congratulations on your purchase of the Linear Acoustic ARC!

ARC – which stands for “Automatic Realtime Control” – is a realtime television loudness processor featuring APTO®, our latest loudness adaptation algorithm.

Most of the television processors in the Linear Acoustic lineup are designed to process stereo and 5.1-channel audio, upmix 2-channel audio to 5.1, insert audience measurement watermarking, handle Dolby® coded audio, and insert local audio sources such as EAS. They also use multiband processing to help mitigate spectral inconsistencies and provide a consistent-sounding output.

In contrast, we designed ARC to simply and effectively process two 2-channel mono or stereo PCM programs, making it ideal for stereo-only channels in the U.S. as well as regions where support for 5.1-channel and coded audio is not required. The APTO algorithm does not employ multiband processing, so the output audio is spectrally identical to the source material. ARC also provides the ability to easily set a LUFS/LKFS output target loudness value and maximum true peak levels, important for meeting certain loudness recommendations and regulations.

ARC offers SDI, AES-3, and AES67 I/O, making it equally at home in today’s facilities as well as forward-looking SMPTE ST 2110 installations. Dual internal redundant universal auto-ranging power supplies ensure reliable operation anywhere in the world.

## ARC Front Panel



Figure 1: Front panel

ARC front panel features include:

- **Four status LEDs** indicating the status of each power supply (1A, 1B), the **overall status** of the unit (1C), and **sync** for the reference clock (1D).
- A **color LCD display** to show status and basic configuration parameters (1E)
- A **five-button navigation cluster** with Left, Right, Up, and Down arrows plus a green "OK" button (1F)

The front panel is used for the initial setup and configuration including setting the IP address of the Control Ethernet port. Additional configuration is accomplished via the remote user interface.

## ARC Rear Panel

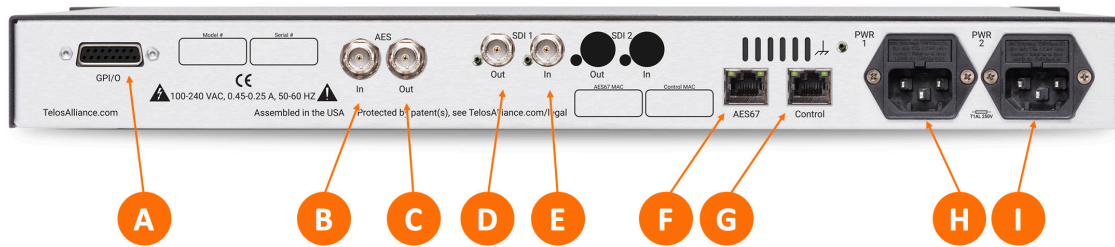


Figure 2: Rear panel

The rear panel of the ARC contains the following connections:

- One parallel **GPI/O control port** (female DB-15) for five inputs and five outputs (2A)
- One **AES-3 Input** (2B) and one **AES-3 Output** (2C) on female BNC connectors
- One **SDI 3Gb/s HD/SD-SDI Input** (2E) and **3Gb/s HD/SD-SDI Output** (2D) on female BNC connectors
- Two RJ-45 **Gigabit Ethernet connections**, one for AES67 I/O (2F) and one for network remote control (2G)
- Two **IEC power inlets** for the internal redundant universal auto-ranging power supplies (2H, 2I)

## Installation

ARC is a 1RU product intended to be permanently installed in standard 19 ½" equipment rack and secured with four standard rack screws. It is fan cooled with air intakes and exhausts located on the side of the unit just behind the front panel, but whenever possible, it is recommended to leave 1RU of empty space above and below the unit.

## Power

Plug the supplied IEC power cords into the ARC and connect each to different mains power sources. Remember that while redundant supplies do protect against the unit losing power in the event of a PSU failure, the loss of mains supply voltage is a bigger concern. Accordingly, each supply should be fed from a different circuit equipped with adequate surge protection and fitted with an uninterruptable power supply (UPS).

## Boot Up and Home Screen

ARC will begin to boot upon applying power; there is no power switch. When ARC finishes booting, it displays the Home Screen which includes the Linear Acoustic and ARC logos, the unit's Control IP address, and its reference source and status.



Figure 3: Front panel home screen

## Setting IP Addresses

ARC ships with DHCP enabled and will automatically retrieve an IP address when connected to a network with a DHCP server.

### *Important!*

*Both the Control and AES67 connections must be connected to 1000BASE-T (Gigabit) switch ports. If a port will not be used, it should not be connected to a switch but does require a specific configuration described below. If both the Control and AES67 ports are used, each must be on a different subnet.*

To set a fixed IP address for the Control port:

- Press the Right button until the IP Configuration (Control) screen is displayed
- Press the OK button to highlight "Edit"
- Press OK again to highlight "Use DHCP"
- Press the Right button to highlight "Yes"
- Press the Up/Down button to "No"
- Press the Left button to highlight the "Use DHCP" field
- Press the Down button to highlight "Address"
- Press the Right button to move to the first digit of the IP address
- Use the Up/Down buttons to change the selection
- Press the Right/Left buttons to select another digit to edit
- When finished editing the address field, press the Right or Left button to return to "Address"
- Press the Down button to navigate to the Netmask and Gateway fields
- Repeat the above steps to edit the Netmask and Gateway fields; note that the gateway may be set to 000.000.000.000 if no gateway is required
- After the gateway is set, press the Left button to highlight "Gateway"
- Press the Down button to highlight "Update"
- Press OK to save the new IP information
- Remove power from the ARC for at least 10 seconds, and then re-apply power.
- If you suddenly notice you've entered some incorrect information and need to start over, use the Right/Left buttons to highlight "Cancel" followed by "OK"

If you are using AES67 I/O, use the Left/Right buttons to navigate to the IP Configuration (AES67) screen. The steps for configuring this port are identical to those above for the Control port. **Please remember that when both the Control and AES67 ports are used, each must be on a different subnet.**

If either of the two Ethernet ports will not be used, the unused port must be configured as follows:

- Do not connect the unused port to a network switch
- Using the steps above, navigate to the IP Configuration screen of the unused port
- Set "Use DHCP" to "Yes"
- Highlight and select "Update"
- Power cycle the unit

Pressing the Right/Left buttons will eventually return you to the Home Screen.



Figure 4: IP configuration screen for Control port

## Connecting Inputs and Outputs

Connect inputs and outputs as required for your particular installation. ARC can access any of the eight audio pairs carried on an incoming HD- or SD-SDI stream and provide de-embedding and pair shuffling at its input. Audio can also be received using the AES-3 input or via AES67. Details instructions on audio routing are provided in the full ARC user manual.

## Connecting to the Web-Based User Interface

No special client software is required to remotely connect to the ARC, and the HTML-5-based GUI is device, operating system, and browser agnostic. We recommend Google Chrome, Firefox, or Apple Safari. The computer or tablet should be on the same network and subnet as the ARC.

Once ARC and your computer are connected to your network, enter the IP address of the ARC to which you want to connect in the URL field of your browser. Once connected, the Home Screen will appear.

Clicking on the **ARC logo** (5A) in the top left corner will always return you to this screen.

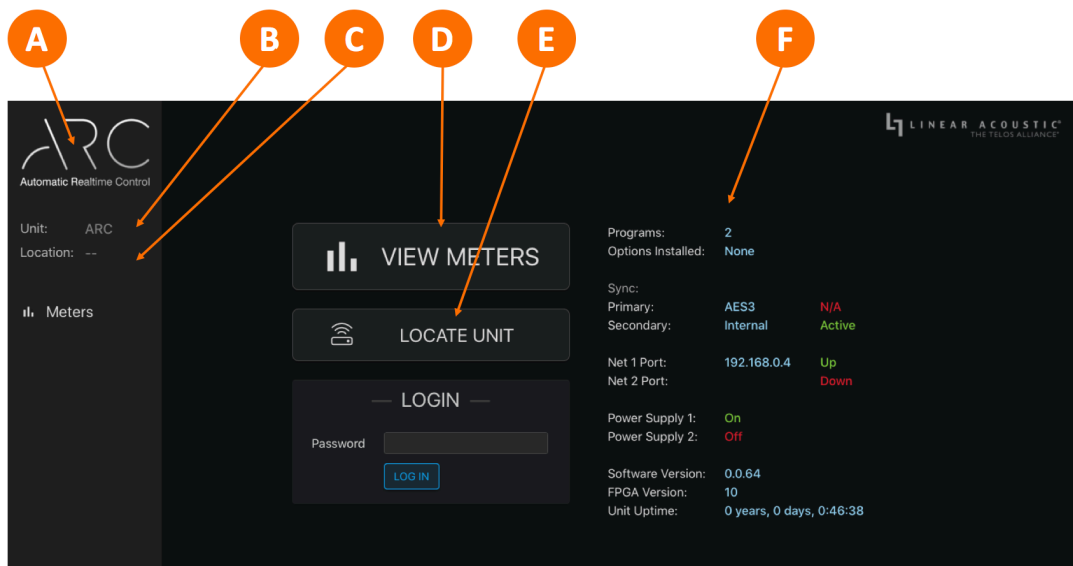


Figure 5: Remote home screen

Multiple users can connect to the same ARC hardware simultaneously. Anyone connected to the unit will be able to see the information on this screen including the **unit's name** (5B) and **physical location** (5C).

Additionally, all users can access **Meters screen** (5D) which shows loudness measurements and input/output levels for both programs. See the section "ARC Home Screen When Logged In" below for detailed information.

The **Locate Unit** feature (5E), which causes the front panel display of the unit to flash for easy identification in a crowded rack, can also be activated without logging in.

Additional information about installed options, clock sync, network status and IP address, power supply status, software and FPGA versions, and unit uptime **are displayed to the right of the screen** (5F).

Making modifications to ARC's configuration, signal routing or audio processing parameters requires logging into the unit. At this time, only one user account with one password is supported. By default, the password is "1234". The ability to change the password will be included in an upcoming software update.

## Download the User Manual from our Website

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Full product documentation and detailed instructions on operating the ARC are provided in the User Manual available for viewing and download on our website at <https://www.telosalliance.com>.



## SPECIFICATIONS

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### Power

- Dual internal redundant auto-ranging power supplies, each rated at 100-264VAC, 50/60Hz, 40 Watts maximum

### Dimensions and Weight

- 19" W x 9" D x 1.75" H (approximately 48.2 x 22.9 x 4.5 cm )
- Net weight: Approximately 9.0 lbs (4.08 kg)
- Shipping weight: Approximately 12.0 lbs (5.44 kg)

### Environmental

- Operating: 0 to 50 degrees C
- Non-Operating: -20 to 70 degrees C

### Intended Location

- Telecommunications center or dedicated computer/machine room

### Regulatory

- North America – FCC and CE tested and compliant with UL-approved power supplies
- Europe – Complies with European Union Directive 2002/95/EC on the restriction of use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended by Commission Decisions 2005/618/EC, 2005/717/EC, 2005/747/EC (RoHS directive), and WEEE

### Warranty

- Standard Telos Alliance 2-year limited parts and labor

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