

Radius AEC

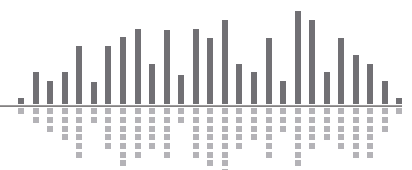
- **Inputs:** 8 mic/line inputs with dedicated wideband AEC processing, zero latency direct outputs, and discrete references per AEC channel. 4 analog line inputs. **Outputs:** 8 analog line outputs.
- Optional input or output expansion using Symetrix modular I/O cards such as the 2 Line VoIP Interface Card.
- A building block in a scalable system design, Radius AEC is configured using Composer software with over 600 DSP modules.
- Network audio expansion using Dante protocol over standard IT networks. 64 transmit and 64 receive channels. Ultra low latency.
- Multiple user control options including ARC-WEB browser, low cost ARC wall panels, third-party touch panels, and SymVue.

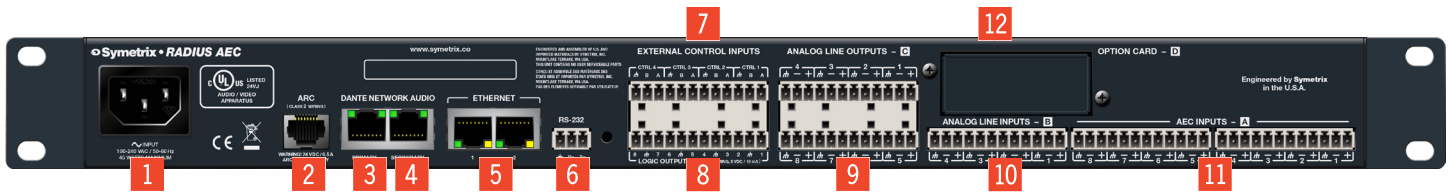
Specifications

| GENERAL SPECIFICATIONS | |
|--|---|
| Processor | 1 x Analog Devices SHARC 21489 @ 400 MHz SIMD. |
| Raw processing capacity | 400 MIPS, 1.6 GFLOPS. |
| Sampling rate | 48 kHz, ± 100 ppm. |
| Frequency response (A/D/A) | 20 Hz – 20 kHz, ± 0.5 dB. |
| Dynamic range (A/D/A) | > 114 dB, A-weighted. |
| Channel separation (A/D/A) | > 108 dB @ 1 kHz, +24 dBu. |
| Latency (A/D/A) | 0.88 mS, inputs routed to outputs. |
| Delay memory | 174 mono seconds. |
| Analog control inputs | 0-3.3 VDC. |
| Recommended external control potentiometer | 10k Ohm, linear. |
| Logic outputs | Low (0V) when active, pulled high (5V) when inactive. |
| Logic output maximum external power supply voltage / current sinking | 24 VDC / 50 mA. |
| Logic output maximum output current | 10 mA. |
| THD + Noise | < -85 dB (unweighted); 1 kHz @ +22 dBu with 0 dB gain. |
| RS-232 accessory serial I/O | 57.6 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control wired straight-through, only pins 2, 3, and 5 required. |
| RS-485 serial I/O | 38.4 kbaud (default) 8 data bits, 1 stop bit, no parity, no flow control. May be broken out of ARC port. |
| Ethernet Cable | Standard CAT5/6, maximum device to device length = 100 meters. |
| Dante Cable | Standard CAT6, maximum device to device length = 100 meters. |
| ARC Cable | Standard CAT5/6, distance dependent upon load and number of devices. |
| Maximum stored presets | 1000. |

| ANALOG INPUTS | |
|---------------------------------------|---|
| Connectors | 3.81 mm terminal blocks. |
| Number of inputs | 12 total; 8 switchable balanced mic or line level with dedicated AEC, 4 line level. |
| Nominal input level | +4 dBu with 20 dB of headroom. |
| Maximum input level | +23 dBu |
| Mic Pre-amp Gain (Inputs 1-8) | 0, 11.8, 24, 44 or 54 dB switchable with ± 24 dB trim. |
| Mic Pre-amp EIN (Inputs 1-8) | < -127 dB with 150 Ohm source impedance. |
| CMRR | > 76 dB @ 1 kHz, unity gain. |
| Input impedance | 8 k Ohms balanced, 4 k Ohms unbalanced. |
| Phantom Power (Per Input, Inputs 1-8) | +48 VDC @ 10 mA maximum. |
| Dynamic range | > 115 dB, A-weighted. |
| THD + Noise | < -94 dB, unweighted; 1 kHz @ +22 dBu with 0 dB gain. |
| Latency | 0.28 mS (direct), 11 mS (AEC enabled, Inputs 1-8). |
| Tail Length (Inputs 1-8) | > 300 mS |
| Convergence Time (Inputs 1-8) | > 100 dB/S |

| ANALOG OUTPUTS | |
|----------------------|---|
| Connectors | 3.81 mm terminal blocks. |
| Number of outputs | Eight (8) balanced line level. |
| Nominal output level | +4 dBu with 20 dB of headroom. |
| Maximum output level | +24 dBu (+22.8 dBu into a 2 k Ohm minimum load). |
| Output impedance | 300 Ohms balanced, 150 Ohms unbalanced. |
| Dynamic range | > 117 dB, A-weighted. |
| THD + Noise | < -95 dB, unweighted; 1 kHz @ +22 dBu with 0 dB gain. |
| Latency | 0.60 mS. |





- 1 Power:** Accepts power from detachable IEC power cable (100-240 VAC, 50-60 Hz, 45 Watts maximum).
- 2 ARC:** Distributes power and RS-485 data to one or more ARC devices.
- 3 Dante (Primary):** 1000 Base-T Ethernet port provides 128 (64x64) channels of Dante network audio.
- 4 Dante (Secondary):** 1000 Base-T Ethernet port for redundant Dante network audio implementation.
- 5 Ethernet:** 10/100 Base-T Ethernet ports for Composer host control and third-party accessory controllers over IP. Features auto-crossover sensing for direct device-to-device connections.
- 6 RS-232:** Serial communications interface for 3rd party accessory controllers. Port Settings: 57.6 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control.
- 7 External Control Inputs:** 4 analog control inputs are able to be used as 4 potentiometer inputs or as 8 switch inputs (+3.3 VDC reference voltage supplied).
- 8 Logic Outputs:** 8 logic outputs with 4 paired common ground pins. Logic Outputs go low (0V) when active and are internally pulled high (5V) when inactive and can drive external LED indicators directly.
- 9 Analog Line Outputs:** 8 balanced analog line level audio outputs, with individually software-controllable nominal levels (reference levels of -10 dBV and +4 dBu), +12/-72 dB of gain and mute.
- 10 Analog Line Inputs:** 4 balanced analog audio inputs, with individually software-controllable nominal levels (reference levels of -10 dBV and +4 dBu), +/- 24 dB of digital trim, signal inversion and mute.
- 11 AEC Inputs:** 8 balanced analog audio inputs, with individually software-controllable pre-amp gain (reference levels of -50 dBu, -40 dBu, -20 dBu, -10 dBV and +4 dBu), +/- 24 dB of digital trim, phantom power, signal inversion and mute.
- 12 Option I/O Card Slot:** I/O card slot accepts any of the available cards providing up to 4 channels of local I/O. Refer to individual Symetrix I/O card data sheets for details.

| Mechanical Data | | |
|------------------------------|---|---|
| Item | Specifications | Remarks |
| Space Required | 1U (WDH: 18.91 in. x 9.5 in. x 1.72 in. / 48.02 cm x 24.13 cm x 4.37 cm). Depth does not include connector allowance. | Allow at least 3 inch additional clearance for rear panel connections. Additional depth may be required depending upon your specific wiring and connections. |
| Electrical | 100-240 VAC, 50/60 Hz, 45 Watts maximum universal input and/or suitable 24 VDC / 2.0 Amp auxillary power source. | No line voltage switching required. |
| Ventilation | Maximum recommended ambient operating temperature is 30 C / 86 F. | Ensure that the left and right equipment sides are unobstructed (5.08 cm, 2 in. minimum clearance). The ventilation should not be impeded by covering the ventilation openings with items such as newspapers, tablecloths, curtains, etc. |
| Shipping Weight | 13 lbs. (5.9 kg). | |
| Certifications or Compliance | UL 60065, cUL 60065, IEC 60065, EN 55103-1, EN 55103-2, FCC Part 15, RoHS. | |

Architect and Engineer Specifications: Radius AEC.

The device shall provide twelve inputs, eight analog mic/line inputs with dedicated acoustic echo cancelling, that are adjustable from line to mic level with coarse gain, fine trim, phantom power, invert and mute, and four analog line level that are adjustable +4 dBu or -10 dBV nominal with fine trim and mute; plus eight analog line outputs that are adjustable +4 dBu or -10 dBV nominal with fine trim and mute. Levels, phantom powers, signal inversions and mutes shall be controllable via software. Audio connections shall be accessed via rear panel 3.81 mm terminal block connectors.

An option card slot may accommodate either a 4 Channel Analog Input Card, 4 Channel Analog Output Card, 4 Channel Digital Input Card, 4 Channel Digital Output Card, 4 Channel AEC Input Card, 2 Line Analog Telephone Interface Card, 2 Line VoIP Interface Card, USB Audio Card, or remain empty.

Network audio expansion shall be provided by the Dante protocol with a capacity of 128 (64x64) channels. Primary and Secondary Dante network audio connections shall be provided for redundant network implementation. Connectors shall be gigabit RJ45 utilizing CAT5/6 cable.

A designer software application shall be provided that operates on a Windows computer, with network interface installed, running Windows® XP or higher operating system. Computer connection for configuration shall be via the device's rear panel Ethernet connector. All internal processing shall be digital (DSP). Available DSP components shall include (but not be limited to) various forms of: mixers, equalizers, filters, crossovers, dynamics/gain controls, routers, delays, remote controls, meters, generators, onboard logic, and diagnostics.

The front panel shall include input and output signal level indicators, indication of installed option card type, as well as indicators for POWER, ARC, RS-232, NETWORK, and DANTE (PRIMARY and SECONDARY). Additionally, a front panel LCD shall display certain system parameters as well as allow editing of network parameters and may be programmed as an ARC for custom user control via the front panel UP, DOWN, LEFT, RIGHT and ENTER buttons.

External control shall include dedicated software screens as well as preset selection, I/O level control and muting using the optional ARC wall panel remote controls via industry-standard CAT5/6 cable with RJ45 connectors. A built-in web server shall provide four instances of ARC-WEB, which allows for user control from nearly any web browser or mobile device. Logic I/O shall consist of eight contact closure or four potentiometer inputs along with eight logic outputs. The logic outputs may be used to drive LEDs directly or control external relays or switchers. All program memory shall be non-volatile and provide program security should power fail. The device shall provide an on board real time clock to facilitate automatic, timed changing of presets and may sync to NTP. Third-party control systems may interface over IP and RS-232 using a published ASCII control protocol.

Audio conversion shall be 24-bit, 48 kHz and internal processing shall be 32-bit or 40-bit floating point, 48 kHz. The dynamic range shall not be lower than 115 dB, A-weighted with a maximum input level of +23 dBu and maximum output level of +24 dBu.

The device shall have an IEC power input socket for 120-240 VAC. The device shall meet UL/CSA and CE safety requirements and comply with CE and FCC Part 15 emissions limits. The two line-analog telephone interface shall comply with FCC Part 68. The device shall be RoHS compliant. The chassis shall be constructed of cold rolled steel and molded plastic, and mount into a standard 19" 1U EIA rack. The device shall be a **Symetrix Radius AEC**.

