

The Radius 12x8 EX is an extremely versatile and affordable audio DSP featuring 12 analog mic/line inputs, 8 analog line level outputs, a 64x64 Dante™ network audio port, and an input/output expansion card slot, all in a 1U rack space.

The I/O expansion slot supports an array of optional SymNet audio I/O cards including analog, digital, AEC and telephone. This feature reduces system cost by incorporating more inputs or outputs into a single device. By way of examples, configuring a 12x8 EX with a 4 Channel Analog Input card yields a 16 in, 8-out processor with Dante; configuring a 12x8 EX with a 4 Channel Analog Output card yields a 12 in, 12-out processor with Dante.

SymNet Composer™ open architecture design software programs the Radius 12x8 EX to process audio in nearly unlimited ways for almost any desired application. With more than 600 processing modules addressing all aspects of audio processing and control, a designer can get a system up and running with minimal effort using existing designs or templates, or, create highly sophisticated unique one-off designs using Composer's intuitive drag and drop design elements. Expert help from Symetrix' highly experienced technical support staff is always just an email, chat, or phone call away.

### Typical Applications:

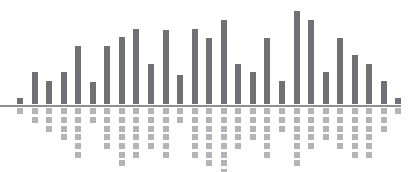
- Room combining
- Paging systems
- Microphone mixing
- Voice reinforcement
- Public address
- Loudspeaker processor
- Equalization and Compression
- Noise masking
- Audio routing and mixing
- Sound management
- Live performance management
- Audio distribution
- Broadcast applications
- Recording
- Audio pre-amplifier
- Zone mixing

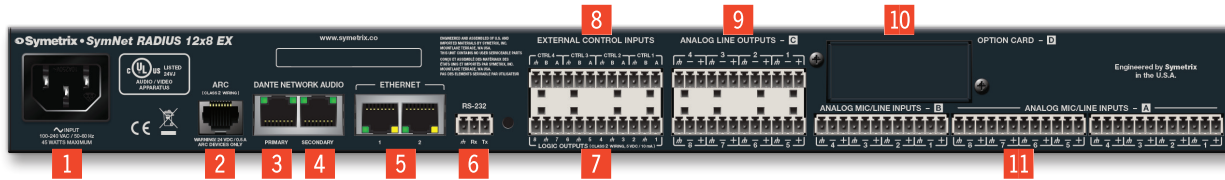
### Typical Venues:

- House of Worship
- Universities
- K-12 Schools
- Auditoriums
- Gymnasiums
- Stadiums
- Race tracks
- Casinos
- Performing arts centers
- Airports
- Corporate facilities
- Convention centers
- Residences
- Home Theatres
- Radio stations
- Television studios
- Sports bars
- Restaurants

### Some additional benefits of designing your DSP systems using the Radius 12x8 EX:

- From small and simple, to mega large and complex projects, Dante digital audio over Ethernet is an industry standard means for interconnecting multiple SymNet Radius and Edge DSP's, as well as a range of Dante 3rd party peripherals including microphones and power amps.
- The Radius 12x8 EX supports multiple user control options including zero-cost ARC-WEB browser based interface, low cost and easy to use Symetrix ARC wall panels, easy to implement SymNet SymVue™ Windows graphical end user interface, and programmable industry standard third-party control systems like Crestron and AMX.
- Studio-grade sound quality means your announcements, presentations, and other applications will have high intelligibility, wide-band audio, and be understandable to all participants.
- Built-in 10/100 and gigabit switches lower overall system cost by reducing complexity, and increasing reliability.

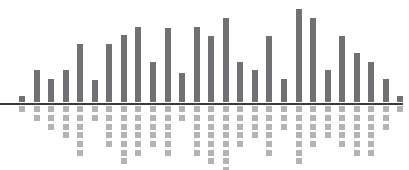




- 1 Power:** Accepts power from detachable IEC power cable (100-240 VAC, 50-60 Hz, 45 Watts maximum).
- 2 ARC:** Distributes power and RS-485 data to one or more ARC devices.
- 3 Dante (Primary):** 1000 Base-T Ethernet port provides 128 (64x64) channels of Dante network audio.
- 4 Dante (Secondary):** 1000 Base-T Ethernet port for redundant Dante network audio implementation. Can also be used for daisy-chaining units.
- 5 Ethernet:** 10/100 Base-T Ethernet ports for SymNet Composer host control and 3rd 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 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.
- 8 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).
- 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 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 SymNet I/O card data sheets for details.
- 11 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.

## Specifications

GENERAL SPECIFICATIONS		ANALOG INPUTS	
Processors	1 x Analog Devices SHARC 21489 @ 400 MHz SIMD.	Connectors	3.81 mm terminal blocks.
Raw processing capacity	400 MIPS, 1.6 GFLOPS.	Number of inputs	Twelve (12) switchable balanced mic or line level.
Sampling rate	48 kHz, ± 100 ppm.	Nominal input level	+4 dBu with 20 dB of headroom.
Frequency response (A/D/A)	20 Hz – 20 kHz, ± 0.5 dB.	Maximum input level	+23 dBu.
Dynamic range (A/D/A)	> 114 dB, A-weighted.	Mic pre-amp gain	0, 11.8, 24, 44 or 54 dB switchable with ± 24 dB trim.
Channel separation (A/D/A)	> 108 dB @ 1 kHz, +24 dBu.	Mic pre-amp EIN	< -127 dB with 150 Ohm source impedance.
Latency (A/D/A)	0.88 mS, inputs routed to outputs.	CMRR	> 76 dB @ 1 kHz, unity gain.
Delay memory	174 mono seconds.	Input impedance	8 k Ohms balanced, 4 k Ohms unbalanced.
Analog control inputs	0-3.3 VDC.	Phantom power (per input)	+48 VDC @ 10 mA maximum.
Recommended external control potentiometer	10k Ohm, linear.	Dynamic range	> 115 dB, A-weighted.
Logic outputs	Low (0V) when active, pulled high (5V) when inactive.	THD + Noise	< -94 dB, unweighted; 1 kHz @ +22 dBu with 0 dB gain.
Logic output maximum external power supply voltage / current sinking	24 VDC / 50 mA.	Latency	0.28 mS.
Logic output maximum output current	10 mA.	ANALOG OUTPUTS	
THD + Noise	< -85 dB (unweighted); 1 kHz @ +22 dBu with 0 dB gain.	Connectors	3.81 mm terminal blocks.
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.	Number of outputs	Eight (8) balanced line level.
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.	Nominal output level	+4 dBu with 20 dB of headroom.
Ethernet Cable	Standard CAT5, maximum device to device length = 100 meters.	Maximum output level	+24 dBu (+22.8 dBu into a 2 k Ohm minimum load).
Dante Cable	Standard CAT6, maximum device to device length = 100 meters.	Output impedance	300 Ohms balanced, 150 Ohms unbalanced.
ARC Cable	Standard CAT5, distance dependent upon load and number of devices.	Dynamic range	> 117 dB, A-weighted.
Maximum stored presets	1000.	THD + Noise	< -95 dB, unweighted; 1 kHz @ +22 dBu with 0 dB gain.
		Latency	0.60 mS.



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.	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: SymNet Radius 12x8 EX.

The device shall provide twelve analog mic/line inputs that are adjustable from line to mic level with coarse gain, fine trim, phantom power, invert and mute, and 8 analog line outputs that are adjustable +4 dBu or -10 dBV nominal with fine trim and mute. All signal processing, mixing and routing functions (including I/O levels) shall be controllable via software. Audio inputs and outputs shall be accessed via rear panel 3.81 mm terminal block connectors.

An option card slot may accommodate either a 2 line VoIP interface card, 2 line analog telephone interface card, 4 channel digital input card, 4 channel digital output card, 4 channel mic/line input card, 4 channel AEC input card, 4 channel analog output 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 CAT6 cable.

A designer software application shall be provided that operates on a Windows computer, with network interface installed, running Windows 7® 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 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 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 SymNet RADIUS 12x8 EX**.

