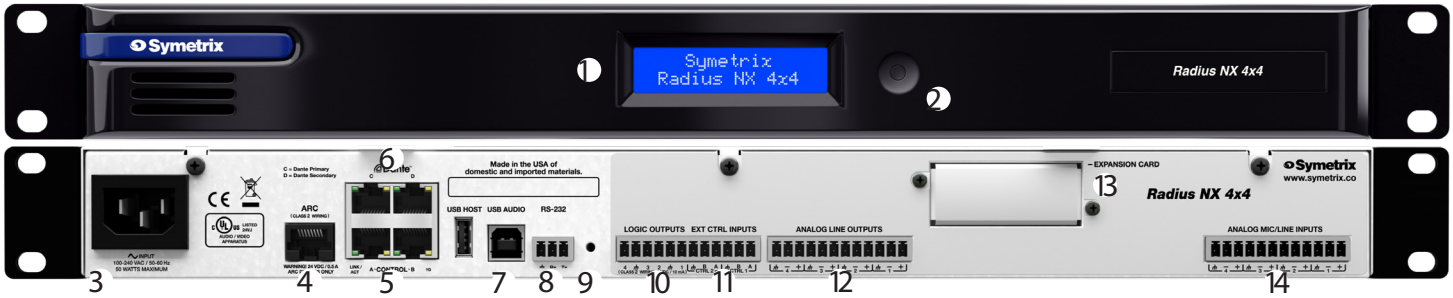
Radius NX 4x4 Data Sheet

Radius NX 4x4 is an excellent choice in cost-sensitive applications where many Dante network audio endpoints are routed to a primary DSP and fewer analog connections are required. Audio connections include 128 (64x64) channels of redundant Dante, 4 analog mic/line inputs, 4 analog outputs, and up to 8x8 channels of USB audio.



1 **Display:** Shows either an overview of system parameters or level meters for analog inputs, analog outputs, USB I/O, and expansion card I/O. The overview contains limited information such as IP Address, DHCP Status, and communication LEDs for Ethernet, Dante, and ARC. A short button press moves between the overview and input/output meters. The meters are scaled from -72 dBFS to 0 dBFS. Each segment represents 12 dB. If the signal reaches clipping, the meter will get wider.

2 **Wake / Navigation button:** A single momentary push button is used to cycle through the Dashboard and System Pages or dismiss a fault notification. A short press scrolls through the menus or dismisses a fault notification and a long press toggles between the Dashboard and System Pages.

3 **Power:** Accepts power from detachable IEC power cable (100-240 VAC, 50-60 Hz, 60 Watts max). Connect only to a grounded power outlet.

4 **ARC:** Distributes power and RS-485 data to one or more ARC devices.

5 **A & B Ethernet Ports:** 1000 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 **C & D Dante Ports:** 1000 Base-T Ethernet ports provides 128 (64x64) channels of Dante network audio.

7 **USB Audio:** A USB 2.0 audio I/O interface with Class 1.0 legacy profiles on a high-retention Type B connection for interfacing with soft codecs, recording and playback software, etc. on Windows, Mac or Linux platforms. Configurable for up to 8x8 line I/O as well as 2x2 line I/O, 1x1 speakerphone, or 1x1 echo cancelling speakerphone profiles.

8 **RS-232:** Serial communications interface for a third-party accessory controller. Tx = Transmit or data out, Rx = Receive or data in. Port Settings: 57.6 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control.

9 **Factory Reset Switch:** To be used under the supervision of technical support, it has the ability to reset the unit's network configuration and completely reset the unit to factory defaults.

10 **Logic Outputs:** Four (4) logic outputs with four (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.

11 **External Control Inputs:** Two (2) analog control inputs able to be used as 2 potentiometer inputs or as 4 switch inputs (+3.3 VDC reference voltage supplied).

12 **Analog Line Outputs:** Four (4) balanced analog line level audio outputs, with individually software-controllable +/- 24 dB of digital trim and mute.

13 **Expansion Card Slot:** I/O card slot accepts any of the available cards providing up to 4 channels of local I/O. Please refer to individual I/O card data sheets for details.

14 **Analog Mic/Line Inputs:** Four (4) balanced analog audio inputs, with individually software-controllable pre-amp gain, +/- 24 dB of digital trim, phantom power, signal inversion and mute.

System Specifications	
Processor	1 x Analog Devices Griffin ADSP-SC587 dual-core DSP @ 500 MHz
Raw processing capacity	500 MIPS, 6 GFLOPS, 2 GMACS
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
THD + Noise	< -95 dB (22.4 kHz BW, unweighted); 1 kHz @ +15 dBu with 0 dB gain
Channel separation (A/D/A)	> 110 dB @ 1 kHz, +24 dBu
Latency (A/D/A)	1.04 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
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 = 328 feet / 100 meters
Dante Cable	Standard CAT6, maximum device to device length = 328 feet / 100 meters
ARC Cable	Standard CAT5/6, distance dependent upon load and number of devices
Maximum stored presets	1000

Analog Inputs	
Number of inputs	Four (4) switchable balanced mic or line level
Connectors	3.81 mm terminal blocks
Nominal input level	+4 dBu
Maximum input level	+24 dBu.
Mic pre-amp gain	0 to 51 dB in 3 dB steps with ± 24 dB digital trim
Mic pre-amp EIN	< -125 dB with 150 Ohm source impedance, 22.4 kHz BW
Input impedance	2k Ohms balanced, 1k Ohms unbalanced
Phantom power (per input)	+48 VDC @ 10 mA maximum
Dynamic range	> 115 dB, A-weighted
THD + Noise	< -100 dB (22.4 kHz BW, unweighted); 1 kHz @ +15 dBu with 0 dB gain.
Latency	0.31 mS

Analog Outputs	
Number of outputs	Four (4) balanced line level
Connectors	3.81 mm terminal blocks
Nominal Output Level	+4 dBu with 20 dB of headroom
Maximum Output Level	+24 dBu (+22.8 dBu into a 2k Ohm minimum load)
Output Impedance	300 Ohms balanced, 150 Ohms unbalanced
Dynamic range	> 117 dB, A-weighted.
THD + Noise	< -97 dB (22.4 kHz BW, unweighted); 1 kHz, 0 dB gain +8 dBu output
Latency	0.65 mS.

USB Audio I/O	
Connector	One (1) high-retention Type B
Interface	2.0 with Audio class 1.0 legacy modes
Capacity	1x1 (echo cancelling speakerphone and non-echo cancelling speakerphone modes) - driverless, 2x2 line I/O mode - driverless, and 8x8 line I/O mode - driver included
Sample Rate	48 kHz
Bit Depth	16-bit, speakerphone modes; 16 or 24-bit, line modes

AEC (if installed)*	
Number of Channels	Up to sixteen (16) for dual-core module (up to 8 references), up to eight (8) for single-core module (up to 4 references)
Tail Length	400mSmaximum, dependent on channel and reference count
Convergence Rate	Typically > 90dB/sec
Latency	16 mS
Processors	1 x Analog Devices Griffin ADSP-21584 dual-core DSP @ 500 MHz
Raw processing capacity	500 MIPS, 6 GFLOPS, 2 GMACS

*Optional coprocessor module required, single-core or dual-core models are available.

Mechanical Data	
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 inches 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, 60 Watts maximum, universal input.
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 and Compliance	Safety: UL 60065, cUL 60065, IEC 60065 EMC: EN 55103-1, EN 55103-2, EN55032, EN 61000-3-2, EN 61000-3-3, ICES-003, FCC Part 15 (all Class A) Environmental: RoHS

Architect & Engineer Specifications : Symetrix Radius NX 4x4

The device shall provide four analog mic/line inputs that are adjustable from line to mic level with coarse gain, fine trim, phantom power, invert and mute, and four analog line outputs that are adjustable with fine gain 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 expansion card slot may accommodate either a 2 line VoIP interface card, 2 line analog telephone interface card, 8x8 USB audio I/O 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.

An internal DSP coprocessor module may be installed for additional application-specific processing such as acoustic echo cancellation (AEC).

A USB 2.0 audio I/O port with class 1.0 legacy modes on a high-retention Type B connection is configurable for up to 8x8 line I/O as well as 2x2 line I/O, 1x1 speakerphone, or 1x1 echo-cancelling speakerphone profiles.

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 1000 Base-T 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 a display and a momentary switch. The display shall provide communications and system status, I/O metering, and fault messages.

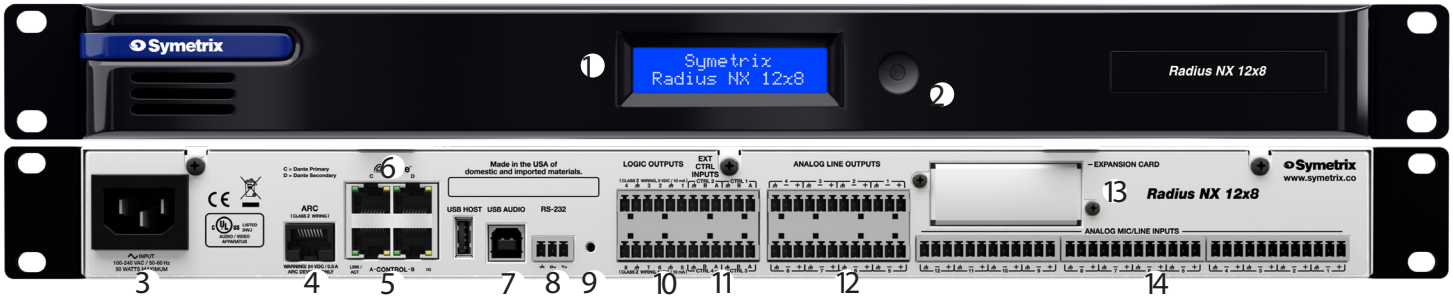
External control shall include dedicated software screens as well as preset selection, I/O level control and muting using the optional ARC wall panel remote controls via industry-standard CAT5 cable with RJ45 connectors. A built-in web server shall provide four instances of ARC-WEB, which allows for user control from nearly any web browser or mobile device. Logic I/O shall consist of four contact closures or two potentiometer inputs along with four 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 +24 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 device shall be RoHS compliant. The chassis shall be constructed of Galvalume and molded plastic, and mount into a standard 19" 1U EIA rack using detachable rack ears. The device shall be a **Symetrix Radius NX 4x4**.

Radius NX 12x8 Data Sheet

Radius NX 12x8 is best suited for applications requiring a greater compliment of analog input and output channels and/or logic output and external control input capabilities. Audio connections include 128 (64x64) channels of redundant Dante, 12 analog mic/line inputs, 8 analog outputs, and USB audio.



1 **Display:** Shows either an overview of system parameters or level meters for analog inputs, analog outputs, USB I/O, and expansion card I/O. The overview contains limited information such as IP Address, DHCP Status, and communication LEDs for Ethernet, Dante, and ARC. A short button press moves between the overview and input/output meters. The meters are scaled from -72 dBFS to 0 dBFS. Each segment represents 12 dB. If the signal reaches clipping, the meter will get wider.

2 **Wake / Navigation button:** A single momentary push button is used to cycle through the Dashboard and System Pages or dismiss a fault notification. A short press scrolls through the menus or dismisses a fault notification and a long press toggles between the Dashboard and System Pages.

3 **Power:** Accepts power from detachable IEC power cable (100-240 VAC, 50-60 Hz, 60 Watts max). Connect only to a grounded power outlet.

4 **ARC:** Distributes power and RS-485 data to one or more ARC devices.

5 **A & B Ethernet Ports:** 1000 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 **C & D Dante Ports:** 1000 Base-T Ethernet ports provides 128 (64x64) channels of Dante network audio.

7 **USB Audio:** A USB 2.0 audio I/O interface with Class 1.0 legacy profiles on a high-retention Type B connection for interfacing with soft codecs, recording and playback software, etc. on Windows, Mac or Linux platforms. Configurable for up to 8x8 line I/O as well as 2x2 line I/O, 1x1 speakerphone, or 1x1 echo cancelling speakerphone profiles.

8 **RS-232:** Serial communications interface for a third-party accessory controller. Tx = Transmit or data out, Rx = Receive or data in. Port Settings: 57.6 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control.

9 **Factory Reset Switch:** To be used under the supervision of technical support, it has the ability to reset the unit's network configuration and completely reset the unit to factory defaults.

10 **Logic Outputs:** Eight (8) logic outputs with four (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.

11 **External Control Inputs:** Four (4) analog control inputs able to be used as 4 potentiometer inputs or as 8 switch inputs (+3.3 VDC reference voltage supplied).

12 **Analog Line Outputs:** Eight (8) balanced analog line level audio outputs, with individually software-controllable +/- 24 dB of digital trim and mute.

13 **Expansion Card Slot:** I/O card slot accepts any of the available cards providing up to 4 channels of local I/O. Please refer to individual I/O card data sheets for details.

14 **Analog Mic/Line Inputs:** Twelve (12) balanced analog audio inputs, with individually software-controllable pre-amp gain, +/- 24 dB of digital trim, phantom power, signal inversion and mute.

System Specifications	
Processor	1 x Analog Devices Griffin ADSP-SC587 dual-core DSP @ 500 MHz
Raw processing capacity	500 MIPS, 6 GFLOPS, 2 GMACS
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
THD + Noise	< -95 dB (22.4 kHz BW, unweighted); 1 kHz @ +15 dBu with 0 dB gain
Channel separation (A/D/A)	> 110 dB @ 1 kHz, +24 dBu
Latency (A/D/A)	1.04 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
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 = 328 feet / 100 meters
Dante Cable	Standard CAT6, maximum device to device length = 328 feet / 100 meters
ARC Cable	Standard CAT5/6, distance dependent upon load and number of devices
Maximum stored presets	1000

Analog Inputs	
Number of inputs	Twelve (12) switchable balanced mic or line level
Connectors	3.81 mm terminal blocks
Nominal input level	+4 dBu
Maximum input level	+24 dBu.
Mic pre-amp gain	0 to 51 dB in 3 dB steps with ± 24 dB digital trim
Mic pre-amp EIN	< -125 dB with 150 Ohm source impedance, 22.4 kHz BW
Input impedance	2k Ohms balanced, 1k Ohms unbalanced
Phantom power (per input)	+48 VDC @ 10 mA maximum
Dynamic range	> 115 dB, A-weighted
THD + Noise	< -100 dB (22.4 kHz BW, unweighted); 1 kHz @ +15 dBu with 0 dB gain.
Latency	0.31 mS

Analog Outputs	
Number of outputs	Eight (8) balanced line level
Connectors	3.81 mm terminal blocks
Nominal Output Level	+4 dBu with 20 dB of headroom
Maximum Output Level	+24 dBu (+22.8 dBu into a 2k Ohm minimum load)
Output Impedance	300 Ohms balanced, 150 Ohms unbalanced
Dynamic range	> 117 dB, A-weighted.
THD + Noise	< -97 dB (22.4 kHz BW, unweighted); 1 kHz, 0 dB gain +8 dBu output
Latency	0.65 mS.

USB Audio I/O	
Connector	One (1) high-retention Type B
Interface	2.0 with Audio class 1.0 legacy modes
Capacity	1x1 (echo cancelling speakerphone and non-echo cancelling speakerphone modes) - driverless, 2x2 line I/O mode - driverless, and 8x8 line I/O mode - driver included
Sample Rate	48 kHz
Bit Depth	16-bit, speakerphone modes; 16 or 24-bit, line modes

AEC (if installed)*	
Number of Channels	Up to sixteen (16) for dual-core module (up to 8 references), up to eight (8) for single-core module (up to 4 references)
Tail Length	400mSmaximum, dependent on channel and reference count
Convergence Rate	Typically > 90dB/sec
Latency	16 mS
Processors	1 x Analog Devices Griffin ADSP-21584 dual-core DSP @ 500 MHz
Raw processing capacity	500 MIPS, 6 GFLOPS, 2 GMACS

*Optional coprocessor module required, single-core or dual-core models are available.

Mechanical Data	
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 inches 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, 60 Watts maximum, universal input.
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 and Compliance	Safety: UL 60065, cUL 60065, IEC 60065 EMC: EN 55103-1, EN 55103-2, EN55032, EN 61000-3-2, EN 61000-3-3, ICES-003, FCC Part 15 (all Class A) Environmental: RoHS

Architect & Engineer Specifications : Symetrix Radius NX 12x8

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 with fine gain 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, 8x8 USB audio I/O card, or remain empty.

An internal DSP coprocessor module may be installed for additional application-specific processing such as acoustic echo cancellation (AEC).

A USB 2.0 audio I/O port with class 1.0 legacy modes on a high-retention Type B connection is configurable for up to 8x8 line I/O as well as 2x2 line I/O, 1x1 speakerphone, or 1x1 echo-cancelling speakerphone profiles.

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The front panel shall include a display and a momentary switch. The display shall provide communications and system status, I/O metering, and fault messages.

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 closures 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 +24 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 device shall be RoHS compliant. The chassis shall be constructed of Galvalume and molded plastic, and mount into a standard 19" 1U EIA rack using detachable rack ears. The device shall be a **Symetrix Radius NX 12x8**.