8x8 DSP

The SymNet 8x8 DSP is the original model in the SymLink series of network audio processors. It is one of the hardware devices used to execute system designs created in SymNet Designer software. Up to sixteen 8x8 DSPs or other SymLink hardware models can be networked together in a ring topology via the low-latency, 64-channel SymLink Bus to provide high channel-count processing systems for use in convention centers, arenas, university and corporate campuses, large houses of worship, theaters, hotels, and casinos.

Powered by four Analog Devices SHARC® processors, the 8x8 DSP delivers pristine audio through eight (8) mic/line-selectable analog inputs (with independent 48 VDC phantom power per channel) and eight (8) line-level analog outputs. Coupled with a comprehensive external control connectivity scheme, this device is a very powerful tool for the modern system designer or integrator made evident by the number of audio professionals around the globe who stake their reputations on SymNet 8x8 DSP hardware every day.

The power and flexibility offered by the SymLink Bus cannot be overlooked. The sharing of digital audio and control at an average latency of 80 microseconds between hardware devices opens vistas in applications and system capabilities not offered by other systems. 64 configurable digital audio bus channels can be used and reused across multiple devices in a ring to far exceed 64 channels of system I/O.

External control options are plentiful. The 8x8 DSP supports RS-232 control systems, the complete line of ARC Wall Panels, other RS-485 control devices, a full compliment of analog control inputs, and an assortment of binary and relay outputs. The rear panel RS-232 port can issue text string commands to compatible third-party devices such as projectors, negating the need for additional external control hardware in some cases.

Specifications

GENERAL SPECIFICATIONS

Processors	4 x Analog Devices SHARC® 21065L @ 66 MHz
Raw processing capacity	264 MIPS, 528 MFLOPS sustained
Analog control inputs	0-10 VDC
Recommended external control potentiometer	10k Ohm, linear
RS-232 host serial I/O	115.2 or 57.6 kbaud, 8 data bits, 1 stop bit, no parity, no flow control, wired straight-through, only pins 2, 3, and 5 required
RS-232 accessory serial I/O	38.4 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, wired in parallel with STP cable.
SymLink Cable	Shielded CAT5, maximum device to device length = 10 meters
Maximum devices per SymLink Ring	16
Maximum SymLink Rings	31
Maximum stored presets	1000

AUDIO SPECIFICATIONS

Converter Type	24-bit Sigma Delta
Sampling Rate	48 kHz, +/- 100 ppm
Frequency Response	20-20 kHz, +/- 0.25 dB
A/D dynamic range	> 113 dB, A-weighted
D/A dynamic range	> 114 dB, A-weighted
Total THD+ Noise	< 0.005% @ 1 kHz, -1 dBFS
Delay memory	86 mono seconds
Input impedance	6.67k Ohms, balanced
Output impedance	210 Ohms, balanced
Maximum input level	+24 dBu
Maximum output level	+24 dBu, 100k Ohms
Mic preamp EIN	-129 dBu typical, 22-22 kHz, A-weighted
Phantom power (per input)	+48 VDC, 10 mA
Input CMR	> 70 dB @ 60 Hz
Channel separation	> 100 dB, in through out @ 1 kHz
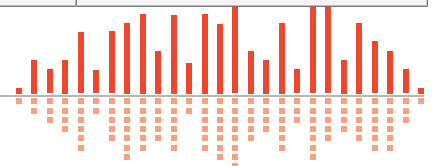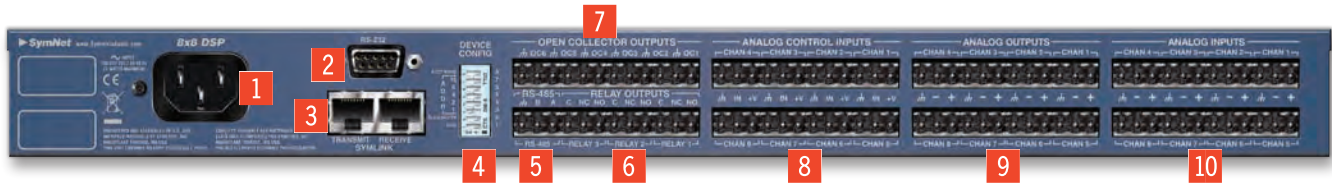
1 Main Power: Accepts power from detachable IEC power cable (100-240 VAC, 50-60 Hz, 75 Watts max).

2 RS-232: Default serial communications interface for a 3rd party accessory controller. Port Settings: 38.4 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control. (By default the front port isreserved for SymNet Designer host communications. Host Port Settings: 115 or 57.6 kbaud, 8 data bits, 1 stop bit, no parity, no flow control.)

3 SymLink: Low-latency 64-channel audio and data bus. TRANSMIT connects to the next downstream SymLink device's receive port. RECEIVE connects to the previous SymLink device's transmit port. This forms the "SymLink Ring". Use shielded CAT5 cables less than 10 meters in length, standard straight-through wiring.

4 Device Config: Configures the RS-232 port host mode baud rate, SymLink Master/Slave status and SymLink device address.

5 RS-485: Connects to a Control I/O, ARC-PS, ARC or other SymNet family RS-485 controller, wired in parallel (A to A, B to B and GND to GND) using shielded twisted pair. Port Settings: 38.4 kbaud (default), 8 data bits, 1 stop bit, no parity, no flow control.

6 Relays: 3 SPDT relays rated at 3 Amps, 24 VDC, resistive; 0.3 Amps, 60 VDC, resistive and can be wired normally open or normally closed. These relays can also be used for power failure detection or emergency alarm system integration.

7 Binary Outputs: 6 open collector outputs with a paired common ground pin. O/C outputs go low (0V) when active, and are internally pulled high (5V) when inactive and can drive external LED indicators directly.

8 Analog Control Inputs: 8 analog control inputs able to be used as potentiometer inputs or as switch inputs (+10 VDC reference voltage supplied).

9 Analog Outputs: 8 analog line level audio inputs with individually software-selectable level of -10 dBV or +4 dBu as well as continuous trim in 0.5 dB steps.

10 Analog Inputs: 8 analog mic / line level audio inputs with individually software-selectable phantom power and level of -50 dBu, -40 dBu, -20 dBu, -10 dBV or +4 dBu as well as continuous trim in 0.5 dB steps.

Mechanical Data

Item	Specifications	Remarks
Space Required	1U (WDH: 48.3 cm x 21.6 cm x 4.37 cm / 19 in x 8.5 in x 1.72 in). Depth does not include connector allowance.	Allow at least 1 inch additional clearance for rear panel connections. Additional depth may be required depending upon your specific wiring and connections.
Electrical	100 to 240 VAC, 50-60 Hz, 75W maximum.	No line voltage switching required.
Ventilation	Maximum recommended ambient operating temperature is 30 C / 86 F.	Fan on equipment right pulls hot air out of device. Air intake at equipment left. 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	6 kg (12 lbs.)	

Architect and Engineer Specifications: SymNet 8x8 DSP.

The DSP network audio solution shall provide eight balanced mic/line inputs, eight balanced line outputs, eight analog control inputs, six open collector outputs, three binary relay outputs, and one RS-485 interface, all on plug-in barrier-strip connectors. The device shall include SymLink Bus transmit and receive ports on two RJ-45 connectors. One front panel 9-pin D-sub connector shall be for host computer connection, and one rear panel 9-pin D-sub connector shall be for RS-232 control. Audio inputs and outputs shall be analog, with internal 24-bit A/D & D/A converters operating at a sample rate of 48 kHz. The device shall support onboard throughput of 8x8 digital audio channels. All internal processing shall be digital (DSP). SymLink Bus connections shall allow sharing of digital audio within multi-device systems. A designer software application shall be provided for creating/connecting DSP systemcomponents within each hardware device. Available system 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. Serial communications shall be utilized for software control and configuration. After initial programming, processors may be controlled via dedicated software screens, third-party RS-232 control systems, and/or optional analog or RS-485 remote control devices. A designer software application shall operate on a Windows computer, with network card installed, running Windows® 98/2000/XP. **The network audio solution shall be CE marked, CSA tested to UL 60065.**

The DSP network audio solution shall be SymNet 8x8 DSP.