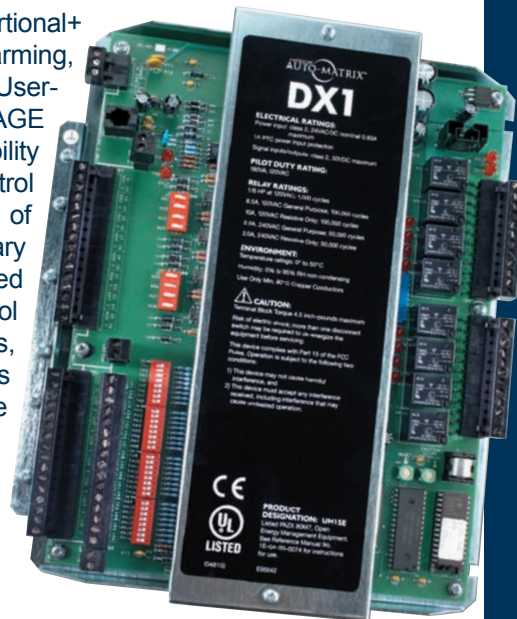


AUTO-MATRIX™

As the ultimate American Auto-Matrix® (AAM) direct digital controller (DDC), the DX1™ offers complete stand-alone control and monitoring without host supervision and has full peer-to-peer capabilities with other DDCs such as the MC1™, GC1™, or GX1™ on the same Public Unitary Protocol™ (PUP) network. Typical HVAC applications include large built-up air-handling units, central-plant control, multiple boilers, chiller optimization, pump control, maximum demand, and load shed algorithms.

CONTROLLING CAPABILITIES

The DX1 provides built-in control functions such as full Proportional+Integral+Derivative (PID) control, run-time totalization with alarming, output supervision, input pulse counting, and scheduling. User-defined custom programming, utilizing a subset of the SAGE Programming Language™ (SPL), provides incredible flexibility and makes the DX1 suitable for all types of custom-control applications. SPL programs can be composed of hundreds of program statements incorporating logic, control flow, and arbitrary arithmetic calculations. Up to eight SPL programs can be executed by the DX1 at the same time. SPL programs can provide control blocks which respond to arbitrary PUP channels and attributes, extending the DX1's base features. SPL programs can access any PUP channel and attribute in any other DDC, allowing the DX1 to supervise other controllers on the same network.



INPUTS

- ▼ **16 universal inputs (UI):** 0 to 10VDC, 0 to 20 mA, thermistor or contact closure; 16-bit resolution; can be programmed as digital, 0 to 5V, 0 to 10V, 0 to 20mA, scaled linear, or thermistor
- ▼ **Input protection:** R-C filter plus dielectric isolation
- ▼ **Thermistor type:** Precon type-3, 10k; can be configured to read Fahrenheit or Celsius over two resolutions: -30.0 to 230.0°F (-34.0 to 110.0°C) and -30.00 to 230.00°F (-34.00 to 110.00°C).

All input ranges can be inverted for reverse-reading sensors, and input polarity is selectable for digital inputs. Each analog input has programmable high- and low-alarm limits. Each digital input can generate off-to-on and/or on-to-off alarms. Digital inputs can be programmed with debouncing, pulse counting, supervisory monitoring, and run-time totalization with alarming. Both types of inputs provide analog alarming with return hysteresis and may be overridden for commissioning purposes.

Each control loop can use the high, low, or average value of any of the 16 UIs as a measured variable. The DX1 can also perform thermostatic control of any of the eight digital outputs using any of the 16 analog inputs as a

measured variable.

Eight broadcast channels are provided for receiving or broadcasting data on the local PUP network, and four of these broadcast channels can be used as pseudoinputs.

OUTPUTS

- ▼ **Eight Analog outputs:** 0 to 10VDC or 0 to 20 mA current sourcing, switch selectable, 8-bit resolution
- ▼ **Output protection:** Tranzorbs, integral overcurrent protection
- ▼ **Eight relay outputs:** 120VAC up to 8.5A; 240VAC up to 2A, Form C with on-board H-A-O switches for manual override
- ▼ **Loop output:** 24VDC up to 350mA for powering external transducers

The analog outputs can be scaled to any desired output units, and output clamps are provided to limit the output range. The outputs can be linked to analog control loops or may be written to by a custom program. The digital outputs can be programmed for on/off, pulsed-output, and minimum cycle time. The digital outputs also support run-time totalization with alarming.

DX1™

AMERICAN AUTO-MATRIX®

DX1™

NETWORKING

Although the DX1 provides stand-alone control, it is also compatible with the entire family of AAM products. Initial system configuration and monitoring may be performed using the *SoloPro for Windows™* or *SPL Development Tool Kit™* software. Network area controllers like the SAGE^{MAX}™ and SF1™ offer full custom programming and upload/download capabilities. Each DX1 can also be connected to a SOLOStat™ room-sensing module. For applications where alarm detection, real-time data trending, or color graphics are of importance, the DX1—via an area controller such as the SF1™ or SAGE^{MAX}™—can be networked to the *Auto-Pilot™* software that enables a PC-compatible computer to provide a user-friendly interface with a network of distributed controllers.

The DX1 interfaces with AAM systems through direct connection to SAGE^{MAX} or SF1 area controllers. Up to 128 DX1 DDCs can be networked to a single SAGE^{MAX} port.

- ▼ **Line signalling:** EIA-485
- ▼ **Wiring:** shielded twisted-pair
- ▼ **Network protection:** dual tranzorbs, optical, and magnetic isolation
- ▼ **Communications speed:** 1,200 to 38.4k baud, programmable
- ▼ **Network configuration:** multidrop up to 5,000ft. (1.5km)
- ▼ **Protocol:** PUP

FEATURES

- ▼ UL-listed 916, Enclosed Energy Management Equipment
- ▼ UL-recognized 873, Temperature Indicating and Regulating Equipment
- ▼ complies with FCC rules Part 15, Class B Computing Device
- ▼ compatible with the American Auto-Matrix family of products
- ▼ outputs updated every 500 ms (full PID calculation for each loop)

- ▼ programmable control algorithms
- ▼ time-of-day scheduling
- ▼ twelve definable holidays
- ▼ nonvolatile clock/calendar
- ▼ 128-KB battery backed-up RAM for programs and attributes
- ▼ peer-to-peer operation
- ▼ multitasking, user-definable programs

SPECIFICATIONS

Mounting

- ▼ flat surface with screws, steel shroud

Terminations

- ▼ pluggable 0.2in. (5.08mm) terminal blocks

Input Supply

- ▼ NEC class II transformer
- ▼ 24VAC, 50/60Hz, 20VA maximum
- ▼ PTC at 1A for load protection

Operating Environment

- ▼ 32 to 122°F (0 to 50°C)
- ▼ 0 to 95% RH noncondensing

Dimensions

- ▼ overall size: 11.2 x 10.1 x 2.2in. (28.4 x 25.6 x 5.6cm)
- ▼ shipping weight: 5.0lb. (2.3kg)

DX1, MC1, GC1, GX1, Public Host Protocol, SAGE Programming Language, SoloPro for Windows, SPL Development Tool Kit, SAGE^{MAX}, SF1, SOLOStat, and Auto-Pilot are trademarks of American Auto-Matrix and are not to be used for publication without the written consent of American Auto-Matrix.

Windows is a registered trademark of Microsoft Corporation.

WORLD HEADQUARTERS

American Auto-Matrix
One Technology Lane
Export, Pennsylvania 15632-8903 USA
Tel (1) 724-733-2000
Fax (1) 724-327-6124
Email aam@aamatrix.com
www.aamatrix.com



AMERICAN
AUTO-MATRIX®
SMART BUILDING SOLUTIONS®

part no. 1E-05-00-0045