

The SAGE<sup>MAX</sup>™ is a communications-intensive area controller that offers powerful programming capabilities. The SAGE<sup>MAX</sup> is ideal for stand-alone control and monitoring applications. It can also be used on a small network, on several small networks, or on a large, high-performance LAN such as Ethernet®.

SAGE<sup>MAX</sup> combines a multitasking, real-time operating system with high-performance microprocessor technology to satisfy today's complex communication, monitoring, and control demands. SAGE<sup>MAX</sup> is the ultimate in high-speed, multiuser, intelligent building control, and information systems.

## OPERATOR INTERFACE

SAGE<sup>MAX</sup> area controllers build on the success of previous American Auto-Matrix® systems by allowing multiple operators to interact with each area controller through easy-to-use menu selections. SAGE<sup>MAX</sup> panels can support sophisticated color graphics host systems like *Auto-Pilot* as well as simple video terminals. The SAGE<sup>MAX</sup> menu can be presented in many different languages and is easily adapted to new ones. The SAGE<sup>MAX</sup> also provides password protection and a list of known users to prevent unauthorized intrusion.

## DATABASE MANAGEMENT

SAGE<sup>MAX</sup> area controllers organize information using an object-oriented database. This technology allows you to use uniform naming conventions to identify diverse equipment such as sensors, control devices, and control processes. This is particularly useful in today's large, information-intensive systems.

SAGE<sup>MAX</sup> area controllers support the listing, creation, and modification of the object database both on and offline. The SAGE<sup>MAX</sup> database can be imported from outside sources and can be exported, in whole or in part, for use with PC-compatible third-party software. These features enable the SAGE<sup>MAX</sup> database to integrate with other PC-based information-management tools. The SAGE<sup>MAX</sup> also provides "wild card" sorting and searching capabilities to create efficient search parameters. The SAGE<sup>MAX</sup> provides load/download capabilities for retrieval of files and other database information from Extended Automation Network Protocol™ (XANP), Public Unitary Protocol™ (PUP), Public Host Protocol™ (PHP), BACnet™-IP, Modbus Protocol, and Ethernet devices.

## CUSTOM CONTROL PANELS

SAGE<sup>MAX</sup> area controllers allow you to create simple or complex custom control programs. These programs appear as objects in the SAGE<sup>MAX</sup> database and can be imported, exported, and edited on or offline just like other database objects. This unique capability allows you to build complex applications from simple ones.



The SAGE Programming Language™ (SPL) is a BASIC-like programming language. It provides real-time control with added capabilities for custom report generation, data logging, and manipulation of objects in the SAGE<sup>MAX</sup> database. SPL contains a rich set of features to address all types of real-time control and monitoring situations. Its mathematical capabilities include floating-point math, trigonometric functions, mixed-mode arithmetic, and data tables.

## ALARM & EVENT MANAGEMENT

SAGE<sup>MAX</sup> area controllers provide flexible options for routing, printing, and logging alarm and event messages. Messages can be conditionally routed to multiple destinations—printers, terminals, other SAGE<sup>MAX</sup> area controllers, and color-graphic hosts—based on the time, day-of-week, and alarm class. Messages can be prioritized and can require operator intervention for acknowledgement. Alarm histories can be searched and sorted in a variety of ways to simplify analysis, speed operator response time, and to help identify trends that may indicate potential failure.

## COMMUNICATION CAPABILITIES

SAGE<sup>MAX</sup> area controllers offer incredibly flexible networking capabilities. On a network, the SAGE<sup>MAX</sup> can operate in any of the following capacities:

- ▼ as a host for direct digital controllers and other PUP devices
- ▼ as a user to a PC-based host like **Auto-Pilot™**
- ▼ as a peer in a multi-SAGE<sup>MAX</sup> system on an Ethernet network
- ▼ as a host for XANP area controllers
- ▼ as a host for PHP devices

SAGE<sup>MAX</sup> area controllers can network to all existing American Auto-Matrix products. The Auto-Matrix product-line is designed around the philosophy of backward-compatibility and nonobsolescence.

## ETHERNET OPERATION

The SAGE<sup>MAX</sup> can use Ethernet for a variety of peer-to-peer operations:

- ▼ Multiple SAGE<sup>MAX</sup> area controllers on the same Ethernet network will automatically inform each other of their presence and supervise each other's activities. For example, users can generate alarms to inform the operator if a peer SAGE<sup>MAX</sup> becomes unavailable.
- ▼ A database object can be designated as "famous": it will be recognized by every SAGE<sup>MAX</sup> on the network.
- ▼ Alarm and event messages can be exchanged between SAGE<sup>MAX</sup> area controllers.
- ▼ Multiple SAGE<sup>MAX</sup> area controllers can maintain a global calendar to synchronize facility-wide scheduling. Any changes to this schedule would automatically be shared among the SAGE<sup>MAX</sup> area controllers.

**Auto-Pilot** workstations and SAGE<sup>MAX</sup> area controllers can exchange information like historical trends, reports, and logs at very high speeds. This allows control programs within multiple SAGE<sup>MAX</sup> panels to interact, facilitating high-speed color graphics and trending via an **Auto-Pilot** workstation. An **Auto-Pilot** workstation can also function as a "virtual terminal," allowing an operator to use the same menu system interface that is available through a direct connection to a SAGE<sup>MAX</sup> area controller.

## DIAL-IN/DIAL-OUT CAPABILITIES

The SAGE<sup>MAX</sup> provides dial-in and dial-out capabilities through a built-in 33.6k baud modem. On dial-in, the SAGE<sup>MAX</sup> can automatically provide either a menu-based

interface for operators or PHP communication for host computers or user PHP devices. Password protection is provided on operator dial-in.

Dial-out from the SAGE<sup>MAX</sup> can be initiated in several ways. Certain alarm classes can be programmed to cause automatic dial-out to multiple destinations. Similarly, SPL programs can trigger a dial-out based on an arbitrarily complex condition. Each dial-out destination can be programmed as an unattended remote printer, a human operator, a PHP host computer, or a paging system.

## DATA TRENDING

SAGE<sup>MAX</sup> area controllers offer sophisticated functions for trending and monitoring, making it easy to observe operation, and analyze performance. Trends can be cyclic or time-anchored either daily, weekly, or monthly. Samples can be averaged over the sample interval or read at a single precise moment within the sample interval. Time-anchored trends support intervals of 1, 15, 30, 60, and 1,440 minutes.

## 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
- ▼ capable of supporting up to 512 direct digital controllers
- ▼ compatible with American Auto-Matrix family of products
- ▼ PHP support
- ▼ PUP support
- ▼ support of standard protocols including BACnet-IP and Modbus
- ▼ multilingual, menu-driven operation
- ▼ object-oriented database, programming, and communications
- ▼ multitasking and multiuser capabilities
- ▼ rich control programming language with floating point, real-time control, and extensive report generation features
- ▼ flexible control programming through object-oriented inter-networking
- ▼ reliable high-speed communications over twisted pair (EIA-485) and/or Ethernet networks
- ▼ compact, rugged enclosure; lightweight aluminum cover, and steel base with conduit knockouts

**HARDWARE FEATURES**

- ▼ 32-bit microprocessor
- ▼ 8-MB RAM
- ▼ 3.5" floppy disk drive (1.44 MB)
- ▼ 528-MB hard drive
- ▼ Built-in, 33.6k baud Hayes-compatible modem (optional)
- ▼ EIA-232D port for leased line modem or other special modem applications (optional)
- ▼ Ethernet interface (optional)
- ▼ 32-key keypad and 4-line by 40-column backlit LCD display (optional), providing simple menu-driven display of operating parameters

**SPECIFICATIONS****Communications Ports**

Two EIA-232D ports

- ▼ control signals: TXD, RXD, RTS, CTS
- ▼ communications speed: 110 to 38k baud, programmable
- ▼ terminations: DB9P connector network protection: tranzorbs, optical, and magnetic isolation

Four EIA-485 ports

- ▼ network configuration: multidrop up to 5,000 ft (1.5 km) per trunk; dual trunk 2-wire/single trunk 4-wire
- ▼ communications speed: 110 bps to 38.4k baud, programmable
- ▼ terminations: pluggable 0.2 in. (5.08 mm), 3-position terminal blocks (2 each port)
- ▼ network protection: dual tranzorbs plus PTC; optical, and magnetic isolation

Modem (Hayes-compatible)

- ▼ communications speed: 33.6k baud
- ▼ termination: integral RJ-11 jack

Parallel port (Centronics interface)

- ▼ termination: DB25S connector

Ethernet port (Optional)

- ▼ communications speed: 10 Mbps
- ▼ termination: BNC connector; DB15S AUI connector

**Mounting**

- ▼ flat surface, 1/2" teardrop holes (1/4-20 recommended)

**Power Supply**

- ▼ 100/120/240VAC 50/60 Hz, 130 VA protected at 2.5 A
- ▼ 0.375 in. (9.52 mm) fixed terminal block

**Operating Environment**

- ▼ temperature: 41 to 113°F (5 to 45°C)
- ▼ altitude: 0 to 10,000 ft. (0 to 3 km)
- ▼ humidity: 20 to 80% RH noncondensing

**Dimensions**

- ▼ shipping weight: 25 lb. (11.3 kg)
- ▼ overall size 13.0 x 14.2 x 6.2 in. (33.0 x 36.1 x 15.7 cm)

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