M500SA Supervised Control Module

SPECIFICATIONS
Normal Operating Voltage: 15 to 32 VDC
Maximum Current Draw: 6.5mA (LED On)
Operating Current: 350 µA max., 1 communication every 5 seconds 47k EOL resistor; 485 µA max. (Communicating, NAC Shorted)
Maximum NAC Line Loss: 4 VDC
External Supply Voltage (between Terminals T3 and T4)
  Maximum (NAC): Regulated 24VDC
  Maximum (Speakers): 70.07 V RMS, 50 W
Max. NAC Current Ratings: For class B wiring system, the current rating is 3A; For class A wiring system, the current rating is 2A
Temperature Range: 32˚F to 120˚F (0˚C to 49˚C)
Humidity: 10% to 93% Non-condensing
Dimensions: 4½” H × 4” W × 1¼” D (Mounts to a 4” square by 2½” deep box.)
Accessories: SMB500 Electrical Box; CB500 Barrier

BEFORE INSTALLING
This information is included as a quick reference installation guide. Refer to the control panel installation manual for detailed system information. If the modules will be installed in an existing operational system, inform the operator and local authority that the system will be temporarily out of service. Disconnect power to the control panel before installing the modules.

NOTICE: This manual should be left with the owner/user of this equipment.

GENERAL DESCRIPTION
M500SA Supervised Control Modules are intended for use in intelligent, two-wire systems, where the individual address of each module is selected using the built-in rotary decade switches. This module is used to switch an external power supply, which can be a DC power supply or an audio amplifier (up to 80 VRMS), to notification appliances. It also supervises the wiring to the connected loads and reports their status to the panel as NORMAL, OPEN, or SHORT CIRCUIT. The M500SA has two pairs of output termination points available for fault-tolerant wiring and a panel-controlled LED indicator. This module can be used to replace an M500CA module that has been configured for supervised wiring operation.

COMPATIBILITY REQUIREMENTS
To ensure proper operation, these modules shall be connected to listed compatible system control panels only.

FIGURE 1. CONTROLS AND INDICATORS:

MOUNTING
The M500SA mounts directly to 4-inch square electrical boxes (see Figure 2A). The box must have a minimum depth of 2½ inches. Surface mounted electrical boxes (SMB500) are available from System Sensor.

WIRING
NOTE: All wiring must conform to applicable local codes, ordinances, and regulations. When using control modules in nonpower limited applications, the System Sensor CB500 Module Barrier must be used to meet UL requirements for the separation of power-limited and nonpower-limited terminals and wiring. The barrier must be inserted into a 4”×4”×2½” junction box, and the control module must be placed into the barrier and attached to the junction box (Figure 2A). The power-limited wiring must be placed into the isolated quadrant of the module barrier (Figure 2B).

1. Install module wiring in accordance with the job drawings and appropriate wiring diagrams.
2. Set the address on the module per job drawings.
3. Secure module to electrical box (supplied by installer), as shown in Figure 2A.
**FIGURE 3. TYPICAL NOTIFICATION APPLIANCE CIRCUIT CONFIGURATION, NFPA STYLE Y:**

- 24 VDC CIRCUIT
- DO NOT LOOP WIRE ON TERMINALS 10 & 11. BREAK WIRE RUN TO PROVIDE SUPERVISION OF CONNECTIONS.

24 VDC POWER SUPPLY ISOLATED, REGULATED, POWER LIMITED PER NFPA 70. LISTED FOR FIRE PROTECTION WITH BATTERY BACKUP.

- MODULE POLARITIES ARE SHOWN IN ALARM

- 47K EOL RESISTOR ELR-47K

- ULC LISTED EOL RELAY SHOWN ENERGIZED 24 VDC COIL EOLR-1A

- TO NEXT CONTROL MODULE OR END-OF-LINE RELAY. ONE RELAY REQUIRED FOR EACH CIRCUIT. SOME CONTROL PANELS HAVE RELAY BUILT IN AND DO NOT REQUIRE EXTERNAL WIRING. REFER TO PANEL MANUAL.

*NOTE: ANY FAULT IN THE POWER SUPPLY IS LIMITED TO THAT ZONE AND DOES NOT RESULT IN A FAULT IN A SEPARATE ZONE.*

**FIGURE 4. TYPICAL FAULT TOLERANT NOTIFICATION APPLIANCE CIRCUIT CONFIGURATION, NFPA STYLE Z:**

- 24 VDC CIRCUIT
- DO NOT LOOP WIRE ON TERMINALS 10 & 11. BREAK WIRE RUN TO PROVIDE SUPERVISION OF CONNECTIONS.

24 VDC POWER SUPPLY ISOLATED, REGULATED, POWER LIMITED PER NFPA 70. LISTED FOR FIRE PROTECTION WITH BATTERY BACKUP.

- EOL RESISTOR IS INTERNAL AT TERMINALS 8 & 9

- ULC LISTED EOL RELAY SHOWN ENERGIZED 24 VDC COIL EOLR-1A

- TO NEXT CONTROL MODULE OR END-OF-LINE RELAY. ONE RELAY REQUIRED FOR EACH CIRCUIT. SOME CONTROL PANELS HAVE RELAY BUILT IN AND DO NOT REQUIRE EXTERNAL WIRING. REFER TO PANEL MANUAL.

*NOTE: ANY FAULT IN THE POWER SUPPLY IS LIMITED TO THAT ZONE AND DOES NOT RESULT IN A FAULT IN A SEPARATE ZONE.*
**FIGURE 5. TYPICAL WIRING FOR SPEAKER SUPERVISION AND SWITCHING, NFPA STYLE Y:**

Audio circuit wiring must be twisted pair as a minimum. See panel installation manual for detailed information.

Audio circuit wiring must be supervised per NFPA.

Audio amplifier, 70.7 Vrms max. Amplifier must provide wiring supervision per NFPA.

47K EOL resistor ELR-47K

Module polarities are shown in alarm.

Audio circuit wiring must be supervised per ULC.

Connect modules to listed compatible control panels only

Signal line circuit (SLC)

32 VDC max. twisted pair is recommended

Audio circuit wiring must be supervised per NFPA.

Connect modules to listed compatible control panels only

Signal line circuit (SLC)

32 VDC max. twisted pair is recommended

Audio circuit wiring must be supervised per ULC.

Connect modules to listed compatible control panels only

All wiring shown is supervised and power limited

Speakers must be listed for fire protection. Refer to the relay contact rating table for maximum load.

*Note: any fault in the power supply is limited to that zone and does not result in a fault in a separate zone.

**FIGURE 6. TYPICAL FAULT TOLERANT WIRING FOR SPEAKER SUPERVISION AND SWITCHING, NFPA STYLE Z:**

Audio circuit wiring must be twisted pair as a minimum. See panel installation manual for detailed information.

Audio circuit wiring must be supervised per NFPA.

Audio amplifier, 70.7 Vrms max. Amplifier must provide wiring supervision per NFPA.

47K EOL resistor is internal at terminals 8 & 9

Module polarities are shown in alarm.

Audio circuit wiring must be supervised per ULC.

Connect modules to listed compatible control panels only

Signal line circuit (SLC)

32 VDC max. twisted pair is recommended

Audio circuit wiring must be supervised per NFPA.

Connect modules to listed compatible control panels only

Signal line circuit (SLC)

32 VDC max. twisted pair is recommended

Audio circuit wiring must be supervised per ULC.

Connect modules to listed compatible control panels only

All wiring shown is supervised and power limited

Speakers must be listed for fire protection. Refer to the relay contact rating table for maximum load.

Bypass capacitors: 100µA2143-20 nonpolarized <10µA leakage

*Note: any fault in the power supply is limited to that zone and does not result in a fault in a separate zone.
Three-Year Limited Warranty

System Sensor warrants its enclosed module to be free from defects in materials and workmanship under normal use and service for a period of three years from date of manufacture. System Sensor makes no other express warranty for this module. No agent, representative, dealer, or employee of the Company has the authority to increase or alter the obligations or limitations of this Warranty. The Company’s obligation of this Warranty shall be limited to the repair or replacement of any part of the module which is found to be defective in materials or workmanship under normal use and service during the three year period commencing with the date of manufacture. After phoning System Sensor’s toll free number 800-SENSOR2 (736-7672) for a Return Authorization number, send defective units postage prepaid to: System Sensor, Repair Department, RA #__________, 6581 Kitimat Road, Unit 6, Mississauga, Ontario L5N-3T5. Please include a note describing the malfunction and suspected cause of failure. The Company shall not be obligated to repair or replace units which are found to be defective because of damage, unreasonable use, modifications, or alterations occurring after the date of manufacture. In no case shall the Company be liable for any consequential or incidental damages for breach of this or any other Warranty, expressed or implied whatsoever, even if the loss or damage is caused by the Company’s negligence or fault. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

WARNING

All relay switch contacts are shipped in the standby state (open) state, but may have transferred to the activated (closed) state during shipping. To ensure that the switch contacts are in their correct state, modules must be made to communicate with the panel before connecting circuits controlled by the module.