

Loop Test/Maintenance Module

Model: 2W-MOD2

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www.systemsensor.com

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 shall be left with the owner/user of this equipment.

General Description

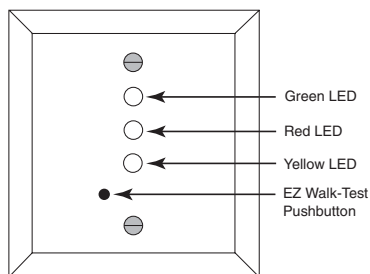
The 2W-MOD2 allows a control panel to receive a “need for maintenance” signal from two-wire i3 series smoke detectors, model numbers 2W-B, 2WT-B, 2WTA-B, and 2WTR-B. The module uses a form C zone relay to initiate “out of sensitivity” and “freeze trouble”, a form A zone alarm relay and a second form A zone relay to indicate loop fault (see Figure 1). An EZ Walk Test puts all detectors on the loop into a Walk Test mode for easy verification of detector loop wiring.

Figure 1:

Condition	Maintenance relay (form C)	Alarm relay (form A)	Loop trouble relay (form A)
Normal	OFF	Open	Close
Loop trouble	OFF	Open	Open
Maintenance/Freeze trouble	ON	Open	Close
Loop trouble and Maintenance/Freeze trouble	ON	Open	Open
Alarm	OFF	Close	N/A
Alarm and loop trouble	OFF	Close	N/A
Alarm and Maintenance/Freeze trouble	OFF	Close	N/A
Terminal Location	Terminal 7 – N.O. Terminal 8 – Common Terminal 9 – N.C.	Relay connected between terminals 10 and 11	Relay connected between terminals 10 and 12

S0236-00

Figure 2. Module front view:



S0218-00

Three LED’s on the module provide a local visual indication of the module status(es).

The maintenance module allows two-wire smoke detectors to be used on any electrically compatible four-wire control panel.

NOTE: If two-wire i3 detectors are used in conjunction with a style D initiating circuit, the 2W-MOD2 must be used to provide that capability. Ground fault on a module’s two-wire loop can be indicated at a control panel if the control panel is capable of ground fault detection on the power supply to the module and meets NFPA 72 ground fault indication requirements for initiating device circuits. The installer must verify that capability.

Figure 3. Module LED modes:

LED COLOR	STATUS	CONDITION
GREEN LED	ON	Power on. Detectors on loop do not have communication capability.
	Blink 1 sec. ON and 1 sec. OFF	Power on. One or more detectors on loop have communication capability.
	OFF	Power not applied or module not operating properly.
RED LED	ON	Detector on loop in alarm.
	Blink 1 sec. ON and 1 sec. OFF	One or more detectors out of sensitivity or in Freeze Trouble.
	OFF	Detectors on loop not in alarm, maintenance or Freeze Trouble.
YELLOW LED	ON	Loop wiring fault.
	Blink 0.5 sec. ON and 0.5 sec. OFF	EZ Walk Test mode.
	OFF	Loop wiring normal.

The module has loop trouble restoration detection. If the loop trouble (open loop) doesn’t exist any more, the module will restore to standby condition with a maximum delay of 1 minute. There is no delay in loop trouble detection.

If an alarm occurs while the module is indicating maintenance, the alarm will supercede maintenance.



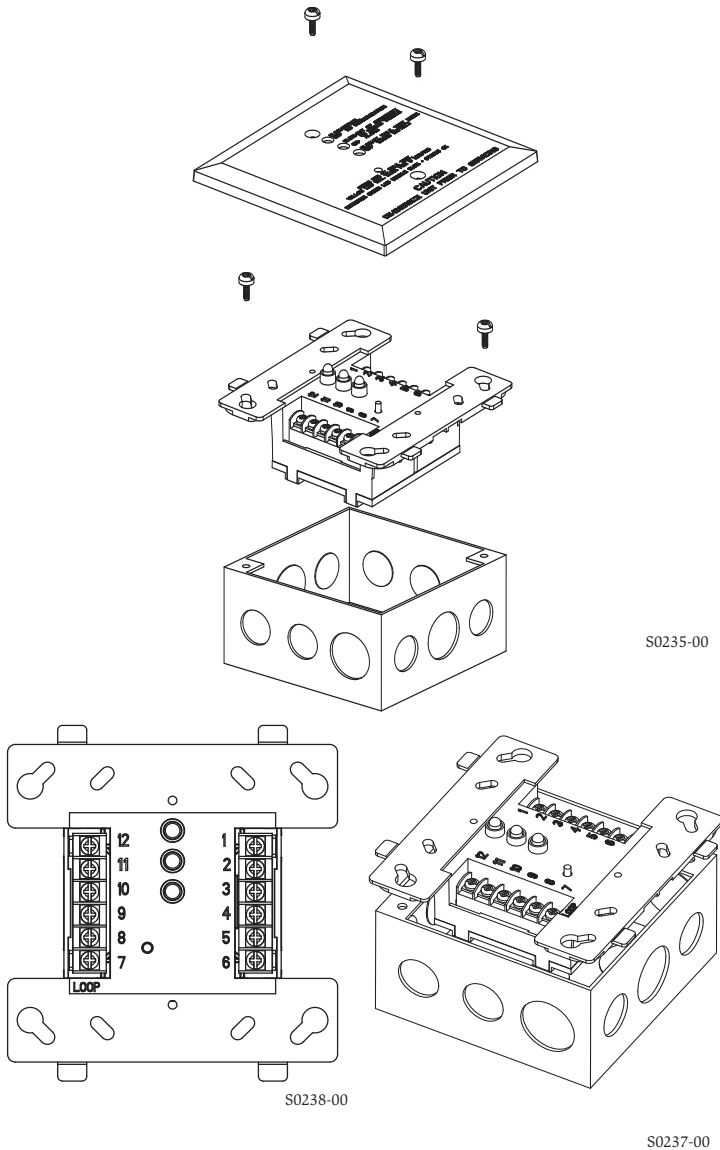
If the green LED remains ON (no blinking) three minutes after applying power, it means that the module has determined that no detector on its loop has communication capability. In this condition, the detectors are still capable of initiating alarm and loop trouble at the module. However, maintenance and freeze trouble, will not be indicated at the module, and EZ walk test will not be available. If i³ detectors are installed on the loop, verify wiring and system operation.

For NFPA loop Style D wiring the EOL resistor is provided internal to the module. An external EOL resistor must not be connected at the last detector on the loop (see Figures 5 - 7).

Compatibility Requirements

The 2W-MOD2 is marked with a compatibility/zone identifier as the last digit of a 5 digit code on the back of the unit. To ensure proper operation, this module shall be connected to compatible two-wire smoke detectors or the alarm contacts of four-wire i3 series detectors only. (Consult System Sensor's 2-wire compatibility guide).

Figure 4. Mounting module



Mounting

Install in a dry indoor location. The 2W-MOD2 Maintenance Module mounts directly to 4 inch square electrical boxes (supplied by installer). The box must have a minimum depth of 2 1/8 inches. Secure module to box as shown in Figure 4.

Wiring Diagram

Install module wiring in accordance with appropriate wiring diagrams (Figures 5 - 7). Reset is performed through power inputs 1 and 2.

Figure 5. The Module Wiring: maintenance signal is sent to a separate zone.

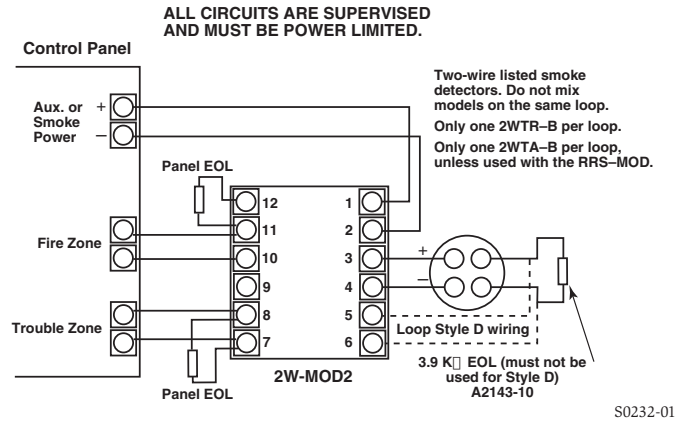


Figure 6. The Module Wiring: maintenance signal is indicated at the panel as a fire trouble.

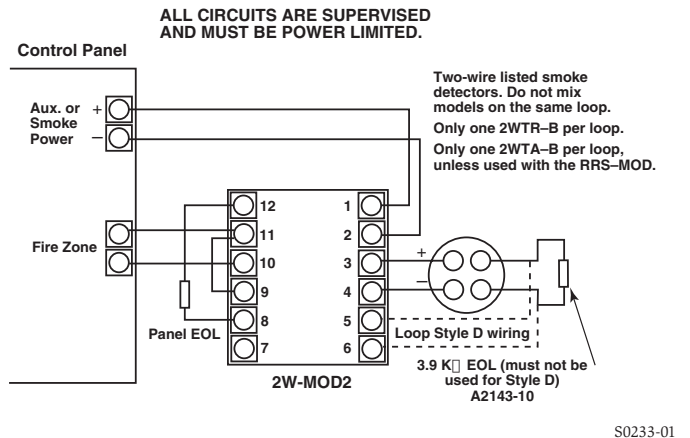
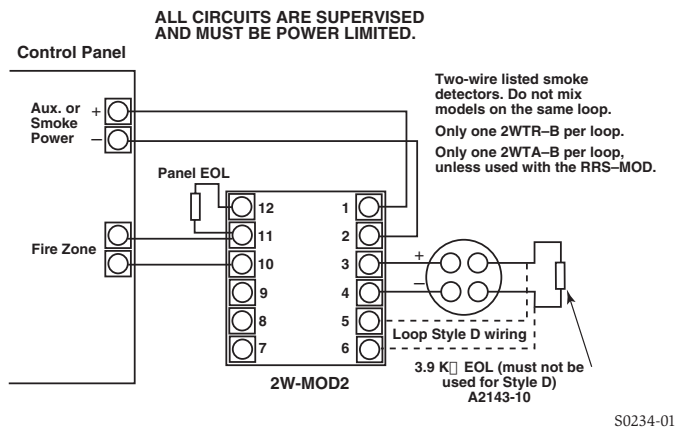


Figure 7. The Module Wiring: two-wire detectors to four-wire panel conversion.



Wiring Installation Guidelines

All wiring must be installed in compliance with the National Electrical Code, applicable state and local codes, and any special requirements of the local authority having jurisdiction (AHJ).

Proper wire gauges should be used. The conductors used to connect the module to the alarm control panel, smoke detectors and accessory devices should be color-coded to reduce the likelihood of wiring errors. Improper connections can prevent a system from responding properly in the event of a fire.

The screw terminals in the mounting base will accept 14-24 gauge wire. For best system performance, all wiring should be installed in separate grounded conduit; do not mix fire alarm system wiring in the same conduit as any other electrical wiring. Twisted pair may be used to provide additional protection against extraneous electrical interference.

Wire connections are made by stripping about 1/4 inch of insulation from the end of the feed wire, inserting it into the proper terminal, and tightening the screw to secure the wire in place.

Installation



Remove power from alarm control unit or initiating device circuits before installing modules.

After all modules have been installed, notify the proper authorities that the system is in operation.

Testing

NOTE: Before testing, notify the proper authorities that maintenance is being performed and the system will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent any unwanted alarms.

Modules must be tested after installation and following periodic maintenance. Testing should be performed at least once a year.

Timing at Power-Up or Reset

Two minutes after power-up, the module will check for communication, high maintenance, low maintenance, and freeze trouble with each communication spaced 1 minute apart. If a valid response to the communication check is received, the module will check for freeze trouble every 4 hours, low and high maintenance every 24 hours, and will recheck communication every 24 hours. Whenever the module fails to receive a valid response to the communication checks, it will verify the result with another communication check one minute later. If it still fails to receive a valid response, the module will cease to communicate until a valid reset from the panel. In this mode, the module is still

able to detect alarm and wiring fault from the 2-wire loop.

NOTE: If an alarm occurs on the 2W-MOD2 zone before the 2W-MOD2 has completed its power-up sequence, the module's green LED will remain on. To reset this condition, the system must be reset and the module must be allowed to complete its power-up sequence.



When using the RRS-MOD with model 2WTA-B, do not mix the 2WTA-B with other model smoke detectors and dry contact closure devices, including mechanical heat detectors, manual pull stations and waterflow switches. Such mixing can cause a direct short on the auxiliary power terminals, damaging the control panel's internal circuitry and/or damage devices connected to the initiating device circuit.

EZ Walk Test

The 2W-MOD2 has a push button for EZ Walk Test mode (see Figure 2.). The EZ Walk Test feature is available 6 minutes after power-up or panel reset. If the push button is pressed momentarily the module will activate EZ Walk Test for five minutes. All detectors on the loop should enter EZ Walk Test mode. See i3 detector manual for detector response in EZ Walk Test mode.

NOTE: EZ Walk Test cannot be initiated if the Green LED is not blinking.

If the 2W-MOD2 is in normal condition (Green LED blinking) and pressing the push button does not initiate EZ Walk Test, wait one minute and try again.

At the end of the five minute period, the module will terminate EZ Walk Test and the yellow LED will stop blinking. The EZ Walk Test period can be extended by pressing the push button a multiple number of times. For example, pressing the push button N times will result in a Walk Test duration of 5*N minutes.

If an alarm occurs during EZ Walk Test, the alarm condition will supercede EZ Walk Test (alarm is the highest priority).



The EZ Walk Test shall not be used in lieu of functional testing (alarm, trouble and other functional tests) of the system.

If a module or detector fails the test, its wiring should be checked. If the module still fails, it should be replaced.

Notify the proper authorities when the system is back in service.

Specifications:**Electrical**

Supply Voltage - Min. 8.5 Volts (Power limited)
Max. 30 Volts (Power limited)
Max. Ripple Voltage: 30% of applied voltage
Max. Standby Current: 30mA (12 detectors on loop)
Max. Alarm Current: 90mA
Alarm Contact Ratings: 0.5 Amp @ 36 V DC, Resistive

Mechanical

Height: 4.5 inches
Width: 4.0 inches
Depth: 1.25 inches
Weight: 0.5 pound
(Includes packaging materials)

Maintenance Contact Ratings: 2 Amp @ 30 V DC, Resistive
Min. Reset Voltage: 6 Volts
Min. Reset Time: 0.3 sec.
Operating Temperature Range: 14°F to 122°F (-10°C to 50 °C)
Operating Humidity Range: 0 to 95% RH non-condensing
Storage Temperature Range: -4°F to 158°F (-20°C to 70 °C)
Initial Communication Cycle: 2-6 minutes after power-up or panel reset
EZ Walk Test Available: 6 minutes after power-up or panel reset

2-wire compatibility

Min. loop voltage: 10 Volts
Max. loop voltage: 11.5 Volts
Max. loop resistance: 50 ohm
Max. loop ripple: 1 Vpp
Max. Loading Capacitance: 0.01 mF
Max. Alarm current: 40 mA
Max. Reset Voltage: 0.3 V
Alarm Delay: No
Min. Alarm reset time: 0.3 sec.
Max. normal load current: 1.25 mA
Zone Type: Standard
EOL Device: 3.9 KΩ (0.25W, 5%)
Loop style: B, D
Compatibility/Zone identifier: A
Max. detectors per zone: Models 2W-B and 2WT-B: 12
Model 2WTR-B: 1
Model 2WTA-B: 1

NOTE: When used with the RRS-MOD reversal relay/synchronization module and the 2W-MOD2, a maximum of 12 2WTA-B detectors are allowed per zone.

Three-Year Limited Warranty

System Sensor warrants its enclosed product 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 the enclosed product. 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 replacement of any part of the product 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, Returns

Department, RA # _____, 3825 Ohio Avenue, St. Charles, IL 60174. Please include a note describing the malfunction and suspected cause of failure. The Company shall not be obligated to 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.

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.