

INSTALLATION & OPERATING INSTRUCTIONS

Thoroughly read and understand these Instructions, they provide detailed information on **various** applications. Copies are available from Offside Technologies Corp. These instructions are provided to ensure compliance with the Installation Requirements of NFPA-72 (National Fire Alarm Code), NFPA 70 (for US) and CSA C22.1, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations, Section 32- (for Canada), CAN/ULC-S524 (Standard for Installation of Fire Alarm Systems). The Offside Technologies SM-001 is intended for permanent installation and can be used in lieu of any standard Fire Alarm System End-of-Line (EOL) device resistor plate. Or as an add on to: ISOLATOR DCL SLC / IN-SUITE SOUNDER / FIX TEMPERATURE HEAT (FT) / MONITORING MODULE / CONTROL UNIT (CU) / TRANSPONDER (T) / ANNUNCIATORS / SUPERVISED BY-PASS / for ease of their respective testing requirements, that would otherwise require you to remove said device or wires from their respective backbox and/or terminal blocks for testing the wiring connected to said device. A copy of these instructions should be left with the Building Fire Alarm System Verification Report.

The Offside Technologies SM-001 is compatible with most UL/ULC Listed Fire Alarm Control Panels, that do not exceed the ratings listed below.

In actual field testing it usually takes around 5 seconds to complete each test, depending on the brand of Listed Fire Alarm System being used.

Terminals: R- R+ G - + are to be connected to Power-Limited circuits only.

IMPORTANT CAUTIONS**Canadian & USA Applications:**

An electrical backbox is required to be properly bonded to ground. Attach a ground wire to the designated ground terminal "G" and to the backbox for proper operation, **where a ground condition is required**. Follow published manufacture instructions for installed equipment for any extra requirements they have, and the testing and maintenance instructions stipulated in CAN/ULC-S536 or NFPA 72 for USA, to ensure the proper utilization of the Offside Technologies SM-001. The Offside Technologies SM-001 is set for testing Positive Ground from the factory. If your codes require a **Negative Ground** as well as a Positive Ground for the same device e.g. CAN/ULC-S536-13, Section 6.2.2 "Control Unit or Transponder Tests" or if you want to achieve a Negative Ground only, you have three options;

(options 1) Use a test wire, not supplied: From the front side of the mounting plate via the voltage/resistor measuring points while at "N" normal position, touch one end of the wire to the voltage point – and the other end to either mounting screw. Ensure non-painted mounting plate screws connect to the metal electrical box. This will ensure a ground reading can be achieved.

(options 2) Reverse connecting wires from + to – for both voltage in and resistor out. This will put the – power through the switch first. Allowing you to use the switch for testing – Ground. The switch will provide same ratings in either + or – configuration.

(options 3) Install two Offside Technologies SM-001 and connect one as normal and the other as option 2, reversing all wires.

RESISTOR , VOLTAGE & LOOP RESISTANCE MEASUREMENT

For testing the **RESISTOR** connected to the Offside Technologies SM-001 turn the switch to "O" open condition and insert your multi-meter set on (ohms) into the voltage/resistor measuring points on the front of the plate. You can now verify the resistor installed.

For testing the **VOLTAGE** connected to the Offside Technologies SM-001 turn the switch to "N" and insert your multi-meter set on (Volts DC) into the voltage/resistor measuring points on the front of the plate. You can now verify the voltage.

For testing the **Loop Resistance**; connect **one** SM-001 at the end of the wire loop, turn the switch to "S" and then use your multi-meter set on (ohms) at the **beginning** of the wire loop. Caution: You must remove power from the wire loop before you can verify the Loop Resistance. If you install a second SM-001 at the beginning, you can turn it to "O" and then insert probes into the measuring points and get your resistance reading. **Figure D**. Otherwise you need to remove wires from the control unit/transponder.

The device needs to be mounted onto a common single gang electrical box or adapter plate that is in accordance with the applicable Installation Standard, National Electrical Code, Electrical Code (both USA and Canada) and in accordance with the local authority having jurisdiction. Suitable for indoor dry locations only.

COMMON END-OF-LINE APPLICATION (EOL)

WARNING: Observe correct polarity when connecting wiring.

NOTE 1: Key-switch is in the "N" (normal circuit operation) position with the test key removed.

INSTALLATION: Reference Figure "A".

NOTE 2: Use only **resistor** provided or specified by the fire control panel manufacturer. It is recommended to mount the Offside Technologies SM-001 less than 1800 mm above the floor (measured to the centre of the testing means) in order to facilitate easy access to the key-switch.

1. Connect the EOL resistor across "Resistor" (R – and R +) terminals of the SM-001 (Can be in either polarity in this application).
2. Connect field wiring from the control panel (or last device in the circuit) to terminals marked “–” and “+” (observe polarity).
3. Connect a ground wire (not supplied) to the "G" terminal.
4. Install SM-001 with compatible hardware or hardware provided. Panel should indicate "normal" state when finished. If "off normal", or "trouble" is indicated at the panel, check field wiring connections for zone in trouble.

ELECTRICAL SPECIFICATIONS

Voltage: 0 - 40 Vdc Operation

Rated Current: 0.1mA – 350mA

Temperature: 0°C to 49°C (32°F to 120°F)

Maximum Humidity: 93%. Noncondensing

Wire Gauge: 14 – 22 AWG

Max. Shorting Ckt. Current: 350mA

RECOMMENDED TESTING PROCEDURE FOR EOL

NOTE 3 WARNING: DO NOT sound the audible/strobe devices from any location while testing the audible/strobe EOL zones, while the EVS is in the "S" position. This will damage the key-switch. As the panel does not remove power from the audible/strobe zones when in alarm state.

1. Insert test key that came with the SM-001.
2. Turn the key-switch from "N" position to "O". This will display an "open circuit condition" at the control panel for that zone.
3. Turn the key-switch to position "G". This will cause the control panel to display "ground condition", independent of the "open circuit condition".
4. Turn the key-switch to position "S". This will impose a "short condition" on the zone. It will activate the "alarm condition" for initiating circuits and a "short fault condition" if connected to an output (NAC) circuit, independent of "O & G".
5. Return test key to "N" and remove.
6. You can now measure voltage across the resistor by inserting a multi-meter, test probes into the – & + probe holes provided on the face plate.
7. For negative ground applications, for same device. See **(options 2)** above or insert test probe or ground wire into the “–” hole provided and ground the other end of the probe/ground wire against one of the unpainted exposed screws used to secure the device to the electrical box. The control panels will indicate "Ground Condition" or "Trouble Condition" depending on brand of control panel.
8. While in position "O" you can now measure your **resistor** value (ohms) across the test probe points. It is recommended to record all your readings.



Item 101



Item 104

Abbreviation meanings

"N" for "NORMAL OPERATION"

"O" for "OPEN CIRCUIT CONDITION"

"G" for "GROUND CONDITION"

"S" for "SHORT / ALARM CONDITION"

COMMON IN-SUITE SOUNDER ISOLATOR APPLICATION

WARNING: Must use correct polarity when connecting wiring.

NOTE 4: Normal circuit operation is with key-switch in the "N" position and the test key removed.

INSTALLATION Reference Figure "C".

1. The Offside Technologies SM-001 should be mounted either adjacent to or below the in-suitesignal isolator it will be testing. Two (2) SM-001 will be required, for each suite, the signalling isolator is monitoring. It is best to mount the SM-001 less than 1800mm above the floor for new installations or beside existing Isolator in retrofitting applications for ease of access to the key-switch.
2. Connect one of the in-suitesignal outputs from the isolator to the ("+" and "-") terminals of the Offside Technologies SM-001. (**Must use correct polarity**)
3. Connect the (R+ and R-) to the 2nd SM-001 ("+" and "-") then
4. Connect the in-suitesounder to the (Resistor R+ and R-) of the 2nd SM-001 terminals of the device. (**Must use correct polarity**)
5. Connect an output jumper wire for the 2nd SM-001 "+" to the R+. **See figure C**
6. With the jumper wire installed, the 2nd SM-001 "O" position is not available on the device.
7. Connect the return wires from the suite sounder to the applicable "return" terminals on the isolator. (**Must use correct polarity**)
8. Connect the ground wire to 1st SM-001 (for Canadian Applications only).
9. Install SM-001 with compatible hardware or hardware provided. Panel should indicate "normal" state when finished. If "off normal", or "trouble" is indicated at the panel, check field wiring connections for zone in trouble.

TESTING PROCEDURE FOR IN-SUITE ISOLATOR DEVICE:

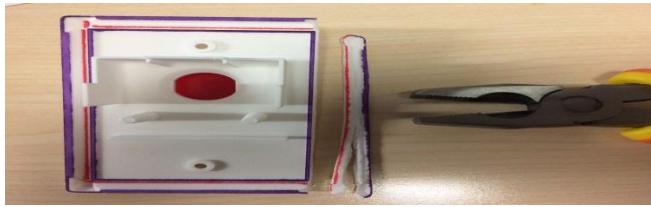
WARNING

WHEN USING Offside Technologies Model SM-001 WITH: IN-SUITE SOUNDER, BELL CIRCUIT, SPEAKER, or STROBE CIRCUITS. YOU ARE ONLY SHORTING THE ISOLATED SIDE. (See Note 3: above)

1. Insert the test key that came with the SM-001 into the 1st SM-001.
2. Turn the key to "O" position; this will cause an "open circuit condition" at the control panel. Now activate a drill test and confirm the in-suit sounder still operates.
3. Turn the key to "G" position. This will cause a Ground Fault condition.
4. Return the key to "N" position and remove the key.
5. Now insert the test key into the 2nd SM-001 that has the **jumper wire**.
6. Turn the key to "S" position. This will cause a "short" on the circuit which will be indicated as "short fault condition" or "NAC Fault" at the control panel.
7. Now INITIATE an Alarm Test with the switch on "S" position, on the 2nd SM-001. The sounders associated with the suite to which the activated Offside Technologies SM-001 is connected should no longer function. All other in-suit sounders in the other suites on the floor area should continue to operate.
8. Return test key to the "N" position. Sounders associated with the suite to which the device is connected should now commence sounding.
9. Turn "off" the "Alarm Test" The control panel should return & read "normal operation".
10. Retest the in-suit sounder with the key removed, by activating manual "Alarm Test". All in-suit sounders should operate as normal.

Breakaway tabs

All four sides will breakaway if standard backboxes have been installed side by side. Simply use standard linemen's pliers, place pliers up to the groove and bend back and forth along the whole line until it breaks off.



COMMON FIX TEMPERATURE NON-RESTORABLE HEAT APPLICATION (FT):

INSTALLATION: Reference Figure "E".

NOTE 10: It is recommended to mount the Offside Technologies SM-001 less than 1800 mm above the floor (measured to the centre of the testing means) in order to facilitate easy access to the key-switch.

1. Connect one positive (JUMPER WIRE) from the detector on the power IN, side of the detector. Connect the other end to the + on the SM-001.
2. Connect one negative (JUMPER WIRE) from the detector on the power IN, side of the detector. Connect the other end to the - on the SM-001.
3. The "G" "R+" and "R-" terminals **are not used** for this test, but a ground wire still needs to be used from the detector backbox to the SM-001 backbox.
4. In this configuration you have created a permanent jumper wire within proximity of the FT Heat. Visual inspection of FT is still required.

Note 11: This configuration is not "T Tapping" as there are no additional devices connected to the R+ and R-. The SM-001 in this configuration acts as a jumper wire only.

Note 12: You shall label the detector and the SM-001 so technicians know what the SM-001 is testing. If no label then the SM-001 must be traced out to verify what it is testing and then relabel both devices. See example of label. Figure "E".

If the FT is the last device before the end-of-line, then you can also use the same SM-001 to test the FT heat as well as the end-of-line. Label the SM-001 for FT and End-of-line testing

TESTING PROCEDURE FOR FIX TEMPERATURE NON-RESTORABLE HEAT (FT):

1. Insert the test key that came with the SM-001 into the 1st SM-001.
2. Turn the test key straight to the "S" position to introduce a Short/Alarm condition.
3. Return test key to "N" and remove test key. Test complete.

FIGURES

Figure A

CONVENTIONAL

END-OF-LINE RESISTOR CONNECTION DIAGRAM

Note 6: Install Offside Technologies SM-001 in accordance with the instructions. Mount the SM-001 less than 1800mm above grade (to the centre of the plate). For retro fit installations confirm with AHJ that you can mount the SM-001 at higher locations. See ADDENDUM 001 for pole use.

CAUTION: Maximum switching current is 350mA.

Please ensure the load calculation for the number of active (or supporting) field devices connected to each Offside Technologies SM-001 does not exceed 350mA. For installations where current (including short circuit current) exceeds 350mA, you may not be able to utilize the Offside Technologies SM-001 testing solution. Use only **resistor** provided or specified by the Fire Control Panel Manufacturer

DATA COMMUNICATION LINK OR SIGNALLING LINE CIRCUIT ISOLATOR APPLICATION (DCL) (SLC)

WARNING: Must use correct polarity when connecting wiring.

NOTE 5: Key-switch is in the "N" (normal circuit operation) position with the test key removed.

INSTALLATION Reference Figure "B".

1. **Two** Offside Technologies SM-001 should be mounted either adjacent to or below the (DCL) (SLC) isolator it will be testing. For systems utilizing smoke detectors with isolator bases, locate SM-001 on an adjacent wall. It is best to mount the SM-001 less than 1800mm above the floor for new installations or beside existing isolator in retrofitting applications for ease of access to the key-switch.
2. The **first one** is connected on the source side (IN) of the isolator. **Label it as such.** Connect the input from the control unit/ transponder to the "+" and "-" terminals of Offside Technologies SM-001 (observe polarity). Then connect wires to the (RESISTOR R+ and R-) terminals of the SM-001 unit (observe polarity) and then connect the wires back to the isolator + and - inputs.
3. Connect the **second** SM-001 to the isolated side (out) from the isolator (normally connected to the floor area devices) to the "+" and "-" terminals of Offside Technologies SM-001 (observe polarity). **Label as such.**
4. Connect the wiring for the field devices to the floor area to the (RESISTOR R+ and R-) terminals of the SM-001 (observe polarity).
5. Connect an **output jumper wire** from the "+" to the R+. **See figure B**
6. With the jumper wire installed the "O" position is not available on the device.
7. Connect the ground to both SM-001 (may be used for both USA and Canada).
8. Install SM-001 with compatible hardware or hardware provided. The loop controller should indicate a "normal condition". If "off normal", or "trouble condition" is indicated for the circuit, check field wiring connection against instruction Figure B.

TESTING PROCEDURE FOR DCL (SLC) ISOLATOR:

WARNING: Observe correct polarity when connecting wiring.

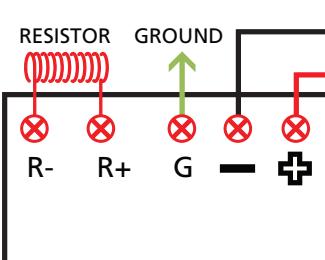
1. Insert the test key that came with the SM-001 switch on source side.
2. Turn the key to position "O". (on the source side) This will cause the control panel's loop controller to display an "Open Loop Fault" Once confirmed return key to "N" remove key.
3. **If Field devices are connected** insert test key on the second SM-001 isolated side and turn the key-switch to position "S". This will cause the wiring to be shorted on the isolated side. Verify both isolator LED'S illuminate if LED's are provided.
4. With the key maintained in "S" position, initiate the required testing for devices connected to the same loop controller on both the isolated and source sides confirm activation of a device before the source side of the floor area served by the isolator and confirm no activation of a device on the isolated side after the isolator.
5. Turn the key to the "N" position and remove the test key. All indications for the designated loop controller at the control panel should return to "normal" (A System Reset may be required)
6. If you need Ground Fault testing on the source side then turn the key-switch of the SM-001 on the source side to "G" confirm Ground, then return key to "N".
7. If you need Ground Fault testing on the isolated side while testing the devices, turn the key to "G" on SM-001 on the isolated side confirm Ground Fault at the control unit or transponder. Then complete required testing to confirm connected fire alarm devices on the isolated side still function with the ground fault on.
8. To achieve a Negative ground fault follow **option 3 and 2 above in "IMPORTANT CAUTIONS"** and install another SM-001, for each. Repeat 6. & 7. Respectively. Then a "negative ground fault" condition should be indicated at the common control.
9. Turn the key to the "N" position and remove the test key. All indications for the designated loop controller at the control panel should read "normal".

AGENCY LISTINGS



MANUFACTURERS INFO

Manufactured in Canada by: Offside Technologies Corp.	
Manufacturing Location	Distributer
717 Wilson Road South Unit 5 Oshawa, Ontario, L1H 6E9 Email: Mark@offsidetechnologies.com Tel: 905-409-2751 Web: www.offsidetechnologies.com	717 Wilson Road South Unit 5 Oshawa, Ontario , L1H 6E9 Email: stephen@offsidetechnologies.com Tel: 905-903-5688 Web: www.offsidetechnologies.com



NAC or Initiating Circuit from previous conventional field device.

Drawing #001 Revision 003

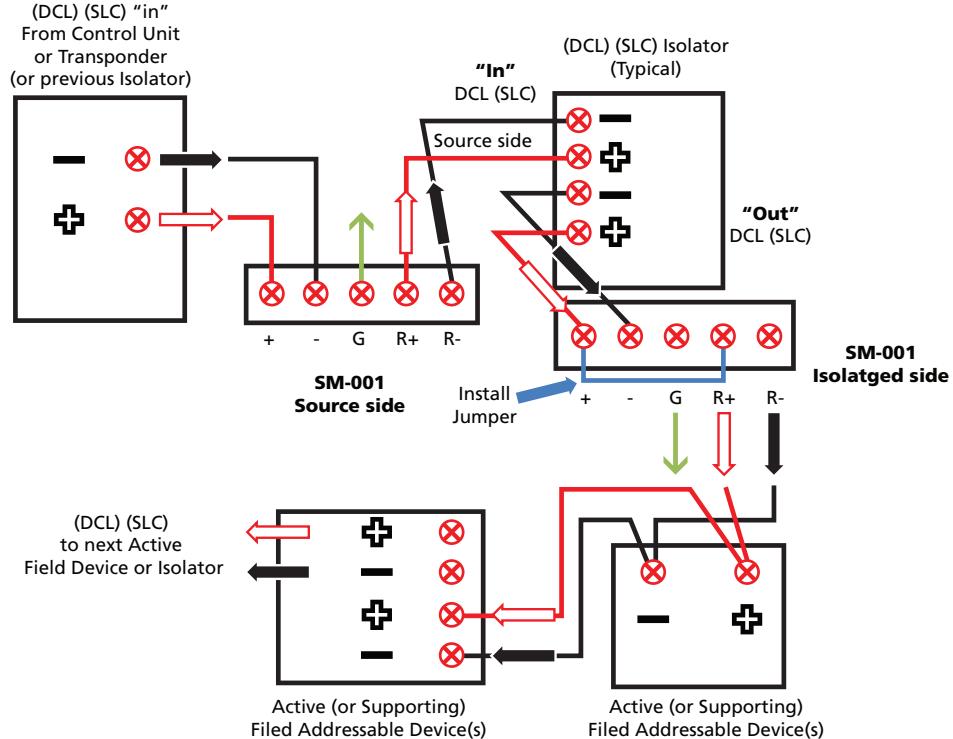
Figure B

TYPICAL (DCL) (SLC) ISOLATOR CONNECTION DIAGRAM

Note 7: Install Offside Technologies SM-001 in close proximity to the (DCL) (SLC) isolator it serves and on a wall (where practical), less than 1800mm above grade (measured to the centre of the device). Follow the instructions.

Note 8: Two Offside Technologies SM-001 are recommended for every (DCL) (SLC) isolated section in the circuit.

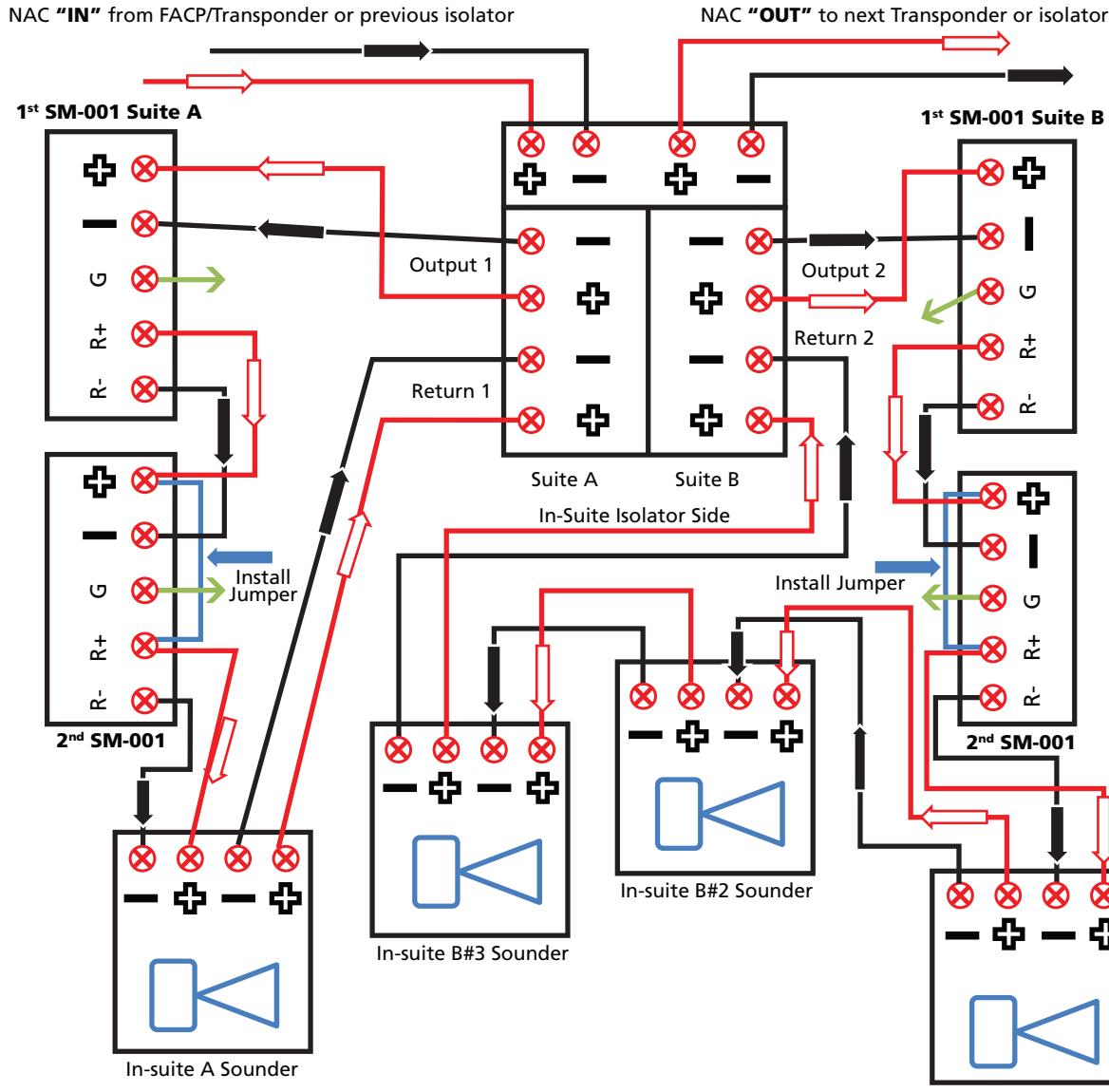
CAUTION: Maximum switching current is 350mA. Please ensure the load calculation for the number of active (or supporting) field devices connected to each Offside Technologies SM-001 does not exceed 350mA. For installations where current (including short circuit current) exceeds 350mA, you may not be able to utilize the Offside Technologies SM-001 testing solution.



Drawing #002 Revision 004

Figure C

TYPICAL IN-SUITE SOUNDER CONNECTION DIAGRAM



CAUTION: Maximum switching current is 350mA. Please ensure load calculations for the number of in-suite sounders connected to each Offside Technologies SM-001 do not exceed 350mA. For installations requiring more sounders, you may not be able to utilize the Offside Technologies SM-001 testing solution. For installations where current (including short circuit current) exceeds 350mA, you may not be able to utilize the Offside Technologies SM-001 testing solution.

Note 9: Install Offside Technologies SM-001 in accordance with the instructions. Mount units in close proximity to the in suite sounder isolator they serve and less than 1800mm above grade (to the centre of the plate).

Drawing #003 Revision 006

Figure D

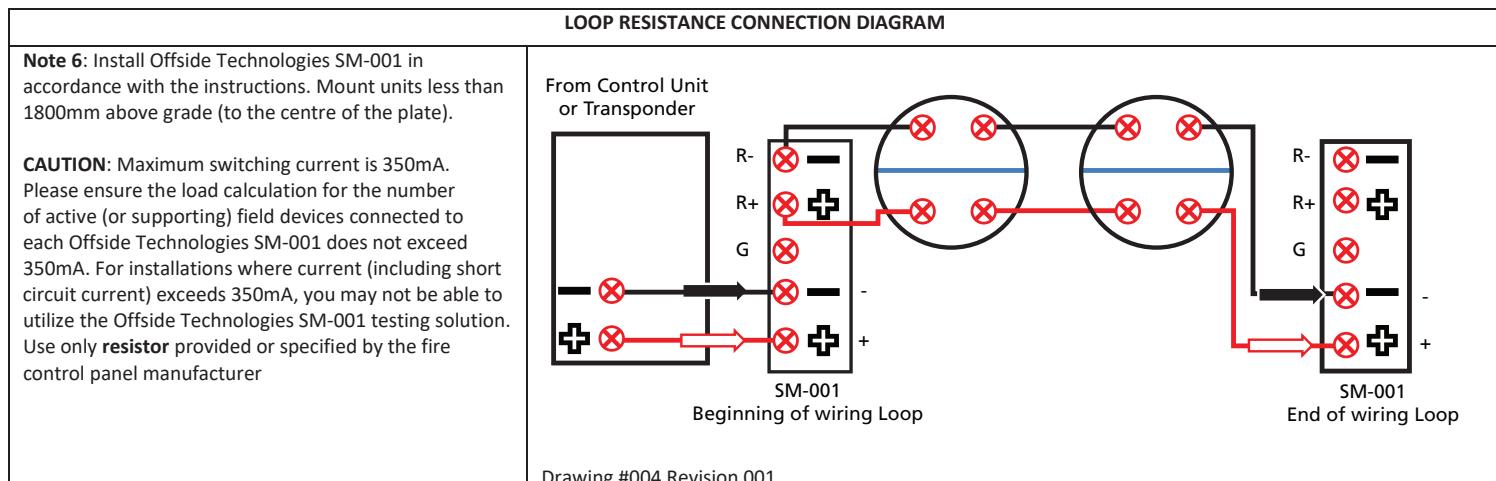
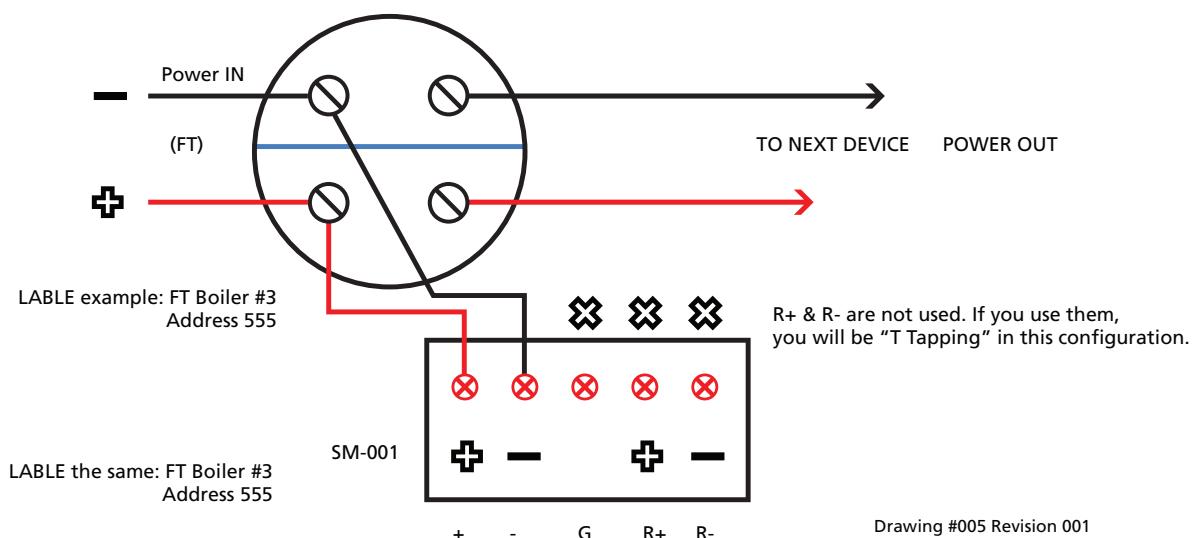
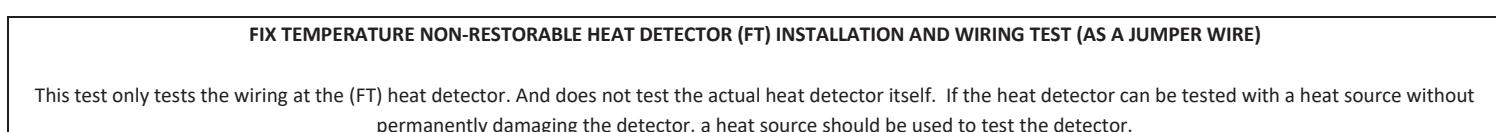
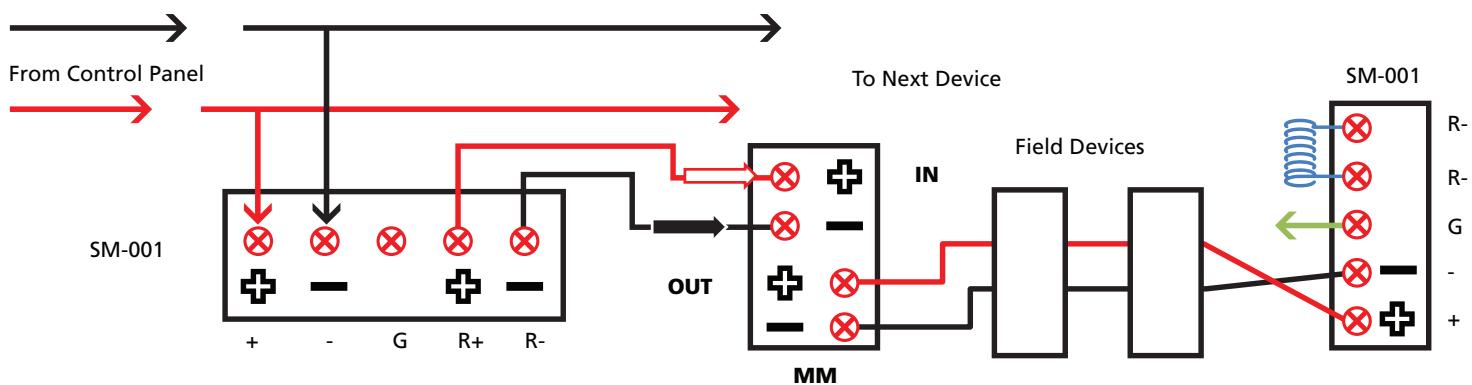


Figure E



SLC INPUT MONITORING MODULE INSTALLATION AND WIRING TESTING (MM)

Connect the + & - wires coming from the Control Panel, to the SM-001 + & -. Then connect the R+ & R- of the SM-001 to the + & - IN of the MM. Then connect the desired devices to the + & - OUT of the MM. The G terminal is not used for this test, but a ground wire still needs to be used from backbox to backbox. You can now test the control panel's ability to monitor the MM and all devices connected to it. To TEST: turn the key switch from "N" to "O", the panel should show loss of communication to the MM address. Return the SM-001 to the "N" position. Test is complete. Note13: The last device connected to the MM has an EOL, install it in another SM-001 as per [Figure A](#) above. Note 14: You will need to label what the SM-001 is testing. Put the same label on or beside the SM-001 and what is being tested. See [Drawing #004](#) above.



CONTROL UNIT / TRANSPONDERS / PRINTERS / ANNUNCIATOR / ALARM MONITORING / INSTALLATION AND TESTING

All terminal screws and soldered terminal blocks over time wear out from use and when this happens you will have to replace the entire component. This could be the main mother board of the Control Board. To prevent this unnecessary wear from removing wires and terminal blocks: 1) Remove the wire to be tested and connect it to the R+ of the SM-001 add a new wire from the + of the SM-001 to what you just disconnected. **Figure 003-1** This will turn the SM-001 into a wire break switch and you will never have to remove that wire again for testing. **SPECIAL NOTE 15:** Alarm monitoring of: Alarm; Trouble; Supervisory Contacts. Connect the SM-001 as shown in **Figure 003-1 Drawing #006.** Before turning to the "O" position, send signals to the monitoring station for each switch to confirm they are receiving signals. Once confirmed they have received the signals, turn the SM-001 to "O" this will by-pass the monitoring in a supervised state. Once all your testing is done with the various devices return the key back to "N" normal position and remove the key. Then send one signal to the monitoring station for each monitoring contact to confirm the monitoring station is still receiving signals. Record the time they received the last signals. **Note 16:** You may need to set up more than one SM-001 depending on the number of wires you are required to disconnect as per Code. You can only use the SM-001 as a supervised by-pass, if when you turn the key to "O" it causes a Trouble condition, if it does not provide a Trouble condition, then you can not use it as a by-pass. **Note 17:** Connect the Ground wire to G only when you want a ground condition as well.

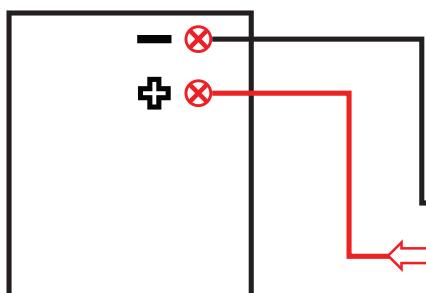
Note 18: Connect the - wire only when you want + & - conditions, from the same source. See **Figure 003-2**

Note 19: For - Ground Conditions reverse the + & - so the SM-001 gives you a - Ground instead of a + Ground. You cannot get a + & a - Ground from one SM-001. There is a + & - probe on the faceplate that will allow + or - Ground, but it cannot be done by one key only.

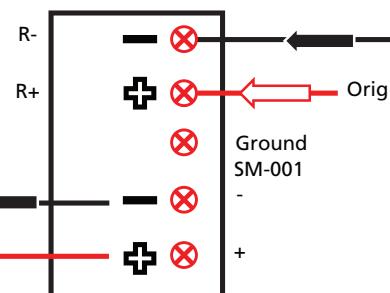
Note 20: Label each SM-001 as to what it is doing. (i.e.: Input wiring/circuit fault; monitoring circuit fault & - Ground; and or Output wiring circuit fault & + Ground)

To TEST: Simply turn the key from "N" to "O" to achieve the open condition test. Turn to "G" to get a positive ground test condition. Use option 2 or **option 3** above to get your negative ground test condition. Turn the key switch to "S" if you need a short condition. Return the SM-001 to the "N" position, to return to a normal condition & remove test key. **NOTE 21:** If the key is left in any SM-001 you can assume the system is not back to the normal state. All test keys MUST be removed upon completion of test for the system to be considered back to normal state.

Figure 003-1

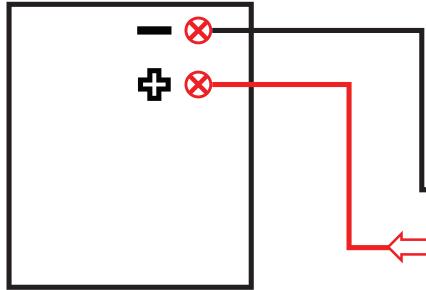


SUPERSVISORY / TROUBLE / ALARM / CONTACTS

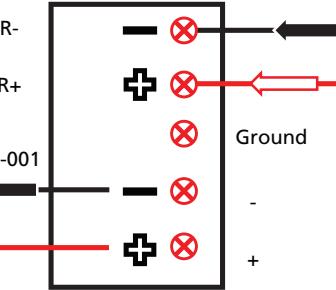


Drawing #007 Revision 004

Figure 003-2



CONTROL UNIT / ANNUNCIATOR



Drawing #008 Revision 004

See website for non listed addendums for additional applications that may be allowed with approval from AHJ

You need to consult the AHJ to get approval for ADDENDUM applications, as these are not yet UL/ULC listed.

The EVS is a **UL & ULC listed device**, some applications may require additional approval from AHJ. Existing codes were written with the technologies available at that time, they do not consider new and improved technologies. The AHJ is there to help all of us, improve fire protection. As in the Ontario Fire Code Part of the AHJ responsibilities are "to co-operate with any body or person interested in developing and promoting the principles and practices of fire protection services" and "to provide programs to **improve practices** relating to fire protection services." All other Provinces or States most likely have a similar philosophy regarding improving fire protection.

The EVS is a vast improvement in various testing applications and as such we feel it is a better testing method than what is currently being done.

CAUTION

Drawings are TYPICAL they do not include every application. Prior to installing EVS, consult local codes as codes may vary from Province to Province or State to State.

If beginning construction/repairs/maintenance where water/dust producing activities could cause damage to the SM-001 key-switch and or measuring points, Offside Technologies Corp. recommends placing a protective covering (not supplied) over the SM-001 or removal before work is done. Temporary protective caps are available through Offside Technologies Corp. The caps can be an effective way to limit the entry of water & dust into the key-switch & voltage/resistor measuring points.

However, they may not completely prevent water or dust particles from entering the key-switch & measuring points and have not been tested with UL for this application.

Five-Year Limited Warranty

Offside Technologies Corp. warrants the enclosed Electronic Verifying Switch model SM-001 to be free from defects in materials and workmanship under normal service and use for a period of five years from date of manufacture. Offside Technologies Corp. makes no other express warranty for this Electronic Verifying Switch model SM-001. No employee, dealer, or agent representative, of the Company has the authority to alter the obligations or limitations of this Warranty. Offside Technologies Corp's obligation for this Warranty shall be limited to the replacement of any part of the Electronic Verifying Switch model SM-001 which is found to be defective in materials or workmanship under normal use and service during the five-year period commencing with the date of manufacture. Please phone Offside Technologies Corp. 1-905-903-5688 for a Return Authorization Number. Then send the defective unit(s) postage prepaid to: Offside Technologies Corp., C/O Repairs, 717 Wilson Road South Unit 5 Oshawa, Ontario, Canada L1H 6E9. (Include Return Authorization Number _____) along with: A note describing the malfunction and location of building it was installed in. A copy of the installation and Verification Report for when the device was installed. 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 Offside Technologies Corp. 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 Offside Technologies Corp. negligence or fault. This Warranty gives you specific legal rights, and you may also have other rights under common law.