



- MB-SDRT-AA** Analog Addressable Detector Sounder Base
- MB-SDRT-CV** Conventional Detector Sounder Base
- MB-SDRT-SM** Synchronization Module

PRODUCT DESCRIPTION

The Multi-Flex family of smoke detector sounder bases and synchronization modules provide today's most advanced functionality and performance, delivering flexible notification capabilities for any installation.

The bases offer selectable steady or temporal pattern output and selectable high or low volume levels. The three-pulse temporal pattern is required by NFPA 72 for fire alarm evacuation for commercial and residential applications.

Available (SM) synchronization modules allow temporal pattern sounder base circuits to be completely synchronized and installed in almost limitless configurations, and also provide an on-board latching test function.

The sounder base requires an external 24VDC power supply. In the absence of a synchronization module, a means for polarity reversal is required for test and general alarm functionality. The connections for the external power supply and the communication loop are opto-isolated to prevent electrical interaction between them.

The 6-inch diameter sounder base mounts to 4-inch octagonal and 4-inch square boxes. When mounting detectors on a ceiling, install at least 4 inches from a wall. When mounting detectors on a wall, install 4 to 12 inches from ceiling.

COMPATIBILITY

The Multi-Flex series is compatible with Apollo analog addressable (XP95A and Discovery Series) and conventional (Series 60A and Series 65) smoke detectors, including heat, photoelectric and ionization types. Please refer to the individual detector documentation for more information.

The smoke detectors and bases are designed to operate in conjunction with UL Listed Fire Alarm Control Panels (FACP). Refer to the FACP manual for guidance on maximum allowable devices per loop. Contact Air Products and Controls or refer to your FACP manual for approved compatibility.

The MB-SDRT-CV is fully compatible with the previous generation MB-SDR-S60 sounder base. Likewise, the MB-SDRT-AA is also backwards compatible with the MB-SDR-XP95 sounder base and MB-RLY-XP95 relay base models. The bases are also compatible with the new MB-RLYT-CV and MB-RLYT-AA relay bases, respectively.

BEFORE INSTALLING

Ensure familiarity with requirements for detector spacing, placement, zoning, wiring and special applications. NFPA 72 and NEMA

guidelines should be observed. The detector used with this base must be tested and maintained regularly in accordance with NFPA 72 requirements. Canadian Installations must comply with the Canadian Standard for installation for Fire Alarm System CAN/ULC-S524 and the Canadian Electrical Code C22.1, Part 1.

NOTE: A COPY OF THIS GUIDE SHOULD BE LEFT WITH THE OWNER/USER OF THIS EQUIPMENT.

INSTALLATION (CONVENTIONAL)

Connect zone circuit (IDC) to wiring terminals L1 and L2 on detector mounting base. (see Fig. 1). Provide regulated or unregulated 24VDC external power supply to sounder base terminals as shown in Fig. 1. Power supply must be UL Listed for Fire Protective Signaling Systems. Please also refer to Fig. 6 and Fig. 7. for zone wiring.

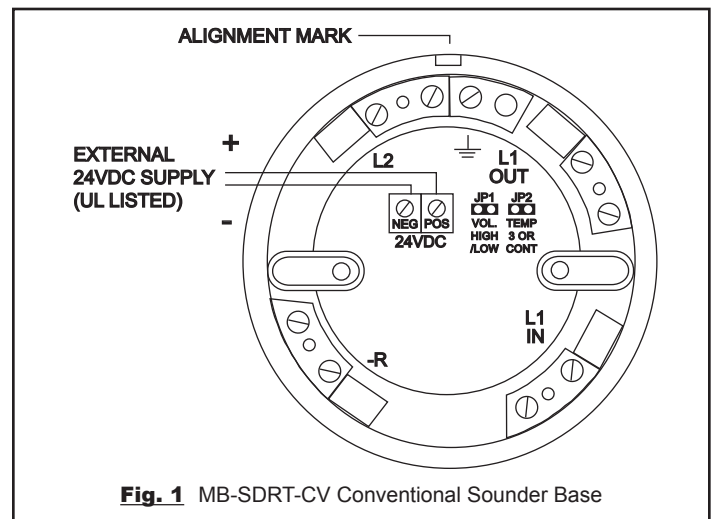


Fig. 1 MB-SDRT-CV Conventional Sounder Base

INSTALLATION (ANALOG ADDRESSABLE)

Connect analog addressable loop (SLC) to wiring terminals L1 and L2 on detector mounting base. (see Fig. 3). Provide regulated or unregulated 24VDC external power supply to sounder base terminals as shown in Fig. 3. Power supply must be UL Listed for Fire Protective Signaling Systems. Please also refer to Fig. 8. for loop wiring.

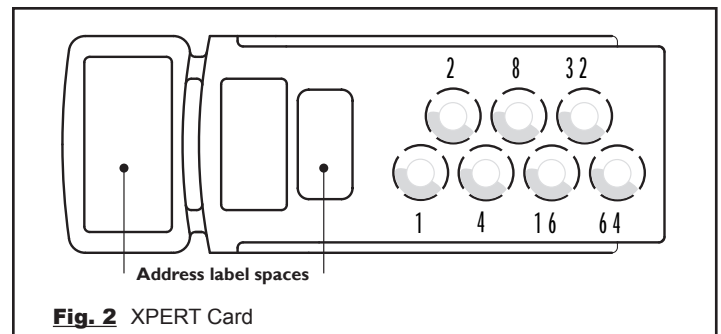


Fig. 2 XPERT Card

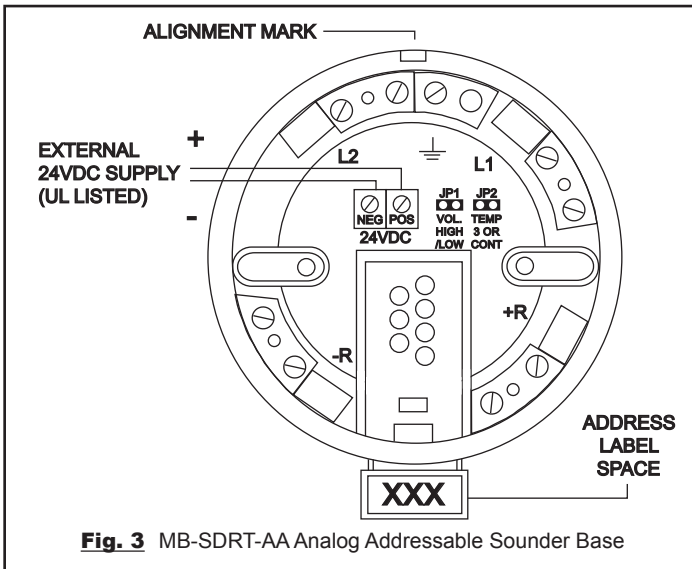


Fig. 3 MB-SDRT-AA Analog Addressable Sounder Base

XPERT CARD PROGRAMMING

Analog addressable Discovery and XP95A bases employ a unique, simple mechanism for hardware addressing (Fig. 2). The XPERT Card provides a series of seven removable pips, which when removed in proscribed patterns, corresponding to binary system digits, and can represent numbers 1 through 126. Factory set and labeled XPERT Cards are available.

NOTE: No buttons removed (address 0) or multiple like addresses on an SLC will cause an FACPTrouble/Fault condition.

NOTE: Remove the XPERT Card, select the desired LABEL address and remove the pips indicated in black with a small screwdriver. Replace the XPERT Card and twist the detector head into place to complete programming (Fig. 4).

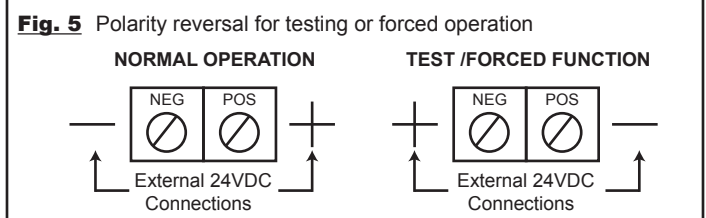
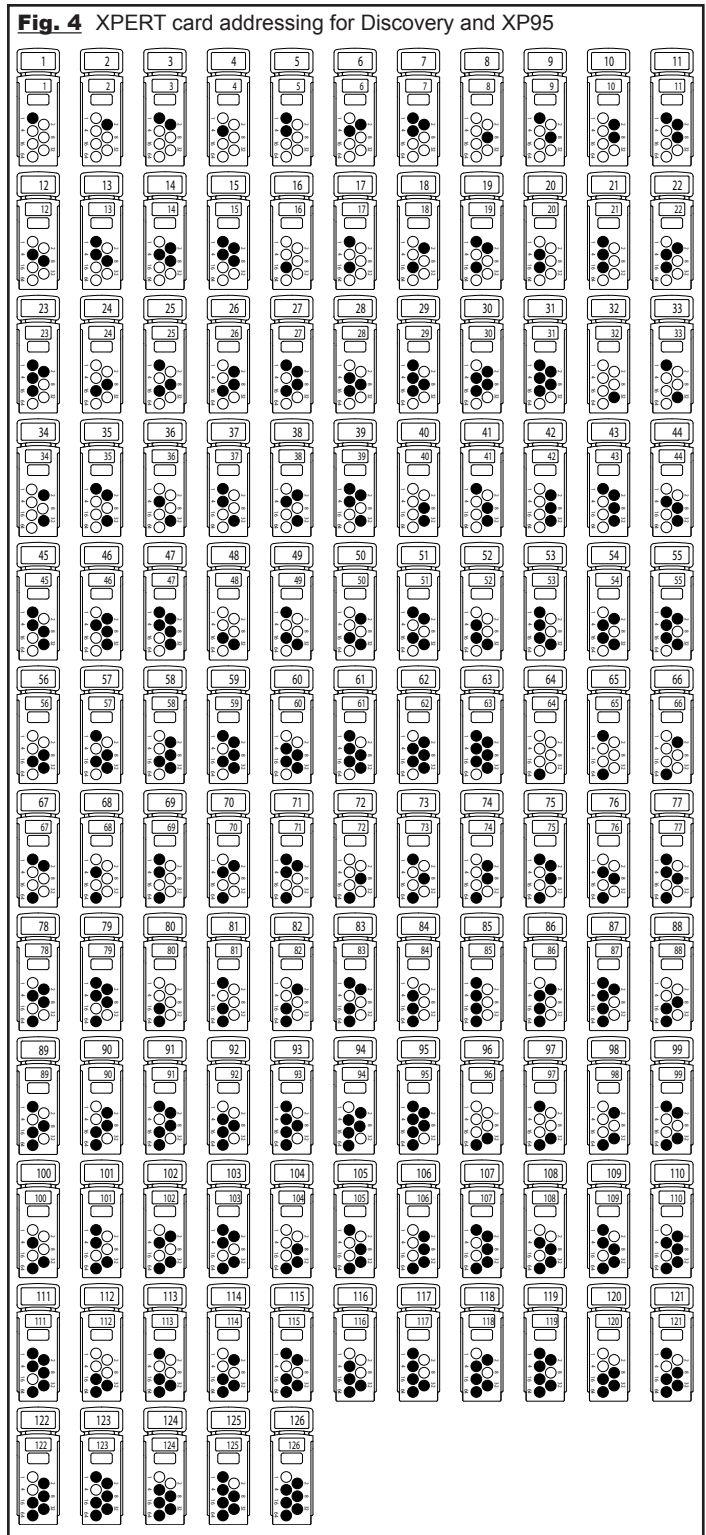
SOUNDER BASE PROGRAMMING

Program the desired volume and format of the sounder by configuring jumpers “JP1” and “JP2” on the sounder base PCB. JP1 controls the volume level, and is left ON for high level (85dB) or taken OFF for low level (75dB). JP2 controls the format of the sound, and is taken OFF for a continuous tone, or left ON for temporal (code 3) pattern.

NOTE: If synchronization of the temporal pattern between two or more sounder bases is required, an optional synchronization module (SM) is required, as described below. When selecting the temporal pattern with no synchronization, the sounders will “free run” on an individual basis.

OPERATION

When a sounder base’s associated detector goes into the alarm state, the sounder will sound a continuous or temporal (code 3) pattern, as programmed. This pattern will continue until the detector is successfully reset to the normal standby state.



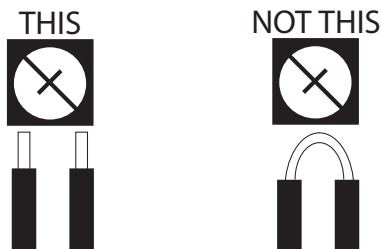
TESTING AND FORCED OPERATION

A group of sounder bases may be tested or force activated by reversing the polarity of the 24VDC external supply. (Fig. 5). This causes the sounder to activate. It is not necessary to have the detector head installed or in alarm for this operation. Note that when doing a forced (or test) alarm operation, the sounder(s) will continue to sound until the polarity is returned to normal or power is restored.

NOTE: All wiring must be installed in compliance with the Aditional electric code and the local codes having jurisdiction. Wires must not be of such size or length which would cause the base to operate outside of its published specifications. The conductors used to connect smoke detectors to fire alarm control panels 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.

For signal wiring (the wiring between interconnected detectors or modules), it is recommended that the wire size be no smaller than 18 gauge (1.0 square mm), despite the terminals having capability to accept smaller gauge wires. Wire sizes up to 12 gauge (2.5 square mm) may be used with the base and modules. For best system performance, the power (24VDC +/-) wires and the communication circuit should be twisted pair or shielded cable installed in separate grounded conduit to protect the communication loop from electrical interference.

Make wire connections by stripping about 3/8" of insulation from the end of the wire. Then, slide the bare end of the wire under the clamping plate, and tighten the clamping plate screw.



The zone wiring of the detector base should be verified before the detector head is installed. Check the wiring for continuity and polarity in the base.

NOTE: DO NOT USE LOOPED WIRE CONNECTIONS. BREAK WIRE UNDER ALL TERMINALS TO ENSURE CIRCUIT SUPERVISION.

NOTE: NE PAS UTILISER EN BOUCLE FIL FIL CONNECTIONS. BREAK SOUS TOUS LES TERMINAUX POUR ASSURER LA SUPERVISION DU CIRCUIT.

SYNCHRONIZATION MODULE PRODUCT DESCRIPTION

The *Multi-Flex* (SM) synchronization module is designed to work with the *Multi-Flex* family of conventional and analog addressable sounder bases to provide the following:

- 1) A means of synchronizing the temporal (code 3) sound pattern between a number of bases in a common area (a group).

- 2) A means of testing or force activating the group of bases both from the synchronization module (via the onboard test switch) and remotely via the FACP.
- 3) A means of powering a group of bases ($\leq 2A$ @ 24VDC nominal).
- 4) A means of silencing a group of bases from the FACP, with subsequent alarm capability.
- 5) A means of triggering and silence flagging connected secondary programmed SM synchronization modules and their associated sub-groups of bases from a SM synchronization module.

The module is also compatible with the fully listed and approved relay products from Air Products and Controls as shown in the wiring diagrams to provide a fully code-compliant, supervised sub-system. Each synchronization module can accommodate a circuit of up to 61 sounder bases.

The *Multi-Flex* synchronization module is also designed to work with the *Multi-Flex* analog addressable and conventional relay bases, MB-RLYT-AA and MB-RLYT-CV, respectively. Please note that when using these relay bases:

- 1) Synchronization is not a concern, as no pulsed pattern is provided by the relays.
- 2) A test or forced (general alarm) operation will activate all connected relay bases.
- 3) A silence operation will not effect the relays' "ON" status.

When using the *Multi-Flex* synchronization module with the previous generation MB-SDR-S60, MB-SDR-XP95 and MB-RLY-XP95 sounder and relay bases, certain design limitations of the older designs will not allow for:

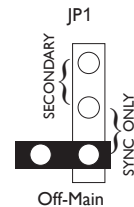
- 1) temporal pattern synchronization on the older bases, as they are continuous tone only devices.
- 2) silencing operations with sub-sequent alarm.

When replacing older model sounder bases where temporal pattern is not required, simply set the *Multi-Flex* sounder base to continuous pattern mode.

Main Mode: For setup of group of bases with general alarm and silence capabilities, plus operating power.

Secondary Mode: For extension of the above groups by providing an additional operating power input point.

Sync Only Mode: For setup of a subgroup of the above group of bases with their own distinct separate general alarm and silence capabilities, as well as operating power.



⊘	⊘	⊘	⊘	⊘	⊘
NC	COM	+(-)	-(+)	+(-)	-(+)
TROUBLE		GENERAL ALARM		HORN ENABLE	
SYNC IN		SYNC OUT		POWER 24VDC	
+	-	+	-	+	-
⊘	⊘	⊘	⊘	⊘	⊘

() = Polarity in alarm

CONVENTIONAL ZONE WIRING

FIG. 6: TYPICAL CLASS B, STYLE B CIRCUIT WIRING FOR MB-SDRT-CV SOUNDER BASE

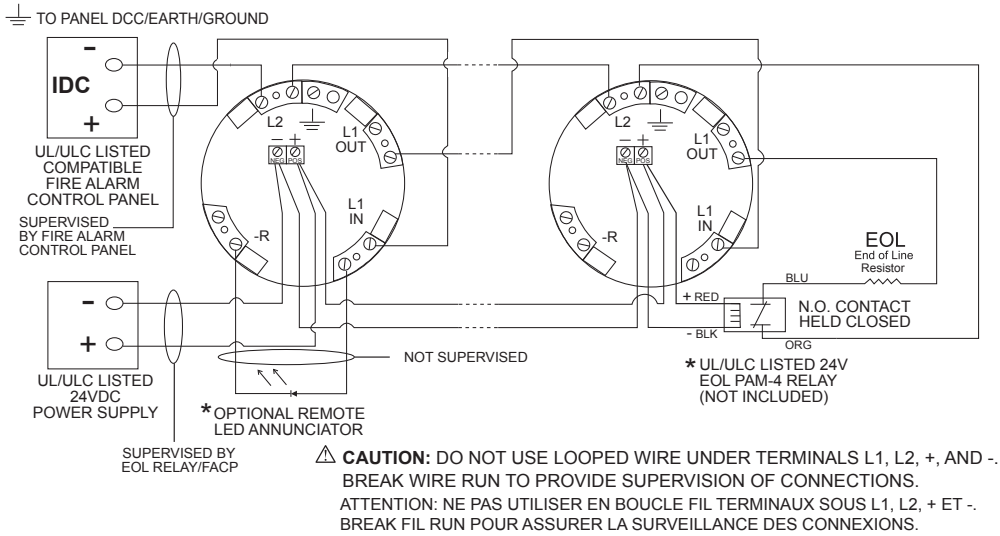
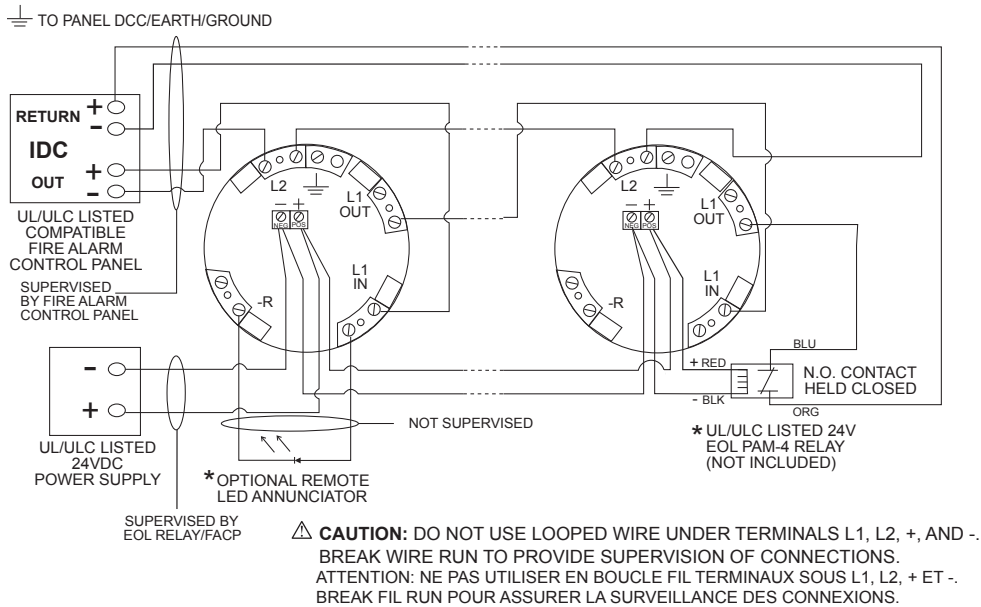
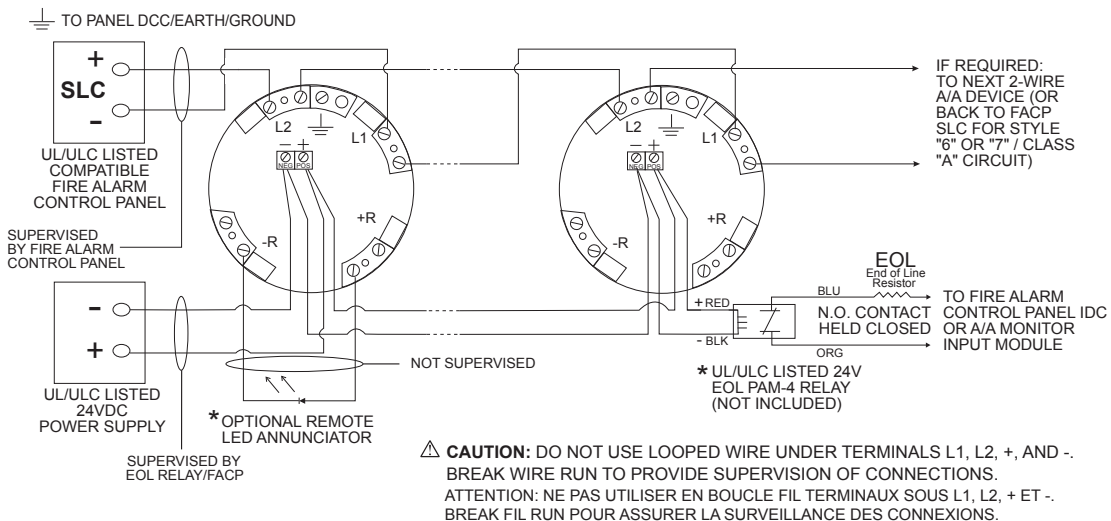


FIG. 7: TYPICAL CLASS A, STYLE D CIRCUIT WIRING FOR MB-SDRT-CV SOUNDER BASE

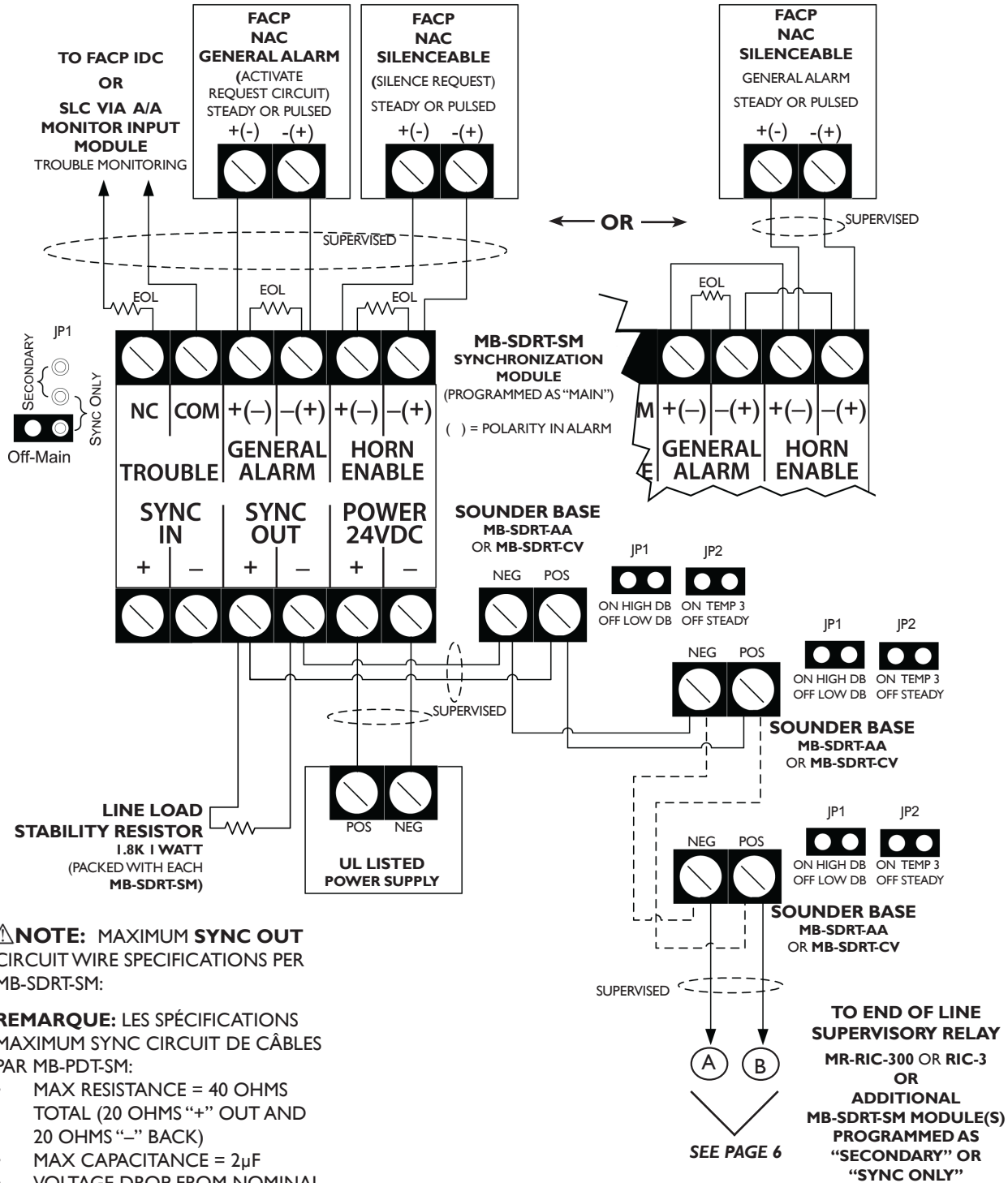


ANALOG ADDRESSABLE LOOP WIRING

FIG. 8: TYPICAL CLASS B/A, STYLE 4/6 CIRCUIT WIRING FOR MB-SDRT-AA SOUNDER BASE



TYPICAL SYNCHRONIZED CIRCUIT WIRING DIAGRAM



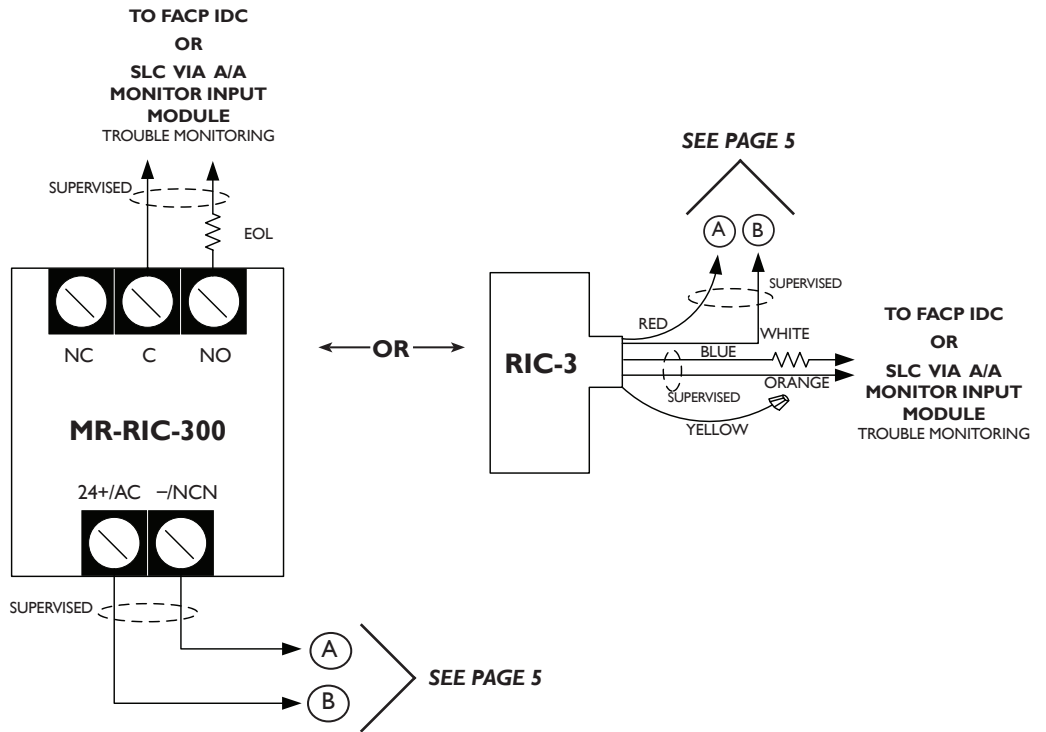
NOTE: MAXIMUM SYNC OUT CIRCUIT WIRE SPECIFICATIONS PER MB-SDRT-SM:

REMARQUE: LES SPÉCIFICATIONS MAXIMUM SYNC CIRCUIT DE CÂBLES PAR MB-PDT-SM:

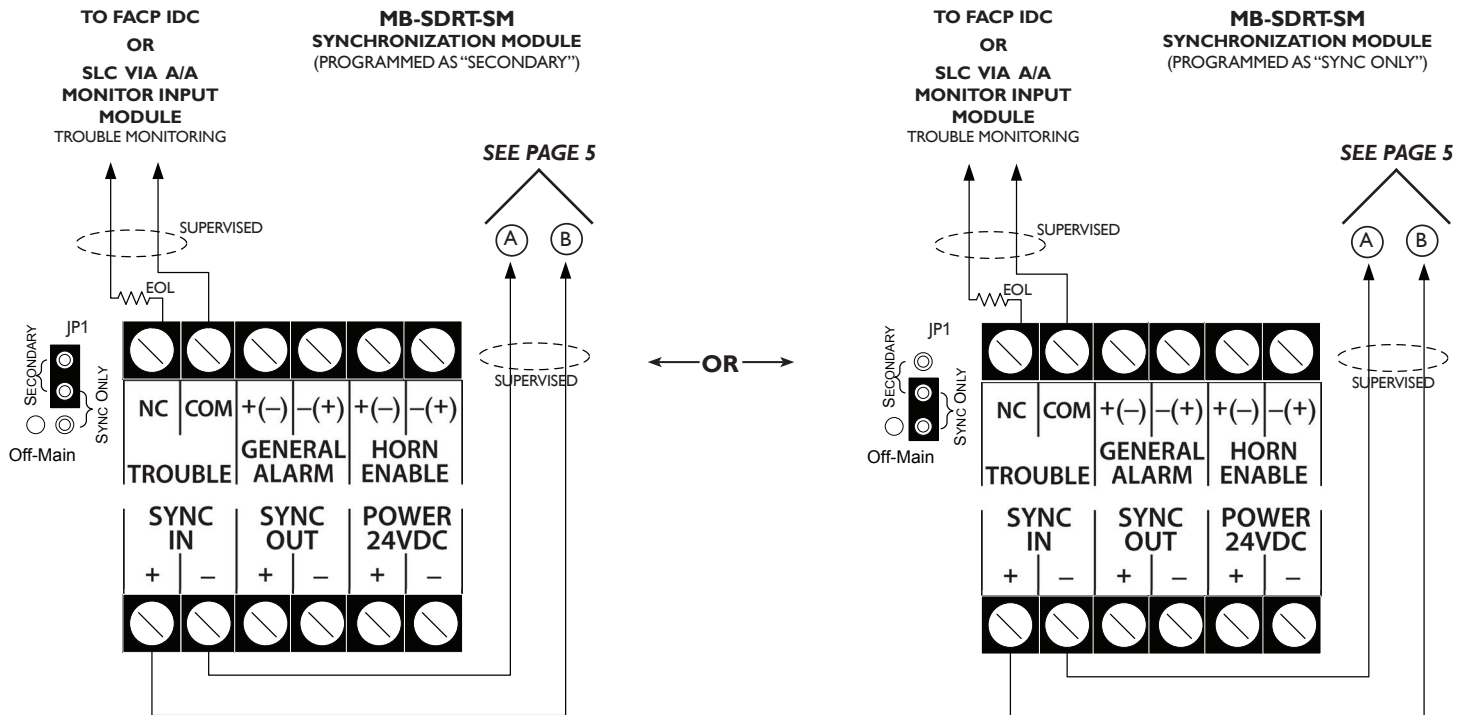
- MAX RESISTANCE = 40 OHMS TOTAL (20 OHMS "+" OUT AND 20 OHMS "-" BACK)
- MAX CAPACITANCE = 2µF
- VOLTAGE DROP FROM NOMINAL 24VDC AT END OF 60 MB-SDRT SOUNDER BASES ≤ 3.6VDC

TYPICAL SYNCHRONIZED CIRCUIT WIRING DIAGRAM (CONTINUED)

If at last MB-SDRT-SM module:

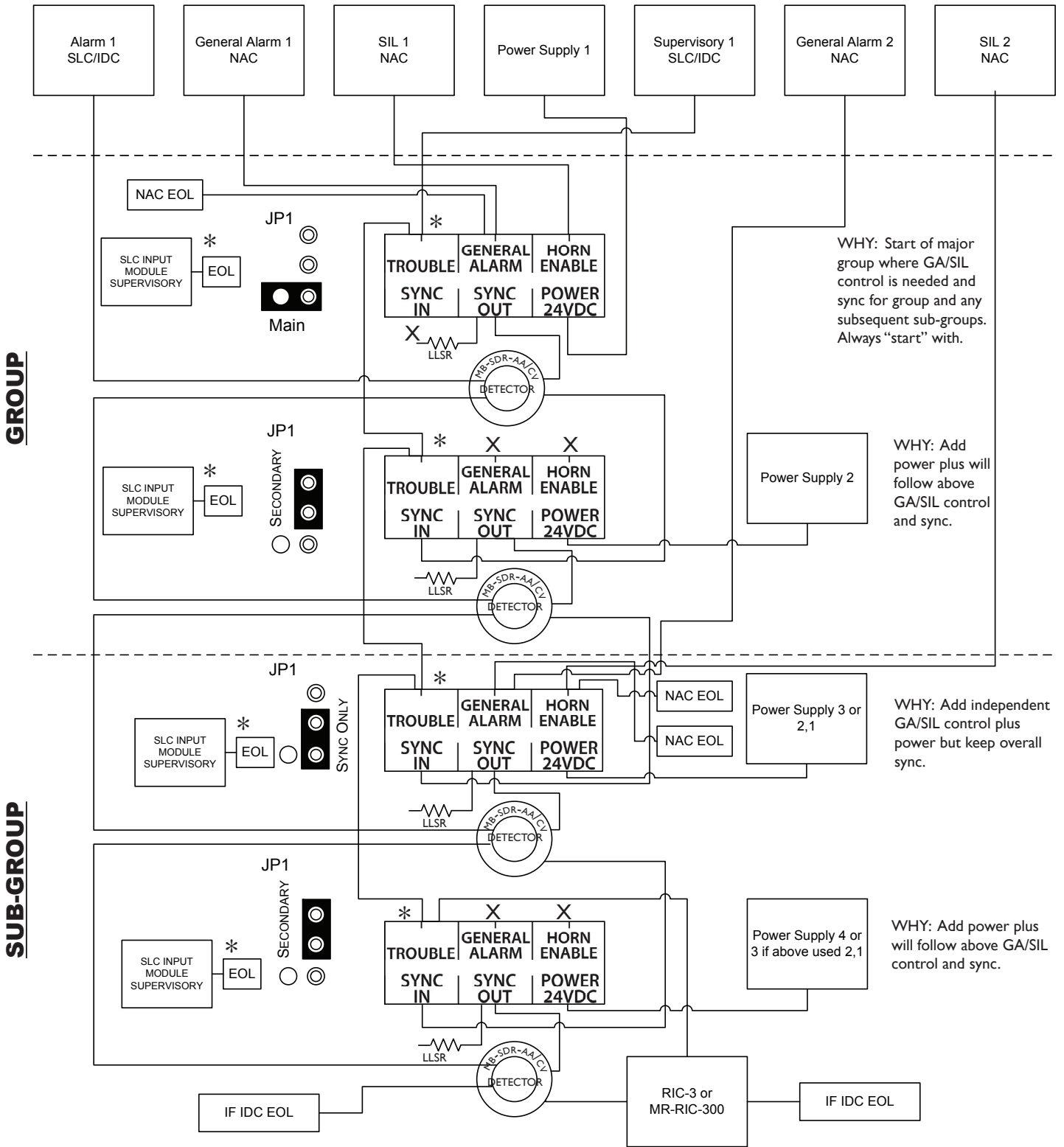


If adding MB-SDRT-SM module(s):



TYPICAL SYSTEM OVERVIEW DIAGRAM (CLASS B, STYLE B/4)

UL Listed, Compatible FACP



X = Not Used

NOTE: All wiring is supervised and wiring faults are indicated on the supervisory SLC/IDC as appropriate.

REMARQUE: Tout le câblage est supervisée et les erreurs de câblage sont indiquées sur la surveillance SLC / IDC, le cas échéant.

MULTI-FLEX BASE COMPATIBLE SMOKE DETECTOR SPECIFICATIONS

DISCOVERY Detector Head Part Number	58000-550	58000-650	58000-450	58000-750
Detector Type	Ionization	Photoelectric	Heat	Multi-Sensor (Photo/Heat)
Detector Alarm Current LED Illuminated	3.5mA	3.4mA	3.4mA	3.5mA
Detector Standby Current	500µA average; 750µA peak	400µA average; 650µA peak	500µA average; 750µA peak	500µA average; 750µA peak
Detector Test Procedure	Aerosol Test Gas TG-1000 or Gemini #501		Heat Gun	Heat Gun, Aerosol Test Gas or Gemini #501
Environmental	32°F to 100°F (0°C to 38°C) 0% to 85% RH; Non-Condensing / Non-Freezing			Employs integral 135° rated heat sensor
Control Panel	See control panel SLC wiring card for compatibility identifier and maximum number of detectors per SLC. Contact Air Products and Controls Inc. for a list of compatible fire alarm control panels.			
XP95A Detector Head Part Number	55000-550	55000-650	55000-450	55000-886
Detector Type	Ionization	Photoelectric	Heat	Multi-Sensor (Photo/Heat)
Detector Alarm Current LED Illuminated	2mA	4mA	2mA	4mA
Detector Standby Current	280µA average; 500µA peak	340µA average; 600µA peak	250µA average; 500µA peak	500µA average; 750µA peak
Detector Test Procedure	Aerosol Test Gas TG-1000 or Gemini #501		Heat Gun	Heat Gun, Aerosol Test Gas or Gemini #501
Environmental	32°F to 100°F (0°C to 38°C) 0% to 85% RH; Non-Condensing / Non-Freezing			Employs integral 135° rated heat sensor
Control Panel	See control panel SLC wiring card for compatibility identifier and maximum number of detectors per SLC. Contact Air Products and Controls Inc. for a list of compatible fire alarm control panels.			
SERIES 65A Detector Head Part Number	55000-225	55000-325	55000-138 55000-141 55000-142	
Detector Type	Ionization	Photoelectric	Heat	
Detector Operating Volt- age	9-33VDC			
Detector Average Alarm Current	17mA @ 9VDC; 52mA @ 24VDC			
Detector Average Standby Current	50µA @ 9VDC; 55µA 24VDC	40µA @ 9VDC; 45µA 24VDC	50µA @ 9VDC; 55µA 24VDC	
Detector Test Procedure	Aerosol Test Gas TG-1000 or Gemini #501		Heat Gun	
Environmental	32°F to 100°F (0°C to 38°C) 0% to 85% RH; Non-Condensing / Non-Freezing			
Control Panel	See control panel's IDC (zone) wiring card for compatibility identifier and maximum number of detectors per IDC. Contact Air Products and Controls Inc. for a list of compatible fire alarm control panels. Note that most FACP's will only guarantee a single 2-wire detector in alarm simultaneously on a single IDC.			
SERIES 60A Detector Head Part Number	55000-250	55000-350	55000-150 55000-151 55000-152 55000-153	55000-380
Detector Type	Ionization	Photoelectric	Heat	Multi-Sensor (Photo/Heat)
Detector Operating Volt- age	9-33VDC			16-34VDC
Detector Average Alarm Current	17mA @ 9VDC; 52mA @ 24VDC			100mA @ 24VDC
Detector Average Standby Current	50µA @ 9VDC; 55µA 24VDC	40µA @ 9VDC; 45µA 24VDC	50µA @ 9VDC; 55µA 24VDC	185µA @ 24VDC
Detector Test Procedure	Aerosol Test Gas TG-1000 or Gemini #501		Heat Gun	Heat Gun, Aerosol Test Gas or Gemini #501
Environmental	32°F to 100°F (0°C to 38°C) 0% to 85% RH; Non-Condensing / Non-Freezing			
Control Panel	See control panel's IDC (zone) wiring card for compatibility identifier and maximum number of detectors per IDC. Contact Air Products and Controls Inc. for a list of compatible fire alarm control panels. Note that most FACP's will only guarantee a single 2-wire detector in alarm simultaneously on a single IDC.			

NOTICE: The information contained in this document is the most current available at the time of shipment of accompanying product, and is subject to change without notice. Future references should always be made to the most current revision of this document. The information contained in all this document should be considered before installing or using the product. Any example applications shown are subject to the most current enforced local/national codes, standards, approvals, certifications, and/or the authority having jurisdiction. All of these resources, as well as the specific manufacturer of any shown or mentioned related equipment, should be consulted prior to any implementation. For further information or assistance concerning this product, contact Air Products and Controls Inc. Air Products and Controls Inc. reserves the right to change any and all documentation without notice.

MULTI-FLEX SOUNDER BASE SPECIFICATIONS

Sounder Base Part Number	MB-SDRT-AA	MB-SDRT-CV
Firmware Code	SFT0002, revA060118	
Compatible Smoke Detectors	Analog Addressable (Discovery or XP95A)	Conventional (Series 65 or Series 60A)
Sounder Base Operating Voltage	17-30VDC (24VDC nominal)	
Sounder Base Alarm Currents	External Supply: 17mA @ 24VDC : Associated Detector: 8mA @ 24VDC	
Sounder Base Standby Current	0.15µA @ 24VDC	
Sounder Base Audible Intensity	High Volume Selection: 85dB @ 10 feet : Low Volume Selection: 75dB @ 10 feet	
Wiring	Solid or Stranded; #12 to #22 AWG Terminals	
Environmental	32°F to 100°F (0°C to 38°C) • 0% to 85% RH; Non-Condensing / Non-Freezing	
Material	Makrolon 6455 or 6555; 94V-0	
Dimensions	6" L x 6"W x 1.6" D (152mm x 152mm x 41mm)	
Approvals	UL Listed File #S2829 • CSFM Listed (7300-1004:117) • MEA Acceptance (73-93-E Vol. 38)	

MULTI-FLEX SYNCHRONIZATION MODULE SPECIFICATIONS

SSM Module Part Number	MB-SDRT-SM/G	MB-SDRT-SM/G/R	MB-SDRT-SM/T	MB-SDRT-SM/C	MB-SDRT-SM/C/R
Firmware Code	SFT0001 revA060629				
Two-Gang Box Mounted (H x W x D)	3.3" (83.82mm) 2.6" (66.04mm) 0.77" (19.56mm)				
Track Mounted (H x W x D)			3.4" (87mm) 2.75" (69.85mm) 1.22" (30.99mm)		
Enclosure Mounted (H x W x D)				5.13" (131mm) x 3.13" (80mm) x 2.5" (64mm)	
Cover Material	White ABS Plastic; 94V-0	Red ABS Plastic; 94V-0		Gray ABS Plastic; 94V-0	Red ABS Plastic; 94V-0
Enclosure / Mounting Details	Metal 2-Gang Mounting Chassis with Appropriate Wall Plate Cover		Low-Profile Snap-Track with Provided Mounting Screws	18Ga. CRS, Plated with ½" Conduit Knockouts, Top and Bottom	
Operating Voltage Range and Current Requirements	Power Input Circuit, 17-30VDC: Sync Out Circuit, 17-30VDC: Sync In Circuit, 17-30VDC: Horn Enable/General Alarm NAC Circuit, 16-33VDC: 7.5mA Standby; 2mA Alarm		17mA Standby; 16mA Alarm (MB-SDRT-SM Sync Module Only) MB-SDRT-SM with Sounder and Relay Bases: ≤ 2A Max. (61 units max.) 4mA Standby; 15mA Alarm MB-SDRT-SM with Sounder and Relay Bases: ≤ 2A Max. (61 units max.) 4mA Standby; 15mA Alarm		
Input / Output Details	<p>TRouble: Always FACP monitored and reported as trouble or supervisory in all program modes. Dry N.O. contact held closed by the POWER 24VDC input being present and the internal module circuitry being fully operational. Also supervises the presence of a SYNC IN signal when module is programmed in the "secondary" or "sync only" modes. It is not used when the module is programmed in the "main" mode.</p> <p>GENERAL ALARM: 24VDC steady or pulsed, silenceable or non, polarized FACP NAC Input. This input is used only when the module is programmed in the "main" or "sync only" modes. When the connected NAC is in the alarm state the module will provide a general alarm signal to all associated sounder/relay bases, causing them to sound if a HORN ENABLE alarm input is also present.</p> <p>HORN ENABLE: 24VDC steady or pulsed, silenceable polarized FACP NAC input. This input is used only when the module is programmed in the "main" or "sync only" modes. When the connected NAC is in the alarm state the module will be active and ready to accept a GENERAL ALARM input. The status of the connected NAC will also be monitored for subsequently being silenced from the FACP and will provide that signal to all associated sounder bases, causing them to silence. Subsequent alarms will resound as signalled from the FACP NAC connected to this input.</p> <p>SYNC IN: 24VDC/protocol feed input from associated module programmed in the "main", "secondary" or "sync only" mode. This input is always used when the module is programmed in the "secondary" or "sync only" modes. It is not used when the module is programmed in the "main" mode.</p> <p>SYNC OUT: 24VDC/protocol feed output from module in all modes. When the module is programmed in the "main" or "sync only" modes, also provides distinct HORN ENABLE and GENERAL ALARM status information to all associated sounder/relay bases and any modules programmed as "secondary". Included line load stability resistor must be installed.</p> <p>POWER 24VDC: 24VDC power feed in, always required in all modes (to boost power available to bases due to long wire runs and possibly the need to increase Db output). When the module is programmed in the "sync only" mode this input could be from a shared power supply with the associated "main" programmed module. When the module is programmed in the "secondary" mode this input will always be supplied from a new additional power source since that is the only reason it is being installed.</p>				
Intelligent Trouble Reporting	Trouble LED: ON - Test Mode		SINGLE BLINK - Sync In (when in "main" mode) DOUBLE BLINK - No Sync In (when in "secondary" mode) TRIPLE BLINK - Output Short		
Wiring	Solid or Stranded; #12 to #22 AWG Terminals				
Environmental	32°F to 100°F (0°C to 38°C) • 0% to 85% RH; Non-Condensing / Non-Freezing				
Approvals	UL Listed File #S9055 • CSFM Listed (7300-1004:117) • MEA Acceptance (73-93-E Vol. 38)				



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AVAILABLE ACCESSORIES FOR USE WITH MULTI-FLEX® FAMILY SOUNDER BASES & SYNC MODULES

SMOKE TEST GAS

TG-1000 Solo Aerosol Test Gas with Spray Nozzle

REPLACEMENT SMOKE DETECTOR HEADS

55000-250 S60 Ionization Detector Replacement Head
55000-350 S60 Photoelectric Detector Replacement Head
55000-150 S60 Heat Detector Replacement Head
55000-151 S60 Heat Detector Replacement Head
55000-152 S60 Heat Detector Replacement Head
55000-153 S60 Heat Detector Replacement Head
55000-380 S60 Multi-Sensor (Photo/Heat) Replacement Head

55000-225 S65 Ionization Detector Replacement Head
55000-325 S65 Photoelectric Detector Replacement Head
55000-138 S65 Heat Detector Replacement Head
55000-141 S65 Heat Detector Replacement Head
55000-142 S65 Heat Detector Replacement Head

55000-550 XP95A Ionization Detector Replacement Head
55000-650 XP95A Photoelectric Detector Replacement Head
55000-450 XP95A Heat Detector Replacement Head
55000-886 XP95A Multi-Sensor (Photo/Heat) Replacement Head

58000-550 DISC Ionization Detector Replacement Head
58000-650 DISC Photoelectric Detector Replacement Head
58000-450 DISC Heat Detector Replacement Head
58000-750 DISC Multi-Sensor (Photo/Heat) Replacement Head

AIR PRODUCTS
AND
CONTROLS



MULTI-FLEX FAMILY
SOUNDER BASES AND
SYNCHRONIZATION
MODULES

INSTALLATION AND MAINTENANCE INSTRUCTIONS



MB-SDRT-AA Analog Addressable Detector Sounder Base
MB-SDRT-CV Conventional Detector Sounder Base
MB-SDRT-SM Synchronization Module

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