SIGA-REL
Technical Reference Manual

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CREDITS	This manual was designed and written by the EST Technical Services - Documentation Department, Sarasota.

DOCUMENT HISTORY

Date	Revision	Reason for change
14FEB01	1.0	Initial release
08JUN01	2.0	Added: testing information; FMRC agency information; drawing for preaction/deluge sprinkler systems; compatibility information for releasing solenoid valves; programming statements Deleted: Halon as a listed agent Edited: compatible panel information; specification values for consistency; drawings for nongeneric captions and missing information; programming rules; cautions on accepting actual devices; drawings in operational description

Content

Important information

Limitation of liability

This product has been designed to meet the requirements of NFPA Standard 72, 1999 Edition; Underwriters Laboratories, Inc., Standard 864, 8th Edition; and Underwriters Laboratories of Canada, Inc., Standard ULC S527. Installation in accordance with this manual, applicable codes, and the instructions of the authority having jurisdiction (AHJ) is mandatory. EST shall not under any circumstances be liable for any incidental or consequential damages arising from loss of property or other damages or losses owing to the failure of EST products beyond the cost of repair or replacement of any defective products. EST reserves the right to make product improvements and change product specifications at any time.

While every precaution has been taken during the preparation of this manual to ensure the accuracy of its contents, EST assumes no responsibility for errors or omissions.

FCC warning

This equipment can generate and radiate radio frequency energy. If this equipment is not installed in accordance with this manual, it may cause interference to radio communications. This equipment has been tested and found to comply within the limits for Class B computing devices pursuant to Subpart B of Part 15 of the FCC Rules. These rules are designed to provide reasonable protection against such interference when this equipment is operated in a commercial environment. Operation of this equipment is likely to cause interference, in which case the user at his own expense, will be required to take whatever measures may be required to correct the interference.

Locating related documents

EST2 documentation

A library of related documents supports the EST2 product line. Here is a complete list of the EST2 library:

- *EST2 Installation and Service Manual* (P/N 270186)
- *EST2 Network Supplement Manual* (P/N 270894)
- *EST2 System Operations Manual* (P/N 270188)
- *EST2 System Programming Manual* (P/N 270187)
- *EST2 Installation Sheets* (P/N 3100056)
- *2-SDU Help*

EST3 documentation

A library of related documents supports the EST3 product line. Here is a complete list of the EST3 library:

- *EST3 Installation and Service Manual* (P/N 270380)
- *EST3 System Operations Manual* (P/N 270382)
- *EST3 System Programming Manual* (P/N 270381)
- *EST3 Installation Sheets* (P/N 3100051)
- *EST3 International Supplement Manual* (P/N 270925)
- *3-SDU Help*

Signature Series documentation

The *Signature Series Intelligent Smoke and Heat Detectors Applications Bulletin* (P/N 270145) provides instructions and illustrations for various arrays of smoke and heat detectors.

The *Signature Series Component Installation Manual* (P/N 270497) supports the installation of the Signature Series detectors and modules.

The *Serial Number Log Book* (P/N 270267) provides a convenient means for recording the serial number of each Signature device installed in the fire alarm system.

Speaker and strobe documentation

The *EST Speaker Application Guide* (P/N 85000-0033) provides information about the placement and layout of speakers for fire alarm signaling and emergency voice communications.

The *EST Strobe Applications Guide* (P/N 85000-0049) provides information for the placement and layout of strobes for fire alarm signaling.

Installation codes and standards

The Signature Series fire detection devices are designed to meet the requirements of NFPA Standard 72, 1999 Edition; Underwriters Laboratories, Inc. Standard 864, 8th Edition and Underwriters Laboratories of Canada, Inc. Standard ULC S527. Other related codes and standards are listed below. Information contained in this document is intended to serve as a guide. Installation in accordance with the instruction sheets (provided with Signature Series devices), applicable codes, and the instructions of the AHJ is mandatory.

National Fire Protection Agency

	**National Fire Protection Agency (NFPA)** **1 Batterymarch Park PO Box 9101** **Quincy, MA 02269-9101**
NFPA 11	Low-Expansion Foam
NFPA 11A	Medium- and High-Expansion Foam Systems
NFPA 12	Carbon Dioxide Extinguishing Systems
NFPA 13	Sprinkler Systems
NFPA 15	Water Spray Fixed Systems for Fire Protection
NFPA 16	Deluge Foam-Water Sprinkler and Foam-Water Spray systems
NFPA 17	Dry Chemical Extinguishing Systems
NFPA 70	National Electric Code
NFPA 72	National Fire Alarm Code

Underwriters Laboratories, Inc.

	**Underwriters Laboratories, Inc. (ULI)** **333 Pfingsten Road** **Northbrook, IL 60062-2096**
UL 864	Standard for Control Units for Fire Protective Signaling Systems

Underwriters Laboratories of Canada

	**Underwriters Laboratories of Canada (ULC)** **7 Crouse Road** **Scarborough, Ontario M1R 3A9**
ULC S527	Standard for Control Units for Fire Alarm Systems

Factory Mutual Research Corporation

	**Factory Mutual Research Corporation** **1151 Boston Providence Turnpike** **PO Box 9102** **Norwood, MA 02062**
1011-1012	Deluge and Preaction Systems

European standards

73/23/EEC	Low Voltage Directive
89/336/EEC as amended by 9/31/EEC	Electromagnetic Compatibility Directive
EN50130-4; 1995	Immunity requirements for Components of Fire, Intruder, and Social Alarm Systems
EN55022:1995	Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Components

Other requirements

Other requirements that affect the installation of this system include:

- State and local building codes
- AHJ

Documentation conventions

Notices throughout this manual inform the reader of practices and conditions, which will affect physical safety, occupant safety, equipment performance, and efficiency. Notices appear as warnings, cautions, and notes.

Warnings

Warnings appear whenever property damage, injury, or loss of life may occur through the neglect of safe practices and conditions. You will see warnings in the following format:

Warning! Disconnect all wiring on TB4 of the SIGA-REL (release circuits 1 and 2) during system service. Disabled points will not prevent activation of the release circuits. Failure to follow these instructions may result in loss of life, serious injury, or property damage.

Cautions

Cautions alert you to practices that may damage equipment, software, or project databases. For example, the manual provides a caution against corrupting the database.

Caution! Do not use the *Accept Actual* function in the Signature Mapping tool. Accepting actual data may corrupt the database by causing it to see every accepted device as two devices.

Notes

Notes provide instructions to help you save time or avoid wasting it. For example, a note may inform you that a system does not support a function so you will not waste time looking for it.

Note: EST2 systems do not support matrix groups.

Chapter 1

Installing the SIGA-REL

Summary

The SIGA-REL supports a variety of fire suppression applications. These applications include sprinkler systems and automatic fire extinguishing systems. When you install the SIGA-REL, follow agency and local requirements along with the instructions in this manual.

Content

Introducing the SIGA-REL

Description

The SIGA-REL Releasing Module (Figure 1-1) is a Signature Series component consisting of:

- Two supervised release circuits
- Two supervised prerelease circuits
- One supervised manual release input circuit
- One supervised abort circuit for a normally-open abort switch
- One first alarm output relay (Form C contact)

The SIGA-REL controls operations for deluge, preaction, and automatic fire extinguishing systems. The module controls the release of gas and other fire suppression agents through release solenoids.

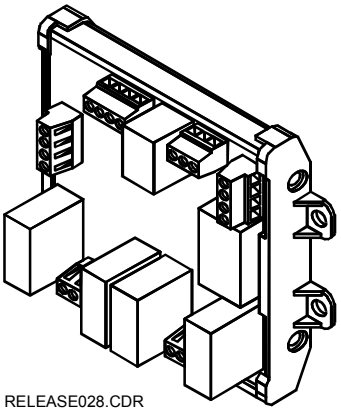


Figure 1-1: SIGA-REL Releasing Module

Features

The SIGA-REL includes:

- Deluge sprinkler operation
- Preaction sprinkler operation
- Automatic fire extinguishing operation
- Selectable abort modes
- Intelligent microprocessor

Fire suppression systems

Sprinkler systems

The SIGA-REL works with two types of sprinkler systems: deluge and preaction. The primary difference between both systems is the type of sprinkler head (or nozzle) that terminates the pipes. Table 1-1 outlines the Factory Mutual Research Corporation (FMRC) requirements for deluge and preaction systems. FMRC also requires FM-approved compatible release valves. See Table 1-4 in *Compatible panels and devices*.

Table 1-1: FM approval requirements for deluge and preaction sprinkler systems

Specification	Value
Standby operation	90 hours
Alarm operation	10 minutes
NFPA style	Class A (Style D or E) or Class A (Style 2, 5, 6, or 7)

Deluge sprinkler systems

In Deluge sprinkler systems, open-valve sprinkler heads terminate pipes connected to a water supply controlled by a single valve. When the system detects a fire it automatically opens the valve to allow the waterflow through all of the sprinkler heads. Deluge sprinklers are useful for applications that require the simultaneous discharge of water through every sprinkler.

The following fire detection systems meet FRMC requirements for deluge systems:

- Wet pilot sprinkler line
- Dry pilot sprinkler line
- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Preaction sprinkler systems

In preaction sprinkler systems, closed-valve sprinkler heads terminate pipes connected directly to a water supply. The water supply is usually in the same area as the sprinklers and the pipes are supervised for air pressure. Preaction sprinklers are useful where it is important to prevent the accidental discharge of water.

The following fire detection systems meet FRMC requirements for preaction systems:

- Hydraulic rate-of-rise
- Pneumatic rate-of-rise
- Electric

Automatic fire extinguishing systems

Warning! Improper applications of fire suppression agents can lead to property damage, injury, or loss of life. Consult the applicable NFPA documents and the authority having jurisdiction (AHJ) for more information.

Automatic fire extinguishing systems automatically detect and extinguish fires. They require no manual input because detectors automatically activate releasing solenoids or sprinkler valves. Table 1-2 provides a list of the fire suppression agents and the applicable NFPA documents.

Table 1-2: Fire suppression agents and NFPA documentation

Agent	NFPA documentation
Low-expansion foam	NFPA 11
Medium- and high-expansion foam	NFPA 11A
CO_2	NFPA 12
Sprinklers	NFPA 13
Water spray	NFPA 15
Foam-water	NFPA 16
Dry chemicals	NFPA 17

Note: On September 16, 1986, the *Montreal Protocol on Substances* determined that Halon is an ozone-depleting substance. The SIGA-REL is not listed for use with Halon.

Table 1-3 outlines the FMRC requirements for automatic fire extinguishing systems.

Table 1-3: FM approval requirements for automatic fire extinguishing systems

Specification	Value
Standby operation	24 hours
Alarm operation	10 minutes
NFPA style	B or D
FMRC documentation	FMRC Approval Guide (Volume 1)

Compatible panels and devices

Panels

The SIGA-REL is compatible with EST2 and EST3 fire alarm control panels. You may install the SIGA-REL in any of the following enclosures:

- 2-WB(X) series
- RACCR series
- 3-RCC series
- 3-CAB series
- MFC-A

Note: Maintain a 1-inch (25.4 mm) minimum clearance all around the SIGA-REL. The clearance space must also comply with the National Electrical Code.

Power supplies

The SIGA-REL is compatible with the following power supplies:

- 2-PPS(-220)
- 2-PPS/6A(-220)
- SIGA-APS(-220)
- 3-BPS/M(-220)
- 3-PPS/M(-220)
- BPS6(-220)*
- BPS10(-220)*

*Not compatible with FMRC sprinkler applications that require 90 hours of standby.

Solenoid polarizing relays

Use the RELA-EOL with the SIGA-REL. For more information, see the RELA-EOL installation sheet.

Abort stations

The SIGA-REL is only compatible with normally-open, momentary-action abort stations. Abort stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Service disconnect stations

The SIGA-REL is only compatible with listed service disconnect stations that are normally-closed (minimum 2.0 Amps). Service disconnect stations must be listed with the appropriate agencies in your area. See *Listing agencies*.

Releasing solenoid valves

Releasing solenoid valves must be listed with the appropriate agencies in your area. FMRC requires FM-approved solenoid release valves. Table 1-4 lists the FM-approved solenoid release valves that work with the Releasing Module.

Table 1-4: FM-approved solenoid release valves

Group	Company	Model
A	Skinner	LV2LBX25
D	ASCO	8210G207
E	Skinner	73218BN4UNLVNDC111C2
F	Skinner	73212BN4TNLVNDC322C2
G	Skinner	71395SN2ENJINOH111C2

For other listing agencies that may apply to your area, see *Listing agencies*.

Listing agencies

Listing agencies include:

- Factory Mutual Research Corporation (FMRC)
- Underwriters Laboratories, Inc. (UL)
- Underwriters Laboratories Canada (ULC)

Specifications

*Riser current: Total current of output circuits is limited to the power riser input current (up to 4 amps) minus 170 mA.

Power riser

Input voltage	24 Vdc
Supervisory current	25 mA, max.
Alarm current	170 mA min., 4 A max. (depends on output circuit loading)
Line resistance	See Table 1-5.

Release circuits, TB4

Output (release circuit 1)	2 A @ 24 Vdc, max. (*See riser current.) TB4-1 and TB4-2
Output (release circuit 2)	2 A @ 24 Vdc, max. (*See riser current.) TB4-3 and TB4-4
Valves per circuit	4 valves, max.
Line resistance	See Table 1-6.
End of line device	47 kΩ resistor

Prerelease circuits, TB5

Output (prerelease circuit 1)	2 A @ 24 Vdc, max. (*See riser current.) TB5-1 and TB5-2
Output (prerelease circuit 2)	2 A @ 24 Vdc, max. (*See riser current.) TB5-3 and TB5-4
Line resistance	See Table 1-6.
End of line device	47 kΩ resistor

Manual release input circuit, TB3-1 and TB3-2

Line resistance	25 Ω/wire, #18 AWG = 3800 ft (0.75 mm^2 = 1158 m)
End of line device	47 kΩ resistor
Circuit capacitance	0.1 μF, max.

Abort circuit, TB3-3 and TB3-4

Line resistance	25 Ω/wire, #18 AWG = 3800 ft (0.75 mm^2 = 1158 m)
End of line device	47 kΩ resistor
Circuit capacitance	0.1 μF, max.

First alarm contact, TB2

Contact rating	3 A @ 24 Vdc, (resistive load) Form C

Signature Data line, TB1

Operating voltage	15.2 to 19.95 Vdc
Supervisory current	1 mA
Alarm current	1 mA
Line resistance	See the installation sheet of the Signature loop controller.
Maximum quantity	Ten SIGA-RELs per loop

Environmental conditions

Operating temperature	32 to 120 °F (0 to 49 °C)
Storage temperature	-4 to 140 °F (-20 to 60 °C)
Humidity	0 to 93% RH, non-condensing

Table 1-5: Power riser

Total riser current (Amps)	Distance from SIGA-REL to power supply				Wire resistance (Ω per wire)
	#12 AWG	2.5 mm^2	#14 AWG	1.5 mm^2	
4.0	29 ft	8.84 m	20 ft	6.10 m	0.050
3.5	34 ft	10.36 m	23 ft	7.01 m	0.057
3.0	39 ft	11.89 m	27 ft	8.23 m	0.067
2.5	47 ft	14.33 m	32 ft	9.75 m	0.080
2.0	59 ft	17.98 m	40 ft	12.19 m	0.100
1.5	78 ft	23.77 m	53 ft	16.15 m	0.133
1.0	118 ft	35.97 m	80 ft	24.38 m	0.200

Table 1-6: Prerelease and release circuits (per circuit)

Total riser current (Amps)	Distance from SIGA-REL to signals				Wire resistance (Ω per wire)
	#12 AWG	2.5 mm^2	#14 AWG	1.5 mm^2	
2.00	176 ft	53.64 m	120 ft	36.58 m	0.300
1.75	202 ft	61.57 m	137 ft	41.76 m	0.343
1.50	235 ft	71.63 m	160 ft	48.77 m	0.400
1.25	282 ft	85.95 m	192 ft	58.52 m	0.480
1.00	353 ft	107.59 m	240 ft	73.15 m	0.600
0.50	706 ft	215.19 m	480 ft	146.30 m	1.200

Mounting the SIGA-REL

Caution! The SIGA-REL and the MFC-A require separation between power-limited and nonpower-limited wiring. See the MFC-A installation sheet for details about power-limited wiring in that enclosure. See *Wiring the SIGA-REL* for details about power-limited wiring on the SIGA-REL.

To mount the SIGA-REL to the MFC-A:

1 Align the SIGA-REL to the designated mounting holes in the MFC-A (Figure 1-2 and Figure 1-3).

2 Secure the SIGA-REL to the MFC-A with the washers and screws provided.

3 Run the wiring from the SIGA-REL to the fire suppression components through the conduit knockouts in the MFC-A.

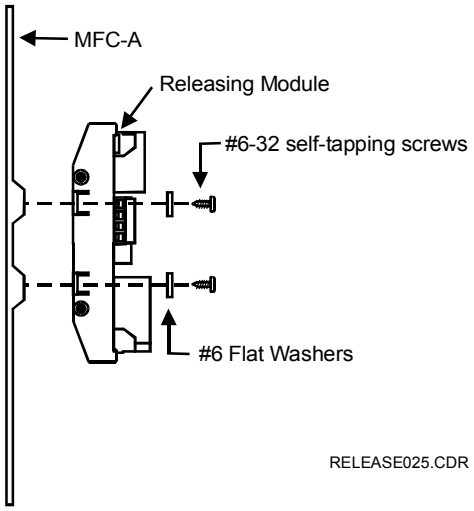


Figure 1-2: Mounting the SIGA-REL

To mount the SIGA-REL in other enclosures:

1 Use the SIGA-REL to mark the mounting hole locations (Figure 1-4).

2 Drill the mounting holes at the marks made in step 1 (mounting hole diameter = 0.125 in or 3.175 mm).

3 Mount the SIGA-REL in the cabinet with the screws and washers provided.

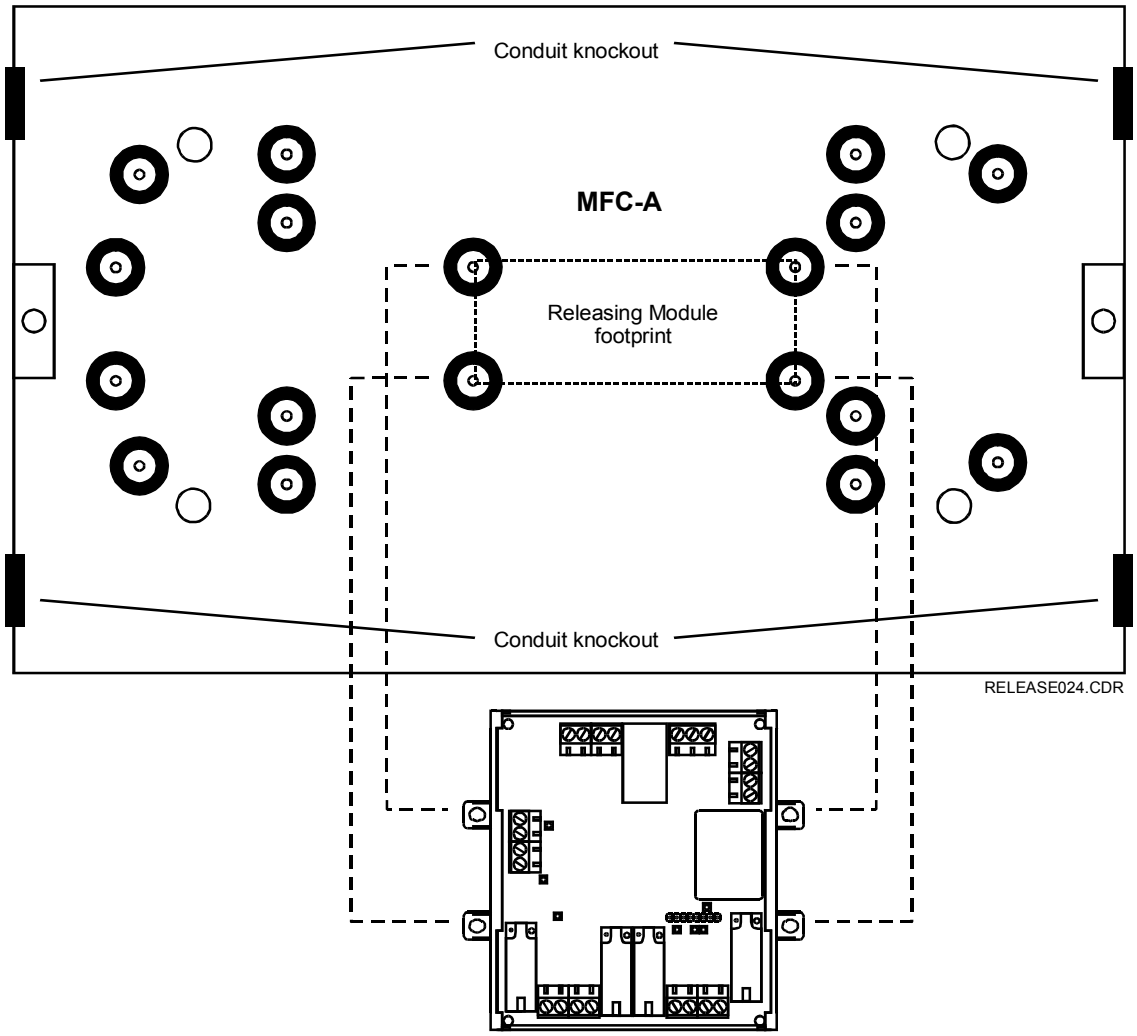


Figure 1-3: MFC-A/SIGA-REL footprint

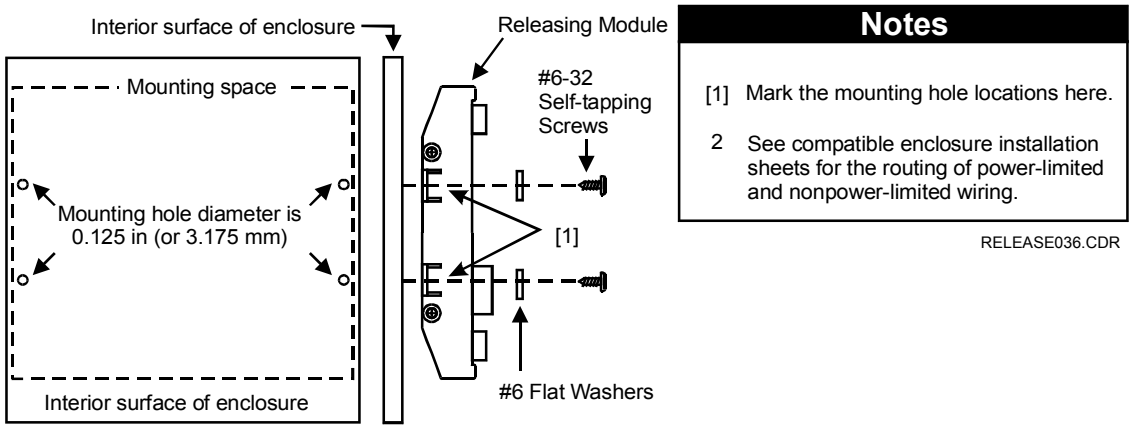


Figure 1-4: SIGA-REL mounting holes in compatible cabinets

Setting abort mode and delay times

Choosing the abort mode

Table 1-7 provides descriptions for the SIGA-REL abort modes.

Note: Abort modes 3 and 4 do not comply with UL or ULC.

Table 1-7: Abort mode descriptions

Mode	Description
1 (Factory default)	If the abort is initiated before the automatic delay timer expires, it will prevent the releasing action. The automatic delay timer will continue to run while the abort is active. When the abort is restored, the release will occur with the expiration of the automatic delay timer or the abort delay timer, whichever occurs last.
2	If the abort is initiated before the automatic delay timer expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort is restored, the automatic delay timer will resume and the release will occur with the expiration of the timer.
3 (Industrial Risk Insurers)	To be recognized as valid, the abort must be active when the second alarm is received. When the abort is restored, the release will occur with the expiration of the abort delay timer (set for 10 sec). If the valid abort is held for more than 10 seconds, the automatic delay timer is inactive. If the valid abort is held for less than 10 seconds, the automatic delay timer operates as programmed.
4 (International)	If the abort is initiated before the automatic delay timer expires, it will prevent the releasing action. The automatic delay timer will stop running. When the abort is restored, the automatic delay timer will reset and commence time from t = 0. The release will occur with the expiration of the timer setting minus 10 seconds.

Setting the DIP switches

Warning! Press the Reset switch at the fire alarm control panel whenever you change the DIP switch settings. Otherwise, the new settings will not take effect.

Figure 1-5 shows the default DIP switch settings of the SIGA-REL. Tables 1-8 through 1-11 provide the DIP switch settings for the SIGA-REL abort modes and delay time settings.

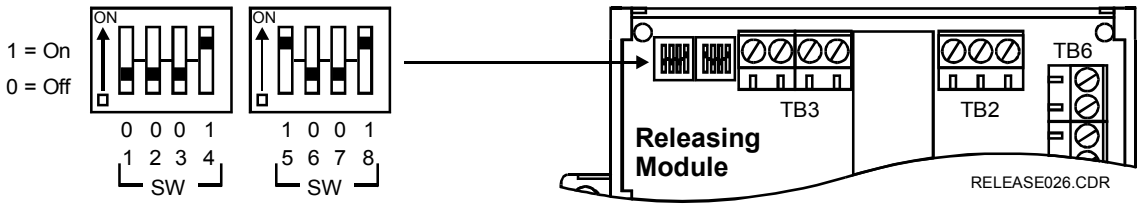


Figure 1-5: SIGA-REL DIP switches

Table 1-8: Abort mode settings

Abort mode	SW1	SW2
1 (Default)	0	0
2	0	1
3 (IRI)	1	0
4 (International)	1	1

Table 1-9: Manual delay time settings

Time delay	SW3	SW4
No delay	0	0
10 seconds (Default)	0	1
20 seconds	1	0
30 seconds	1	1

Table 1-10: Automatic delay time settings

Time delay	SW5	SW6	SW7
10 seconds	0	0	0
20 seconds	0	0	1
30 seconds	0	1	0
40 seconds	0	1	1
50 seconds (Default)	1	0	0

Table 1-11: Abort delay time settings

Time delay	SW8
No delay	0
10 seconds (Default)	1

Reading LEDs

Figure 1-6 shows the location of the LEDs on the SIGA-REL.

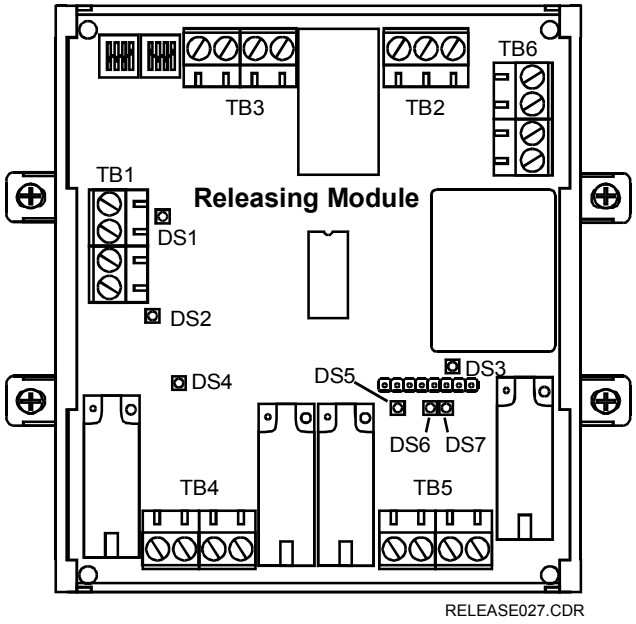


Figure 1-6: SIGA-REL LEDs

Table 1-12 explains the color, patterns, and functions for each LED.

Table 1-12: SIGA-REL LEDs

LED	Color	Pattern	Function
DS1	Red	Flashing	Data (alarm conditions)
DS2	Green	Flashing	Data (normal conditions)
DS3	Red	Steady	Alarm
DS4	Green	Steady	Power
DS5	Yellow	Steady	Abort
DS6	Yellow	Steady	Trouble
DS7	Red	Steady	Release active

Wiring the SIGA-REL

Observing equipment and personal safety

To ensure safety with the SIGA-REL:

1 Copy Figure 1-7.

2 Cut out the photocopied warning along the perforated line.

3 Post the warning next to the SIGA-REL.

4 Inform all appropriate personnel about the posted warning, its location, and its importance.

5 Require compliance with the warning during all installation and service procedures.

Warning! Observe static-sensitive material handling practices while installing or servicing the SIGA-REL. Electrostatic discharge may damage the equipment and activate the release circuits.

Running the wires

Wire SIGA-REL according to Figure 1-8.

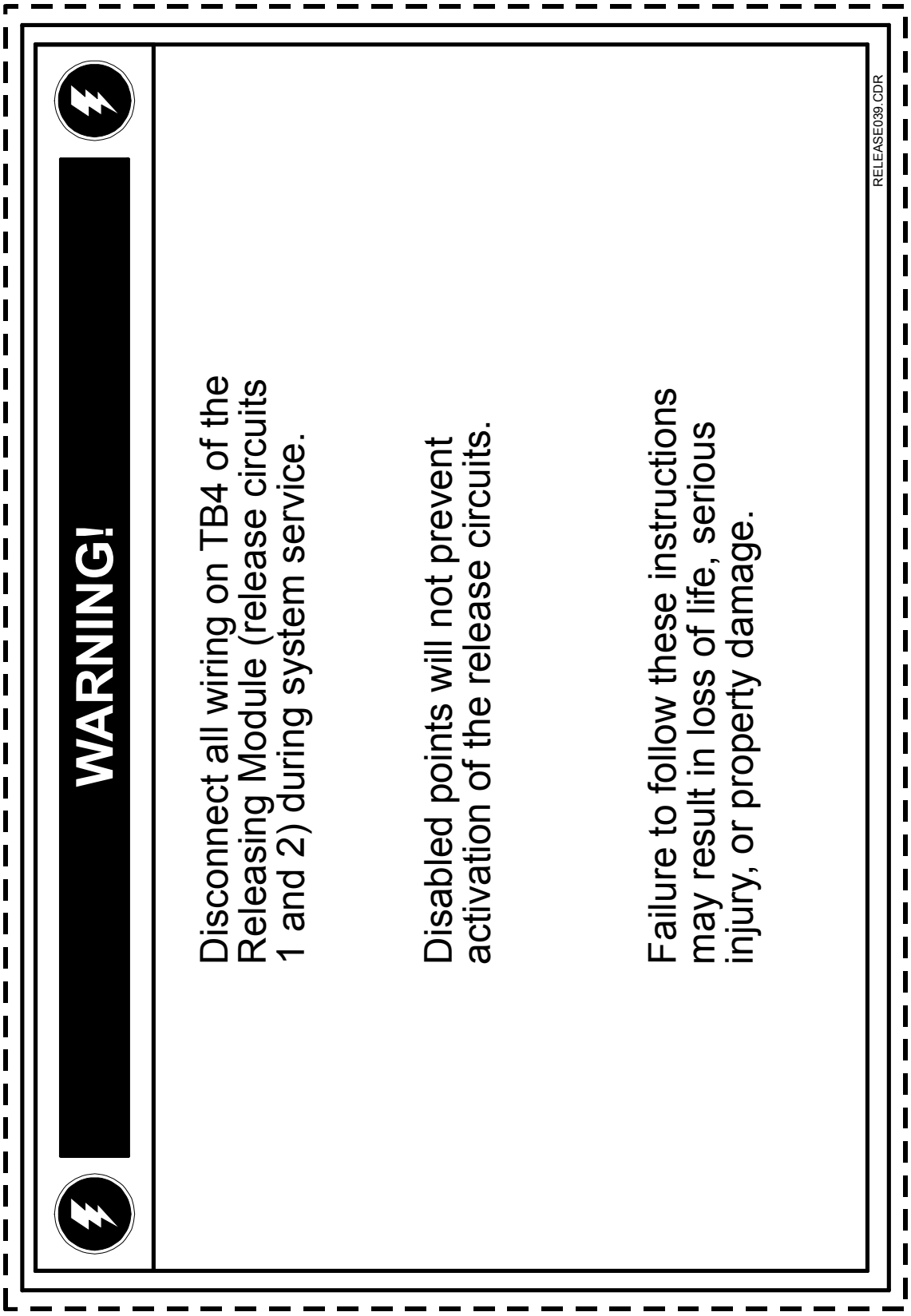
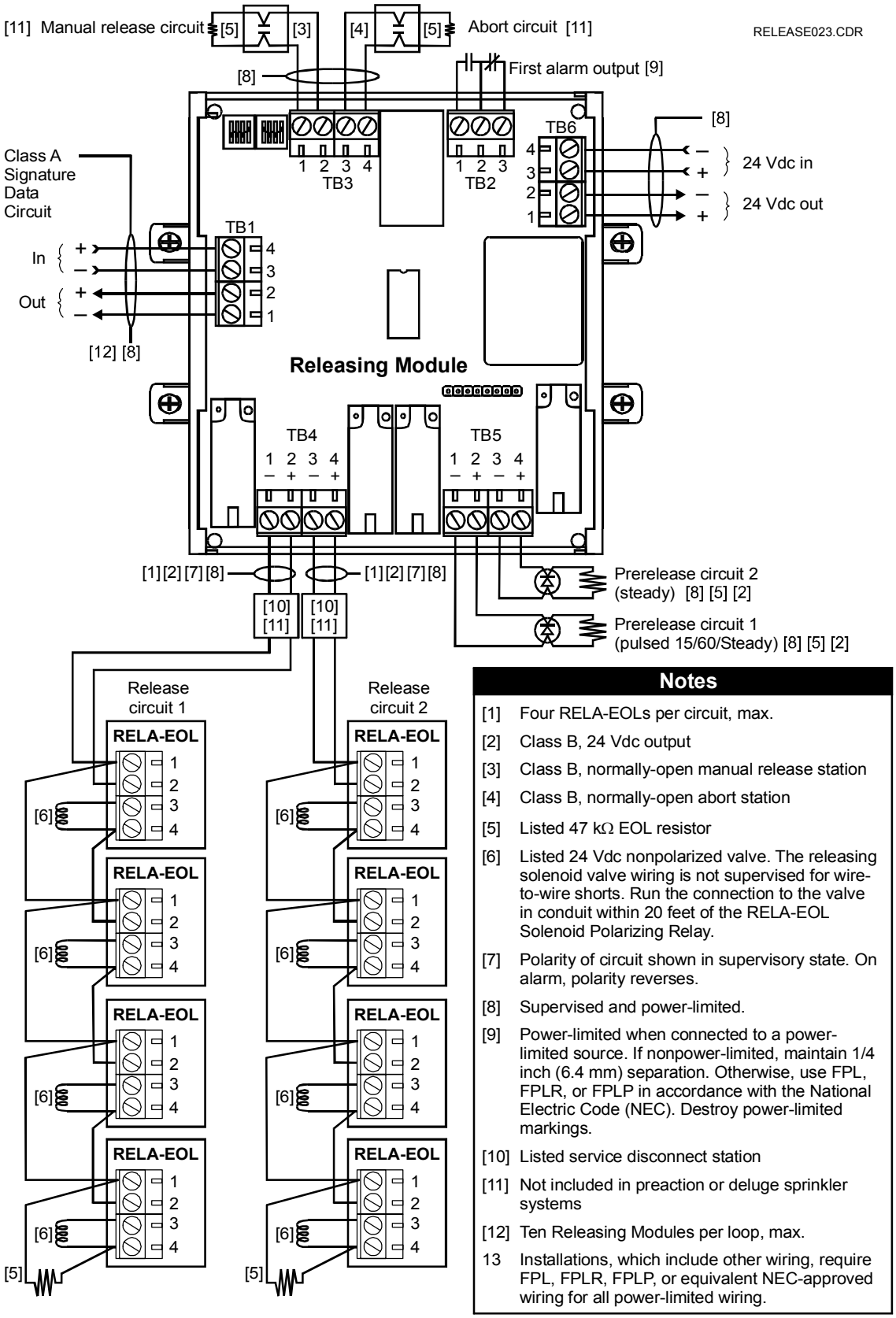


Figure 1-7: Warning notice



Notes

[1] Four RELA-EOLs per circuit, max.

[2] Class B, 24 Vdc output

[3] Class B, normally-open manual release station

[4] Class B, normally-open abort station

[5] Listed 47 kΩ EOL resistor

[6] Listed 24 Vdc nonpolarized valve. The releasing solenoid valve wiring is not supervised for wire-to-wire shorts. Run the connection to the valve in conduit within 20 feet of the RELA-EOL Solenoid Polarizing Relay.

[7] Polarity of circuit shown in supervisory state. On alarm, polarity reverses.

[8] Supervised and power-limited.

[9] Power-limited when connected to a power-limited source. If nonpower-limited, maintain 1/4 inch (6.4 mm) separation. Otherwise, use FPL, FPLR, or FPLP in accordance with the National Electric Code (NEC). Destroy power-limited markings.

[10] Listed service disconnect station

[11] Not included in preaction or deluge sprinkler systems

[12] Ten Releasing Modules per loop, max.

13 Installations, which include other wiring, require FPL, FPLR, FPLP, or equivalent NEC-approved wiring for all power-limited wiring.

Figure 1-8: SIGA-REL wiring

Chapter 2

Programming the SIGA-REL

Summary

The SIGA-REL works with EST2 and EST3 systems. The 2-SDU and the 3-SDU (Revision 1.5) recognize the SIGA-REL as three SIGA-UM modules that occupy six addresses. The 3-SDU (Revision 2.0) does not require you to select SIGA-UMs because it recognizes the SIGA-REL.

In all systems, the programming procedures for the SIGA-REL are almost identical. The greatest differences exist in the required rules and the configuration of AND groups. The SIGA-REL programming steps require strict adherence. Follow each instruction carefully.

Content

Programming the SIGA-REL in the 2-SDU

Adding the SIGA-REL to the database

Warning! This information was prepared for users who are proficient in every aspect of 2-SDU programming. DO NOT attempt to program the SIGA-REL if your certification is not current. Failure to do this may result in loss of life, serious injury, or property damage.

Caution! If you are adding other Signature Series devices to the project database, add the SIGA-REL last. Adding devices after the SIGA-REL may disrupt the addressing scheme. The SIGA-REL is a single module with six serial numbers, but the 2-SDU recognizes it as three SIGA-UMs. Addresses will differ for each installation, but they must be consecutive.

The SIGA-REL provides only one serial number label. When you scan in the SIGA-REL, only the first two serial numbers will appear in the database.

To add the SIGA-REL to the database:

1 Scan in the SIGA-REL serial number label.

2 In the SDC Configuration, ensure that four blank addresses follow the first two addresses.

3 Add two more SIGA-UMs (four address spaces) to the database to fill in the four empty addresses.

4 In the Signature Series mapping tool, access the Actual vs. Expected Data dialog box (F9 key).

Break Chain button

5 Click Break Chain and select the appropriate address.

6 Commit the expected data.

7 In the SDC Configuration, configure the SIGA-REL (SIGA-UM) addresses in strict accordance with Tables 2-1 and 2-2.

Caution! Do not use the *Accept Actual* function in the Signature Mapping tool. Accepted data may corrupt the database by causing it to see every device as two devices.

Warning! DO NOT configure the third and fifth SIGA-UM addresses as common outputs or audio amplifiers. Any off-normal condition will activate the automatic release sequence if these addresses are common outputs. The Drill switch will activate the prerelease and the release circuits if they are audio amplifiers. You must select the device types and personality codes exactly as prescribed in Tables 2-1 and 2-2.

Table 2-1: Device type selections

Typical address	Typical serial number	Device type	Model
7*	5300411525*	Monitor	SIGA-UM
8*	5300411532*	Pull	SIGA-UM
9*	5300411549*	DoorControl**	SIGA-UM
10*	5300411556*	None	SIGA-UM
11*	5300411563*	DoorControl**	SIGA-UM
12*	5300411570*	None	SIGA-UM

Table 2-2: Device type personality codes

Typical address	Personality code	
7*	3	N/O Active - Non-Latching (Class B)
8*	1	N/O Alarm Latching (Class B)
9*	16	Signal Output (Class B)
10*	0	No personality
11*	16	Signal Output (Class B)
12*	0	No personality

*Actual addresses in your system may differ, but they must be consecutive. Serial numbers must also be consecutive up to the second-to-last digit.

**Select one of the following: DamperControl, DoorControl, or FanControl. Ensure that the selected device type is exclusive for SIGA-REL use.

Labeling the SIGA-REL components

In the Object Configuration, assign the labels and messages listed in Table 2-3 to the SIGA-UM.

Table 2-3: SIGA-REL labels

Device Type	Typical address	Label	Message	Model
Monitor	0207*	Abort	Abort	SIGA-UM
Pull	0208*	Manual	Manual	SIGA-UM
DoorControl	0209*	Release_1	Release_1	SIGA-UM
None	0210*	Release_2	Release_2	SIGA-UM
DoorControl	0211*	Prerelease_1	Prerelease_1	SIGA-UM
None	0212*	Prerelease_2	Prerelease_2	SIGA-UM

*The addresses in Table 2-3 demonstrate the importance of ensuring that the SIGA-REL occupies six consecutive addresses. The actual addresses in your system may differ.

Programming an AND group

AND groups function as cross zones. For more information about programming AND groups, see the *EST2 System Programming Manual* and the *2-SDU Help*.

Note: Every device contained in each (SIGA-REL) AND group must include a rule with an output statement like the one in [ALARM1]. See Figure 2-1 for the details.

Reconciling the Signature map

Caution! Do not use *Accept Actual* in the Signature Series mapping tool. Accepted devices may appear as two devices in the SDC database and corrupt it. Use the *Break Chain* and *Commit Expected* functions to reconcile the Signature map.

Writing rules for the SIGA-REL

To write the rules:

1 In the Rules Editor, write the mandatory rules in Figure 2-1 and the optional rules in Figure 2-2.

2 Compile the rules and run the required conversions.

3 Download and upload the new information.

Note: See the system testing section, at the end of this chapter, before you test of your system.

```
[ALARM1]
ALARM 'ALARM_1' : ON 'PRERELEASE_1';

[ALARM2]
ALARM 'ALARM_2' : ON 'PRERELEASE_1';

[RELEASE]
DEFINE AND 'AND_GROUP1' : DELAY 10,
                          ON 'RELEASE_1';

[RESET]
DEFINE SYSRESET 'MCMN1' : OFF 'PRERELEASE_1',
                          OFF 'RELEASE_1';

[DUMP]
ALARM 'MANUAL' : ON 'RELEASE_1';
```

Note: [ALARM_1] and [ALARM_2] require the addition of two Signature Series alarm devices to the SDC Configuration. Make sure that the object labels in the rules match the labels assigned in the Object Configuration.

RELEASE010.CDR

Figure 2-1: Mandatory rules of the SIGA-REL

```
[DRILL]
DEFINE DRILL 'MCMN1' : ON 'PRERELEASE_1';

[LED1]
CONFIRMATION 'PRERELEASE_1' :   ON 'LED_1_1';

[LED2]
CONFIRMATION 'RELEASE_1' :      ON 'LED_1_2';
```

Note: [LED1] and [LED2] require the addition of an LED module to the MCM Configuration. Make sure that the labels for the LEDs match the labels assigned to them in the Object Configuration.

RELEASE032.CDR

Figure 2-2: Optional rules for the SIGA-REL

Avoid using the Drill switch to test the SIGA-REL. If you activate a Drill, press the Reset switch to deactivate it. The deactivation of the Drill switch, alone, will not silence the prerelease tones.

Programming the SIGA-REL in the 3-SDU (Revision 1.5)

Adding the SIGA-REL to the database

Warning! This information was prepared for users who are proficient in every aspect of 3-SDU (Revision 1.5) programming. DO NOT attempt to program the SIGA-REL if your certification is not current. Failure to do this may result in loss of life, serious injury, or property damage.

Caution! If you are adding other Signature Series devices to the project database, add the SIGA-REL last. Adding devices after the SIGA-REL may disrupt the addressing scheme. The SIGA-REL is a single module with six serial numbers, but the 3-SDU (Revision 1.5) recognizes it as three SIGA-UMs. Addresses will differ for each installation, but they must be consecutive.

The SIGA-REL provides only one serial number label. When you scan in the SIGA-REL, only the first two serial numbers will appear in the database.

To add the SIGA-REL to the database:

1 Scan in the SIGA-REL serial number label.

2 In the DSDC configuration (Loop X Modules tab), ensure that four blank addresses follow the first two addresses.

3 Add two more SIGA-UMs (four address spaces) to the database to fill in the four empty addresses.

Break Chain button

4 In the Signature Series mapping tool, access the Actual vs. Expected Data dialog box (F9 key).

5 Click Break Chain and select the appropriate address.

6 Commit the expected data.

7 In the DSDC configuration, configure the SIGA-REL (SIGA-UM) addresses in strict accordance with Tables 2-4 and 2-5.

Caution! Do not use the *Accept Actual* function in the Signature Mapping tool. Accepted data may corrupt the database by causing it to see every device as two devices.

Warning! DO NOT configure the third and fifth SIGA-UM addresses as common outputs or audio amplifiers. Any off-normal condition will activate the automatic release sequence if these addresses are common outputs. The Drill switch will activate the prerelease and the release circuits if they are audio amplifiers. You must select the device types and personality codes exactly as prescribed in Tables 2-4 and 2-5.

Table 2-4: Device type selections

Typical address	Typical serial number	Device type	Model
126*	5300411525*	Monitor	SIGA-UM
127*	5300411532*	Pull	SIGA-UM
128	5300411549*	SupervisedOutput	SIGA-UM
129*	5300411556*	None	SIGA-UM
130*	5300411563*	SupervisedOutput	SIGA-UM
131*	5300411570*	None	SIGA-UM

Table 2-5: Device type personality codes

Typical address	Personality code	
126*	3	N/O Active - Non-Latching (Class B)
127*	1	N/O Alarm Latching (Class B)
128*	16	Signal Output (Class B)
129*	0	No personality
130*	16	Signal Output (Class B)
131*	0	No personality

*Actual addresses in your system may differ, but they must be consecutive. Serial numbers must also be consecutive up to the second-to-last digit.

Labeling the SIGA-REL components

In the Object configuration, assign the labels and messages listed in Table 2-6 to the SIGA-UMs.

Table 2-6: SIGA-REL labels

Device Type	Typical address	Label	Message	Model
Monitor	126*	Abort	Abort	SIGA-UM
Pull	127*	Manual	Manual	SIGA-UM
SupervisedOutput	128*	Release_1	Release_1	SIGA-UM
None	129*	Release_2	Release_2	SIGA-UM
SupervisedOutput	130*	Prerelease_1	Prerelease_1	SIGA-UM
None	131*	Prerelease_2	Prerelease_2	SIGA-UM

*The addresses in Table 2-6 demonstrate the importance of ensuring that the SIGA-REL occupies six consecutive addresses. The actual addresses in your system may differ.

Programming an AND group

AND groups function as cross zones; matrix groups function as counting zones. For more information about programming AND groups and matrix groups, see the *EST3 System Programming Manual* and the *3-SDU Help*.

Note: Every device contained in each (SIGA-REL) AND group must include a rule with an output statement like the one in [ALARM1]. See Figure 2-3 for the details.

Warning! Set the AND group to an Activate number 2 or greater. Activate number 1 will cause the AND group to become an OR group, and any activation of Alarm_1 or Alarm_2 will activate the release sequence.

Note: For preaction operation, set the Activate number to 1. This will cause the AND group to become an OR group. Any activation of Alarm_1 or Alarm_2 will then activate the release sequence.

Reconciling the Signature map

Caution! Do not use *Accept Actual* in the Signature Series mapping tool. Accepted devices may appear as two devices in the SDC database and corrupt it. Use the *Break Chain* and *Commit Expected* functions to reconcile the Signature map.

Writing rules for the SIGA-REL

To write the rules:

1 In the Rules Editor, write the mandatory rules in Figure 2-3 and the optional rules in Figure 2-4.

2 Compile the rules and run the required conversions.

3 Download and upload the new information.

Note: See the system testing section, at the end of this chapter, before you test of your system.

```
[ALARM1]
ALARM 'ALARM_1' :      ON 'PRERELEASE_1';

[ALARM2]
ALARM 'ALARM_2' :      ON 'PRERELEASE_1';

[ANDGROUP DUMP]
ALARM 'AND_GROUP1' :       DLYA 10,
                           ON 'RELEASE_1',
                           DLYR 10;

[DUMP]
ALARM 'MANUAL' : ON -HIGH 'RELEASE_1';
```

RELEASE011.CDR

Note: [ALARM_1] and [ALARM_2] require the addition of alarm devices to the panel configuration. Make sure that the object labels match the labels assigned to them in the Object Configuration.

Figure 2-3: Mandatory rules for the SIGA-REL

```
[DRILL]
DRILL :    ON 'PRERELEASE_1';

[LED1]
RLYCFG 'PRERELEASE_1' :   ON 'LED_1_1';

[LED2]
RLYCFG 'RELEASE_1' :      ON 'LED_1_2';
```

Note: [LED1] and [LED2] require the addition of an LED module to the Cabinet Configuration (Modules tab, operator layer). Make sure that the labels for the LEDs match the labels assigned to them in the Object Configuration.

RELEASE033.CDR

Figure 2-4: Optional rules for the SIGA-REL

Avoid using the Drill switch to test the SIGA-REL. If you activate a Drill, press the Reset switch before you deactivate it. The deactivation of the Drill switch, alone, will not silence the prerelease tones.

Programming the SIGA-REL in the 3-SDU (Revision 2.0)

Adding the SIGA-REL to the database

Warning! This information was prepared for users who are proficient in every aspect of 3-SDU (Revision 2.0) programming. DO NOT attempt to program the SIGA-REL if your certification is not current. Failure to do this may result in loss of life, serious injury, or property damage.

Caution! If you are adding other Signature Series devices to the project database, add the SIGA-REL last. Adding devices after the SIGA-REL may disrupt the addressing scheme. The SIGA-REL is a single module with six serial numbers, but the 3-SDU (Revision 2.0) recognizes it as three SIGA-RELs. Addresses will differ for each installation, but they must be consecutive.

The SIGA-REL provides only one serial number label. When you scan in the SIGA-REL, only the first two serial numbers will appear in the database.

To add the SIGA-REL to the database:

1 Scan in the SIGA-REL serial number label.

2 In the DSDC configuration (Loop X Modules tab), ensure that four blank addresses follow the first two addresses.

3 Add two more SIGA-RELs (four address spaces) to the database to fill in the four empty addresses.

Break Chain button

4 In the Signature Series mapping tool, access the Actual vs. Expected Data dialog box (F9 key).

5 Click Break Chain and select the appropriate address.

6 Commit the expected data.

7 In the DSDC configuration, configure the SIGA-REL addresses in strict accordance with Tables 2-7 and 2-8.

Caution! Do not use the *Accept Actual* function in the Signature Mapping tool. Accepted data may corrupt the database by causing it to see every device as two devices.

Warning! DO NOT configure the third and fifth SIGA-REL addresses as common outputs or audio amplifiers. Any off-normal condition will activate the automatic release sequence if these addresses are common outputs. The Drill switch will activate the prerelease and the release circuits if they are audio amplifiers. You must select the device types and personality codes exactly as prescribed in Tables 2-7 and 2-8.

Table 2-7: Device type selections

Typical address	Typical serial number	Device type	Model
126*	5300411525*	Monitor	SIGA-REL
127*	5300411532*	Pull	SIGA-REL
128	5300411549*	SupervisedOutput	SIGA-REL
129*	5300411556*	None	SIGA-REL
130*	5300411563*	SupervisedOutput	SIGA-REL
131*	5300411570*	None	SIGA-REL

Table 2-8: Device type personality codes

Typical address	Personality code	
126*	3	N/O Active - Non-Latching (Class B)
127*	1	N/O Alarm Latching (Class B)
128	16	Signal Output (Class B)
129*	0	No personality
130*	16	Signal Output (Class B)
131*	0	No personality

*Actual addresses in your system may differ, but they must be consecutive. Serial numbers must also be consecutive up to the second-to-last digit.

Labeling the SIGA-REL components

In the Object configuration, assign the labels and messages listed in Table 2-9 to the SIGA-REL.

Table 2-9: SIGA-REL labels

Device Type	Typical address	Label	Message	Model
Monitor	126*	Abort	Abort	SIGA-REL
Pull	127*	Manual	Manual	SIGA-REL
SupervisedOutput	128*	Release_1	Release_1	SIGA-REL
None	129*	Release_2	Release_2	SIGA-REL
SupervisedOutput	130*	Prerelease_1	Prerelease_1	SIGA-REL
None	131*	Prerelease_2	Prerelease_2	SIGA-REL

*The addresses in Table 2-9 demonstrate the importance of ensuring that the SIGA-REL occupies six consecutive addresses. The actual addresses in your system may differ.

Programming an AND group

AND groups function as cross zones; matrix groups function as counting zones. For more information about programming AND groups and matrix groups, see the *EST3 System Programming Manual* and the *3-SDU Help*.

Note: Every device contained in each (SIGA-REL) AND group must include a rule with an output statement like the one in [ALARM1]. See Figure 2-5 for the details.

Warning! Set the AND group to an Activate number 2 or greater. Activate number 1 will cause the AND group to become an OR group, and any activation of Alarm_1 or Alarm_2 will activate the release sequence. Check only Q1 for each device in the listbox labeled “Devices in Selected Group.” For Q1, only a detector in alarm will count as a device activation. If you check Q2, Q3, or Q4 the release circuit may accidentally activate for maintenance issues.

Note: For preaction operation, set the Activate number to 1. This will cause the AND group to become an OR group. Any activation of Alarm_1 or Alarm_2 will then activate the release sequence.

Reconciling the Signature map

Caution! Do not use *Accept Actual* in the Signature Series mapping tool. Accepted devices may appear as two devices in the SDC database and corrupt it. Use the *Break Chain* and *Commit Expected* functions to reconcile the Signature map.

Writing rules for the SIGA-REL

To write the rules:

1 In the Rules Editor, write the mandatory rules in Figure 2-5 and the optional rules in Figure 2-6.

2 Compile the rules and run the required conversions.

3 Download and upload the new information.

Note: See the system testing section, at the end of this chapter, before you test of your system.

```
[ALARM1]
ALARM 'ALARM_1' :      ON 'PRERELEASE_1';

[ALARM2]
ALARM 'ALARM_2' :      ON 'PRERELEASE_1';

[ANDGROUP DUMP]
ALARM 'AND_GROUP1' :       DLYA 10,
                           ON 'RELEASE_1',
                           DLYR 10;

[DUMP]
ALARM 'MANUAL' : ON -HIGH 'RELEASE_1';
```

RELEASE011.CDR

Note: [ALARM_1] and [ALARM_2] require the addition of alarm devices to the panel configuration. Make sure that the object labels match the labels assigned to them in the Object Configuration.

Figure 2-5: Mandatory rules for the SIGA-REL

```
[DRILL]
DRILL :    ON 'PRERELEASE_1';

[LED1]
RLYCFG 'PRERELEASE_1' :   ON 'LED_1_1';

[LED2]
RLYCFG 'RELEASE_1' :      ON 'LED_1_2';
```

Note: [LED1] and [LED2] require the addition of an LED module to the Cabinet Configuration (Modules tab, operator layer). Make sure that the labels for the LEDs match the labels assigned to them in the Object Configuration.

RELEASE033.CDR

Figure 2-6: Optional rules for the SIGA-REL

Avoid using the Drill switch to test the SIGA-REL. If you activate a Drill, press the Reset switch before you deactivate it. The deactivation of the Drill switch, alone, will not silence the prerelease tones.

System testing

Warning! Disconnect the release circuit until system testing is complete and the system is stable.

Testing EST2 systems

Allow the system sufficient time to stabilize after the initial startup or download. Before you test the system, access the SDC Status tool in the 2-SDU. Do not test the system if the status LEDs indicate anything pending or in progress. This includes:

- Mapping
- Device new starts
- Resets
- Restarts

Testing EST3 systems

Allow the system sufficient time to stabilize after the initial startup or download. Before you test the system, access the DSDC Status tool in the 3-SDU. Do not test the system if the status LEDs indicate anything pending or in progress. This includes:

- Mapping
- Device new starts
- Resets
- Restarts

In the 3-SDU (Rev 2.0), you can test the system while the Device Supervision LED is on. The Device Supervision LED may be on longer for larger loops.

Chapter 3

Operational description

Summary

The SIGA-REL works with manual and automatic inputs. The operational description explains how the SIGA-REL fits into the fire alarm system and behaves during fire alarms.

Content

Integrating the Releasing Module with fire alarm systems

System overview

The SIGA-REL is a Signature Series module that interfaces a Signature loop controller with fire suppression components. The Releasing Module works with sprinkler systems and automatic extinguishing systems. Sprinklers include preaction and deluge systems. Automatic fire extinguishing systems include the fire suppression agents listed in Table 1-2.

Note: See *Installing the SIGA-REL* for details about its wiring, specifications, mounting, and abort mode settings. For wiring resistance calculations, see pages 1.7 and 1.8.

Preaction/deluge sprinkler systems

Figure 3-1 illustrates the integration of the SIGA-REL with the fire alarm control panel and a preaction or deluge sprinkler system. Sprinkler systems do not include service disconnect stations, abort stations, or manual release stations.

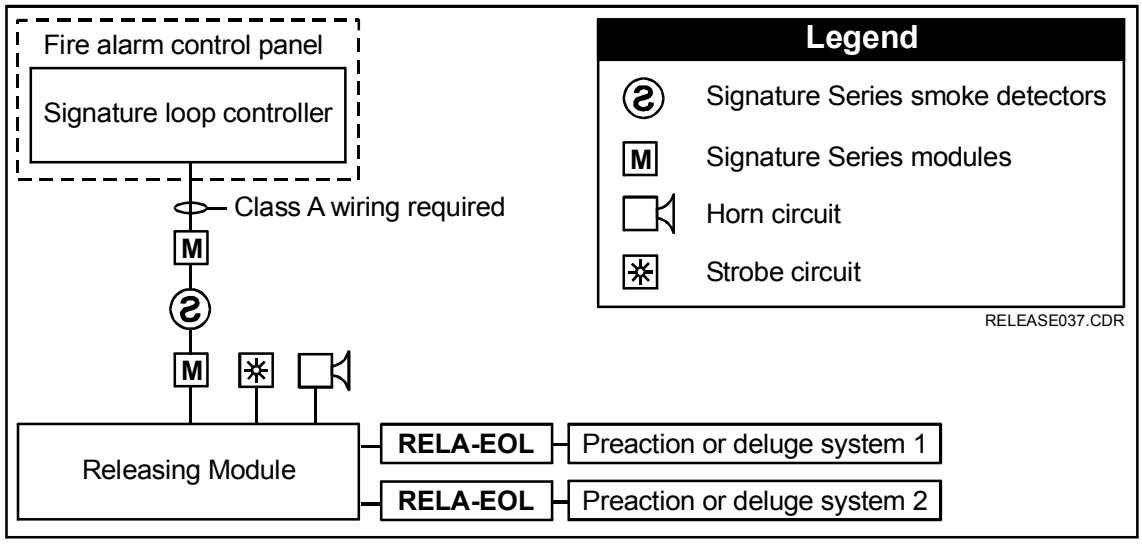


Figure 3-1: Integration of the Releasing Module with a deluge or preaction sprinkler system

Automatic fire extinguishing systems

The SIGA-REL also supports automatic extinguishing systems, which provide manual actuation of abort, release, and service-disconnect functions. Figure 3-2 illustrates the integration of the SIGA-REL with a fire alarm control panel in an automatic fire extinguishing system.

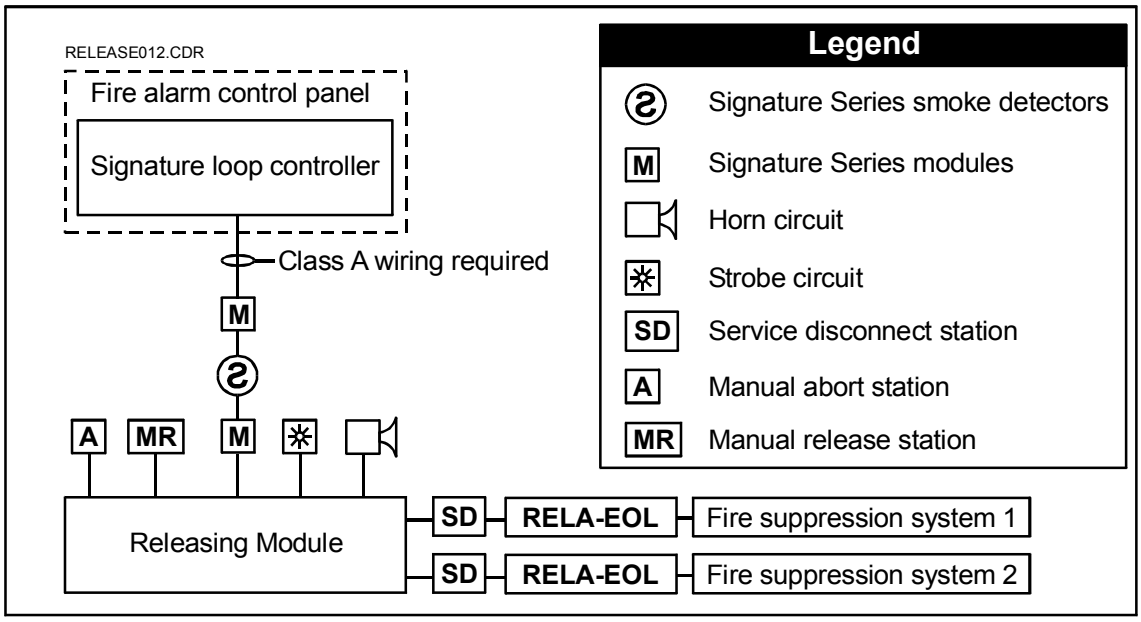


Figure 3-2: Integration of the Releasing Module with an automatic extinguishing system

Developing a fire suppression plan

The Releasing Module consists of two releasing circuits, which provide fire suppression in two separate areas. The computer room illustrated in Figure 3-3 is a typical application for the Releasing Module.

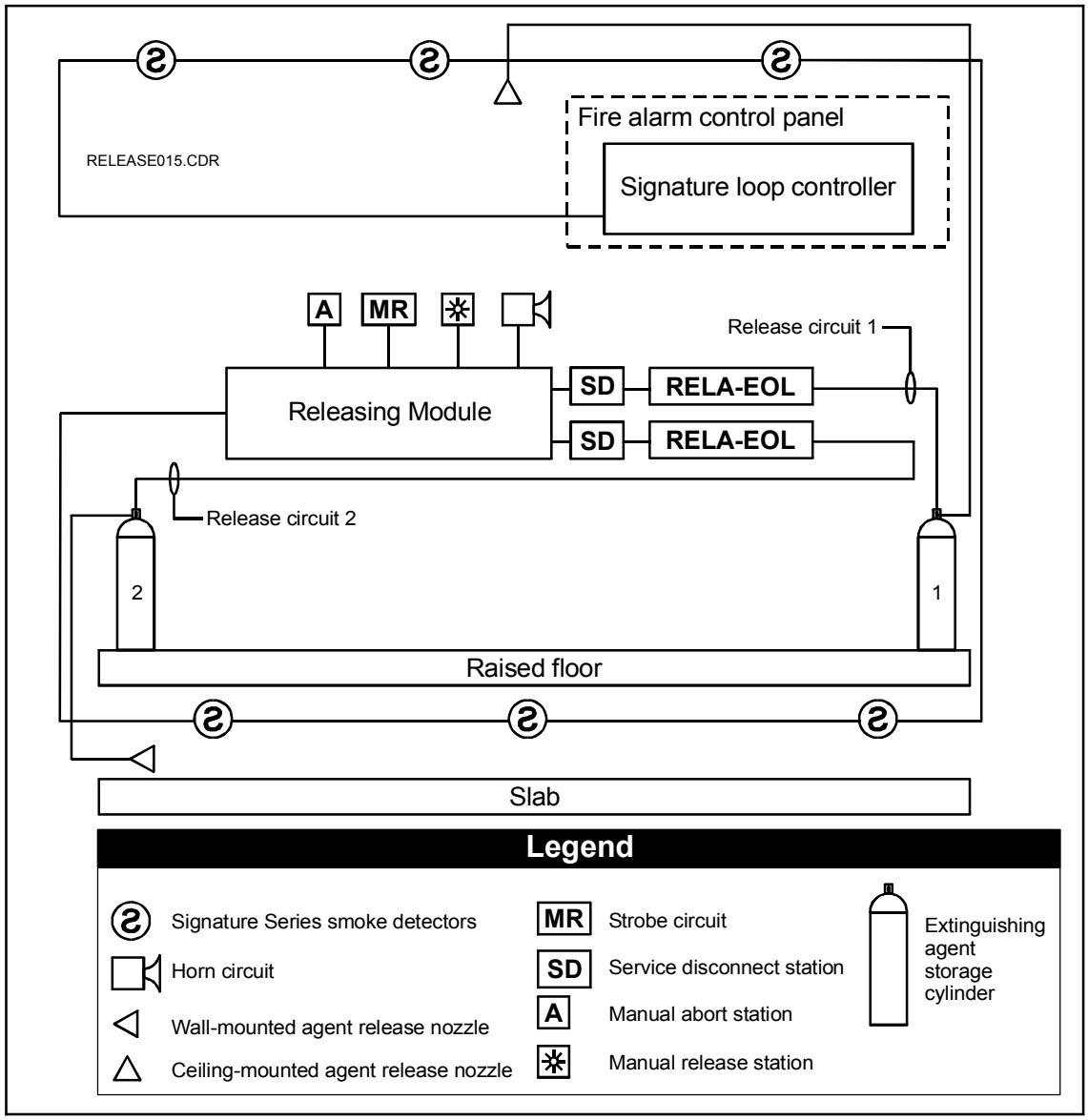


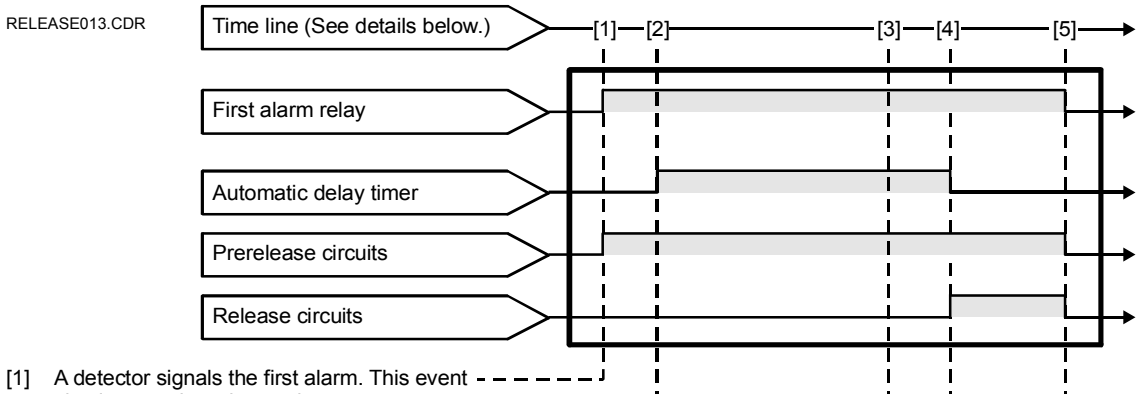
Figure 3-3: Typical computer room application

Releasing fire suppression agents

Understanding the automatic release sequence

The automatic release sequence requires an AND group (cross zone) or a matrix group (counting zone). AND groups and matrix groups require fire alarm signals from designated Signature Series devices. These logic groups are programmable through a laptop computer and the System Definition Utility (SDU). Figure 3-4 explains the automatic release sequence.

Note: EST2 systems do not support matrix groups. See *Programming the SIGA-REL* for AND group rules. To create AND groups and matrix groups, see the *System Programming Manual* and the SDU *Online Help* for your system.



[1] A detector signals the first alarm. This event simultaneously activates the:

- First alarm relay
- Prerelease strobe circuit (steady On)
- Prerelease horn circuit (15 pulses per minute)

[2] A detector in the protected area signals a second alarm and meets the AND group conditions.* The automatic delay timer then starts its countdown and the prerelease horn circuit changes to 60 pulses per minute.

*AND group and matrix group conditions depend on programming.

[3] 10 seconds before the automatic delay timer expires, the prerelease (horn) circuit changes to steady On.

[4] The automatic delay timer expires and the release circuits activate.

[5] A manual reset at the fire alarm control panel deactivates the release solenoids and the Releasing Module returns to the normal state.

Figure 3-4: Automatic release sequence

Note: Prerelease circuit 1 supports audible notification appliances that sound prerelease and release signals. Audible prerelease signals sound at 15 and 60 pulses per minute. The audible release signal is a steady tone. Prerelease circuit 2 supports visual notification appliances.

Initiating manual releases

The operation of a manual release station initiates the manual release sequence. Figure 3-5 explains the manual release sequence.

Warning! You CANNOT abort the manual release sequence.

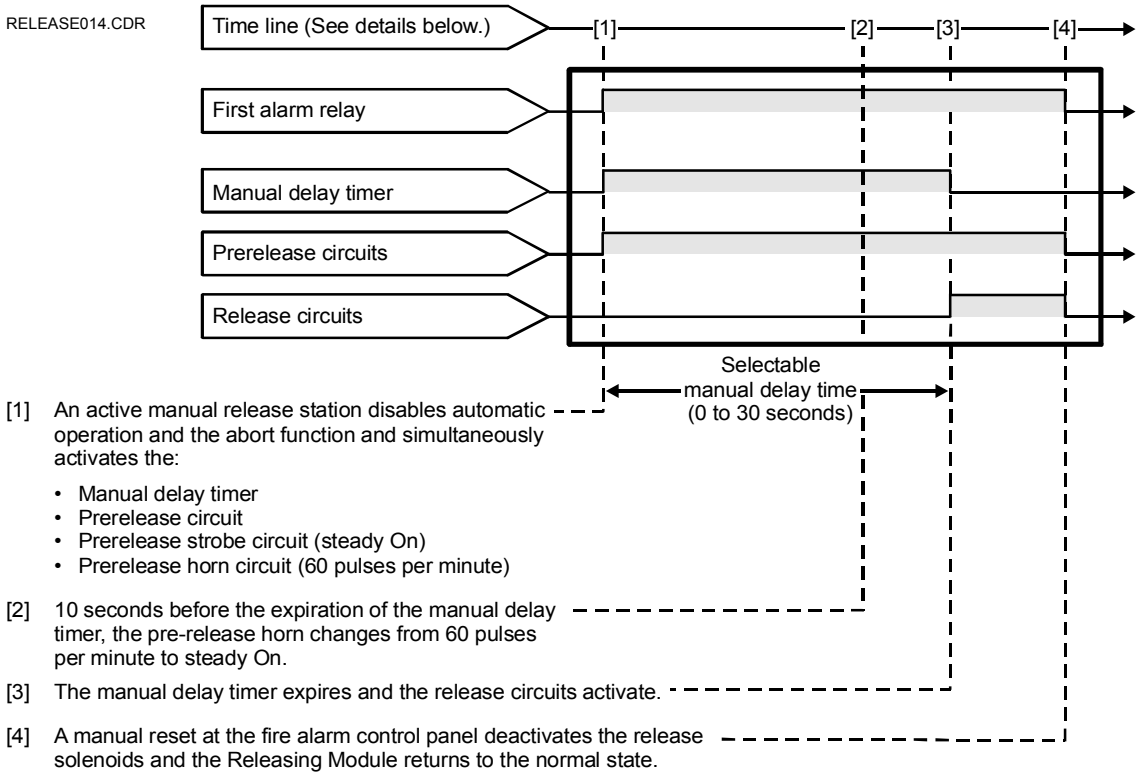


Figure 3-5: Manual release sequences

Chapter 4

SIGA-REL trouble indications

Summary

You may occasionally see SIGA-REL messages on the front panel display. Table 4-1 provides trouble indications for EST2 panels. Table 4-2 provides trouble indications for EST3 panels.

Content

SIGA-REL indications on EST2 panels

Warning! Disconnect all wiring on TB4 of the SIGA-REL (release circuits 1 and 2) during system service. Disabled points will not prevent activation of the release circuits. Failure to follow these instructions may result in loss of life, serious injury, or property damage.

After the successful completion of the programming process, the fire alarm control panel will reset itself. Upon reset, device supervision may cause the panel to generate a Dev/Line fault for each SIGA-REL circuit. This is a normal indication, and it should go away within minutes. Table 4-1 lists the indications you may see for the SIGA-REL on the 2-LCD.

Table 4-1: Releasing Module indications

Device	Condition	LED	2-LCD message
Abort	Short	Monitor	None, unless there is another event
	Open	Trouble	Open Fault Abort*
Manual	Short	Alarm	1st Fire Alarm Manual*
	Open	Trouble	Open Fault Manual*
Prerelease_1	Short	Trouble	Short Fault Prerelease_1*
	Open	Trouble	Open Fault Prerelease_1*
Prerelease_2	Short	Trouble	Dev/Line Flt Prerelease_2*
	Open	Trouble	Open Fault Prerelease_2*
Abort Manual Prerelease_1 Prerelease_2 Release_1 Release_2	No riser	Trouble	Dev/Line Flt Device (Abort, Manual, Prerelease_1, Prerelease_2, Release_1, or Release_2)*
Release_1	Short	Trouble	Short Fault Release_1*
	Open	Trouble	Open Fault Release_1*

Table 4-1: Releasing Module indications (Continued)

Device	Condition	LED	2-LCD message
Release_2	Short	Trouble	Dev/Line Flt Release_2*
	Open	Trouble	Open Fault Release_2*

*Message requires user programming.

SIGA-REL indications on EST3 panels

Warning! Disconnect all wiring on TB4 of the SIGA-REL (release circuits 1 and 2) during system service. Disabled points will not prevent activation of the release circuits. Failure to follow these instructions may result in loss of life, serious injury, or property damage.

When programming is complete, the fire alarm control panel will reset itself, reconstruct the line datacard, and map it. Upon reset, device supervision may cause the panel to generate a common trouble active for each SIGA-REL circuit. This is a normal indication, and it should go away within minutes. Table 4-2 lists the indications you may see for the SIGA-REL on the 3-LCD.

Table 4-2: Releasing Module indications

Device	Condition	LED	3-LCD message
Abort	Short	Monitor	MONITOR ACT (Abort)
	Open	Trouble	COMMON TRBL ACT Abort* Expanded message: TROUBLE OPEN ACT
Manual	Short	Alarm	PULL STATION ACT Manual*
	Open	Trouble	COMMON TRBL ACT Manual* Expanded message: TROUBLE OPEN ACT
Prerelease_1	Short	Trouble	COMMON TRBL ACT Prerelease_1* Expanded message: TROUBLE SHRT ACT
	Open	Trouble	COMMON TRBL ACT Prerelease_1* Expanded message: TROUBLE OPEN ACT
Prerelease_2	Short	Trouble	COMMON TRBL ACT Prerelease_2* Expanded message: TROUBLE SHRT ACT
	Open	Trouble	COMMON TRBL ACT Prerelease_2* Expanded message: TROUBLE OPEN ACT
Abort Manual Prerelease_1 Prerelease_2 Release_1 Release_2	No riser	Trouble	COMMON TRBL ACT Device (Abort, Manual, Prerelease_1, Prerelease_2, Release_1, or Release_2)* Expanded message: INTRNL TRBL ACT

Table 4-2: Releasing Module indications (Continued)

Device	Condition	LED	3-LCD message
Release_1	Short	Trouble	COMMON TRBL ACT Release_1* Expanded message: TROUBLE SHRT ACT
	Open	Trouble	COMMON TRBL ACT Release_1* Expanded message: TROUBLE OPEN ACT
Release_2	Short	Trouble	COMMON TRBL ACT Release_2* Expanded message: TROUBLE SHRT ACT
	Open	Trouble	COMMON TRBL ACT Release_2* Expanded message: TROUBLE OPEN ACT

*Message requires user programming.

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