FX-3500RCU
Fire Alarm Control Panel

FM APPLICATIONS MUST HAVE CLASS A INITIATING CIRCUITS ONLY AND 90 HOUR BATTERY STANDBY OPERATION

Releasing Application Guide

Table of Contents

1.0   Operating the Panel

> **!**
> **Attention: ONLY UL/ULC LISTED MANUAL ABORT AND MANUAL RELEASE SWITCHES, SUCH AS THE MIRCOM SS-2004, ARE PERMITTED FOR USE.**

The TS1 terminal on the power supply board (MD-1011) is dedicated to supply power for releasing devices. For wiring information see LT-1083RCU FX-3500RCU Installation Manual.

1.1   Hazard Zones

Hazard zones are configurable by correlating input devices, releasing circuits, (pre)release signals, and manual release and abort switches.

> ***i***
> **Notes:**   Abort switches are only configurable in Preaction/Agent release applications.
>
> Soak Delay timer is only configurable for Deluge applications.
>
> As PER NFPA 72: System releasing circuits will not initiate an alarm signal due to movement of waste water, surges, or variable pressure.

1.2   Counting Zone Type

Releasing applications must be configured with one of the following Counting Zone types:

Single   Activation of any one input device correlated to the hazard zone will initiate the release process.

Double   Activation of any two input devices correlated to the hazard zone will confirm the alarm and initiate the release process.

Triple   Activation of any three input devices correlated to the hazard zone will initiate the release process.

2 Input Types   Activation of any two different input device types (ion, photo, heat etc.) correlated to the hazard zone will initiate the release process.

1.3   Abort Type

Releasing applications must be configured with one of the following Delay Timer types:

ULI   After the Abort switch is pressed, the release timer will reset and then restart. If the switch is held for any time up to 50 seconds, then the releasing device will actuate 60 seconds after the switch is pressed. However, if the switch is held for longer than 50 seconds, then the releasing device will actuate 10 seconds after the switch is released.

IRI   Same as ULI with the following condition: For the Abort switch to function, you must press and hold the Abort switch before the second zone goes into alarm.

NYC   Pressing the Abort switch causes the control panel to add 90 seconds to the Release Delay Timer (RDT).
Pressing and holding the Abort switch stops the Release Delay Timer (RDT) from counting down. Releasing the Abort switch resumes the count down of the RDT.

AHJ   The timer does not start while you press and hold the Abort switch. Press the Abort switch and the timer resumes counting down. Press the Abort switch again to restore the timer to its full value. Release the Abort switch and the timer resumes counting down.

1.4   Configurable Timers

Releasing applications may be configured with the following timers:

Release Delay Timer (RDT)   The amount of time from when the Hazard Zone is activated via correlated input devices until release.
The maximum value for the RDT is 60 seconds.

Soak Delay Timer (SDT)   The amount of time that the releasing circuit will be active. Upon the expiration of Soak Timer, the releasing circuits will be shut off. Only configurable in Deluge applications.
The maximum value for the SDT is 600 seconds.

Configuring the SDT to 0 seconds causes the releasing circuits to shut off ONLY when the system is reset.

Manual Release Delay Timer (MRDT)   The amount of time from when the Manual Release Switch is pressed until release.
The maximum value for the MRDT is 60 seconds.

!   **Attention: Manual Release cannot be aborted once it has been initiated. Use ULC-S528 listed Manual Release such as MS-704(U) and MS-714(U).**

1.5   Hazard Zone States

The escalating Hazard Zone states are as follows:

• Hazard Idle

• Hazard Alarm

• Hazard Release.

The states are defined based on the status of Hazard Area input devices, and correlated Abort and Manual Release Switches.

1.5.1 Hazard Idle

The Hazard Zone is Idle when:

• Release Delay Timer (RDT) is not started.

• There are insufficient alarm conditions to activate the Hazard Zone. For more information see Chapter 1.2 Counting Zone Type.

• Manual Release Switch is not active.

During this state:

• The corresponding NAC circuit(s) is off.

• Releasing circuit(s) is off.

1.5.2 Hazard Alarm (pre-discharge)

The panel enters the Hazard Alarm state when:

- It detects the Hazard area confirming alarm input device. For more information on confirming alarms see Chapter 1.2 Counting Zone Type.

OR

- For a Single Counting Zone hazard area, a single alarm input device will put the Hazard Zone into the Hazard Alarm state.

OR

- Manual Release switch is activated.

The releasing process continues as follows:

- Release Delay Timer (RDT) or Manual Release Delay Timer (MRDT) is started.
- Corresponding NAC(s) turns on at Alert rate.

1.5.3 Hazard Release

The panel enters the Hazard Release state when:

- The Release Delay Timer (RDT) or Manual Release Delay Timer (MRDT) expires.

The releasing process continues as follows:

- The correlated releasing circuit is activated.
- Corresponding NAC(s) switch to Evac rate.

1.6 General Operation

- If the Hazard Zone is Idle, activation of a Manual Release Switch starts the Manual Release Delay Timer (MRDT). The expiration of the MRDT activates the releasing circuits.
- If the Hazard Zone is active and the configured time for the Manual Release Delay Timer (MRDT) is less than the time remaining on the Release Delay Timer (RDT), once the MRDT expires the MRDT activates and release occurs. If the RDT is less than the MRDT, once the RDT expires the RDT activates and release occurs.
- If the Hazard Zone is activated by the Manual Release Switch, it cannot be aborted.
- If the Hazard Zone is activated by any other method, any configured abort switches will operate as described in 1.3 Abort Type.
- System Reset will reset all circuits, including releasing circuits.

Attention: **When using a system that requires the activation of two automatic detection devices, detector installation spacing must be reduced to 0.7 times the linear spacing in accordance with National Fire Alarm Code, NFPA 72.**

Caution: To meet the requirements of NFPA 12A, Clean Agent Fire Extinguishing Systems, and NFPA 2001, Water Mist Fire Protection Systems, the Authority Having Jurisdiction may require to have the Manual Release Switch override the Abort Switch. To accomplish this, the FX-3500RCU configuration software set the Man Rel Priority flag for the Hazard Zone to Yes.

2.0 Releasing Circuit Wiring

INPUT CIRCUIT WIRING: FM APPLICATIONS MUST HAVE CLASS A INITIATING CIRCUITS ONLY AND 90 HOUR BATTERY STANDBY OPERATION

See page 16 for the list of compatible solenoids.

Only addressable M500S and MIX-M500SAP supervised output modules can be used as a releasing circuit.

The releasing circuit is wired as Class B. Supervision of the solenoid coil is performed by the MP-3500R/W Solenoid EOL.

Wiring for the releasing circuit is shown in Figure 1.

To comply with UL 864 10th edition May 7 2010 section 36.1.12, the disconnect switch must be a switch listed for UL 864 that has an appropriate current and voltage rating to match the maximum loading from the panel.

The following releasing disable switches are UL listed:

- Notifier: MRD-1 (UL file S635)
- Honeywell: MRD-1H (UL file S470)
- Potter: RCDS-2001 (UL file S2930

Solenoid EOL module (MP-3500R/W) is used to supervise the solenoid coil. If the solenoid is already fitted with the directional diode then only the 47K EOL resistor is used. The supervisory current passes through the solenoid coil thus confirming the integrity of the solenoid coil for open coil. The wiring is supervised for the open and short conditions.

2.1 Releasing Circuit Wiring - Class B (Style Y) Wiring
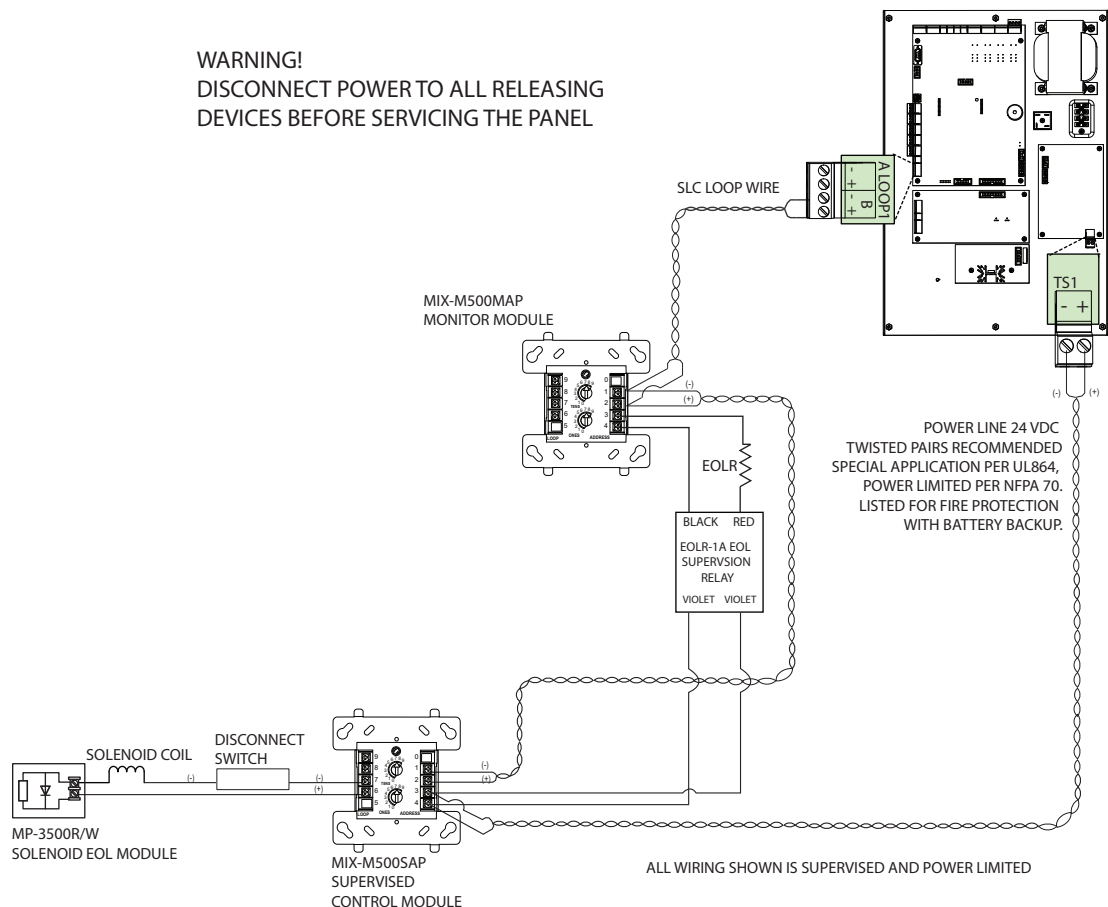
Figure 1   Releasing Circuit Wiring - Class B (Style Y) Wiring

3.0　Typical Releasing Applications

3.1　Pre-Action/Agent Release, Single Activation Application

Devices	
———	**SLC Loop**
	Any Detector in Hazard Zone
	Releasing Agent
	Addressable Module
❌	**Abort Switch**
✅	**Manual Release Switch**
Logic	
AND	**AND Gate** Both inputs are required.
··············	**Logic Path**
OR	**OR Gate** If either input is activated release occurs.
NOT	**NOT Gate** Input is required to be not activated.
⏱	**Delay Timer** Use FX-3500RCU Configurator to set type.
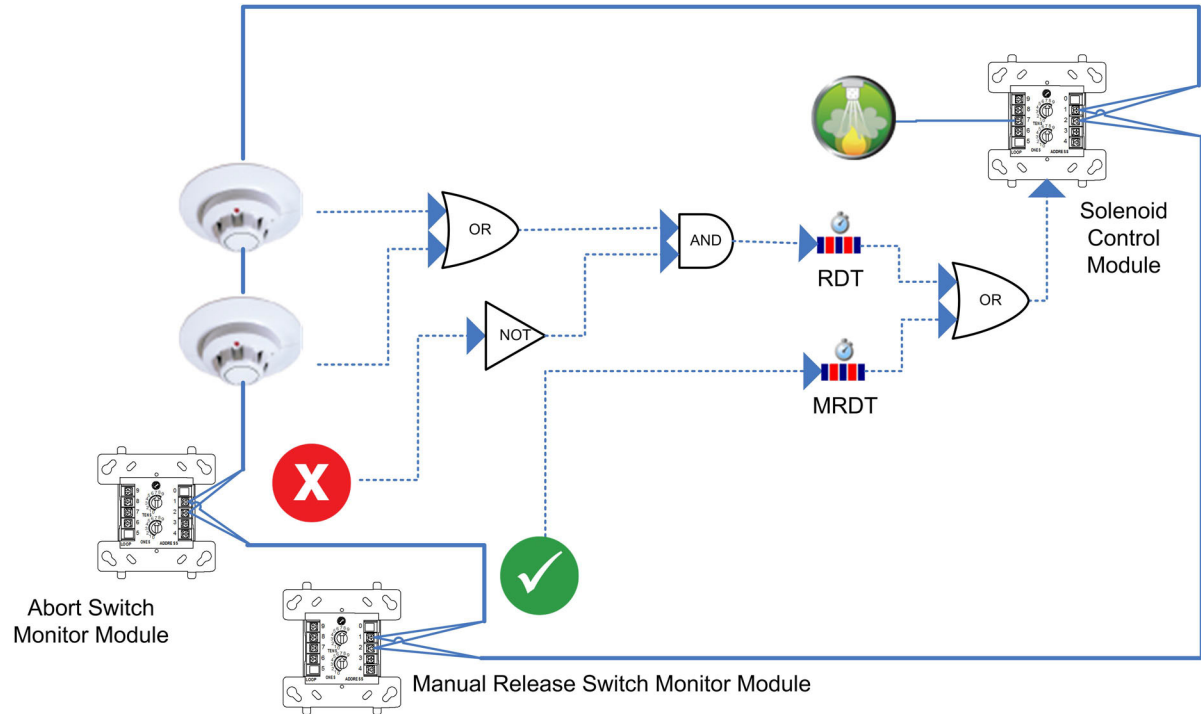
Abort Switch Monitor Module

Manual Release Switch Monitor Module

OR

AND

NOT

RDT

MRDT

OR

Solenoid Control Module

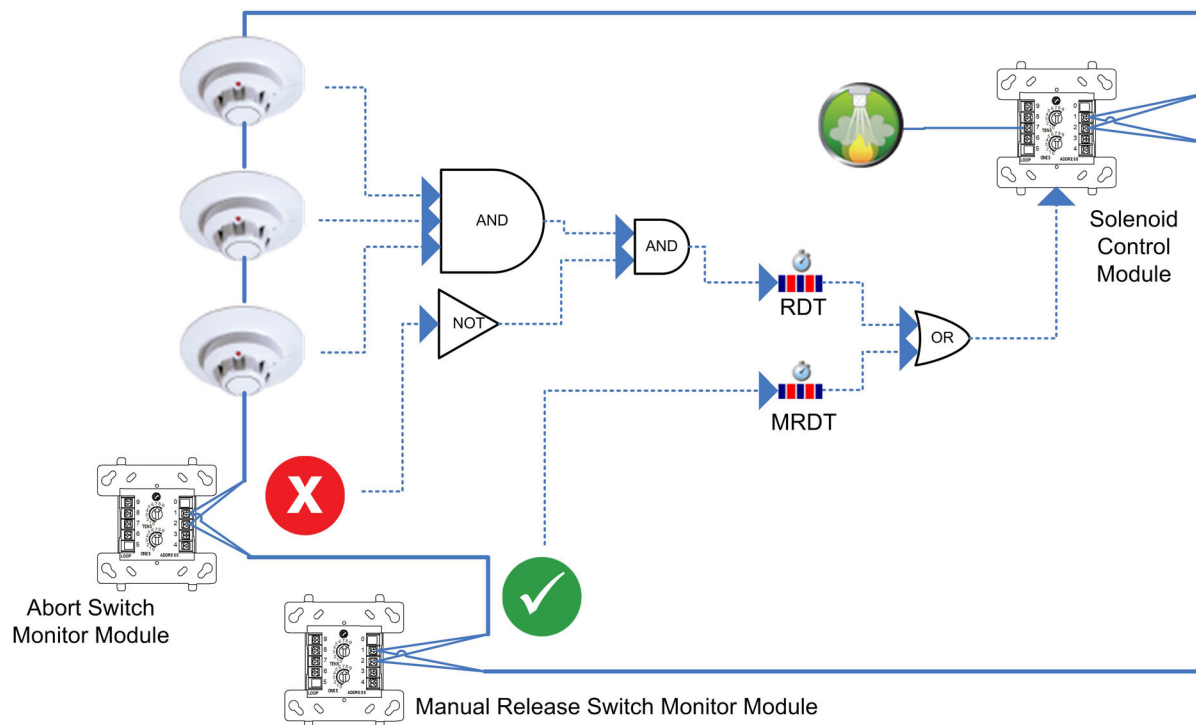Release commences if the following events occur:

- a single detector correlated to the Hazard Zone enters alarm
- the abort switch is not pressed
- the delay timer expires

OR

- the Manual Release Switch is pressed
- the delay timer expires

3.2   Pre-Action/Agent Release, Double Activation Application

Devices		
————		**SLC Loop**
		Any Detector in Hazard Zone
		Releasing Agent
		Addressable Module
❌		**Abort Switch**
✅		**Manual Release Switch**
Logic		
··············		**Logic Path**
AND		**AND Gate** Both inputs are required.
NOT		**NOT Gate** Input is required to be not activated.
OR		**OR Gate** If either input is activated release occurs.
⏲		**Delay Timer** Use FX-3500RCU Configurator to set type.

Abort Switch
Monitor Module

Manual Release Switch Monitor Module
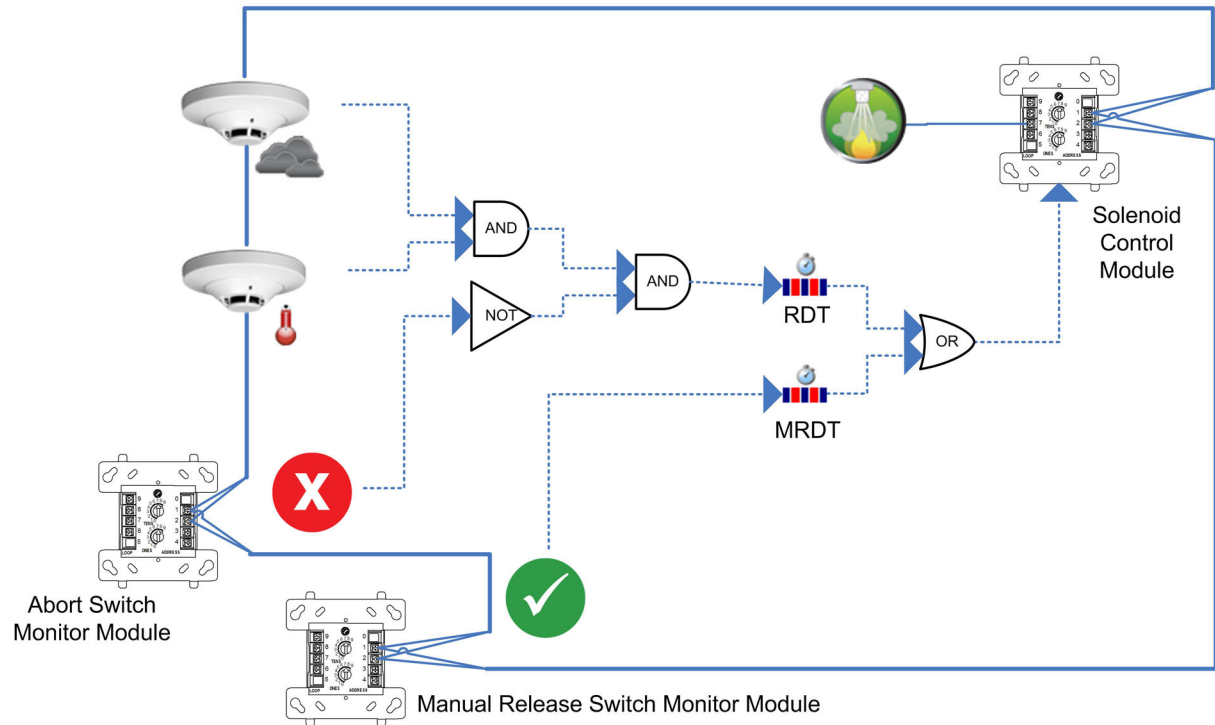
Solenoid
Control
Module

RDT

MRDT

AND

NOT

AND

OR

Release commences if the following events occur:

• two detectors correlated to the Hazard Zone enter alarm

• the abort switch is not pressed

• the delay timer expires

OR

• the Manual Release Switch is pressed

• the delay timer expires.

3.3   Pre-Action/Agent Release, Triple Activation Application

Devices		
		SLC Loop
		Any Detector in Hazard Zone
		Releasing Agent
		Addressable Module
	X	**Abort Switch**
	✔	**Manual Release Switch**
Logic		
....		**Logic Path**
AND		**AND Gate** Both inputs are required.
NOT		**NOT Gate** Input is required to be not activated.
OR		**OR Gate** If either input is activated release occurs.
		Delay Timer Use FX-3500RCU Configurator to set type.

Abort Switch
Monitor Module

Manual Release Switch Monitor Module

Solenoid
Control
Module

AND

AND

NOT

RDT

MRDT

OR

Release commences if the following events occur:

• three detectors correlated to the Hazard Zone enter alarm

• the abort switch is not pressed

• the delay timer expires

OR

• the Manual Release Switch is pressed

• the delay timer expires.

## 3.4 Pre-Action/Agent Release, 2 Input Type Activation Application

Devices		
		SLC Loop
		Smoke Detector
		Heat Detector
		Releasing Agent
		Addressable Module
✕		**Abort Switch**
✓		**Manual Release Switch**
Logic		
		Logic Path
AND		**AND Gate** Both inputs are required.
NOT		**NOT Gate** Input is required to be not activated.
OR		**OR Gate** If either input is activated release occurs.
		Delay Timer Use FX-3500RCU Configurator to set type.

Abort Switch Monitor Module

Manual Release Switch Monitor Module
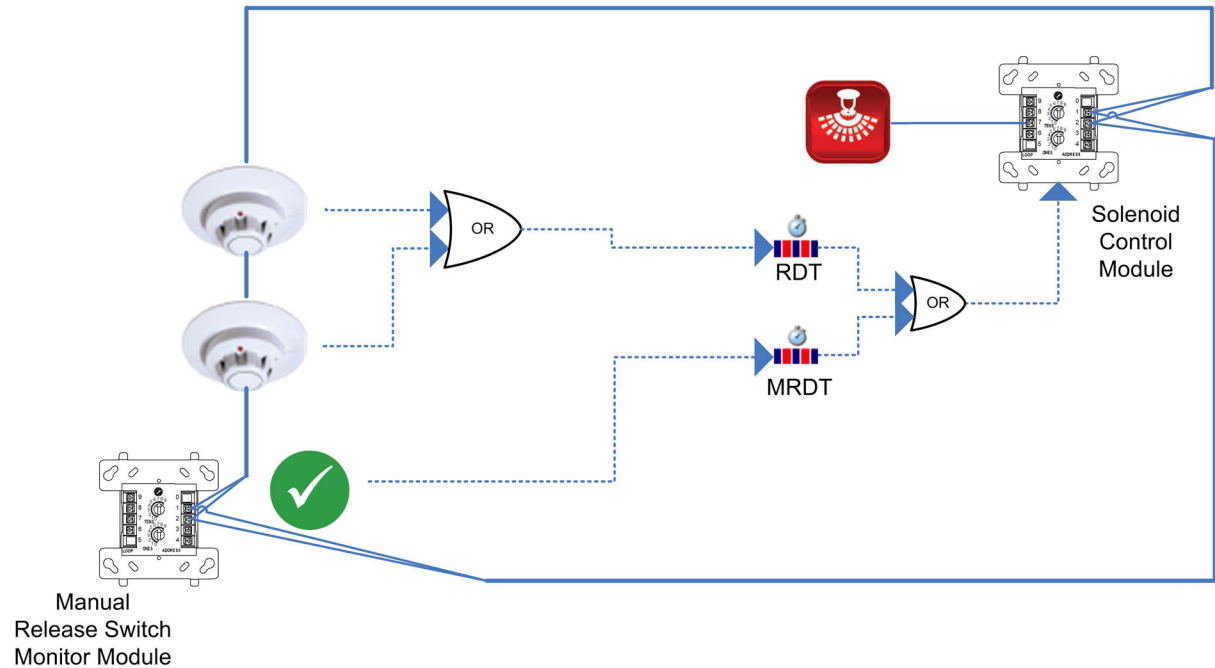
RDT

MRDT

Solenoid Control Module

Release commences if the following events occur:

- two detectors of different types correlated to the Hazard Zone enter alarm
  - the abort switch is not pressed
  - the delay timer expires

OR

- the Manual Release Switch is pressed
  - the delay timer expires.

3.5   Deluge, Single Activation Application

Devices	
───────	**SLC Loop**
	Any Detector in Hazard Zone
	Deluge System
	Addressable Module
	Manual Release Switch
Logic	
----------------	**Logic Path**
OR	**OR Gate** If either input is activated release occurs.
	Delay Timer Use FX-3500RCU Configurator to set type.

Manual Release Switch Monitor Module

RDT

MRDT

Solenoid Control Module

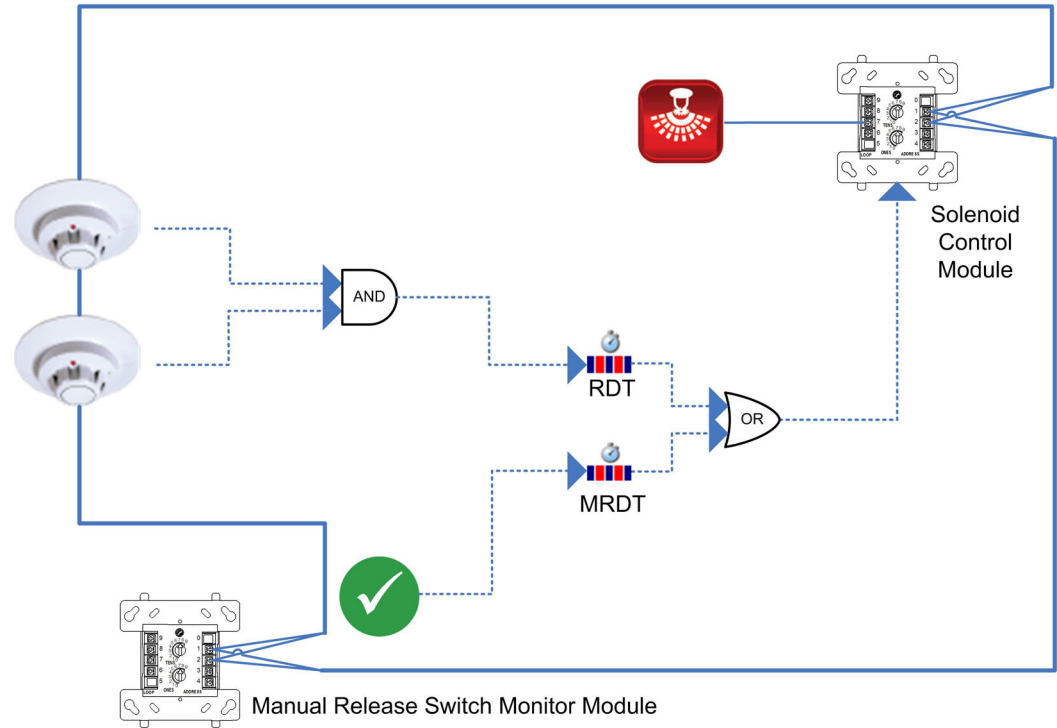Deluge commences if the following events occur:

• a single detector correlated to the Hazard Zone enters alarm

• the delay timer expires

OR

• the Manual Release Switch is pressed

• the delay timer expires.

## 3.6   Deluge, Double Activation Application

Devices		
——	**SLC Loop**	
	Any Detector in Hazard Zone	
	Deluge System	
	Addressable Module	
	Manual Release Switch	
Logic		
··············	**Logic Path**	
AND	**AND Gate** Both inputs are required.	
OR	**OR Gate** If either input is activated release occurs.	
	Delay Timer Use FX-3500RCU Configurator to set type.	

AND

RDT

MRDT

OR

Solenoid Control Module

Manual Release Switch Monitor Module
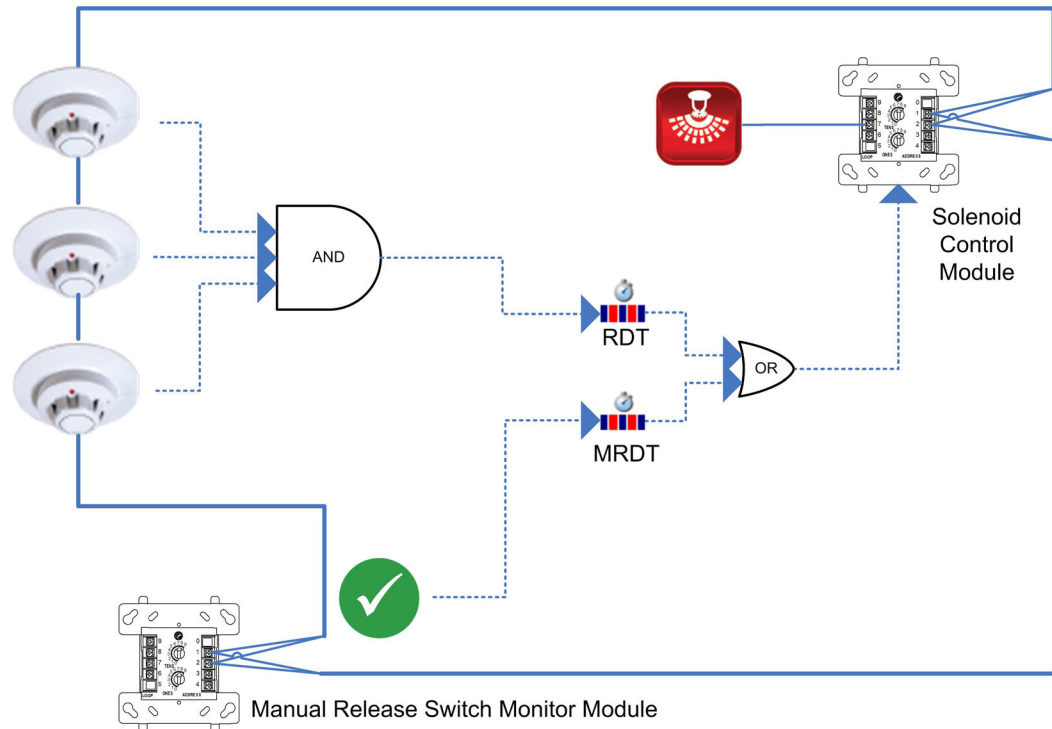
Deluge commences if the following events occur:

• two detectors correlated to the Hazard Zone enter alarm

• the delay timer expires

OR

• the Manual Release Switch is pressed

• the delay timer expires.

3.7 Deluge, Triple Activation Application
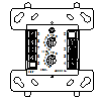
Devices	
———	**SLC Loop**
	Any Detector in Hazard Zone
	Deluge System
	Addressable Module
✔	**Manual Release Switch**

Logic	
....	**Logic Path**
AND	**AND Gate** Both inputs are required.
NOT	**NOT Gate** Input is required to be not activated.
OR	**OR Gate** If either input is activated release occurs.
	Delay Timer Use FX-3500RCU Configurator to set type.

AND

RDT

MRDT

OR

Solenoid Control Module

Manual Release Switch Monitor Module

Deluge commences if the following events occur:

• three detectors correlated to the Hazard Zone enter alarm

• the delay timer expires

OR

• the Manual Release Switch is pressed

• the delay timer expires.

3.8   Deluge, 2 Input Type Activation Application

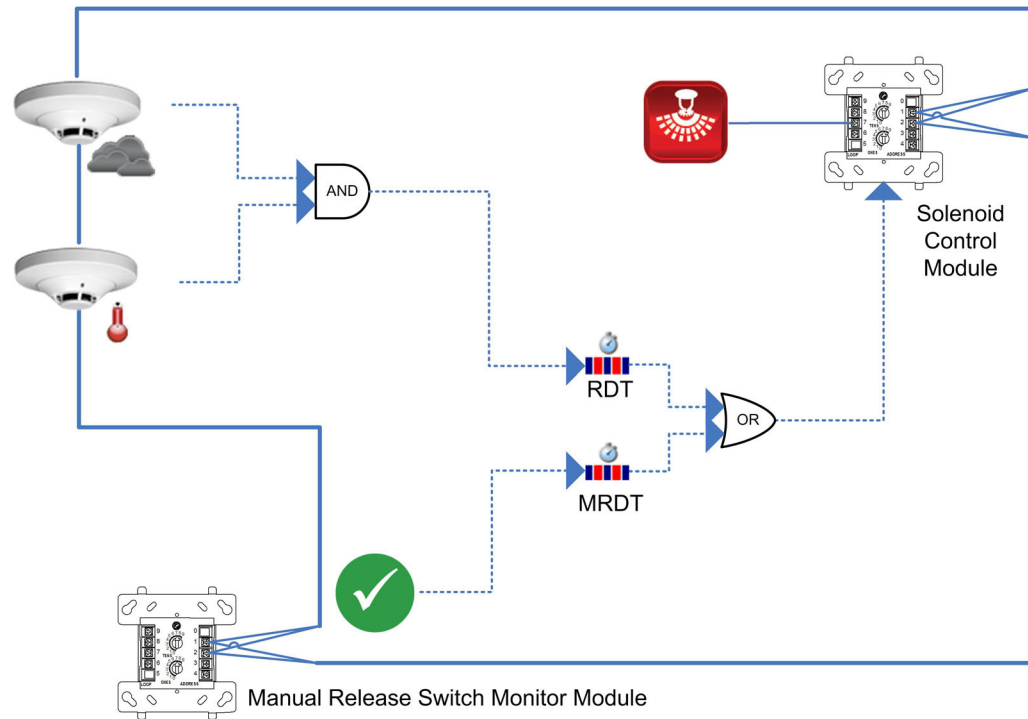| Devices		
————		**SLC Loop**
		Smoke Detector
		Heat Detector
		Deluge System
		Addressable Module
✓		**Manual Release Switch**
Logic		
----------------		**Logic Path**
AND		**AND Gate** Both inputs are required.
NOT		**NOT Gate** Input is required to be not activated.
OR		**OR Gate** If either input is activated release occurs.
		Delay Timer Use FX-3500RCU Configurator to set type.

AND

RDT

MRDT

OR

Solenoid Control Module

Manual Release Switch Monitor Module

✓

Deluge commences if the following events occur:

• two detectors of different types correlated to the Hazard Zone enter alarm

• the delay timer expires

OR

• the Manual Release Switch is pressed

• the delay timer expires.

4.0   Compatible Solenoids

The following table lists the compatible solenoids.

Table 1 FX-3500RCU Compatible Solenoids

Manufacturer	Model	Extended Description
Safety Hi-Tech (SHT)	SH21006403 (S3023024SHT)	Valve Solenoid
Safety Hi-Tech (SHT)	SH21006404 (S3023024SHT)	Valve Solenoid
ASCO	8210G207	Valve Solenoid
ASCO	8210A107	Valve Solenoid
ASCO	HV2185328	Valve Solenoid
PARKER	73212BN4TNLVN0C322C2	Valve Solenoid
Barnbrook Systems	AE45 *	Actuator
Kidde Fenwal	486500-01	Actuator
TLX Technologies	PA0036	Actuator

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Note: * AE45 is also known as Amerex 17014, BSCO 510006, TSP 17842.