



Intelligent Power Module TR-RPS1

Installation/Operation Manual

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Fire Alarm & Emergency Communication System Limitations

While a life safety system may lower insurance rates, it is not a substitute for life and property insurance!

An automatic fire alarm system—typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control panel (FACP) with remote notification capability—can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

An emergency communication system—typically made up of an automatic fire alarm system (as described above) and a life safety communication system that may include an autonomous control unit (ACU), local operating console (LOC), voice communication, and other various interoperable communication methods—can broadcast a mass notification message. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire or life safety event.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premises following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. This document can be found at <http://www.systemsensor.com/appguides/>. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

Particles of combustion or "smoke" from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, chimneys, even wet or humid areas may inhibit particle or smoke flow.
- Smoke particles may become "cold," stratify, and not reach the ceiling or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets, such as air conditioning vents.
- Smoke particles may be drawn into air returns before reaching the detector.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).

Heat detectors do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. Heat detectors are designed to protect property, not life.

IMPORTANT! Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, compromising its ability to report a fire.

Audible warning devices such as bells, horns, strobes, speakers and displays may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol, or medication. Please note that:

- An emergency communication system may take priority over a fire alarm system in the event of a life safety emergency.
- Voice messaging systems must be designed to meet intelligibility requirements as defined by NFPA, local codes, and Authorities Having Jurisdiction (AHJ).
- Language and instructional requirements must be clearly disseminated on any local displays.
- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond to or comprehend the meaning of the signal. Audible devices, such as horns and bells, can have different tonal patterns and frequencies. It is the property owner's responsibility to conduct fire drills and other training exercises to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

A life safety system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

Equipment used in the system may not be technically compatible with the control panel. It is essential to use only equipment listed for service with your control panel.

Alarm Signaling Communications:

- **IP connections** rely on available bandwidth, which could be limited if the network is shared by multiple users or if ISP policies impose restrictions on the amount of data transmitted. Service packages must be carefully chosen to ensure that alarm signals will always have available bandwidth. Outages by the ISP for maintenance and upgrades may also inhibit alarm signals. For added protection, a backup cellular connection is recommended.
- **Cellular connections** rely on a strong signal. Signal strength can be adversely affected by the network coverage of the cellular carrier, objects and structural barriers at the installation location. Utilize a cellular carrier that has reliable network coverage where the alarm system is installed. For added protection, utilize an external antenna to boost the signal.
- **Telephone lines** needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup alarm signaling connections are recommended.

The most common cause of life safety system malfunction is inadequate maintenance. To keep the entire life safety system in excellent working order, ongoing maintenance is required per the manufacturer's recommendations, and UL and NFPA standards. At a minimum, the requirements of NFPA 72 shall be followed. Environments with large amounts of dust, dirt, or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled as required by National and/or local fire codes and should be performed by authorized professional life safety system installers only. Adequate written records of all inspections should be kept.

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Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

WARNING - Several different sources of power can be connected to the fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until manuals are read and understood.

CAUTION - System Re-acceptance Test after Software Changes:

To ensure proper system operation, this product must be tested in accordance with NFPA 72 after any programming operation or change in site-specific software. Re-acceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49° C/32-120° F and at a relative humidity 93% ± 2% RH (non-condensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15-27° C/60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interference, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, or printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.

Units with a touchscreen display should be cleaned with a dry, clean, lint free/microfiber cloth. If additional cleaning is required, apply a small amount of Isopropyl alcohol to the cloth and wipe clean. Do not use detergents, solvents, or water for cleaning. Do not spray liquid directly onto the display.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

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FCC Warning

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause interference to radio communications. It has been tested and found to comply with the limits for Class A computing devices pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when devices are operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his or her own expense.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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Software Downloads

In order to supply the latest features and functionality in fire alarm and life safety technology to our customers, we make frequent upgrades to the embedded software in our products. To ensure that you are installing and programming the latest features, we strongly recommend that you download the most current version of software for each product prior to commissioning any system. Contact Technical Support with any questions about software and the appropriate version for a specific application.

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This symbol (shown left) on the product(s) and / or accompanying documents means that used electrical and electronic products should not be mixed with general household waste. For proper treatment, recovery and recycling, contact your local authorities or dealer and ask for the correct method of disposal.

Electrical and electronic equipment contains materials, parts and substances, which can be dangerous to the environment and harmful to human health if the waste of electrical and electronic equipment (WEEE) is not disposed of correctly.

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Section 1: Overview

1.1 TR-RPS1 Description

The Triga TR-RPS1 Intelligent Power Module provides additional power and circuits to the following Fire Alarm Control Panels (FACPs):

- TR-2100
- TR-2100ECS

The TR-RPS1 can power all the FACP compatible modules, including SLC devices (via a Model TR-6815 SLC Expander), remote annunciators, notification appliances, auxiliary power modules, and all other compatible modules.

- The TR-RPS1 has six Flexputs® and two programmable relays. Outputs are rated: 3.0 A (6.0 A total for each TR-RPS1). Relays are Form C rated at 2.5 A @ 24 VDC. Outputs and relays are fully programmable.
- The TR-RPS1 is optically isolated, providing the ground loop isolation and the transient protection. It functions as an SBUS repeater which conditions the RS-485 signal and allows the module to drive up to 6,000 feet of additional SBUS wiring.
- The TR-RPS1 is housed in a metal cabinet. This cabinet is large enough to house two 17 AH batteries. The TR-RPS1 cabinet provides mounting studs for two Model TR-RPS1 or TR-6815 SLC Expander modules.
- The TR-RPS1 communicates to the main FACP via the SBUS. Each TR-RPS1 provides an additional 6,000 feet of SBUS wiring length to the main panel. As the drawings on the next pages illustrate, this allows you to distribute modules, SLC devices, and outputs throughout an extremely large facility.
- As well as expanding the wiring length capabilities of the FACP, the TR-RPS1 also expands the power capabilities by an additional 6.0 A of current.

1.1.1 Maximum Number of SBUS Modules

Table 1.1 shows the maximum number of compatible modules that can be used in an Intelligent installation. Modules can be distributed among the main panel SBUS and each additional TR-RPS1 SBUS in virtually any combination.

Module or Device	Maximum Number
TR-RPS1 Intelligent Power Module	63 per TR-2100/ECS installation
TR-RPS1 or TR-RD1R/G Remote Annunciator	31 per TR-2100/ECS installation
TR-RD2R/Gemote Annunciator	63 per TR-2100/ECS installation
TR-6815 SLC Expander	63 per TR-2100/ECS installation
TR-5824 Serial/Parallel Modules	4 per TR-2100/ECS installation
Outputs	6 per TR-RPS1 installation
Conventional Relays	2 per TR-RPS1 installation

Table 1.1 SBUS Modules

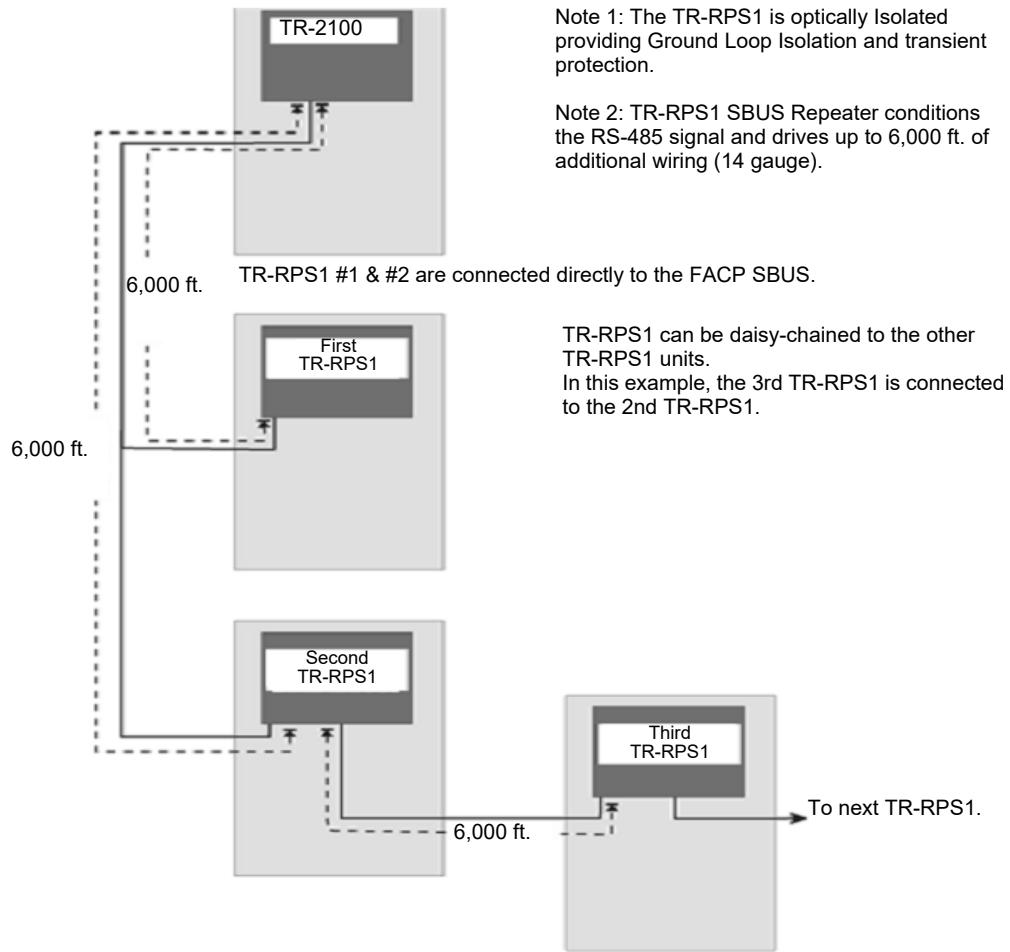


Figure 1.1 Example TR-RPS1 Installation Overview

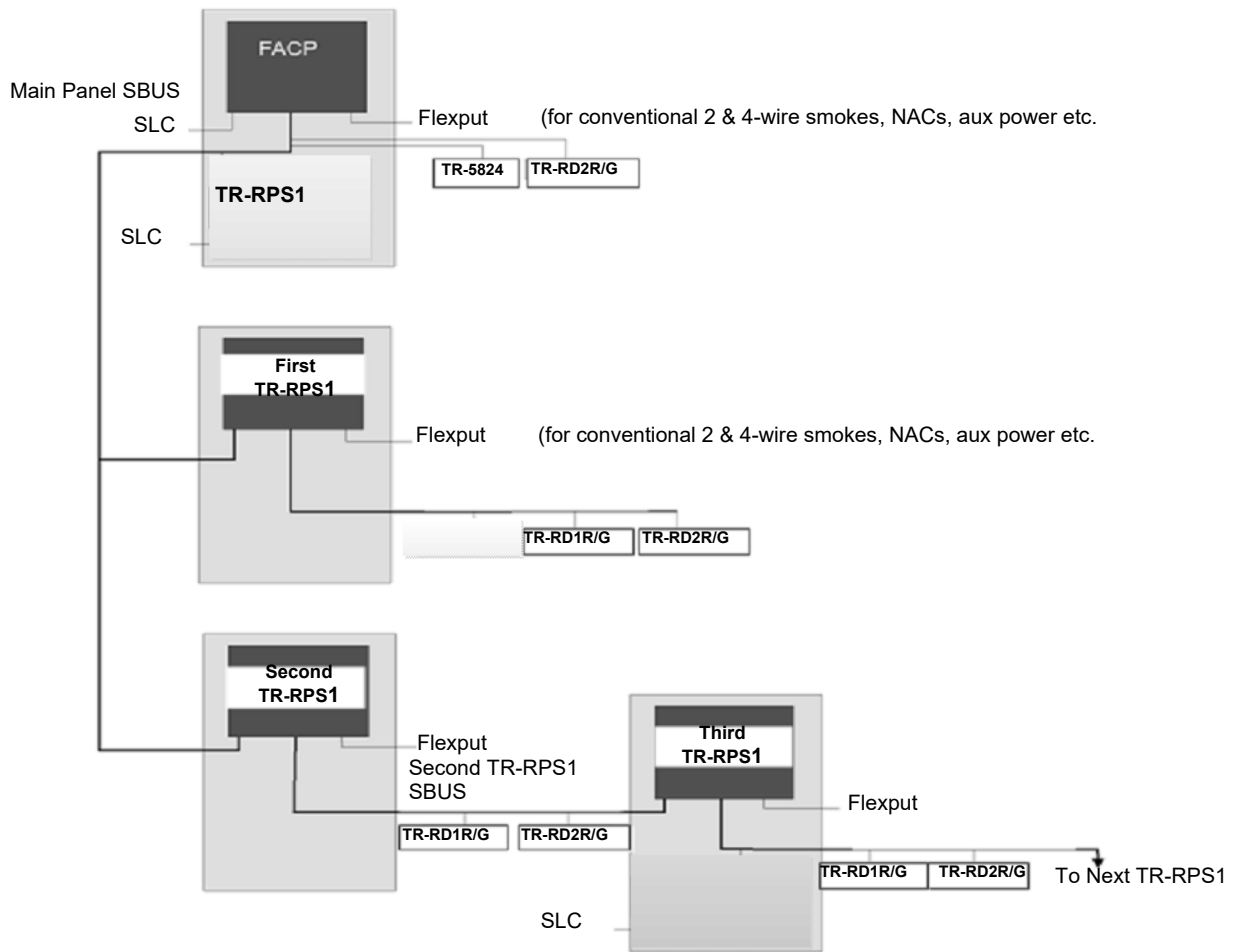


Figure 1.2 Example TR-RPS1 Installation Overview (Details Added)

1.2 Agency Requirements

The TR-RPS1 has the same requirements as the Main Control panel. These requirements are listed in the following Document :

ECS Series Model Number	FACP Installation Manual
TR-2100ECS	LS10143-003TR-E

Table 1.2 Models and Document Part Numbers

Section 2: Installation Requirements

2.1 Inventory

The Model TR-RPS1 ships with the following hardware:

- A cabinet with all hardware assembled
- Two keys for the front door
- Ten 4.7K ohm end-of-line resistors



NOTE: For UL installations, the 4.7kΩ end-of-line resistor (ordered separately) must be used.

- A battery cable for batteries wired in series

2.2 Environmental Specifications

It is important to protect the TR-RPS1 control panel from water. To prevent water damage, the following conditions should be AVOIDED when installing the units:

- Do not mount the panel directly on exterior walls, especially masonry walls (condensation).
- Do not mount the panel directly on exterior walls below grade (condensation).
- Protect the panel from plumbing leaks.
- Protect the panel from splash caused by sprinkler system inspection ports.
- Do not mount the panel in areas with humidity-generating equipment (such as dryers, production machinery).

When you select a location to mount the TR-RPS1, the unit should be mounted where it will NOT be exposed to temperatures outside the range of 0°C-49°C (32°F-120°F) or humidity outside the range of 10%-93% at 30°C (86°F) non-condensing.

2.3 Software Downloads

In order to supply the latest features and functionality in fire alarm and life safety technology to our customers, we make frequent upgrades to the embedded software in our products. To ensure that you are installing and programming the latest features, we strongly recommend that you download the most current version of software for each product prior to the acceptance testing of any System. Contact Technical Support with any questions about software and the appropriate version for a specific application. Software updates can be found at www.trigaglobal.com.

2.4 TR-RPS1, Board and Terminal Strip Description

Figure 2.1 shows the TR-RPS1 circuit board including the location of the terminals, the DIP switch for setting the module ID, and the LED.

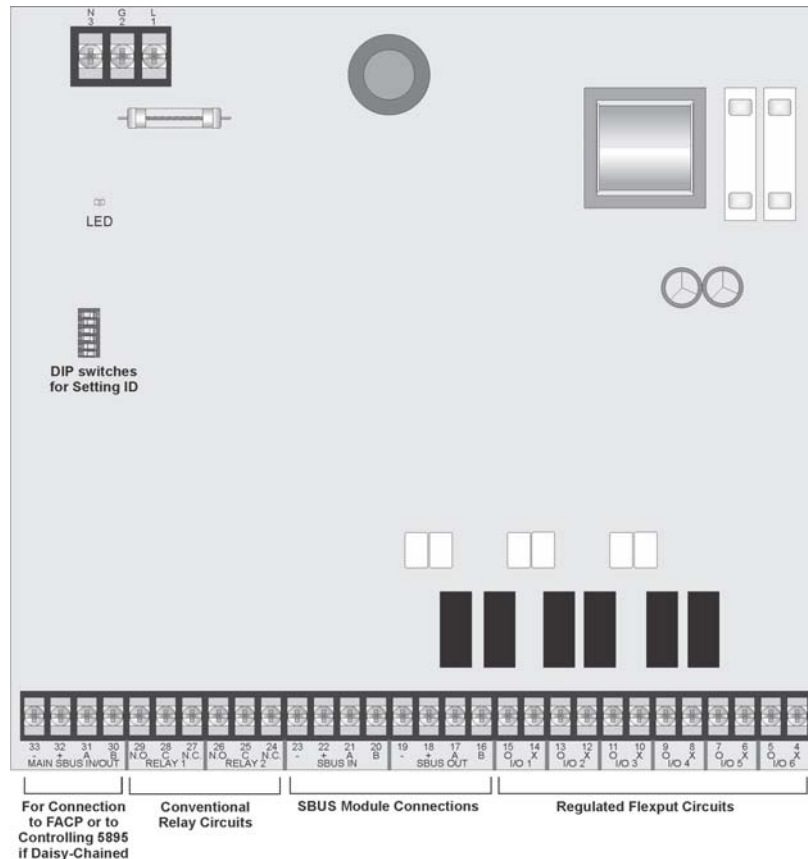


Figure 2.1 The TR-RPS1 Board Layout

Terminal # and Label		Description	Rating		
			Voltage	Current	
1	L	AC input (hot)	120/240 VAC, 50/60 Hz	2.7 A 1.4 A	
2	G	Earth ground	N/A	N/A	
3	N	AC input (neutral)	120/240 VAC, 50/60 Hz	2.7 A 1.4 A	
4	X	I/O 6*	Flexput Circuit	24 VDC	
5	O			3.0 A Notification Circuits 100 mA Initiation Circuits	
6	X	I/O 5*	Flexput Circuit	24 VDC	
7	O			3.0 A Notification Circuits 100 mA Initiation Circuits	
8	X	I/O 4*	Flexput Circuit	24 VDC	
9	O			3.0 A Notification Circuits 100 mA Initiation Circuits	
10	X	I/O 3*	Flexput Circuit	24 VDC	
11	O			3.0 A Notification Circuits 100 mA Initiation Circuits	
12	X	I/O 2*	Flexput Circuit	24 VDC	
13	O			3.0 A Notification Circuits 100 mA Initiation Circuits	
14	X	I/O 1*	Flexput Circuit	24 VDC	
15	O			3.0 A Notification Circuits 100 mA Initiation Circuits	
16	B	SBUS OUT	SBUS communication	5 VDC	
17	A				
18	+		SBUS power	24 VDC	1.0 A
19	-				
20	B	SBUS IN	Used for Class A Installations		
21	A				
22	+				
23	-				
24	N.C.	RELAY 2	General Purpose Relay 2	24 VDC	
25	C				
26	N.O.				
27	N.C.	RELAY 1	General Purpose Relay 1	24 VDC	
28	C				
29	N.O.				
30	B	SBUS IN/ OUT	TR-RPS1 communication with the main panel or to control the TR-RPS1 if daisy-chained.	5 VDC	
31	A				
32	+	MAIN	TR-RPS1 SBUS power (from TR-2100)	24 VDC	
33	-				

* Regulated/special application when used for releasing.

Table 2.1 Terminal Strip Description and Electrical Ratings

2.5 Earth Fault Resistance

Table 2.2 lists the earth fault resistance detection for each applicable terminal on the FACP.

Function	Terminal Number	Terminal Label		Low Biased		High Biased	
		(Values in kohms)		High Trip	High Restore	Low Trip	Low Restore
Flexput® Notification Circuits	4	X	I/O 6	-	-	0	0
	5	O		0	0	-	-
	6	X	I/O 5	-	-	0	0
	7	O		0	0	-	-
	8	X	I/O 4	-	-	0	0
	9	O		0	0	-	-
	10	X	I/O 3	-	-	0	0
	11	O		0	0	-	-
	12	X	I/O 2	-	-	0	0
	13	O		0	0	-	-
	14	X	I/O 1	-	-	0	0
	15	O		0	0	-	-

Table 2.2 Earth Fault Resistance Values by Terminal

Function	Terminal Number	Terminal Label		Low Biased		High Biased	
		(Values in kohms)		High Trip	High Restore	Low Trip	Low Restore
SBUS Communication	16	B	SBUS OUT	-	-	0	0
	17	A		-	-	0	0
SBUS Power	18	+		0	0	-	-
	19	-	-	-	0	0	
Used for Class A Installations	20	B	SBUS IN	-	-	0	0
	21	A		-	-	0	0
	22	+		0	0	-	-
	23	-		-	-	0	0

Table 2.2 Earth Fault Resistance Values by Terminal (Continued)

2.6 Calculating the Current Draw and Standby Battery

This Section is used to provide the procedure for you to determine the current draw and the standby battery requirements for your installation.

2.6.1 Worksheet Requirements

The following steps must be taken when determining the TR-RPS1 current draw and the standby battery requirements.

■ Filling in the Current Draw Worksheet, Table 2.4

1. For the TR-RPS1, the worst case current draw is listed for the panel, addressable devices, and SLC expanders. Fill in the number of addressable devices and expanders that will be used in the system and compute the current draw requirements for the alarm and the standby.
2. Add up the current draw for all the auxiliary devices and record the current draw in the table at Line B.
3. Add up all the notification appliance loads and record it in the table at Line C.
4. For notification appliances and auxiliary devices not mentioned in the manual, refer to the device manual for the current ratings.
5. Make sure that the total alarm current you calculated, including the current for the panel itself, does not exceed 6.0 A. This is the maximum alarm current allowable.
6. Complete the remaining instructions in the table for determining the battery size requirements.

Maximum Battery Standby Load

Table 2.3 shows the maximum battery standby load for the TR-RPS1, based on 24 and 60 hours of standby. The standby load calculations of line G in the Current Draw Calculation Worksheet must be less than the number shown in Table 2.3 for the required battery size used and the standby hours.

Rechargeable Battery Size	Max. Load for 24 hrs. Standby, 5 mins. Alarm	*Max. Load for 60 hrs. Standby, 5 mins. Alarm
7 AH	270 mA	105 mA
12 AH	475 mA	190 mA
17 AH	685 mA	270 mA
33 AH	1370 mA	540 mA

Note: * Required for NFPA 72 Auxiliary Protected Fire Alarm systems for Fire Alarm Service (City Box) and Remote Station Protected Fire Alarm systems (Polarity Reversal) and Digital Alarm Communicator/Transmitter (DACT).

Table 2.3 Maximum Battery Standby Load

Use a separate worksheet for each TR-RPS1.

2.6.2 Current Draw Worksheet for TR SLC Devices

For each TR-RPS1* in the installation, use this worksheet to determine the current requirements during the alarm/battery standby operation. See the individual FACP Manual for the maximum number of devices.

Device	# of Devices	Current per Device	Standby Current	Alarm Current
For each device use this formula: This column X This column = Current per number of devices.				
TR-RPS1, Intelligent Power Module (Current draw from battery)	1*	Standby	40 mA	40 mA
		Alarm:	160 mA	160 mA
Additional TR-RPS1, (Daisy-chained to this module)	(7 max.)	Standby	10 mA	mA
		Alarm:	10 mA	mA
Addressable SLC Devices				
TR-PHOTO-W /-IV		Standby: .30 mA ¹	mA	mA
TR-PHOTO-T-W /-IV			mA	mA
TR-PHOTO-R-W /-IV			mA	mA
TR-HEAT-W /-IV			mA	mA
TR-HEAT-T-W /-IV			mA	mA

Table 2.4 Current Draw Worksheet for TR and IDP SLC Devices

Device	# of Devices	Current per Device		Standby Current	Alarm Current	
TR-HEAT-ROR-W		Standby:	.30 mA	mA	mA	
TR-HEAT-ROR-IV				mA	mA	
TR-DNR ⁶ (non-relay)		None, included with TR-HEAT-ROR-W				
TR-DNR ⁷ (with relay)		None, included with TR-HEAT-ROR-W and TR-RELAY				
TR-FIRE-CO-W		SLC	Standby: .30 mA	mA		
TR-FIRE-CO-IV			Alarm: 7.2 mA		mA	
TR-MONITOR		Standby/Alarm		.375 mA	mA	
TR-MINIMON				mA	mA	
TR-PULL-SA				mA	mA	
TR-PULL-DA						
TR-MONITOR-2		Standby/Alarm:		.75 mA	mA	
TR-MONITOR-10		Standby/Alarm:		3.5 mA	mA	
TR-CONTROL		SLC	Standby	.375 mA	mA	
			Alarm:	.375 mA		mA
		Aux Pwr	Standby	1.7 mA	mA	
			Alarm:	7mA		mA
TR-CONTROL-6		SLC	Standby	2.25 mA	mA	
			Alarm:	2.25 mA		mA
		Aux Pwr	Standby	8 mA	mA	
			Alarm:	20 mA		mA
TR-RELAY		Standby/Alarm:		.255 mA	mA	
TR-RELAY-6		Standby/Alarm:		1.45 mA	mA	
TR-RELAYMON-2		Standby:		1.3 mA	mA	
		Alarm:		24 mA		mA
TR-ZONE		Aux Pwr	Standby	12 mA	mA	
			Alarm:	90 mA		mA
		SLC	Standby/Alarm		.27 mA	mA
TR-ZONE-6		Aux Pwr	Standby	50 mA	mA	
			Alarm:	70 mA		mA
		SLC	Standby/Alarm		2 mA	mA
SLC Accessories						
TR-B200SR Sounder Base		Aux Pwr	Standby:	.5 mA	mA	
			Alarm:	35 mA		mA
TR-B200S Intelligent Sounder Base		Aux Pwr	Standby:	.5 mA	mA	
			Alarm: (high vol)	35 mA		mA
TR-B200SR-LF Low Frequency Sounder Base		Aux Pwr	Standby:	1 mA	mA	
			Alarm:	125 mA		mA
TR-B200S-LF Low Frequency Sounder Base		Aux Pwr	Standby	.55 mA	mA	
			Alarm (high vol)	140 mA		mA
		SLC	Standby		.30 mA	mA
TR-B224RB Relay Base		Standby/Alarm:		.5 mA	mA	
TR-RA100Z		Alarm:		10 mA		mA
SLC Isolator Devices						
TR-ISO (Isolator Module)		Standby/Alarm:		0.45 mA	mA	
TR-ISO-6 (6 Fault Isolator Module)		Standby: (per circuit)		.45 mA	mA	
		Alarm: (per circuit)		17 mA		mA
TR-B224BI-W-/IV Isolator Base		Standby/Alarm:		0.5 mA	mA	
Accessories Modules						
TR-6815 SLC Loop Expander		Standby:		78 mA	mA	
		Alarm:		78 mA		mA
TR-RD2R/GRemote LCD Annunciator		Standby:		20 mA	mA	
		Alarm:		25 mA		mA
TR-RD1G/R Remote LCD Annunciator		Standby:		20 mA	mA	
		Alarm:		25 mA		mA
TR-5824 Serial/Parallel Module		Standby/Alarm:		45 mA	mA	
5496 NAC Expander		Standby/Alarm:		10 mA	mA	
TR-RPS1 Power Supply		Standby/Alarm:		10 mA	mA	

Table 2.4 Current Draw Worksheet for TR and IDP SLC Devices (Continued)

Device	# of Devices	Current per Device	Standby Current	Alarm Current
TR-5865-4 LED Annunciator (with reset and silence switches)		Standby: 35 mA	mA	
		Alarm: 145 mA		mA
TR-5865-3 LED Annunciator Module		Standby: 35 mA	mA	
		Alarm: 145 mA		mA
TR-5880 LED I/O Module		Standby: 35 mA	mA	
		Alarm: 200 mA		mA
TR-5883 Relay Interface		Standby: 0 mA	mA	
		Alarm: (22 mA/relay) 220 mA		mA
TR-50W or TR-125W Voice Amplifier with/without TR-CE4		Standby 10 mA	mA	
		Alarm 10 mA		mA
TR-INT50W Internal Amplifier		Standby: 52 mA	mA	
		Alarm @ 25V: 275 mA		mA
		Alarm @ 70V: 310 mA		mA
TR-DUAL50W Dual Voice Amp		Standby/Alarm: 10 mA	mA	mA
TR-50WBU Back-Up Amplifier		Standby/Alarm: 10 mA	mA	mA
ECS-NVCM Voice Control Module		Standby/Alarm: 59 mA	mA	mA
TR-SW24 Switch Expander		Standby: 10 mA	mA	
		Alarm: 25 mA		mA
TR-RPU Remote Paging Unit		Standby: 70 mA	mA	
		Alarm: 100 mA		mA
Network Cards				
TR-NIC Network Interface Card		Standby/Alarm: 21 mA	mA	mA
TR-FML Fiber-Optic Multi Mode		Standby/Alarm: 53 mA	mA	mA
TR-FSL Fiber-Optic Single Mode		Standby/Alarm: 79 mA	mA	mA
Wireless Modules				
TRW-GI Wireless Gateway		Max current using ext supply 40 mA	mA	mA
		Max current SLC Power 24 mA	mA	mA
Total System Current				
Auxiliary Devices²	Refer to devices manual for current rating			
		Alarm/Standby: mA	mA	mA
		Alarm/Standby: mA	mA	mA
		Alarm/Standby: mA	mA	mA
Auxiliary Devices Current				
Notification Devices	Refer to device manual for current rating			
		Alarm: mA		mA
		Alarm: mA		mA
		Alarm: mA		mA
Notification Appliances Current				
Total current ratings of all devices in system (line A + line B + C)			mA	mA
Total current ratings converted to amperes (line D x .001):			A	A
Number of standby hours			H	
Multiply lines E and F.			Total standby AH	AH
Alarm sounding period in hours. (For example, 5 minutes = .0833 hours)				H
Multiply lines E and H.			Total alarm AH	AH
Add lines G and I. ³			Total ampere hours required	AH

Table 2.4 Current Draw Worksheet for TR and IDP SLC Devices (Continued)

2.7 Wiring Specifications

2.7.1 Length Limitations

This Section contains the information on calculating the SBUS wire distances and the types of wiring configurations (Class A and B).

2.7.2 Calculating the Wiring Distance for SBUS Modules

The following instructions will guide you in determining the type of wire and the maximum wiring distance that can be used with the SBUS accessory modules.

To calculate the wire gauge that must be used to connect the SBUS modules to the panel, it is necessary to calculate the total worst case current draw for all modules on a single 4-conductor bus. The total worst case current draw is calculated by adding the individual worst case currents for each module. The individual worst case values are shown in the Table 2.5.



NOTE: The Total worst case current draw on a single SBUS cannot exceed 1 amp. If a large number of accessory modules are required, and the worst case current draw will exceed the 1 amp limit, then the current draw must be distributed using the TR-RPS1, Power Expanders. Each TR-RPS1, Power Expander provides an additional SBUS, with an additional 1 amp of the SBUS current. The Wiring distance calculations are done separately for each TR-RPS1, and separately for the panel itself.

Model Number	Worst Case Current Draw
TR-RD2R/G,TR-RD1G/R Fire Annunciator	.120 amps
TR-6815 SLC Loop Expander	.078 amps
TR-5824 Serial/Parallel Printer Interface Module	.040 amps
TR-5880 LED I/O Module	.250 amps
TR-5865 LED Annunciator	.200 amps
TR-RPS1 Intelligent Power Supply	.010 amps
TR-50W	.010 amps
TR-125W	.010 amps
ECS-NVCM Network Voice Control Module	.059 amps
ECS-EMG NVCM keypad	.06 amps
TR-DUAL50W	.010 amps
TR-DUAL50W with TR-50WBUS	.010 amps
TR-NIC Network Interface Card	.021 amps
TR-F485C Fiber Converter	.125 amps

Table 2.5 Model Numbers and Worst Case Current Draws

After you calculate the total worst case current draw, Table 2.6 specifies the maximum distance the modules can be located from the panel on a single wire run. The table ensures 6.0 volts of line drop maximum. In general, the wire length is limited by the resistance, but for heavier wire gauges, capacitance is the limiting factor.

These cases are marked in the chart with an asterisk (*). The maximum length can never be more than 6,000 feet, regardless of the gauge used. (The formula used to generate this chart is shown in the Note below).

Wiring Distance: SBUS Modules to Panel				
Total Worst Case Current Draw (amps)	22 Gauge	18 Gauge	16 Gauge	14 Gauge
0.100	1852 ft.	4688 ft.	* 6000 ft.	* 6000 ft.
0.200	926 ft.	2344 ft.	3731 ft.	5906 ft.
0.300	617 ft.	1563 ft.	2488 ft.	3937 ft.
0.400	463 ft.	1172 ft.	1866 ft.	2953 ft.
0.500	370 ft.	938 ft.	1493 ft.	2362 ft.
0.600	309 ft.	781 ft.	1244 ft.	1969 ft.
0.700	265 ft.	670 ft.	1066 ft.	1687 ft.
0.800	231 ft.	586 ft.	933 ft.	1476 ft.
0.900	206 ft.	521 ft.	829 ft.	1312 ft.
1.000 (Max)	185 ft.	469 ft.	746 ft.	1181 ft.

Table 2.6 Wire Distances Per Wire Gauge



NOTE 1: The following formulas were used to generate the wire distance chart.

$$\text{Maximum Resistance (Ohms)} = \frac{6.0 \text{ Volts}}{\text{Total Worst Case Current Draw (amps)}}$$

$$\text{Maximum Wire Length (Feet)} = \frac{\text{Maximum Resistance (Ohms)}}{\text{Rpu}} * 500$$

(6000 feet maximum)

where: Rpu = Ohms per 1000 feet for various Wire Gauges (see table below)

Wire Gauge	Ohms per 1000 feet (Rpu)
22	16.2
18	6.4
16	4.02
14	2.54

Table 2.7 Typical Wire Resistance Per 1000 ft.

■ Wiring Distance Calculation Example:

Suppose a system is configured with the following SBUS modules:

- 2 - TR-RD1G/R Fire Annunciators
- 1 - TR-RPS1 Intelligent Power Expander
- 1 - TR-5865 LED Fire Annunciator
- 1 - TR-5824 Parallel/Serial Interface

The total worst case current is calculated as follows:

TR-RD1G Current Draw	= 2 x .100 amps	= .200 amps
TR-RPS1, Current Draw	= 1 x .010 amps	= .010 amps
TR-5865 Current Draw	= 1 x .200 amps	= .200 amps
TR-5824 Current Draw	= 1 x .040 amps	= .040 amps
Total Worst Case Current Draw		= .450 amps

Table 2.8 Models Current Draws

Using this value, and referring to the Wiring Distance Table, the available options are as follows:

- 370 feet maximum using 22 Gauge wire
- 938 feet maximum using 18 Gauge wire
- 1493 feet maximum using 16 Gauge wire
- 2362 feet maximum using 14 Gauge wire

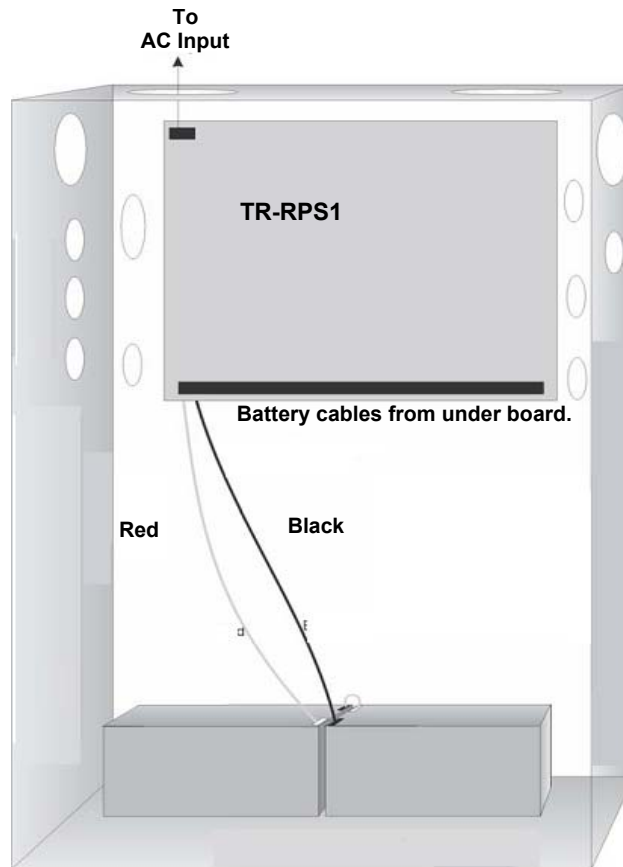
2.7.3 Wire Routing

For wire routing, follow the power-limited wiring techniques, which includes the following:

- maintain one-quarter inch spacing between the power-limited and the non-power-limited circuits
- separate the high and the low voltage circuits

Route off low voltage wiring through any of these knockouts.

Maintain 1/4" spacing between battery cables and input wiring.



All circuits except battery cables and AC are power-limited.

Maintain at least 1/4" spacing between power-limited and non-power-limited circuits
Separate high and low

Fire alarm power-limited circuits are installed using types FPL, FPLR, FPLP or permitted substitute cable conductors or extending beyond the jacket are separated by a minimum of 0.25" in (6.35mm) or by a non-conductor sleeve or non-conductor barrier for all other conductors.

Figure 2.2 Wire Routing Example

Section 3: Hardware Installation

The TR-RPS1 installation involves the following steps:

1. Connect the AC power (see Section 3.1) and backup battery connection (see Section 3.2).
2. Connect the FACP to the controlling TR-RPS1 (see Section 3.3).
3. Setting an ID for the TR-RPS1 (see Section 3.3.1).
4. Connect the SBUS modules that will be powered by this TR-RPS1 (see Section 3.4).
5. Connect any outputs (conventional relays, notification appliances, auxiliary power modules, and so on) that will be powered by this TR-RPS1. See Section 3.5.3 for notification appliance wiring information. Refer to the FACP Installation Manual for software configuration information and other information about installing outputs.

3.1 AC Power

At the installation site, connect the AC terminals to the 240 VAC source as shown in Figure 3.1. It may be necessary for a professional electrician to make this connection. The AC terminals are rated as (240 VAC, 50 or 60 Hz, 1.4A..

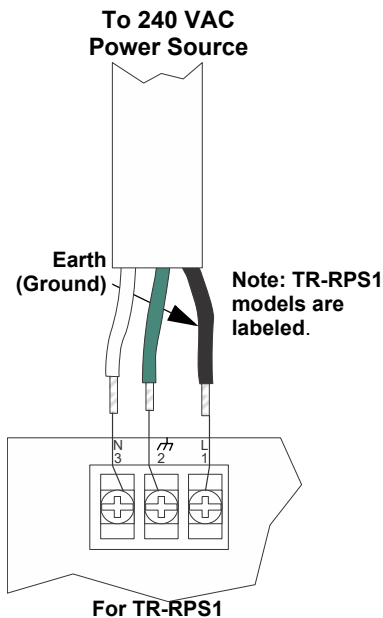


Figure 3.1 AC Power Connection

3.2 Battery Connection

The TR-RPS1 battery charge capacity is 7.0 to 33.0 AH. Use the 12V batteries of the same A/H rating. Determine the correct A/H rating as per your current load calculation (for information, refer Table 2.4).



NOTE: When the backup batteries require the use of backup batteries that are too large to fit into the TR-RPS1 cabinet, the AB-33 cabinet holds batteries up to the 33 AH size. (Refer to FACP Installation manual for the AB-33 installation instructions).

Wire batteries in series (sequentially) to produce a 24-volt equivalent. Do not parallel the batteries to increase the AH rating.

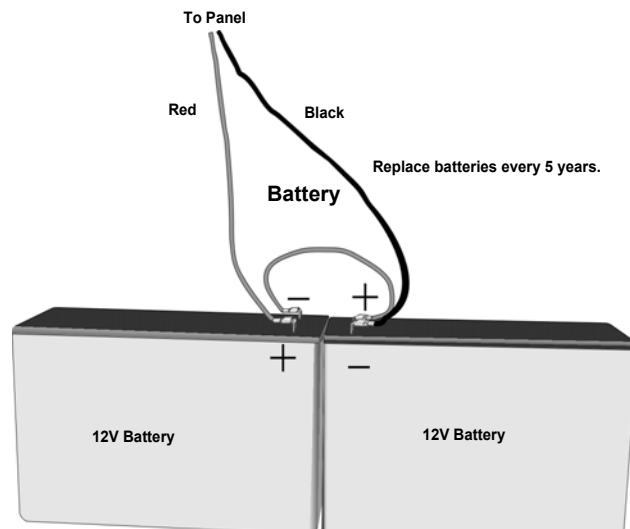


Figure 3.2 Battery Connection

3.3 Connecting the TR-RPS1 to the FACP

1. Connect the TR-RPS1 to the appropriate SBUS. The TR-RPS1 can be connected directly to the FACP or it can be daisy-chained to another TR-RPS1. Figure 3.3 and Figure 3.4 show both connections.
2. Use the onboard DIP switch to assign an ID number, (See Section 3.3.1). Figure 2.1 shows the location of the DIP switches on the TR-RPS1 board.
3. Use JumpStart to add and configure the TR-RPS1 module, or, add it manually. You can also assign a name to the module. These procedures are described in the FACP Installation Manuals in Section 1.2.

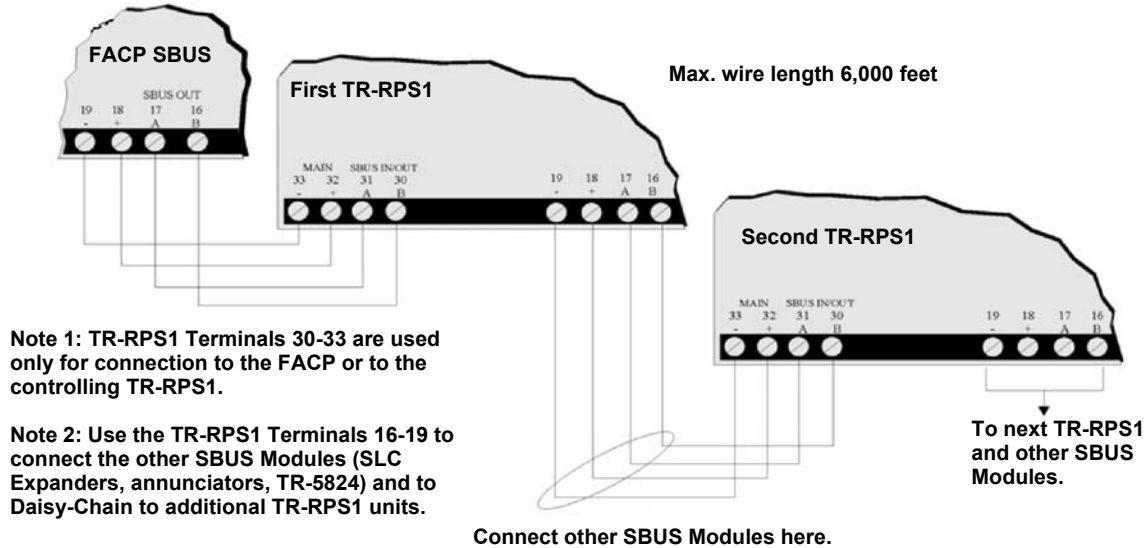


Figure 3.3 Class B TR-RPS1 Connection to FACP

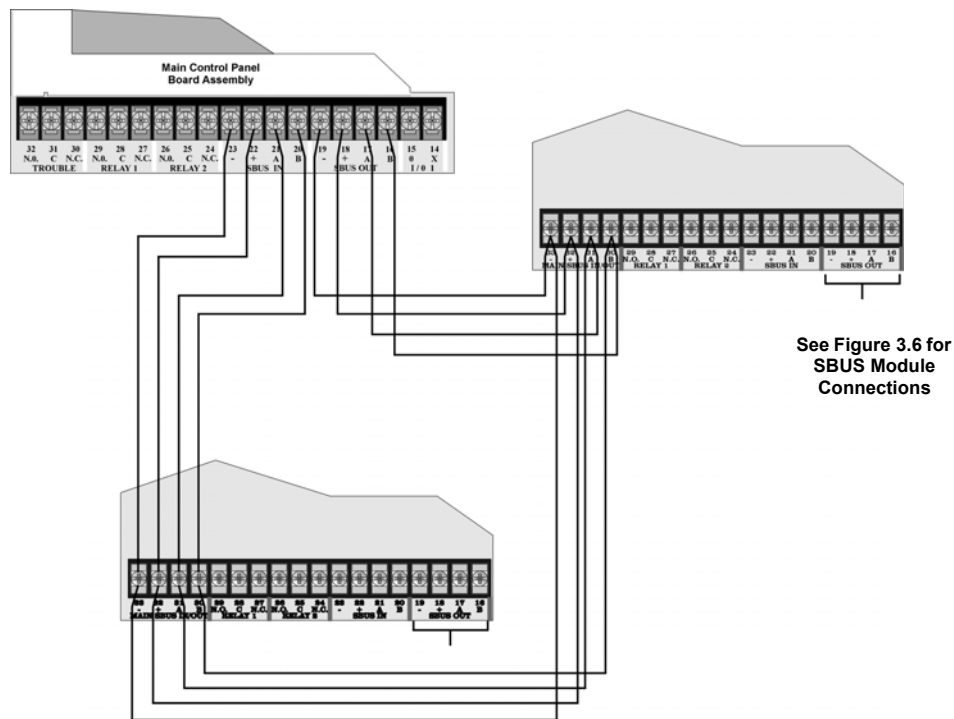


Figure 3.4 Class A TR-RPS1 Connection to FACP

3.3.1 Setting the Device ID

The actual number of SBUS devices used is limited by the current draw and the SBUS bandwidth usage. When you install the TR-RPS1, you must use the DIP switches on the module to assign an ID# to the module. The address, zero, is an invalid address and is not allowed. Figure 3.5 shows all the possible DIP switch positions and their correlation to the numerical ID.

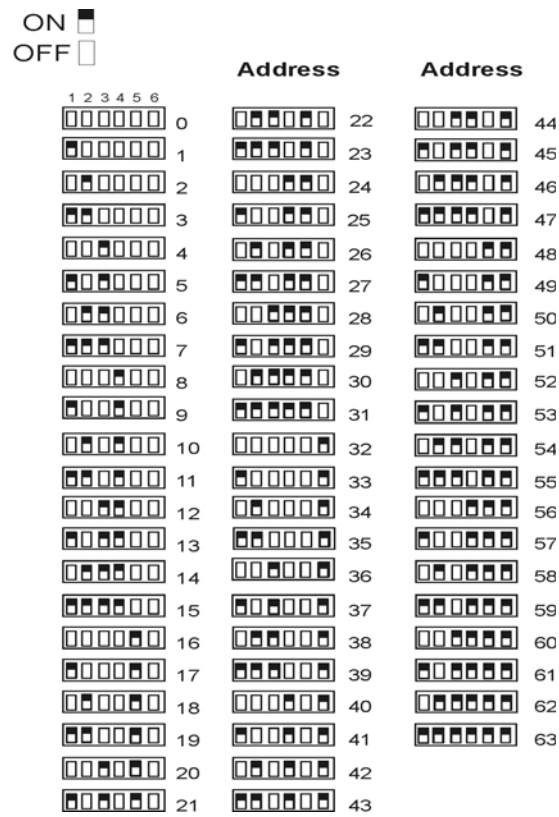


Figure 3.5 Possible Module Addresses

3.4 Connecting SBUS Modules to the TR-RPS1

1. Connect the SBUS modules to the TR-RPS1 as shown in Figure 3.6 or Figure 3.7.
2. All SBUS modules must have an ID. Use the DIP switches on the module board to assign an ID number (1-31) to the module. This ID number identifies the module assigned to the TR-RPS1 and must be unique.
3. The Software configuration steps vary for each SBUS module.

For more information, refer to the section of the FACP Manual that discusses the type of module you are installing.

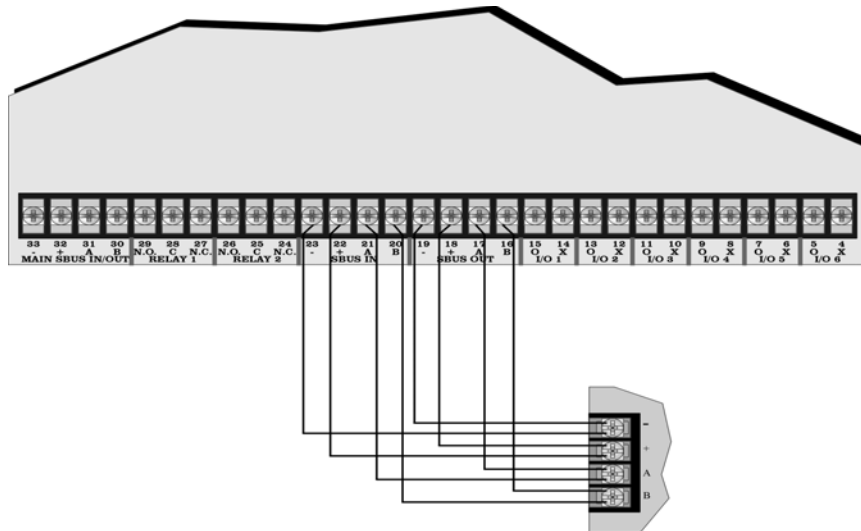


Figure 3.6 SBUS Class A Connection to TR-RPS1

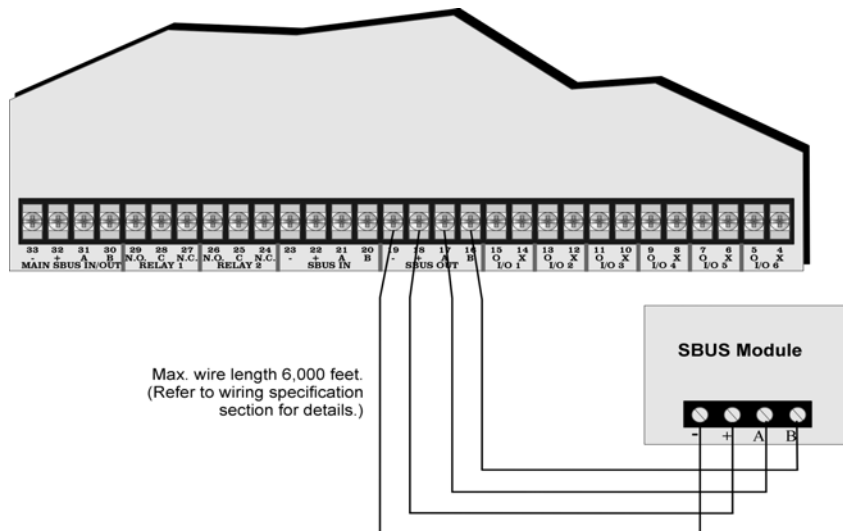


Figure 3.7 SBUS Class B Wiring to TR-RPS1

3.5 Flexputs I/O Circuits

The six Flexput circuits are an innovative and versatile feature of the TR-RPS1 panel. They can be used as: Class A or Class B notification circuits, Class A or B initiation circuits (either 2 or 4 wire detectors), or as an auxiliary power (resettable, continuous, or door holder).

3.5.1 Conventional Notification Appliances

This section of the manual explains how to install conventional notification appliances and initiating devices to be used with the TR-RPS1. The sub-sections of the manual describes how to install the conventional notification appliances for Class A and Class B configurations.

Class B Notification Wiring

You must use an appliance from the list of compatible appliances in Appendix A.

To install a Class B notification appliance circuit, do the following.

1. Wire Class B notification appliances as shown in Figure 3.8.
2. Configure the circuit through programming.

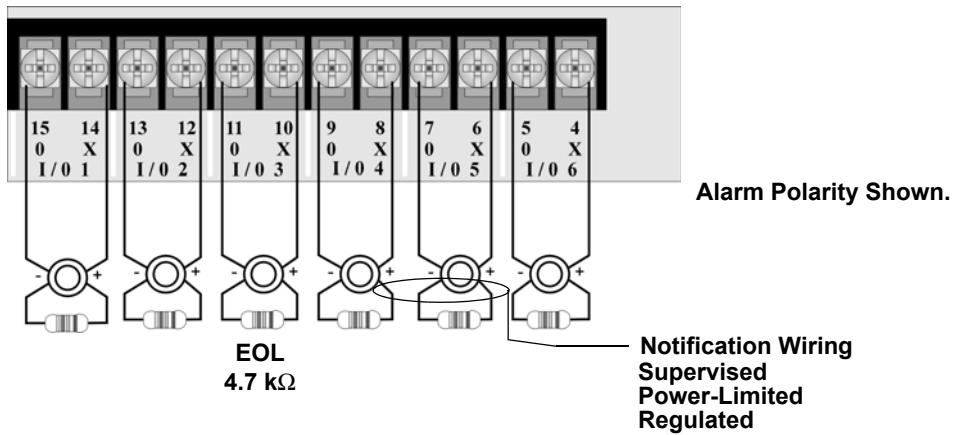


Figure 3.8 Class B Notification Appliance Circuit Wiring

Class A Notification Wiring

You must use an appliance from the list of compatible appliances in the Appendix A at the back of this manual.

To install a Class A notification appliance circuit, do the following.

1. Wire the Class A notification appliances as shown in Figure 3.9.
2. Use programming to configure the circuit for Class A. (Refer to the *FACP Installation Manuals in Section 1.2*).

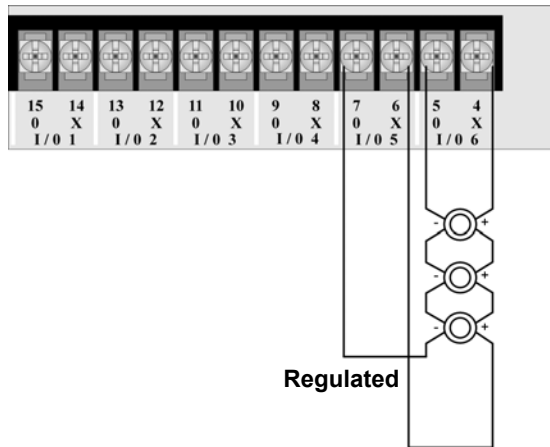


Figure 3.9 Class A Notification Appliance Circuit Configuration



NOTE: In programming, any point that uses the multiple I/O circuits are always referred to as the lowest I/O circuit number used. For example, Figure 3.9 uses both I/O circuits 5 and 6. In programming, the circuits would be referred to as point 5.

3.5.2 Releasing Operations

Table 3.1 lists the approved releasing solenoids. Do not mix the cross alarming zones with the smoke verification zones. There must be at least two automatic detection devices in each protected space. The spacing must be reduced to 0.7 times the linear spacing in accordance with NFPA 72.

Manufacturer	Part Number	Rating	Current	Frequency
Asco	T8210A107	24 VDC	3A max	0 Hz
	8210G207	24 VDC	3A max	0 Hz

Table 3.1 Approved Releasing Solenoids

3.5.3 Conventional Initiation Circuits

This Section of the manual explains how to install the conventional initiating devices for Class A (Style D) or Class B (Style B) configurations.

Class B Inputs

You can connect the conventional Class B switches, (such as waterflow switches and pull stations), directly to the I/O circuits of the TR-RPS1 panel.

To install a Class B switch, do the following.

1. Wire the Class B switch as shown in Figure 3.10.
2. Configure the circuit through programming. For additional information, refer to the *FACP Installation Manuals in Section 1.2*.

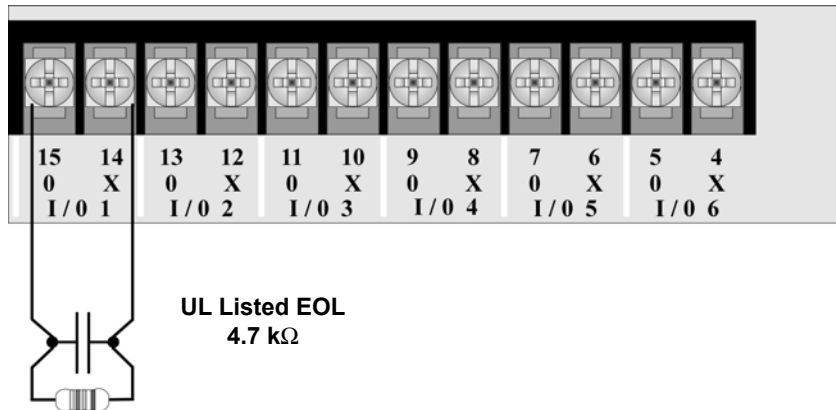


Figure 3.10 Class B Input Switches

Class A Inputs

You can connect conventional Class A switches, such as waterflow switches and pull stations, directly to the I/O circuits of the TR-RPS1 panel.

To install a Class A switch, do the following.

1. Wire the Class A switch as shown in Figure 3.11.
2. Configure the circuit through programming (see FACP Installation Manual)

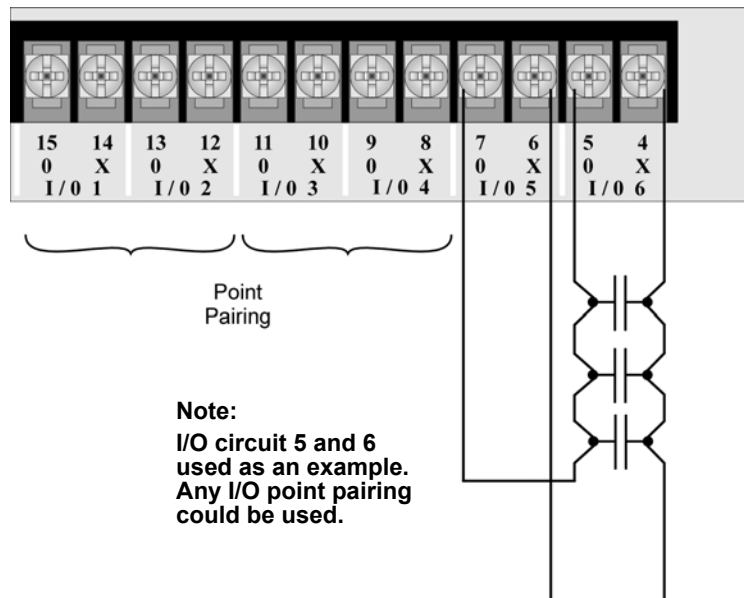


Figure 3.11 Class A Initiating Switches



NOTE: In programming, any point that uses the multiple I/O circuits are always referred to as the lowest I/O circuit number used. For example, Figure 3.11 uses both I/O circuit 5 and 6, so in programming it would be referred to as point 5.

3.5.4 Installing 2-Wire Smoke Detectors

Any compatible UL Listed two-wire smoke detector can be used with the TR-RPS1 panel (see Appendix A for a list of compatible smoke detectors). Figure 3.12 and Figure 3.13 illustrate how to connect a UL Listed 2-wire detector to the control panel.

Class B Installation

To install a Class B two-wire smoke detector, wire as shown in Figure 3.12.

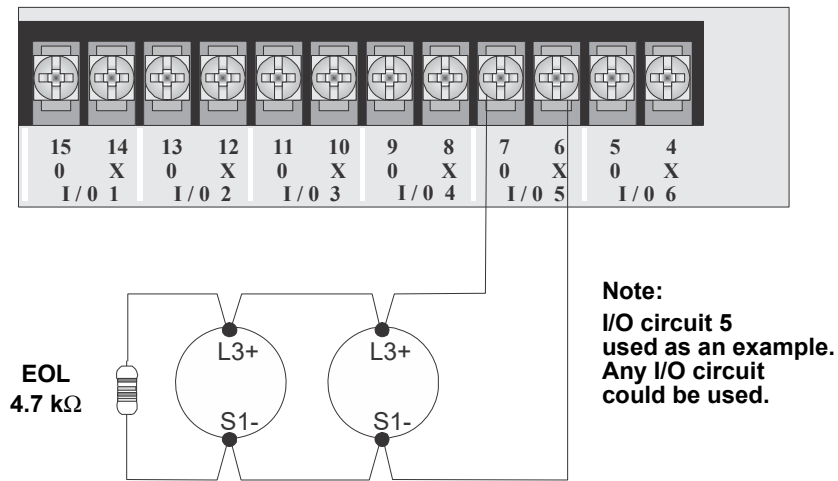


Figure 3.12 Two-Wire Class B Smoke Detector Connections

2-Wire Class A Smoke Detector Installation

To install a Class A two-wire smoke detector, wire as shown in Figure 3.13.

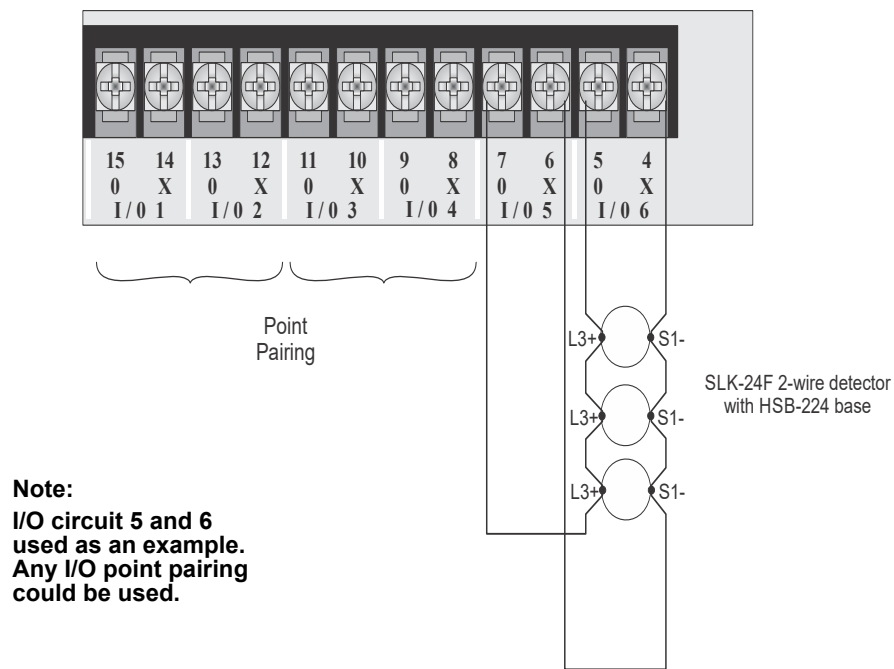


Figure 3.13 Two-Wire Class A Smoke Detector Connections



NOTE: In programming, any point that uses the multiple I/O circuits are always referred to as the lowest I/O circuit number used. For example, Figure 3.13 uses both the I/O circuits 5 and 6. In programming, the circuit would be referred to as point 5.

3.5.5 Installing 4-Wire Smoke Detectors

Any compatible UL Listed four-wire smoke detector can be used with the TR-RPS1 panel (see Appendix A for list of compatible smoke detectors). Figure 3.12 and Figure 3.13 illustrate how to connect a UL Listed four-wire detector to the control panel.

Installing a Class B 4-Wire Smoke Detector

Figure 3.14 illustrates how to install a 4-wire Class B smoke detector.

Conventions used for wiring 4-wire Class B loops:

1. Up to three Class B 4-wire smoke detector loops can be connected to the control panel at once.
2. Each Class B loop input is paired with a unique power source as shown in Figure 3.14.
3. Each loop gets smoke power from the even numbered I/O circuit and the contact input is connected to the odd numbered I/O circuit.

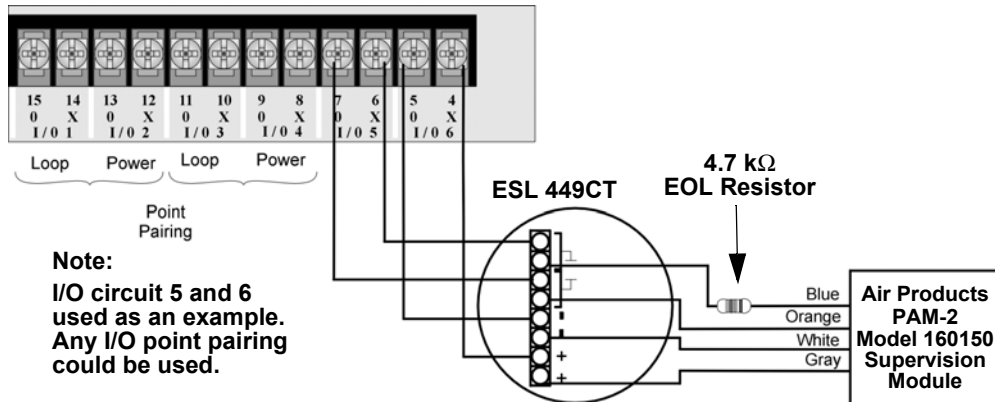


Figure 3.14 Class B 4-Wire Smoke Detector Connections



NOTE: In programming, any point that uses multiple I/O circuits are always referred to as the lowest I/O circuit number used. For example, Figure 3.14 uses both I/O circuit 5 and 6, so in programming it would be referred to as point 5.

Installing 4-Wire Class A Smoke Detectors

Figure 3.15 illustrates how to install 4-wire Class A detectors.

Conventions used for wiring 4-wire Class A loops:

1. Up to two Class A 4-wire loops can be connected to the control panel at once.
2. Smoke power is supplied to each Class A loop as shown in below.

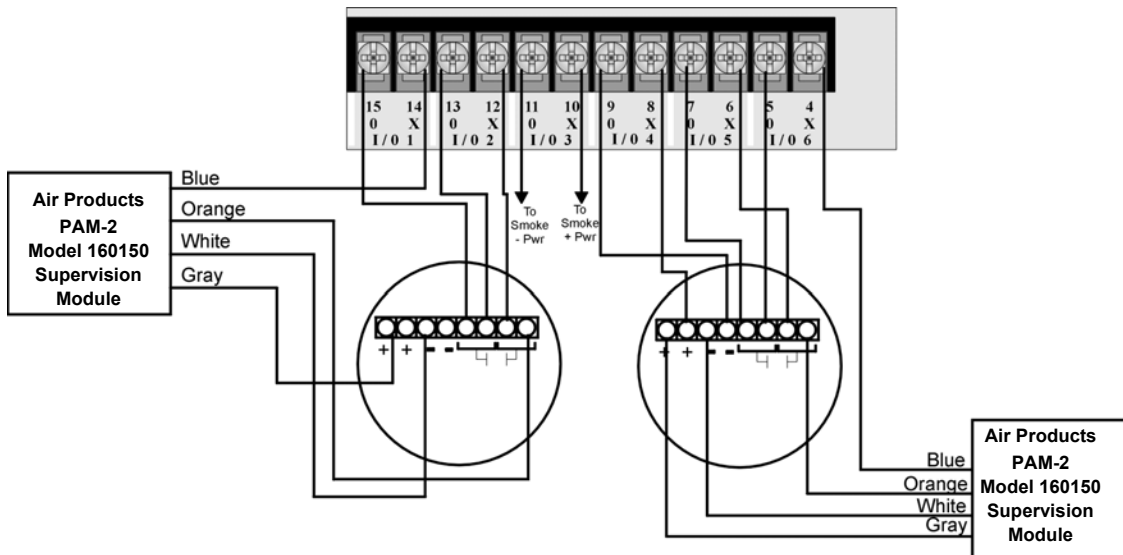


Figure 3.15 Class A 4-Wire Smoke Detector Connections



NOTE: In programming, any point that uses the multiple I/O circuits are always referred to as the lowest I/O circuit number used. For example, Figure 3.15 uses I/O circuits 1, 2, 3 together and 4, 5, 6 together. In programming, (1, 2, 3) would be referred to as point 1, and (4, 5, 6) would be referred to as point 4.

3.5.6 Auxiliary Power Configuration

Flexput circuits 1-6 on the control panel can be used as auxiliary power circuits. The three types of auxiliary power available are as follows:

- Door Holder
- Constant
- Resettable
- Sounder Sync Power

Auxiliary power circuits are power-limited. Each circuit can source up to 3A (total current for all Flexput circuits must not exceed 5A).

To configure a Flexput circuit as auxiliary power, do the following.

1. Wire the Flexput circuit(s) that will be used for the auxiliary power. See Figure 3.16 for location of Flexput circuits.
2. Configure the auxiliary power output through programming for the Door Holder, Constant or Resettable power.

When used as auxiliary power; terminals labeled "0" are negative, terminals labeled "X" are positive.

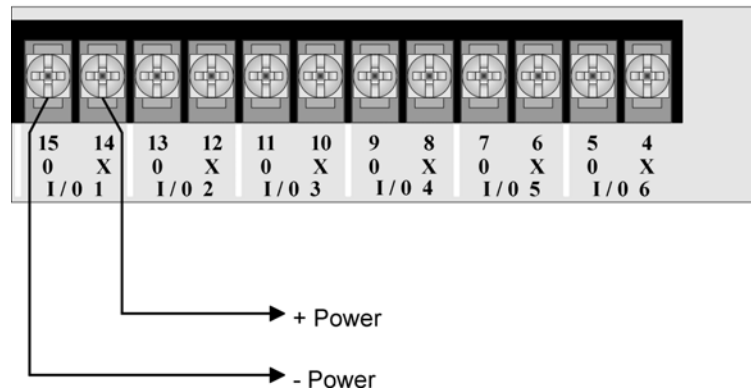


Figure 3.16 Flexput Circuits Used as Auxiliary Power

Door Holder Power

The Door holder is intended for use with the fire door applications. When there are no alarms in the system and the panel has AC power, the door holder circuits have 24-volt power present at their terminals. Any alarm will cause the power to discontinue. The Power will be re-applied when the system is reset. If the AC power is off for more than 15 seconds, the auxiliary door holder power will be discontinued to conserve the battery backup power. When the AC power is restored, the power is immediately restored to the door holder circuits.

Constant Power

Use the constant power for applications that require a constant auxiliary power source. The Power is always present at the Constant circuits.

Resettable Power

Resettable power is typically used to power the beam detectors, flame detectors, and conventional 4-wire smoke detectors. For circuits selected as Resettable, the 24-volt power is always present at the terminals unless a system reset occurs. If a system reset occurs, the power is removed from the terminals for 30 seconds, then re-applied.

Sounder Sync Power

The Sounder Sync Power continuously outputs the System Sensor synchronization pattern and is intended for use with TR-B200S sounder bases.

3.6 Conventional Relay Installation

TR-RPS1 relay circuits are installed in exactly the same way as the FACP main panel relay circuits. For ease of installation, the TR-RPS1 output terminals use the same numbering scheme as the FACP terminals. Refer to the FACP Manual for information on installing conventional relays.

Appendix A: Compatible Devices

A.1 Notification Appliances

For proper operation, you must use polarized devices with a Model 7628 4.7k ohm EOL resistor on each loop. All supervised notification appliances used with the TR-RPS1 must be polarized.

NOTE: Not all devices can use the Sync feature, be sure to check below table to ensure the device you have chosen will work with this feature. This control is UL listed for panel wide Synchronization.

Table below lists notification appliances compatible with the fire alarm control panel. Appliances which can be synchronized indicate the type of sync available in the columns marked Audio and/or Visual.

Manufacturer	Model	Audio	Visual	Type
AMSECO	SH24W-153075	x	x	Horn/Strobe
	SAD24-153075		x	Strobe
	SAD24-75110		x	Strobe
	SL24W-75110		x	Strobe
	SL24C-3075110		x	Strobe
	SLB24-75		x	Strobe
	RSD24-153075		x	Strobe
	RSD24-75110		x	Strobe
	SH24W-75110	x	x	Horn/Strobe
	SH24W-3075110	x	x	Horn/Strobe
	SHB24-75	x	x	Horn/Strobe
	SCM24W-153075	x		Chimes/Strobe
	SCM24W-75110	x		Chimes/Strobe
	SCM24C-3075110	x		Chimes/Strobe
	SCM24C-177	x		Chimes/Strobe
	H24W	x		Horn
	H24R	x		Horn

Table A.1 Compatible Devices

Manufacturer	Model	Audio	Visual	Type	
FCI	S2415-FC		x	Strobe	
	S241575-FC		x	Strobe	
	S2430-FC		x	Strobe	
	130-3117C	x		Mini Horn	
	130-3147C	x		Mini Horn	
	BLV-6	x		Vibrating Bell	
	BLV-10	x		Vibrating Bell	
	BLVCH	x		Vibrating Chime	
	H12/24-FC	x		Horn	
	H12/24W-FC	x		Horn	
	H12/24K-FC	x		Horn	
	HC12/24-FC	x		Horn	
	HC12/24W-FC	x		Horn	
	HC12/24K-FC	x		Horn	
	P2415-FC	x	x	Horn/Strobe	
	P2415W-FC	x	x	Horn/Strobe	
	P2415K-FC	x	x	Horn/Strobe	
	P241575-FC	x	x	Horn/Strobe	
	P241575W-FC	x	x	Horn/Strobe	
	P241575F-FC	x	x	Horn/Strobe	
	P241575K-FC	x	x	Horn/Strobe	
	P2430-FC	x	x	Horn/Strobe	
	P2430W-FC	x	x	Horn/Strobe	
	P2430K-FC	x	x	Horn/Strobe	
	P2475-FC	x	x	Horn/Strobe	
	P2475W-FC	x	x	Horn/Strobe	
	P2475K-FC	x	x	Horn/Strobe	
	P24110-FC	x	x	Horn/Strobe	
	P24110W-FC	x	x	Horn/Strobe	
	P24110K-FC	x	x	Horn/Strobe	
	S2430W-FC		x	Strobe	
	S2430K-FC		x	Strobe	
	S2475-FC		x	Strobe	
	S2475W-FC		x	Strobe	
	S2475K-FC		x	Strobe	
	S24110-FC		x	Strobe	
	S24110W-FC		x	Strobe	
	S24110K-FC		x	Strobe	
	Federal Signal	450	x		Horn
		VALS	x	x	Horn/Strobe

Table A.1 Compatible Devices (Continued)

Manufacturer	Model	Audio	Visual	Type
Gentex	GEC-24-15	x	x	Horn/Strobe
	GEC-24-30	x	x	Horn/Strobe
	GEC-24-60	x	x	Horn/Strobe
	GEC-24-75	x	x	Horn/Strobe
	GEC-24-177	x	x	Horn/Strobe
	GEC-24-110	x	x	Horn/Strobe
	GEC-24-15/75	x	x	Horn/Strobe
	GX91	x		MiniHorn Steady Tone
	GX93	x		MiniHorn Temporal Tone
	HG124	x		Horn
	HS24-15	x	x	Horn/Strobe
	HS24-30	x	x	Horn/Strobe
	HS24-60	x	x	Horn/Strobe
	HS24-75	x	x	Horn/Strobe
	HS24-110	x	x	Horn/Strobe
	HS24-1575	x	x	Horn/Strobe
	GCC24	x	x	Multi Candella Horn/Strobe Ceiling Mount
	GCCR24		x	Multi Candella Horn/Strobe Ceiling Mount
	GCS24		x	Multi Candella Strobe Ceiling Mount
	GCSR24		x	Multi Candella Strobe Ceiling Mount
	GEGR-24	x	x	Multi Candella Horn/Strobe
	GES24-15		x	Strobe
	GES24-30		x	Strobe
	GES24-60		x	Strobe
	GES24-75		x	Strobe
	GES24-110		x	Strobe
	GES24-15/75		x	Strobe
	GES24-177		x	Strobe
	GES3-24		x	Multi Candella Strobe
	GESR-24		x	Multi Candella Strobe
	GEH-24	x		Horn
	ST24-30		x	Strobe
	ST24-60		x	Strobe
	ST24-75		x	Strobe
	ST24-110		x	Strobe
	ST24-1575		x	Strobe
	WGEC24-75W	x	x	Weatherproof Horn/Strobe
	WGES24-75W		x	Weatherproof Strobe
	WGMS-24-X	x	x	Horn/Strobe
	System Sensor	CHR	x	
CHW		x		Chime
CHSR		x	x	2-Wire Chime/Strobe
CHSW		x	x	2-Wire Chime/Strobe

Table A.1 Compatible Devices (Continued)

Manufacturer	Model	Audio	Visual	Type
System Sensor (continued)	HR	x	x	Horn
	HW		x	Horn
	HGRL		x	Horn Red Wall 2x4
	HGWL		x	Horn WHT Wall 2x4
	CHWL	x		Chime WHT Wall 4x4
	CHRL	x		Chime Red Wall 4x4
	CHSRL	x	x	Chime/Strobe Red Wall 4x4
	CHSWL	x	x	Chime/Strobe WHT Wall 4x4
	CHSCRL	x	x	Chime/Strobe Red Ceil 4x4
	CHSCWL	x	x	Chime/Strobe WHT Ceil 4x4
	P2R	x	x	2-Wire Horn/Strobe
	P2R-P	x	x	2-Wire Horn/Strobe
	PC2R	x	x	2-Wire Horn/Strobe
	PC2R-P	x	x	2-Wire Horn/Strobe
	P2RH	x	x	2-Wire Horn/Strobe High Candela
	P2RH-P	x	x	2-Wire Horn/Strobe High Candela
	PC2RH	x	x	2-Wire Horn/Strobe High Candela
	PC2RH-P	x	x	2-Wire Horn/Strobe High Candela
	P2W	x	x	2-Wire Horn/Strobe
	P2W-P	x	x	2-Wire Horn/Strobe
	PC2W	x	x	2-Wire Horn/Strobe
	PC2W-P	x	x	2-Wire Horn/Strobe
	P2WH	x	x	2-Wire Horn/Strobe High Candela
	P2WH-P	x	x	2-Wire Horn/Strobe High Candela
	PC2WH	x	x	2-Wire Horn/Strobe High Candela
	PC2WH-P	x	x	2-Wire Horn/Strobe High Candela
	P2RHK	x	x	2-Wire Horn/Strobe High Candela
	PC2RHK	x	x	2-Wire Horn/Strobe High Candela
	P4R	x	x	4-Wire Horn/Strobe
	PC4R	x	x	4-Wire Horn/Strobe
	P4RH	x	x	4-Wire Horn/Strobe High Candela
	P4W	x	x	4-Wire Horn/Strobe
	PC4W	x	x	4-Wire Horn/Strobe
	P4WH	x	x	4-Wire Horn/Strobe High Candela
	PC4WH	x	x	4-Wire Horn/Strobe High Candela
	P4RK	x	x	4-Wire Horn/Strobe
	PC4RK	x	x	4-Wire Horn/Strobe
	P4RHK	x	x	4-Wire Horn/Strobe High Candela
	PC4RHK	x	x	4-Wire Horn/Strobe High Candela
	PC4RH	x	x	4-Wire Horn/Strobe High Candela
P2RL-P, P2RL-SP*	x	x	Horn/Strobe 2W Red Wall 4x4	
P2WL-P, P2WL-SP*	x	x	Horn/Strobe 2W WHT Wall 4x4	
P2GRL	x	x	Horn/Strobe 2W Red Wall 2x4	

Table A.1 Compatible Devices (Continued)

Manufacturer	Model	Audio	Visual	Type
System Sensor (continued)	P2GWL	x	x	Horn/Strobe 2W WHT Wall 2x4
	P4RL	x	x	Horn/Strobe 4W Red Wall 4X4
	P4WL	x	x	Horn/Strobe 4W WHT Wall 4X4
	PC4RL	x	x	Horn/Strobe 4W Red Ceil 4X4
	PC4WL	x	x	Horn/Strobe 4W WHT Ceil 4X4
	SR		x	Strobe
	SR-P		x	Strobe
	SCR		x	Strobe
	SCR-P		x	Strobe
	SRH		x	Strobe High Candela
	SRH-P		x	Strobe High Candela
	SCRH		x	Strobe High Candela
	SCRH-P		x	Strobe High Candela
	SW		x	Strobe
	SW-P		x	Strobe
	SCW		x	Strobe
	SCW-P		x	Strobe
	SWH		x	Strobe High Candela
	SWH-P		x	Strobe High Candela
	SCWH		x	Strobe High Candela
	SCWH-P		x	Strobe High Candela
	SCRK		x	Strobe
	SRHK		x	Strobe High Candela
	SCRHK		x	Strobe High Candela
	SRL-P, SRL-SP*		x	Strobe Red Wall 4x4
	SWL-P, SWL-ALERT, SWL-CLR-ALERT*		x	Strobe White Wall 4x4
	SCWL-CLR-ALERT		x	Strobe WHT Ceil CLR Lens 4x4
	SGRL		x	Strobe Red Wall 2x4
	SGWL		x	Strobe White Wall 2x4
	P2RH-LF	x	x	2-Wire Low Frequency Sounder Strobe
P2WH-LF	x	x	2-Wire Low Frequency Sounder Strobe	
HR-LF	x		Low Frequency Sounder	
HW-LF	x		Low Frequency Sounder	
Triga	TR-HRK			Horn
	TR-HWL		x	Horn WHT Wall 4x4
	TR-HRL		x	Horn Red Wall 4x4
	TR-P2RK	x	x	2-Wire Horn/Strobe
	TR-PC2RK	x	x	2-Wire Horn/Strobe
	TR-P2RL	x	x	Horn/Strobe 2W Red Wall 4x4
	TR-P2WL,	x	x	Horn/Strobe 2W WHT Wall 4x4
	TR-PC2RL	x	x	Horn/Strobe 2W Red Ceil 4x4
	TR-PC2WL	x	x	Horn/Strobe 2W WHT Ceil 4x4
	TR-SRK		x	Strobe
	TR-SRL		x	Strobe Red Wall 4x4
	TR-SWL		x	Strobe White Wall 4x4
	TR-SCRL		x	Strobe Red Ceil 4x4
	TR-SCWL		x	Strobe White Ceil 4x4

* P=Plain, ALERT=Pad Printing ALERT, SP=Fuego

Table A.1 Compatible Devices (Continued)

Manufacturer	Model	Audio	Visual	Type
Wheelock	AH-12	x		Horn
	AH-24	x		Horn
	AH-12WP	x		Horn Weatherproof
	AH-24WP	x		Horn Weatherproof
	AMT-241575W	x	x	Multi-Tone Horn Strobe
	AMT-24MCW		x	Multi-Tone Horn Strobe
	AMT-241575W-NYC	x	x	Multi-Tone Horn Strobe
	AMT-12/24	x		Multi-tone Horn
	AMT-12/24 NYC	x		Multi-tone Horn
	AS-121575W		x	Horn/Strobe
	NH-12/24	x	x	Horn
	AS-241575W	x	x	Horn/Strobe
	AS-24MCC	x	x	Horn/Strobe
	AS-24MCCH	x	x	Horn/Strobe
	AS-24MCW	x	x	Horn/Strobe
	AS-24MCWH	x	x	Horn/Strobe
	ASWP-2475W	x	x	Horn/Strobe Weatherproof
	ASWP-2475C	x	x	Horn/Strobe Weatherproof

Table A.1 Compatible Devices (Continued)

Manufacturer	Model	Audio	Visual	Type
Wheelock (continued)	ASWP-24MCWH	x	x	Horn/Strobe
	ASWP-24MCCH	x	x	Horn/Strobe
	CH-70	x		Chime
	CH-90	x		Chime
	CH70-241575W		x	Chime/Strobe
	CH70-24MCW		x	Chime/Strobe
	CH70-24MCWH		x	Chime/Strobe
	CH90-24MCC		x	Chime/Strobe
	CH90-24MCCH		x	Chime/Strobe
	HS-24	x		Horn
	HS4-241575W	x	x	Horn/Strobe
	HS4-24MCW	x	x	Horn/Strobe
	HS4-24MCWH	x	x	Horn/Strobe
	HS4-24MCC	x	x	Horn/Strobe
	MIZ-24S	x	x	Mini Horn Strobe
	MT-121575W		x	MultitoneHorn Strobe
	MT-241575W	x	x	Multitone Horn Strobe
	MT-24MCW		x	Multitone Horn Strobe
	MTWP-2475W		x	Multitone Horn Strobe
	MTWP-2475C		x	Multitone Horn Strobe
	MTG-121575W	x	x	Multitone Horn Strobe
	MTR-121575W	x	x	Multitone Horn Strobe
	MTWPA-2475W	x	x	Multitone Horn Strobe
	MTWPB-2475W	x	x	Multitone Horn Strobe
	MTWPG-2475W	x	x	Multitone Horn Strobe
	MTWPR-2475W	x	x	Multitone Horn Strobe
	MTWPA-24MCCH	x	x	Multitone Horn Strobe
	ZNH	x		Horn
	NS-121575W	x	x	Horn/Strobe
	NS-241575W	x	x	Horn/Strobe
	NS-24MCW	x	x	Horn/Strobe
	NS-24MCC	x	x	Horn/Strobe
	NS-24MCCH	x	x	Horn/Strobe
	ZNS-MCW	x	x	Horn/Strobe
	ZNS-MCWH	x	x	Horn/Strobe
	ZNS-24MCC	x	x	Horn/Strobe

Table A.1 Compatible Devices (Continued)

Manufacturer	Model	Audio	Visual	Type	
Wheelock (continued)	ZNS-24MCCH	x	x	Horn/Strobe	
	RSS-121575W		x	Strobe	
	RSS-241575W		x	Strobe	
	RSS-24MCC		x	Strobe	
	RSS-24MCCR		x	Strobe	
	RSS-24MCCH		x	Strobe	
	RSS-24MCCHR		x	Strobe	
	RSS-24MCW		x	Strobe	
	RSS-24MCWH		x	Strobe	
	RSSP-121575W		x	Strobe	
	RSSP-241575W		x	Strobe	
	RSSR-2415W		x	Strobe	
	RSSR-2415C		x	Strobe	
	RSSR-2475W		x	Strobe	
	RSSR-2475C		x	Strobe	
	RSSR-24110C		x	Strobe	
	RSSA-24110W		x	Strobe	
	RSSB-24110W		x	Strobe	
	RSSG-24110W		x	Strobe	
	RSSR-24110W		x	Strobe	
	RSSA-24MCC		x	Multi-Cd Strobe	
	RSSB-24MCC		x	Multi-Cd Strobe	
	RSSG-24MCC		x	Multi-Cd Strobe	
	RSSR-24MCC		x	Multi-Cd Strobe	
	RSSWPA-2475W		x	Strobe Weatherproof	
	RSSWPA-24MCCH		x	Strobe Weatherproof	
	RSSWPG-24MCCH		x	Strobe Weatherproof	
	RSSWPR-24MCCH		x	Strobe Weatherproof	
	RSSWP-2475W		x	Strobe Weatherproof	
	RSSWP-2475C		x	Strobe Weatherproof	
	RSSWP-24MCWH		x	Strobe Weatherproof	
	ZRS-MCWH			x	Strobe
	ZRS-24MCC			x	Strobe
	ZRS-24MCCH			x	Strobe
	MB-G6-24		x		Motor Bell
	MB-G10-24		x		Motor Bell
	MB-G6-12		x		Motor Bell
	MB-G10-12		x		Motor Bell
	MIZ-24-R		x		Mini-Horn
	MT-12/24-R		x	x	Multitone Horn
	MT4-12/2z		x	x	Multitone Horn
	ZRS-MCW			x	Strobe
	MTWPR-24MCCH		x	x	Multitone Horn Strobe
NH-12/24R		x		Horn	
HSR			x	Horn/Strobe	
HSW			x	Horn/Strobe	
STR			x	Strobe	
STW			x	Strobe	
HNR			x	Horn	
HNW			x	Horn	

Table A.1 Compatible Devices (Continued)

A.2 Two-Wire Smoke Detectors

Table A.3 lists two-wire smoke detectors that are compatible with the panel. The table is organized by manufacturer. The columns show the number of detectors per loop that can be used.

TR-RPS1	
Identifier	24H
Operating Voltage Range	17.1-27.3 VDC

Table A.2

The maximum number of smoke detectors per zone is determined by both the current draw and the impedance of the smoke detector. If too many smoke detectors are used on any zone, false alarms could occur.

Do not mix different models of detectors on any zone; false alarms could occur.

Do not mix detectors of different models unless the system is specifically intended to be installed in that configuration.

Control unit Smoke Reset Time must be programmed for a number greater than or equal to the maximum reset time of the smoke detector.

Table A.3 lists two-wire smoke detectors that are compatible with the TR-RPS1 panel. The table is organized by manufacturer. The columns show the number of detectors per loop that can be used.

Manufacturer	Model Name or Number <i>(Base model name or number in parentheses.)</i>	Compatibility ID		# per Loop
		Head	Base	
Apollo	55000-350 (45681-200)	55000-350	45681-200	24 / loop
	55000-250 (45681-200)	55000-250	45681-200	24 / loop
Hochiki	SLR-24 V			30 / loop
System Sensor	1400	A	N/A	20 / loop
	1451 (B401B)	A	A	20 / loop
	2100	A	N/A	30 / loop
	2100T	A	N/A	30 / loop
	2151 (B110LP)	A	N/A	30 / loop
	2400	A	N/A	30 / loop
	2400TH	A	N/A	30 / loop
	2451 (B401B)	A	N/A	30 / loop
	2451TH (B401B)	A	N/A	30 / loop
	2W-B	A	N/A	30 / loop
	2WT-B	A	N/A	30 / loop
	2WTA-B	A	N/A	1 / loop
	2WTR-B	A	N/A	1 / LOOP

Table A.3 Compatible Two-Wire Smoke Detectors

A.3 Four-Wire Smoke Detectors/Devices (UL Listed)

Smoke Detector/Base	Detector Type	Max Standby Current (mA)	Alarm Current (mA)
Fenwal CPD-7021 (w/70-201000-005 Base)	Ionization	0.10	*
Fenwal PSD-7125	Photoelectric	0.10	*
Fenwal PSD-7126 (w/70-201000-005 Base)	Photoelectric	0.10	*
Fire-Lite BLP-12-4W	Base	*	*
Gentex 824	Photoelectric	0.50	*
Gentex 824T	Photoelectric	0.50	*
Gentex 824CP	Photoelectric	0.50	*
Gentex 824CPT	Photoelectric	0.50	*
Hochiki HSC-4R	Base	*	*
Hochiki SPB-24	Projected Beam	0.25	*
System Sensor B112LP	Base	0.12	36
System Sensor B114LP	Base	*	*
System Sensor B404B	Base	*	*
System Sensor DH100ACDC	Photoelectric	0.15	0.70
System Sensor DH100ACDCLP	Photoelectric	0.15	0.70
System Sensor DH100ACDCLWP	Photoelectric	0.15	0.70
System Sensor DH400ACDCI	Ionization Duct	25	95
System Sensor DH400ACDCP	Photoelectric Duct	25	95
System Sensor 1112/24/D	Ionization	0.05	50
System Sensor 1424	Ionization	0.10	41
System Sensor 1451 (w/B402B Base)	Ionization	0.10	39
System Sensor 2112/24ATR	Photoelectric	0.50	60/70
System Sensor 2112/24AITR	Photoelectric	0.50	60/70
System Sensor 2112/24/D	Photoelectric	0.05	50
System Sensor 2112/24R	Photoelectric	0.50	60/70
System Sensor 2112/24TR	Photoelectric	0.50	60/70
System Sensor 2112/24T/D	Photoelectric w/135° Thermal	0.05	50
System Sensor 2112/24TSRB	Photoelectric w/135° Thermal Supervisory Relay	15	45
System Sensor 2312/24TB	Photoelectric	0.12	50
System Sensor 2412 (12 volt)	Photoelectric	0.12	77
System Sensor 2412AT (12 volt)	Photoelectric	0.12	58
System Sensor 2412TH (12 volt)	Photoelectric	0.12	77
System Sensor 2424	Photoelectric	0.10	41
System Sensor 2424TH	Photoelectric	0.10	41
System Sensor 2451	Photoelectric	0.10	39
System Sensor 2451TH (with/B402B Base)	Photoelectric	0.10	39
System Sensor 2W-MOD	Loop Test/Maintenance Mod.	30	50
System Sensor 4W-B (12/24 Volt)	Photoelectric I ³	.05	23
System Sensor 4WT-B (12/24 Volt)	Photoelectric I ³ w/Therm	.05	23
System Sensor 4WTA-B (12/24 Volt)	I ³ Photo w/ Therm Sounder	.05	35
System Sensor 4WTR-B (12/24 Volt)	I ³ Photo w/ Therm/Relay	.05	35
System Sensor 4WTAR-B (12/24 Volt)	I ³ Photo w/ Therm/Sounder/Relay	.05	50
System Sensor 4WITAR-B (12/24 Volt)	I ³ Photo w/ Isolated Therm/Sounder/Relay	.05	50
System Sensor 2W-MOD2	I ³ Loop Test/Maintenance Mod.	.05	*
System Sensor RRS-MOD	I ³ Reversing Relay/Sync Module	.05	*
System Sensor 6424	Projected Beam	10	28.4
System Sensor Beam 1224(S)	Projected Beam	17	38.5

* Contact manufacturer for current draws

Table A.4 Compatible Four-Wire Smoke Detectors

A.4 Door Holders (UL Listed)

Table A.5 lists door holders that are compatible with the fire control panel.

Manufacturer	Model	Type	Current (mA)
Edwards	DH150A	Floor Mount	96
Edwards	DH154A	Flush Mount	96
Edwards	DH158A	Surface Mount	96
Rixon Firemark	FM-980	Floor Mount, single	68
Rixon Firemark	FM-996	Surface Wiring	68
Rixon Firemark	FM-998	Concealed Wiring	68

Table A.5 Compatible Door Holders

A.5 Relays (UL Listed)

Table A.6 lists relays compatible with the fire control panel.

Manufacturer	Model	Current (mA)
Air Products & Controls, LTD	MR-101/C	15
	MR-201/C	35
	PAM-1	15
	PAM-2	15
	PAM-SD	15
System Sensor	A77-716B	20
	PR-1	15
	PR-2	30
	PR-3	30
	EOLR-1	30
	R-10T	23
	R-14T	23
	R-20T	40
	R-24T	40
	R-10E	23
	R-14E	23
	R-20E	40
	R-24E	40

Table A.6 Compatible Relays

A.6 Compatible 520Hz Signaling Speakers

Model Number	Description
System Sensor Model Numbers	
	Description
SPR	Wall High-Fidelity Speaker, Red
SPW	Wall High-Fidelity Speaker, White
SPCR	Ceiling High-Fidelity Speaker, Red
SPCW	Ceiling High-Fidelity Speaker, White
SPSR	Wall High-Fidelity Speaker Strobe, Red
SPSRH	Wall High-Fidelity Speaker Strobe, High Candela, Red
SPSW	Wall High-Fidelity Speaker Strobe, White
SPSCR	Ceiling High-Fidelity Speaker Strobe, Red
SPSCW	Ceiling High-Fidelity Speaker Strobe, White
SPSCWH	Ceiling High-Fidelity Speaker Strobe, High Candela, White
SPSCRH	Ceiling High-Fidelity Speaker Strobe, High Candela, Red
SPSCW-CLR-ALERT	Ceiling High-Fidelity Speaker Strobe, Clear Lens, ALERT, White
SPSCW-P	Ceiling High-Fidelity Speaker Strobe, Plain, White
SPSCWH-P	Ceiling High-Fidelity Speaker Strobe, High Candela, Plain, White
SPSR-P	Wall High-Fidelity Speaker Strobe, Plain, Red
SPSRH-P	Wall High-Fidelity Speaker Strobe, High Candela, Plain, Red
SPSCWH-P	Ceiling High-Fidelity Speaker Strobe, High Candela, Plain, White
SPSW-ALERT	Wall High-Fidelity Speaker Strobe, Amber Lens, ALERT, White
SPSW-CLR-ALERT	Wall High-Fidelity Speaker Strobe, Clear Lens, ALERT, White
SPSW-P	Wall High-Fidelity Speaker Strobe, Plain, Red
SPSWH	Wall High-Fidelity Speaker Strobe, High Candela, White
SPSWH-P	Wall High-Fidelity Speaker Strobe, High Candela, Plain, Red
SPSRL-P	Wall High-Fidelity Speaker Strobe, Standard, Red, Plain
SPSWL-P	Wall High-Fidelity Speaker Strobe, Standard, White, Plain
SPSCWL-CLR-ALERT	Ceiling High-Fidelity Speaker Strobe, Clear Lens, Standard, White, ALERT
SPSWL-ALERT	Wall High-Fidelity Speaker Strobe, Amber Lens, ALERT, White
Triga Model Numbers	
TR-SPCRL	Ceiling High-Fidelity Speaker, Red
TR-SPCWL	Ceiling High-Fidelity Speaker, White
TR-SPRL	Wall High-Fidelity Speaker, Red
TR-SPWL	Wall High-Fidelity Speaker, White
TR-SPSCRL	Ceiling High-Fidelity Speaker Strobe, Red
TR-SPSCWL	Ceiling High-Fidelity Speaker Strobe, White
TR-SPSRL	Wall High-Fidelity Speaker Strobe, Red
TR-SPSWL	Wall High-Fidelity Speaker Strobe, White
TR-SPSCWL-P	Ceiling High-Fidelity Speaker Strobe, Standard, White, Plain
*F=FIRE, P=PLAIN, AL=ALERT, AG=AGENT, EV=EVAC, SP=FUEGO, PG=FOGO	

Table A.7 Compatible 520Hz Signaling Speakers

A.7 Compatible 520Hz Low Frequency Bases

Model Number	Description
TR-B200S-LF	Low Frequency Intelligent Sounder Base
TR-B200SR-LF	Low Frequency Intelligent Sounder Base

Table A.8 Compatible 520Hz Low Frequency Bases



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