

## Installation Guide

### 1.0 Notice

- These instructions are for the installation of the D9073 RS-485 High Integrity Bus Module in a High Integrity RS-485 Circuit connected to Radionics D8024, D9024 or D10024 Fire Alarm Control Panels (FACPs). See the *Analog Fire Alarm Control Panels Programming Guide* (P/N: 38789) for programming instructions, and the specific panel's operator's guide for operating instructions.
- See section 4.0 of this installation guide for information on the design and configuration of the High Integrity RS-485 Circuit.
- Installing the D9073 in this circuit consists of:
  1. Removing power from the FACP.
  2. Mounting the D9073 Module in an approved fire-rated enclosure.
  3. Connecting the D9073 to the D9051 RS-485 module(s) in the FACP(s).
  4. Connecting a power source to the D9073.
  5. Restoring power to the system.

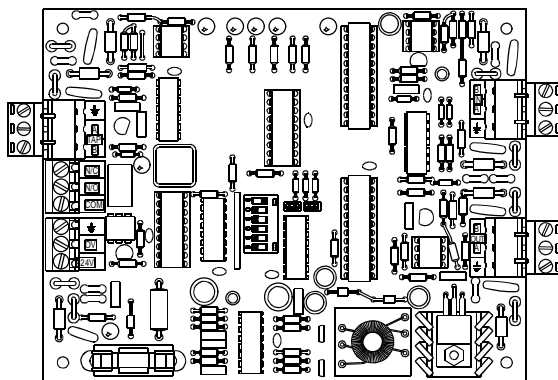


Figure 1: D9073 RS-485 Bus Module



These instructions contain procedures to follow in order to avoid injury and damage to equipment.

### 2.0 Installation Standards

- Install, test, and maintain these devices according to these instructions, NFPA 72, Local Codes, and the Authority Having Jurisdiction. Failure to follow these instructions may result in failure of the system to initiate an alarm condition. Radionics is not responsible for improperly installed, tested or maintained devices.

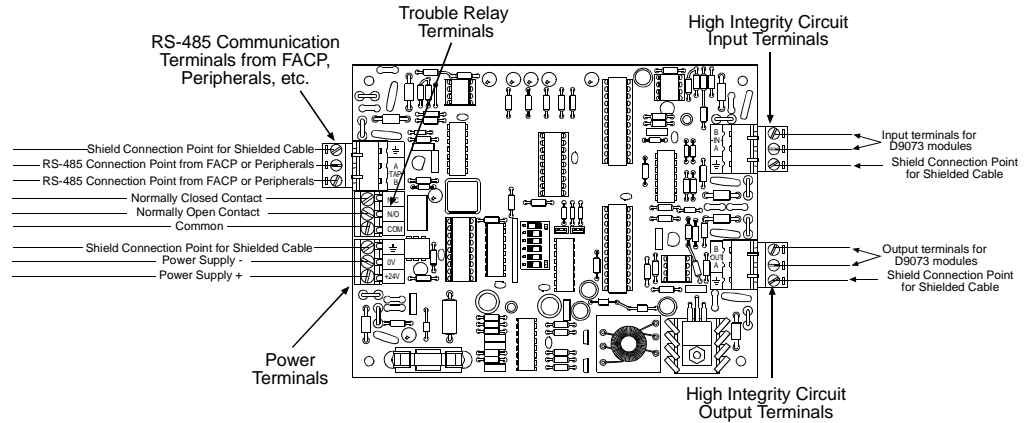
### 3.0 Description

- The addressable D9073 High Integrity RS-485 Bus Modules provide unrestricted bi-directional RS-485 data communication between devices in a Class A circuit. The modules supervise the circuit and are able to detect and isolate open circuit and ground fault conditions. The bi-directional data communication feature insures that data is communicated to all devices in circuit fault conditions. When multiple D9073 modules are used, the D9073 acts as a signal repeater and booster allowing for the construction of High Integrity RS-485 data circuits of up to 39,300 feet (7.4 miles) in length.
- Each D9073 has a dry contact relay that switches in a fault condition. This can be monitored or used to trigger external supervision devices.
- Each D9073 has a six-position dip switch for setting a device address to between 0 and 63. This address is independent of the panel network address. Diagnostic control can be exercised and status reports obtained from each D9073 in a system. Each D9073 should be set to a unique address.

### 4.0 D9073 High Integrity RS-485 Circuit

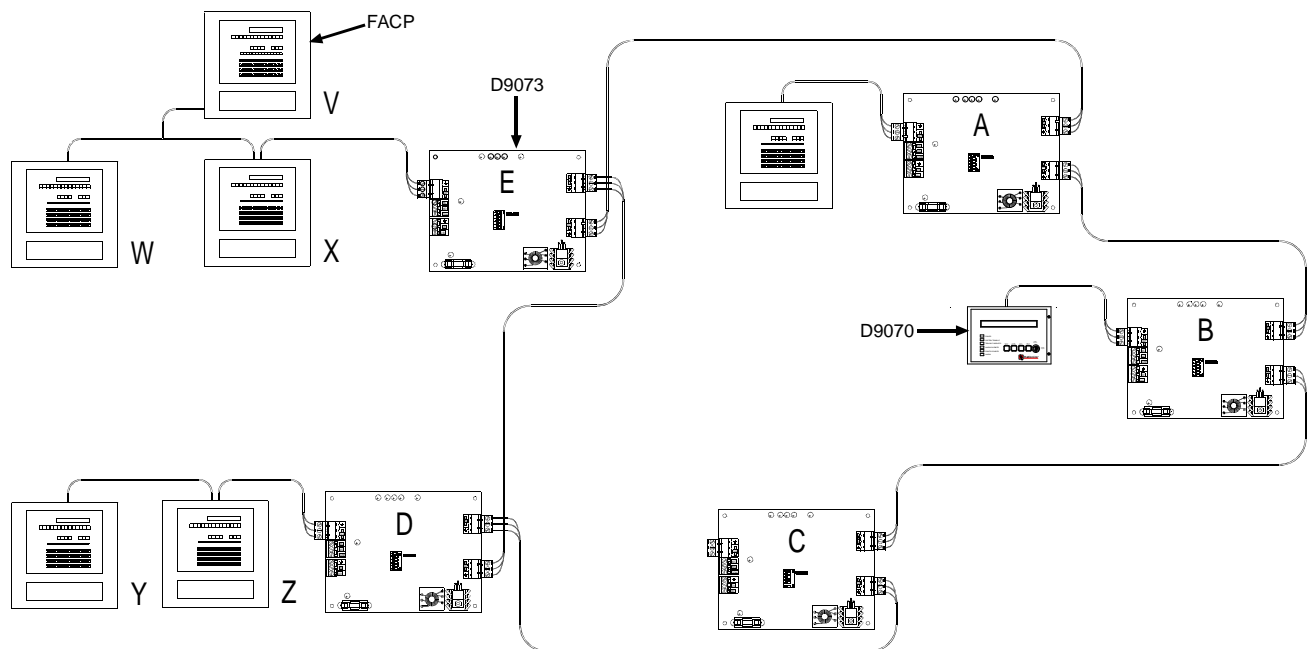
- The D9073 High Integrity Circuit is created when multiple D9073 modules are connected directly to each other's High Integrity Circuit Output Terminal Block. In order for this circuit to be created, there cannot be any other RS-485 devices connected in between the High Integrity Output Circuit Blocks. Each block has connections for two data lines and an earth connection for cable shielding. Connect the drain wire for shielded cable to the E terminal of the Data Terminal Block.
- **An improperly grounded shielded cable may aggravate rather than eliminate noise problems. Reconnect the shielded cable drain each time the cable is cut to install a device.**

- Wiring should be twisted pair type with an outer foil shield (or copper shield for MICC) for maximum immunity from external magnetic fields. Shielded twisted pair wiring such as the Data Grade Cable D293, Belden 8760 two-core twisted pair, or their equal should be used in a Class A circuit connecting all D9073 modules. Up to 20 D9073s can be placed on a circuit not to exceed 39,300 ft (7.4 miles) in length. Circuit wiring between D9073s can be up to 4,900 ft (.93 miles, 1.5 km) in length.



**Figure 2: D9073 Circuit Connections and Terminal Call-Outs**

- Each terminal is filtered to restrict noise entering and leaving the D9073 and prevent voltage spikes from damaging circuitry.



**Figure 3: RS-485 High Integrity Circuit**

- Figure 3 is a typical RS-485 High Integrity Circuit containing five D9073 modules. Modules D and E have several panels connected through their D9051 RS-485 modules in Class B circuits and connected to the RS-485 Communication (TAP) terminals. FACP V is connected to the RS-485 Class B circuit in a "T" Tap not to exceed six feet in length. Modules A and B are each connected to only one device. The remaining D9073 is not connected to any device, and acts as a booster, increasing the distance between panels up to 9,840 feet.

#### 4.1 Removing Power from the FACP's

- Remove AC power from the system at the dedicated 120V AC breaker(s), "lock out" the breaker(s) and remove the standby battery power before making or breaking any connections to the FACP's.
- Disconnect all power to the FACP before connecting to the D9073 High Integrity RS-485 Circuit.**

## 4.2 Mounting the D9073 Module in an Approved Fire-Rated Enclosure

- D9073s can be mounted in a fire panel enclosure, such as the Radionics D4103R or D8109.

## 4.3 Connecting the D9073 to the D9051 RS-485 Module(s) in the FACP(s)

- Peripherals, panels, and all other devices communicating by RS-485 protocol connect to the RS-485 Communication (TAP) Terminals in series. This line can be up to 3,280 ft (1,000 m) in length, and will support 31 peripherals. A D9051 RS-485 Bus Module on the fire panel is used to connect to the D9073 RS-485 Communication (TAP) terminal.
- “T” tapping is permissible to this line, but it must not exceed 6 ft (1.8 m) in length.

## 4.4 Connecting a Power Source to the D9073

- The D9073 can take power from any filtered DC supply (an approved auxiliary power supply or the FACP auxiliary power supply.) The D9073 provides electrical isolation between the 24V supply and the earth-referenced RS-485 communication terminals. A 1.6 A anti-surge fuse provides supply current surge and reverse polarity protection.

## 4.5 Restoring Power to the System

- Connect the standby batteries and close the 120V AC dedicated breaker that controls the power input to the FACP. The green AC Power LED on the panel display lights to show that the 120V AC power supply is on and the standby power supply is connected.

## 5.0 LED Indicators

- The D9073 has seven LEDs to assist in installation and troubleshooting.
  - **Power LED:** The green power LED indicated 24V DC power. Check the fuse if this LED is not lit.
  - **Relay LED:** The red Relay LED lights when the relay is powered and the Form C dry contacts are switched.
  - **Data Transmission LEDs:** The yellow Data Transmission LEDs flicker when the respective terminals are passing data.
  - **Fault LED:** The red Fault LED will light on the two D9073s on either side of a fault. This LED is also useful in manually determining fault location.
  - **Poll LED:** The yellow Poll LED indicates polling activity on the High Integrity Circuit.

## 6.0 Setting the D9073 Address

- Use Table 1 (page 4) to set the address on the D9073 module.

## 7.0 Specifications

D9073 Specification	Value
Operating Current	125 mA
Operating Voltage	21 - 28V DC
Dry Contact Rating	1A @ 24V DC
Operating Temperature	32°F to 120°F (0°C to 49°C)
Maximum Humidity	85% RH-Non Condensing (@104°F( 40°C))
Dimensions	6 ½ in. W x 4 ½ in. H x 1 in D (16.5 cm W x 11.4 cm H x 2.5 cm D)

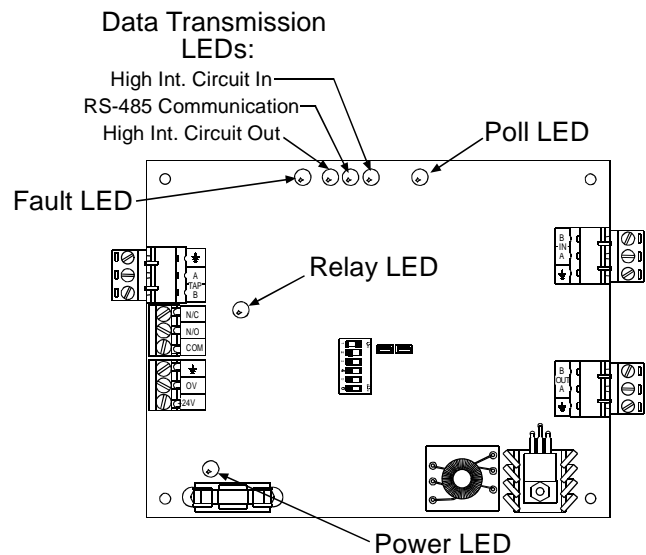


Figure 4: D9073 LEDs

**Table 1: Peripheral Analog Device Address Table**

- A number in the switch column indicates that the switch is ON.

Switch									Switch									Switch								
Address Value	1	2	4	8	16	32	64	NA	Address Value	1	2	4	8	16	32	64	NA	Address Value	1	2	4	8	16	32	64	NA
Address	1	2	3	4	5	6	7	8	Address	1	2	3	4	5	6	7	8	Address	1	2	3	4	5	6	7	8
1	1								43	1	2		4		6			85	1		3		5		7	
2		2							44			3	4		6			86		2	3		5		7	
3	1	2							45	1		3	4		6			87	1	2	3		5		7	
4			3						46		2	3	4		6			88				4	5		7	
5	1		3						47	1	2	3	4		6			89	1			4	5		7	
6		2	3						48					5	6			90		2		4	5		7	
7	1	2	3						49	1				5	6			91	1	2		4	5		7	
8				4					50		2			5	6			92			3	4	5		7	
9	1			4					51	1	2			5	6			93	1		3	4	5		7	
10		2		4					52			3		5	6			94		2	3	4	5		7	
11	1	2		4					53	1		3		5	6			95	1	2	3	4	5		7	
12			3	4					54		2	3		5	6			96						6	7	
13	1		3	4					55	1	2	3		5	6			97	1					6	7	
14		2	3	4					56				4	5	6			98		2				6	7	
15	1	2	3	4					57	1			4	5	6			99	1	2				6	7	
16					5				58		2		4	5	6			100			3			6	7	
17	1				5				59	1	2		4	5	6			101	1		3			6	7	
18		2			5				60			3	4	5	6			102		2	3			6	7	
19	1	2			5				61	1		3	4	5	6			103	1	2	3			6	7	
20			3		5				62		2	3	4	5	6			104				4		6	7	
21	1		3		5				63	1	2	3	4	5	6			105	1			4		6	7	
22		2	3		5				64							7		106		2		4		6	7	
23	1	2	3		5				65	1						7		107	1	2		4		6	7	
24				4	5				66		2					7		108			3	4		6	7	
25	1			4	5				67	1	2					7		109	1		3	4		6	7	
26		2		4	5				68			3				7		110		2	3	4		6	7	
27	1	2		4	5				69	1		3				7		111	1	2	3	4		6	7	
28			3	4	5				70		2	3				7		112					5	6	7	
29	1		3	4	5				71	1	2	3				7		113	1				5	6	7	
30		2	3	4	5				72				4			7		114		2			5	6	7	
31	1	2	3	4	5				73	1			4			7		115	1	2			5	6	7	
32						6			74		2		4			7		116			3		5	6	7	
33	1					6			75	1	2		4			7		117	1		3		5	6	7	
34		2				6			76			3	4			7		118		2	3		5	6	7	
35	1	2				6			77	1		3	4			7		119	1	2	3		5	6	7	
36			3			6			78		2	3	4			7		120				4	5	6	7	
37	1		3			6			79	1	2	3	4			7		121	1			4	5	6	7	
38		2	3			6			80					5		7		122		2		4	5	6	7	
39	1	2	3			6			81	1				5		7		123	1	2		4	5	6	7	
40				4		6			82		2			5		7		124			3	4	5	6	7	
41	1			4		6			83	1	2			5		7		125	1		3	4	5	6	7	
42		2		4		6			84			3		5		7		126		2	3	4	5	6	7	



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