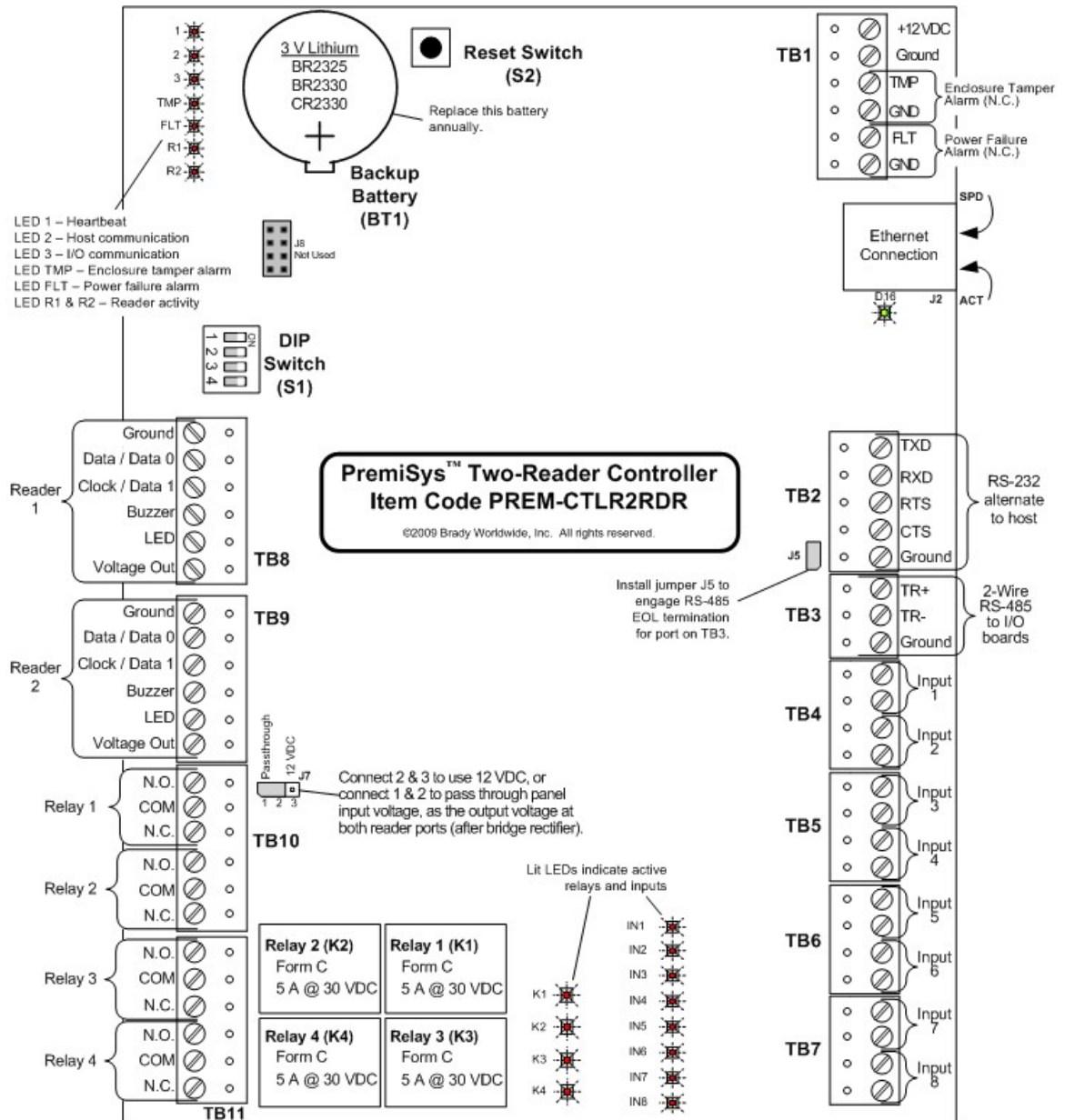
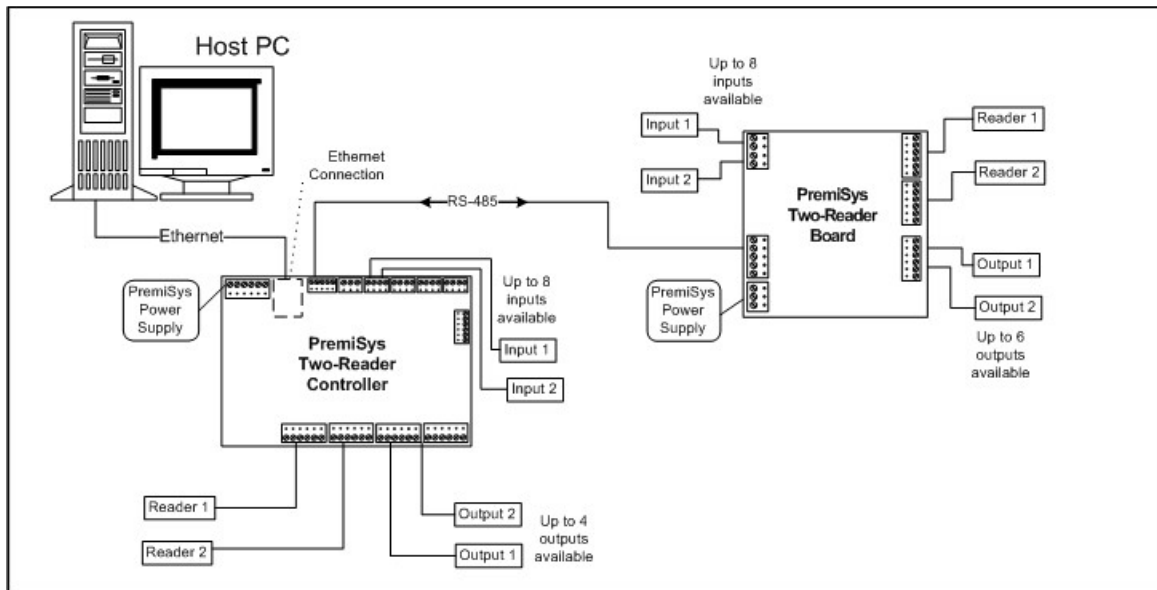


PremiSys Two-Reader Controller



Sample General Configuration for a PremiSys Two-Reader Controller Connected to a PremiSys Two-Reader Board, a Reader and Auxiliary Equipment



Two-Reader Controller Specifications

Certifications for the Two-Reader Controller

UL: recognized to UL 294: Access Control System Units - component
 CE: EN55022, EN50082-1, IEC801-2, IEC801-3 and IEC801-4

Dimensions and Weight of the Two-Reader Controller

Controller Width	8.0 inches (203 mm)
Controller Height	6.0 inches (152.4 mm)
Controller Depth	1.0 inch (25 mm)
Controller Weight	9 ounces (255 g) (nominal)

Environmental Specifications for the Two-Reader Controller

Temperature	32°F to 158°F (0°C to 70°C) operating -67°F to 185°F (-55°C to 85°C) storage
Relative Humidity	0 to 95% RH noncondensing

Power Specifications for the Two-Reader Controller



CAUTION! The processor in this component is intended for use only in a Class 2, low-voltage circuit!

Input Voltage	12 – 24 VDC \pm 10%, 500 mA maximum (reader current not included) 12 VDC @ 250mA (plus reader current) nominal 24 VDC @ 150mA (plus reader current) nominal
Memory Backup	Lithium coin cell, 3.0 V, type BR2325, BR2330, CR2330



IMPORTANT! Replace the coin cells (memory backup) used in the controllers annually. Use three-volt, lithium coin cell batteries of the types BR2325, BR2330 or CR2330 as replacements.



IMPORTANT! The Altronix® Power Supply Control panel contains 8 individual power outputs. Each output can supply up to 2.5 A @ 12 VDC. However, the total output amperage on all 8 ports cannot exceed 10 A. You must determine the load of each board in the loop to ensure that the current draw does not exceed 2.5 A per output port and that the total current draw on the power supply does not exceed 10 A.

Wiring Requirements for the Two-Reader Controller

Power to Two-Reader Controller	Twisted pair, 18 AWG (0.823 mm ²).
Primary Port – Ethernet to Host	Category 5 cable
Port 1 – RS-232 or Ethernet to Host	Ethernet Category 5 cable RS-232 Twisted pair, 22 AWG (0.325 mm ²), with overall shield Maximum cable length: 50 feet (15.2 meters) of wire, total copper, including drops
Port 2 – RS-485 to I/O boards	Twisted pairs, 22 AWG (0.325 mm ²), with overall shield Maximum cable length: 4000 feet (1219 meters) of wire, total copper, including drops
Alarm Inputs	Twisted pair, 30 ohms maximum

Communications Specifications for the Two-Reader Controller

Primary Port	Ethernet, 10/100Base-T interface
Port 1	RS-232 9600; 19,200; 38,400 or 115,200 bps
Port 2	Two-wire RS-485 2,400-38,400 bps

Access-Control Specifications for the Two-Reader Controller

Memory	8.2 MB assigned as follows: 6.2 MB for card information 1 MB for configuration data 1MB for transactions
Alarm Inputs	Two unsupervised, dedicated alarm inputs for enclosure tamper and power loss

Indicators on the Two-Reader Controller

Visible	6 red, single-color LEDs 1 dual-color LED for Ethernet connection
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Two-Reader Controller DIP Switches – Chart

See the section ["Logging into the Configuration Manager for the First Time"](#)^[115] for more information on when and why you change DIP switch settings on a controller.

You can configure the operating mode of the controller by setting the DIP switches before you apply power to the controller. Avoid changing the switch settings while the PremiSys™ IP Controller is powered, except where noted to do so. If you do change a setting while the controller is powered, cycle power off, and then on again for the setting to take effect. However, there is a point in the bulk erasing process when power must never be cycled. [See the instructions for bulk erasing for details.](#)^[133]



IMPORTANT!: The first time you program this controller or after the controller has been bulk erased, the default communication parameters are in effect. The DIP switches may be set to "OFF, OFF, OFF, OFF" to program the controller. You then contact the controller using the default IP address "192.168.10.20" to program it. See the section titled ["Configuring Ethernet Controllers"](#)^[114] for complete information on how

to program an Ethernet controller for use in your PremiSys system.

Selection	Switches			
	1	2	3	4
Initial Configuration Mode - Use this setting after a bulk erase, when a bulk erase is needed. Normal Operating Mode - Use this setting after the controller is programmed and is ready for normal function.	Off	Off	Off	Off
Pre-Bulk-Erase Mode - Use this setting before beginning a bulk erase. See the instructions for bulk erasing for full details. ¹³³	<u>On</u>	<u>On*</u>	Off	Off

*After you initially program your controller communication settings through the Configuration Manager, you may leave SW1 and SW 2 "Off" unless you need to perform a bulk erase and go through the initial configuration again.

DIP Switch Examples

- SW1 is On - Default username and password CAN log into the Configuration Manager, regardless of the "Disable Web Server" setting.
- SW 1 is On and "Disable Web Server" is enabled - Custom usernames and passwords CANNOT log into the Configuration Manager.
- SW 1 is On and "Disable Web Server" is disabled - Custom usernames and passwords CAN log into the Configuration Manager.
- SW 1 is Off and "Disable Web Server" is disabled - Custom usernames and passwords CAN log into the Configuration Manager, the default username and password CANNOT log into the Configuration Manager.
- SW 1 is Off and "Disable Web Server" is enabled, NO username and passwords work can log into the Configuration Manager. To configure the controller while the Disable Web Server is selected you must move switch 1 to "On."

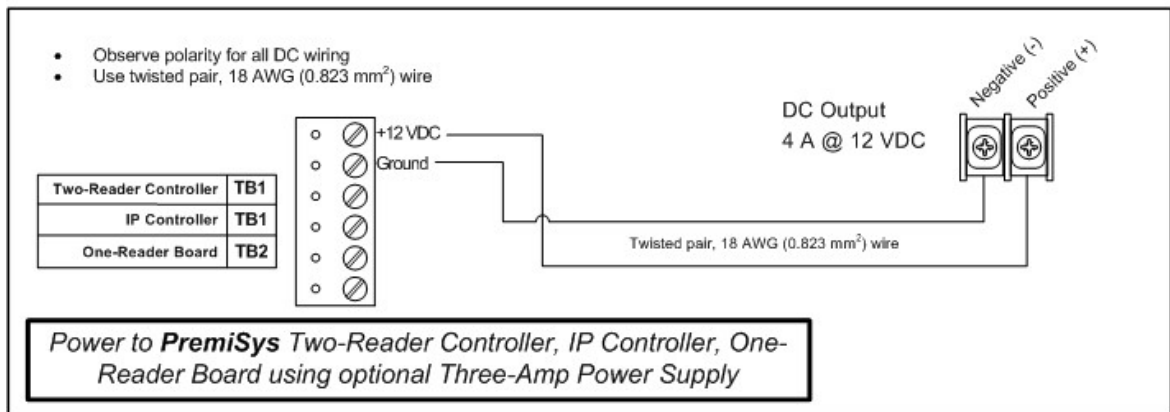
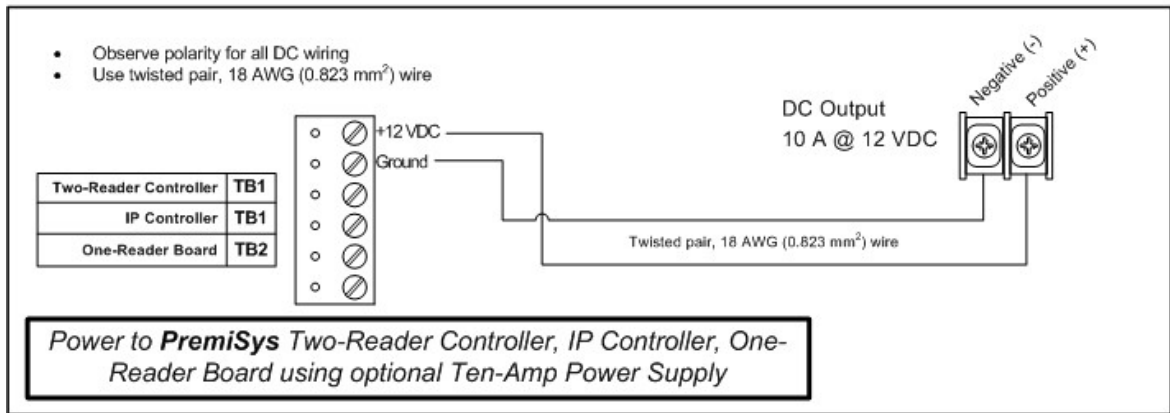
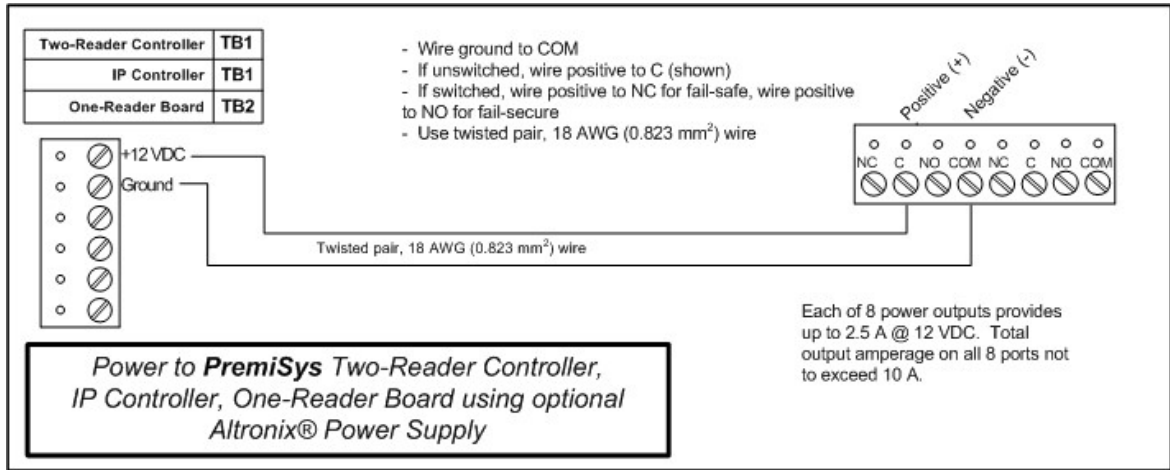


Note: See the PremiSys Online Help for instructions about setting other IP and communication addresses as well as other configurations.

Two-Reader Controller Jumper Settings

Jumpers	Set At	Selected
J5	OFF	Port 2 RS-485 EOL Terminator is not on
	ON	Port 2 RS-485 EOL Terminator is on
J7	PASS	Pass-through voltage to reader ports
	12V	12VDC at reader ports

Wiring a Two-Reader Controller to a Power Supply



CAUTION! The processor in this component is intended for use only in a Class 2, low-voltage circuit!

Input Voltage	12 – 24 VDC \pm 10%, 300 mA (reader current not included) 12 VDC @ 250mA (plus reader current) nominal 24 VDC @ 150mA (plus reader current) nominal
Memory Backup	Lithium coin cell, 3.0 V, type BR2325, BR2330, CR2330



IMPORTANT! Replace the coin cells (memory backup) used in the controllers annually. Use three-volt, lithium coin cell batteries of the types BR2325, BR2330 or CR2330 as replacements.



IMPORTANT! The Altronix® Power Supply Control panel contains 8 individual power outputs. Each output can supply up to 2.5 A @ 12 VDC. However, the total output amperage on all 8 ports cannot exceed 10 A. You must determine the load of each board in the loop to ensure that the current draw does not exceed 2.5 A per output port and that the total current draw on the power supply does not exceed 10 A.

Verifying Power and Operation:

When a controller is first powered up, the pattern of the LEDs' flashing indicates proper powering and response.

The Two-Reader Controller has red LEDs, 1-3, TMP, FLT, R1, R2, IN1 – IN8 and D16 as well as one yellow and one green LED on the Ethernet port. See the schematic of the [Two-Reader Controller](#)^[64] at the beginning of this section to view the location of the LEDs. See the table at the end of this topic for information indicating the status of the controller based on the LEDs.

As you begin to power up, all LED's are off.

While the controller is initializing, the LEDs have the following meanings:

- LED's 1, 2, 3, TMP, FLT, R1, R2, IN1, IN2, IN3, IN4, IN5, IN6, IN7 and IN8 are sequenced during initialization.
- LED's 1, 3, and TMP are turned ON for approximately 4 seconds after the hardware initialization has completed,
- The application code is then initialized. The amount of time the application takes to initialize depends on the size of the database, about 3 seconds without a card database. Each 10,000 cards will add about 3 seconds to the application initialization.



IMPORTANT! When LED's 1, 2, 3 and TMP flash at the same time, data is being read from or written to flash memory, do not cycle power when in this state.

If the sequence stops or repeats, perform one of the steps below.

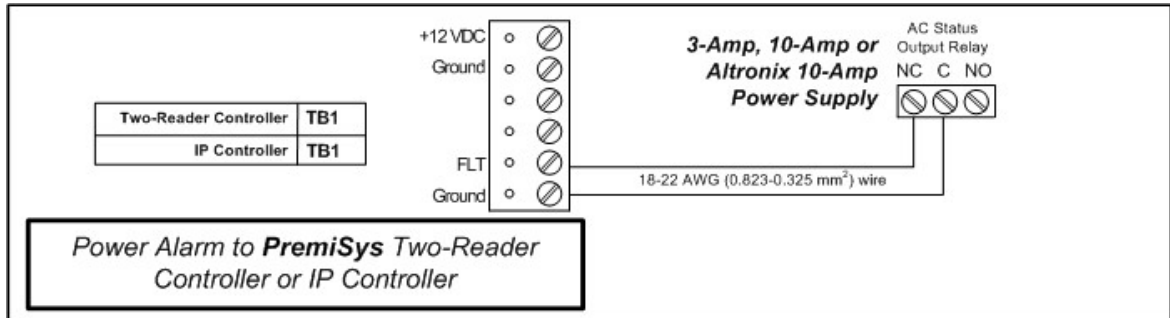
- Power-up and tag database as invalid:
 - Remove input power to the controller
 - Place an insulator under the battery clip and wait 5-10 seconds
 - Remove insulator and reapply input power.
- Power-up without loading database into RAM:
 - Remove input power to the controller
 - Set DIP switches to a default mode (in a default mode, the database is not loaded into RAM)
 - Reapply input power.
- Erase all of the configuration and databases (also erases card database for security reasons.) See "[Bulk Erasing Ethernet Controllers](#)"^[133] for instructions to erase all information on the controller.

If clearing the memory does not correct the initialization problem, contact technical support.

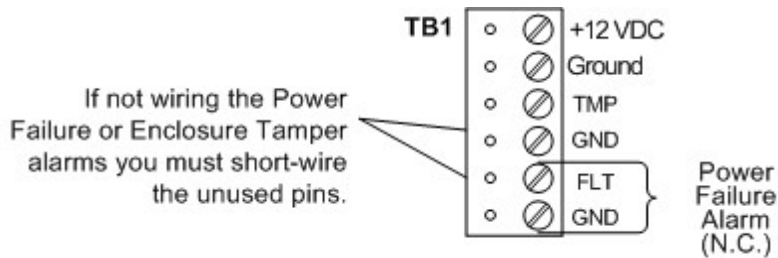
After initialization is complete the Two-Reader Controller's LEDs have the following meanings while in run mode:

Reader LEDs		<u>FLASH</u>	
R1	Clock/Data or D1/D0	Reader 1 receiving data	
	RS-485 Mode	Reader 1 transmitting data	
R2	Clock/Data or D1/D0	Reader 1 receiving data	
	RS-485 Mode	Reader 1 transmitting data	
Ethernet Port LEDs	<u>OFF</u>	<u>ON</u>	<u>FLASH</u>
Red LED (D16)	No data transmitting	Data transmitting	
Yellow LED	10Mb/S Ethernet speed	100Mb/S Ethernet speed	N/A
Green LED	No link	Good link	Ethernet activity
Inputs			
	<u>OFF</u>	<u>ON</u>	<u>FLASH</u>
IN1	Input 1 inactive	Input 1 active	Trouble on input 1
IN2	Input 2 inactive	Input 2 active	Trouble on input 2
IN3	Input 3 inactive	Input 3 active	Trouble on input 3
IN4	Input 4 inactive	Input 4 active	Trouble on input 4
IN5	Input 5 inactive	Input 5 active	Trouble on input 5
IN6	Input 6 inactive	Input 6 active	Trouble on input 6
IN7	Input 7 inactive	Input 7 active	Trouble on input 7
IN8	Input 8 inactive	Input 8 active	Trouble on input 8
	<u>OFF</u>	<u>ON</u>	
K1	Relay 1 de-energized	Relay 1 energized	
K2	Relay 2 de-energized	Relay 2 energized	
K3	Relay 3 de-energized	Relay 3 energized	
K4	Relay 4 de-energized	Relay 4 energized	

Wiring a Two-Reader Controller to Monitor for UPS Power Loss

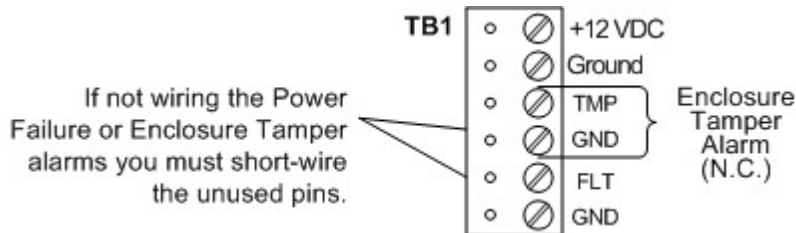


Alarm Inputs	Twisted pair, 30 ohms maximum
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Wiring a Two-Reader Controller for Enclosure Tamper

Alarm Inputs	Twisted pair, 30 ohms maximum
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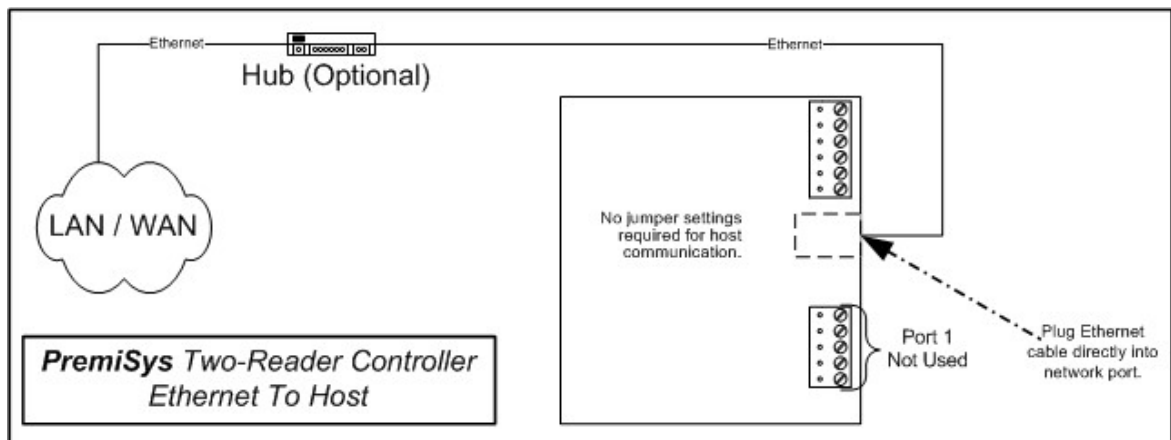


Wiring a Two-Reader Controller to the Host



IMPORTANT! Make sure that all pertinent jumper and DIP switch settings on all controllers in the system are also entered in the relevant controller setup window in the PremiSys™ software. See the PremiSys Online Help for details.

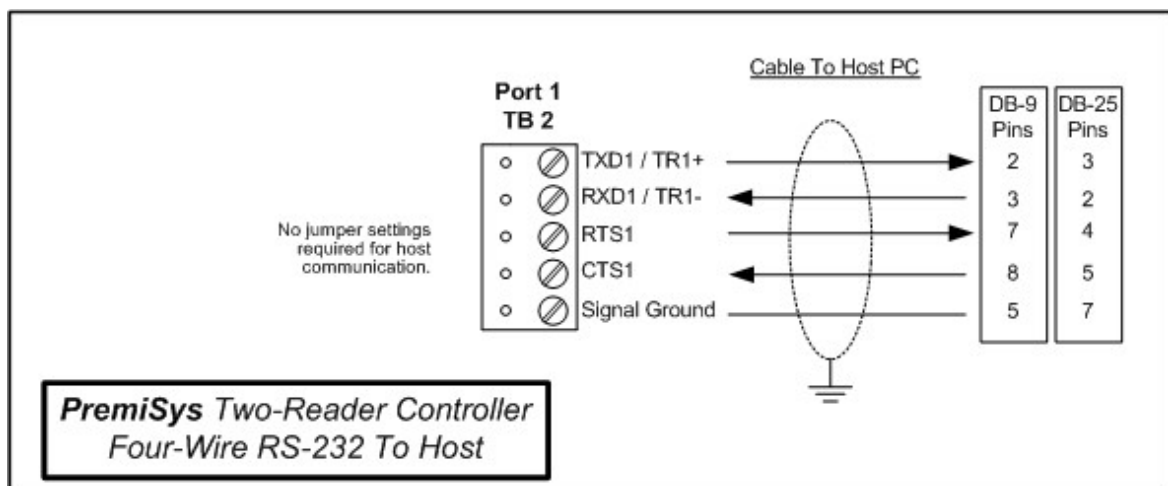
Two-Reader Controller via Ethernet to Host

**Notes:**

- The number of Two-Reader Controllers you can connect to an Ethernet network is limited by the number of IP addresses available, capacity of the server, bandwidth of the network and any other factor that affects network capacity.
- The Ethernet can be directly plugged into the Primary Port on the Two-Reader Controller.
- Each controller connected via the Ethernet must be configured in the software to have its own channel.

Two-Reader Controller via Four-Wire RS-232 to Host

RS-232 communications are limited to 50 total cable-feet (15 total cable-meters.)



Primary Port –
Ethernet to Host

Category 5 cable

Port 1 – RS-232 Host	Twisted pair, 22 AWG (0.325 mm ²), with overall shield Maximum cable length: 50 feet (15.2 meters) of wire, total copper, including drops
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Notes:

- You can connect one Two-Reader Controller per serial channel.
- You cannot connect the Two-Reader Controller to the host via RS-485 and you cannot use a MUX board between the Two-Reader Controller and the host since the Two-Reader Controller does not accept RS-485 communication on Port 1, the host communication serial port.

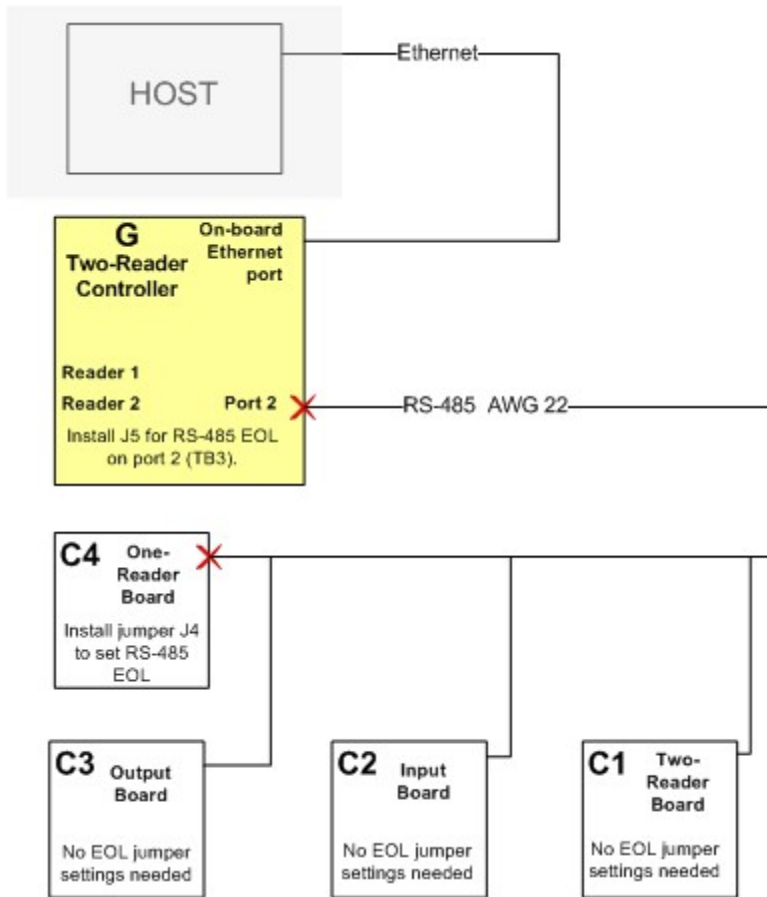
Setting End-of-Line (EOL) Resistance for the Two-Reader Controller

Install jumper J5 on the PremiSys™ Two-Reader Controller to set RS-485 EOL when needed for port 2 used to connect to auxiliary boards. The Two-Reader Controller does not have a jumper for EOL serial communication with the host.

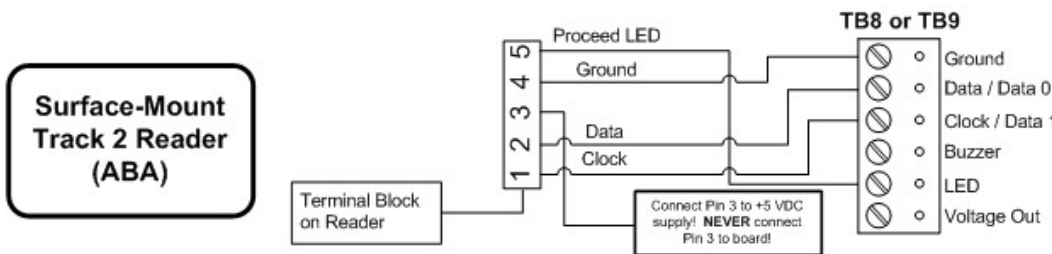
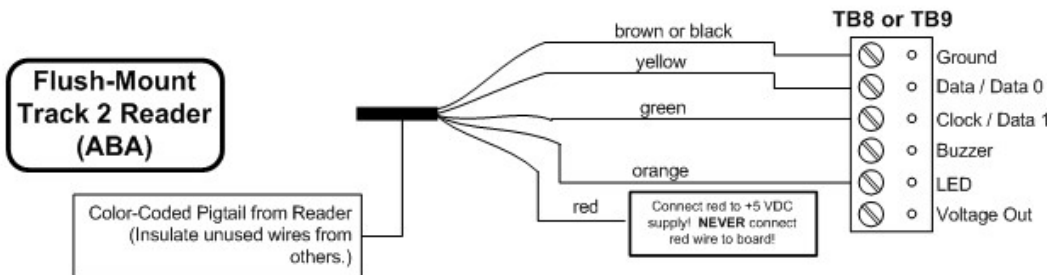
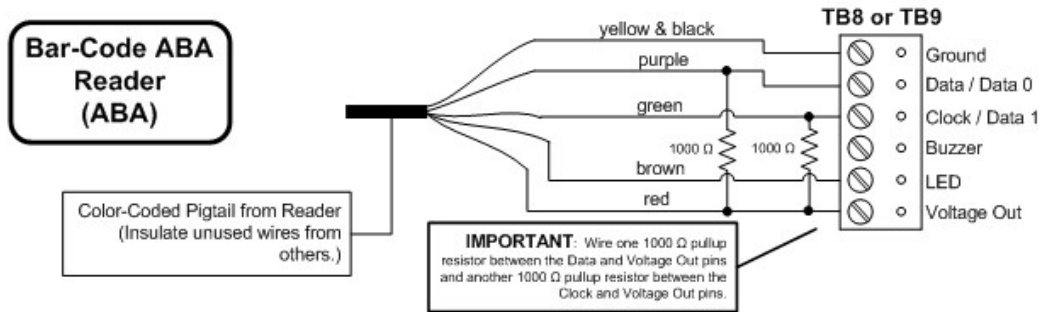
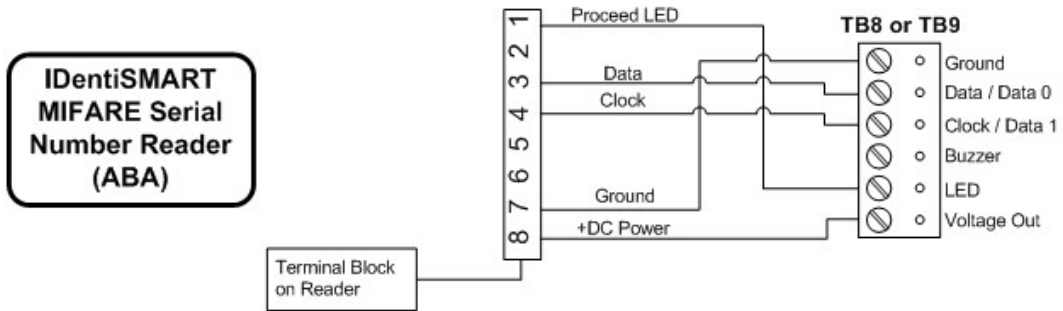
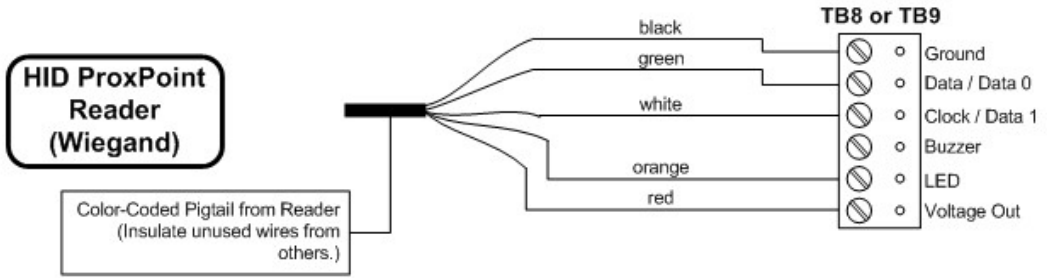
In the diagram below:

Controller “G”

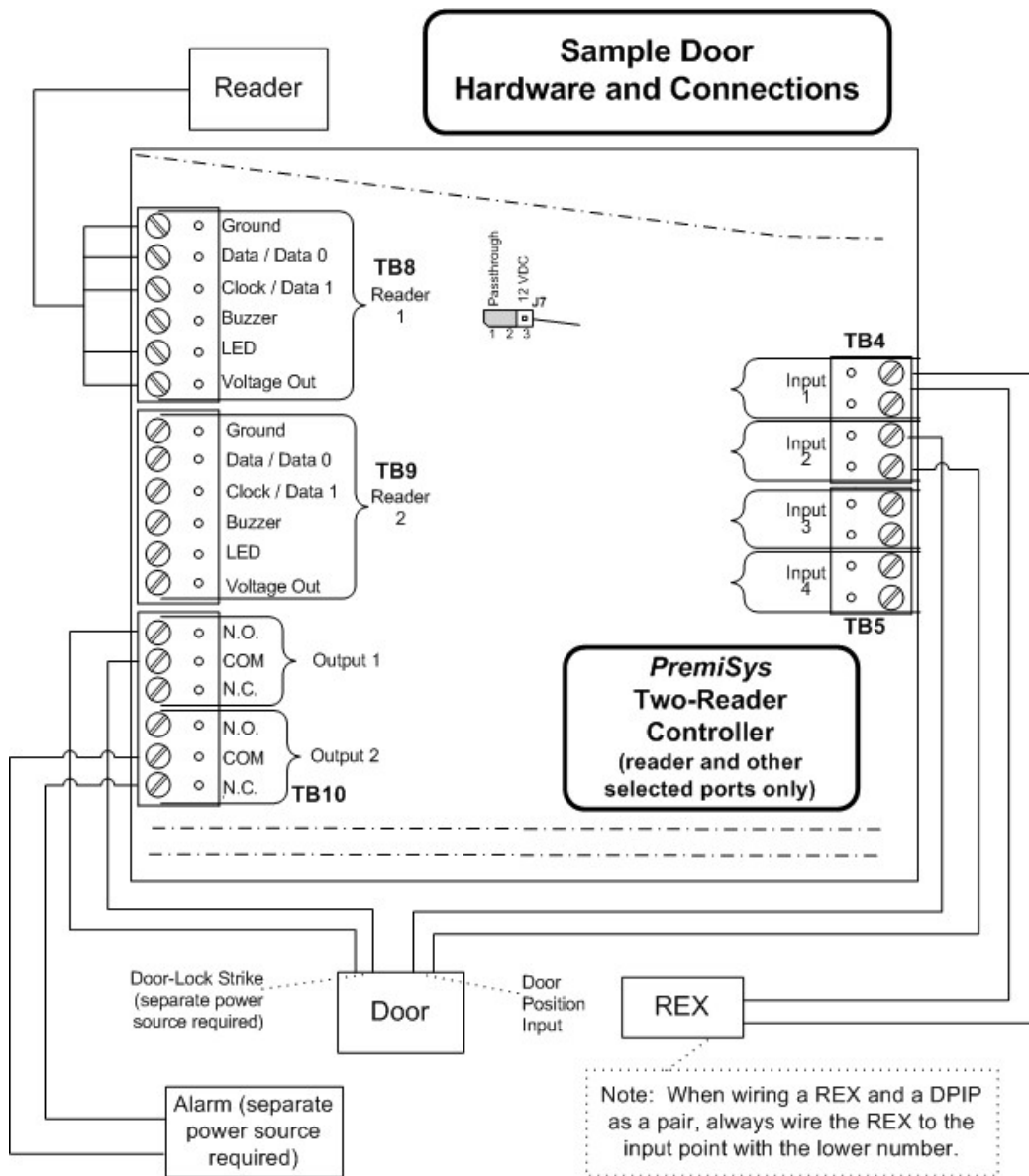
- Jumper J5 is set to signify there is an EOL board on Port 2. Board C4 is an end-of-line board on Port 2 of Controller G.



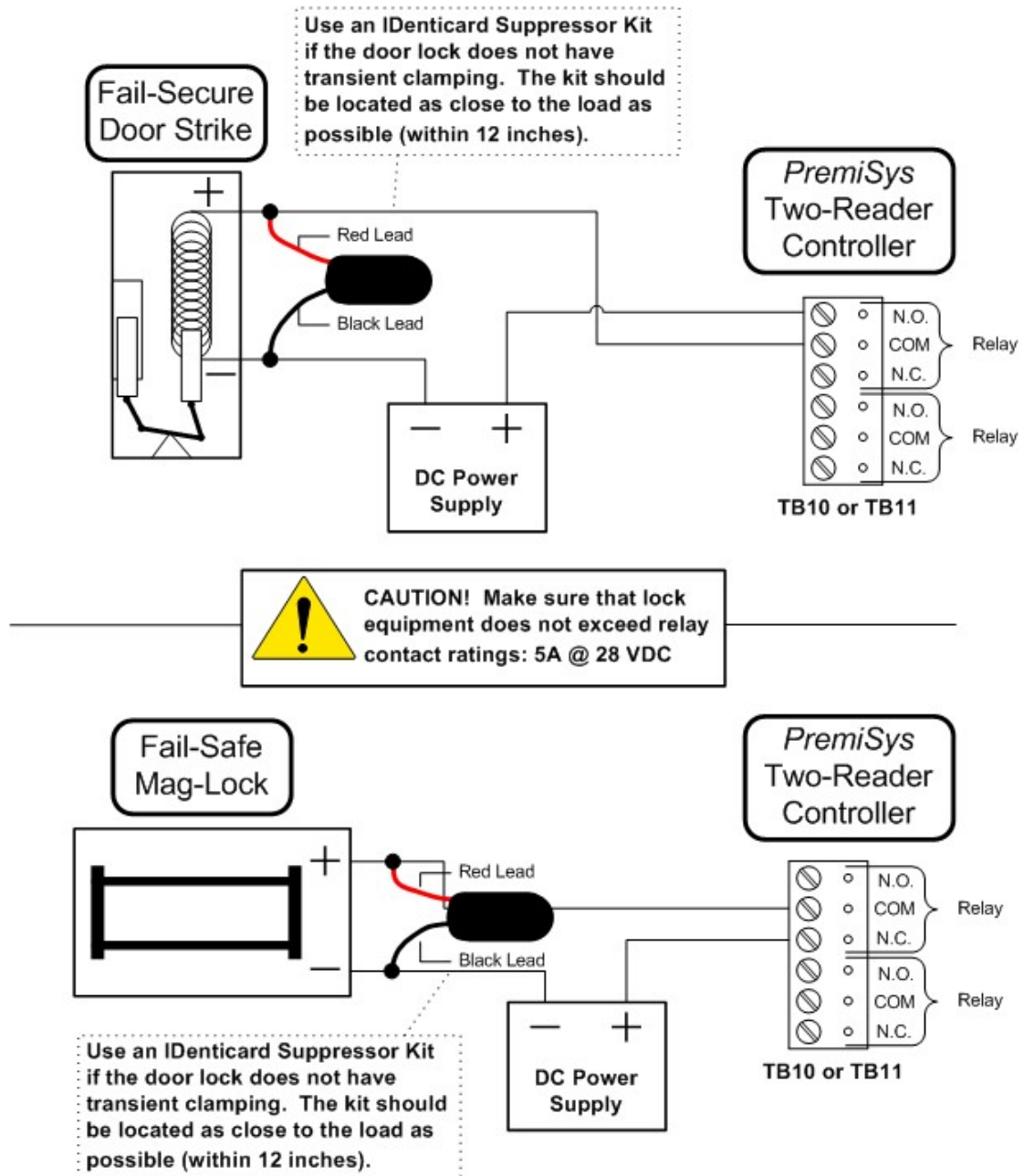
Wiring a Two-Reader Controller to Wiegand and ABA Readers



Wiring a Two-Reader Controller to Reader with Door Strike, REX, Alarm DPIP and Alarm Relay



Wiring a Two-Reader Controller to Door Strike and Magnetic Lock



Wiring Supervised Input Points on the Two-Reader Controller

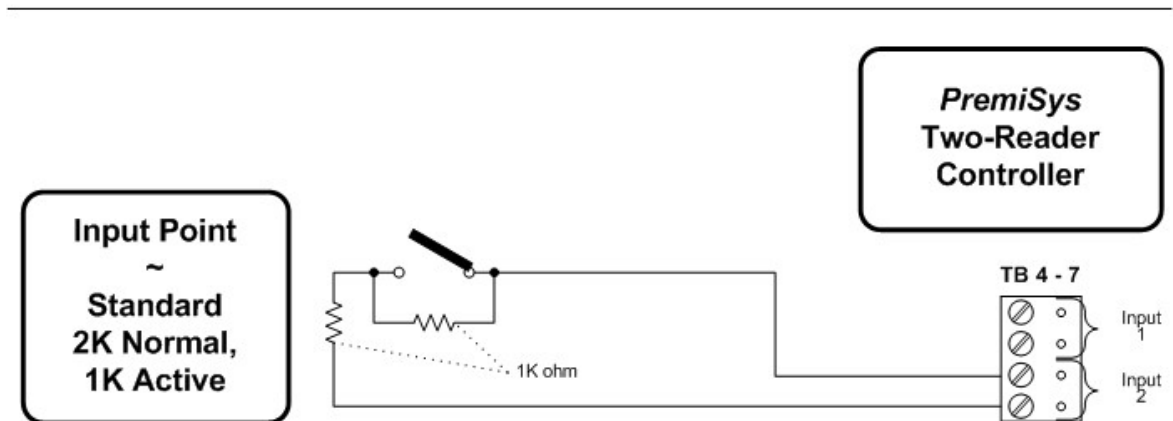
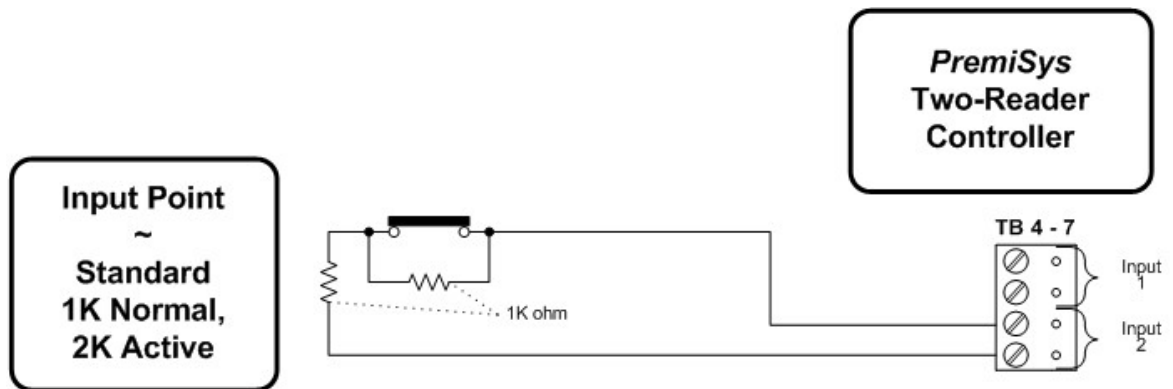
Supervised inputs such as these can be used for door-position input points or any other input that requires supervision.

PremiSys™ hardware supports only the standard “1 K normal, 2 K active” and “2 K normal, 1 K active” supervision modes depicted here.



IMPORTANT! Inputs on a single board are normally processed in ascending numeric sequence when they change state simultaneously or nearly simultaneously. Consequently, if wiring a REX input point and a door-position input point in a pair on a Two-Reader Controller, make sure that the door-position input point has a higher input number than the REX point paired with it.

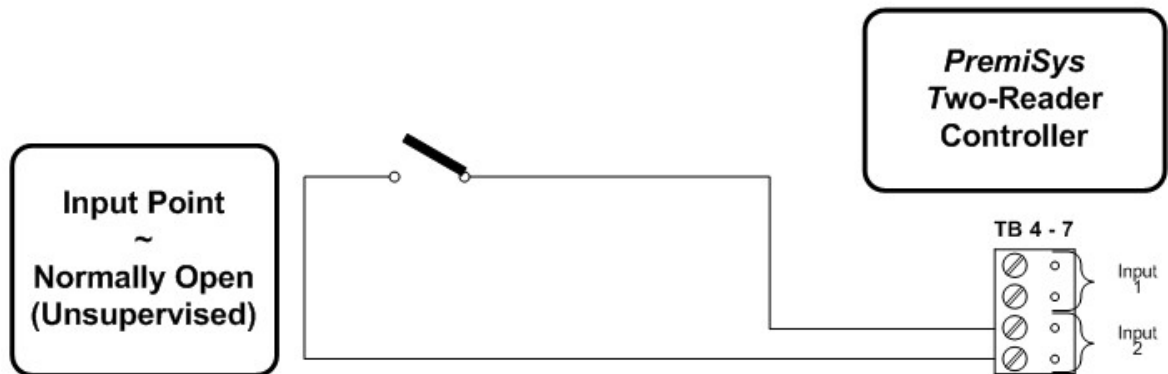
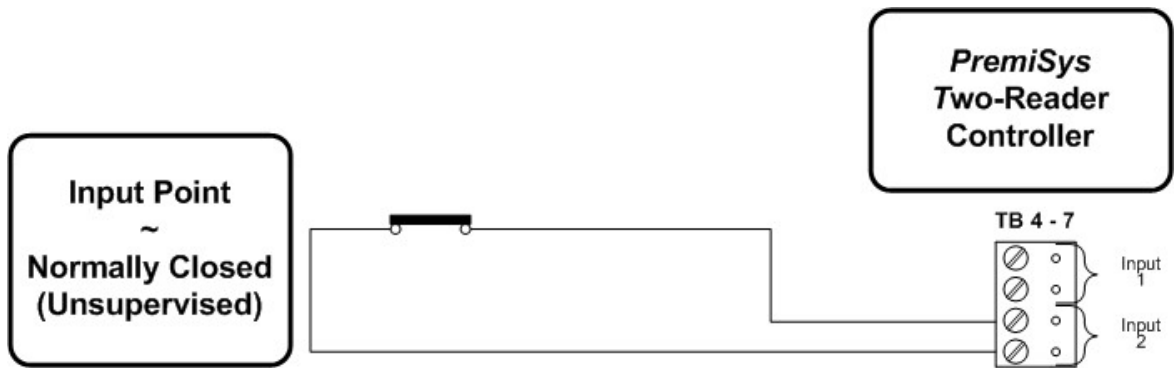
Input circuits require one twisted pair per input and are rated at 30 ohms maximum.



Wiring Unsupervised Input Points on the Two-Reader Controller

Unsupervised inputs such as these can be used for REXes, general-purpose input points or any other input that does not require supervision. See the topic "[Wiring a Supervised Input Point to the PremiSys Two-Reader Controller](#)^[81]" to wire inputs that require supervision.

Input circuits require one twisted pair per input and are rated at 30 ohms maximum.

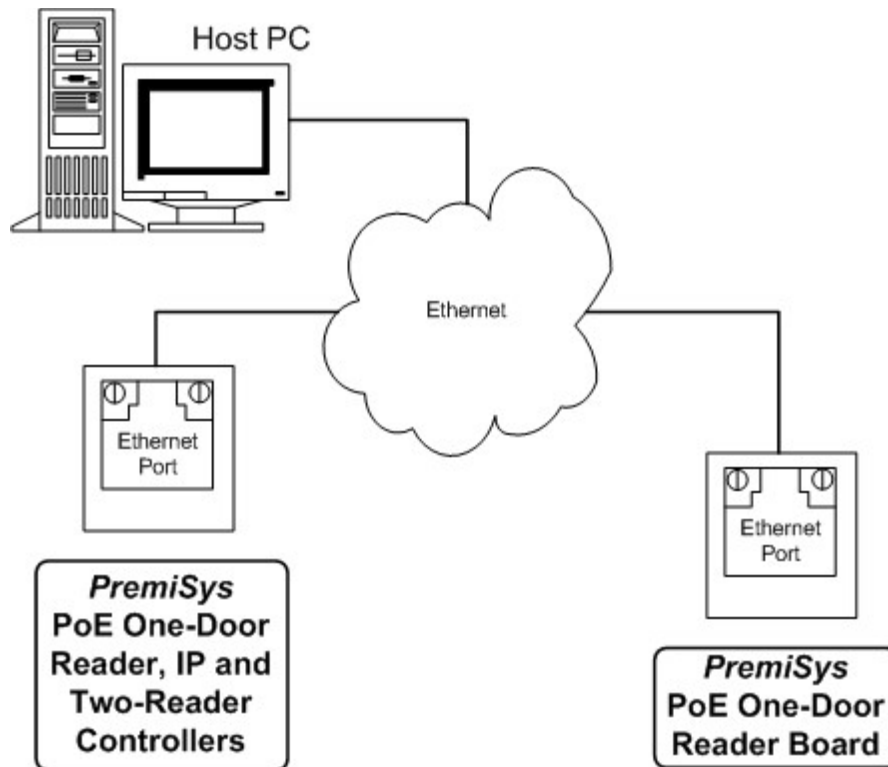


Wiring a Two-Reader Controller to the PoE One-Door Reader Board

Communication from the PremiSys™ Two-Reader Controller to the PremiSys PoE One-Door Reader Board is handled via the Ethernet, while power to the board can be handled via the Ethernet or via a separate power supply.

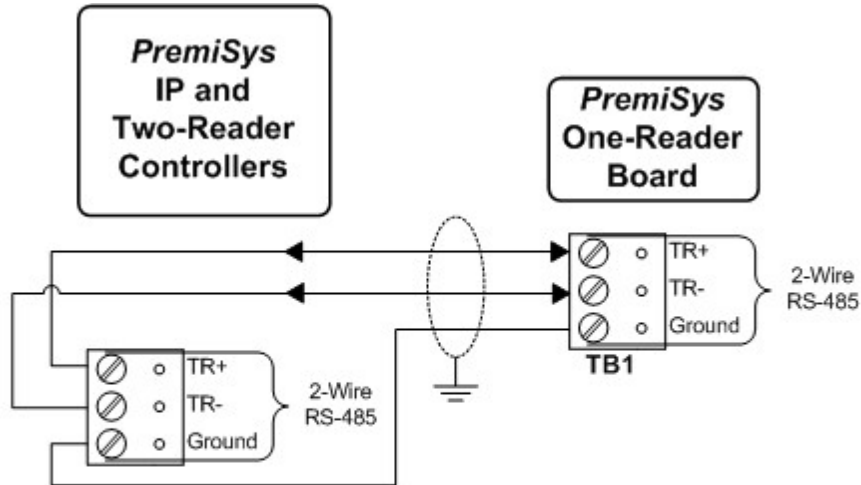


Note: You can connect up to 32 PoE One-Door Reader Boards to one Two-Reader Controller.



IMPORTANT! You cannot address the PoE One-Door Reader Board using jumpers; you must assign a range of IP addresses to the Ethernet controller. The controller then assigns one of those IP addresses to the PoE One-Door Reader Board. Enter the MAC address of the PoE One-Door Reader Board when you add the board to your Ethernet controller through your PremiSys™ software. The controller links the MAC address to an IP address from the range of reserved IP address.

Wiring Two-Reader Controller to the One-Reader Board



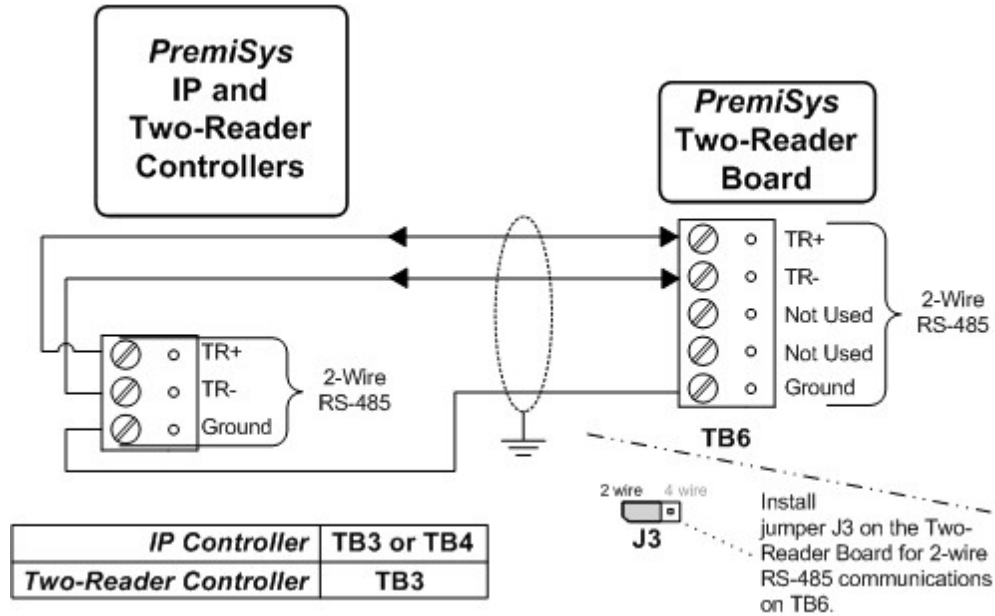
<i>IP Controller</i>	TB3 or TB4
<i>Two-Reader Controller</i>	TB3

Port 2 on the Two-Reader Controller – RS-485 to TB 1 on the One-Reader board	Two-wire RS-485 2,400-38,400 bps, asynchronous Twisted pairs, 22 AWG (0.325 mm ²), with overall shield Maximum cable length: 4000 feet (1219 meters) of wire, total copper, including drops
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**Notes:**

- You can connect up to 32 I/O boards to one Two-Reader Controller.
- All data wiring between the Two-Reader Controller and I/Os is two-wire RS-485.

Wiring a Two-Reader Controller to the Two-Reader Board



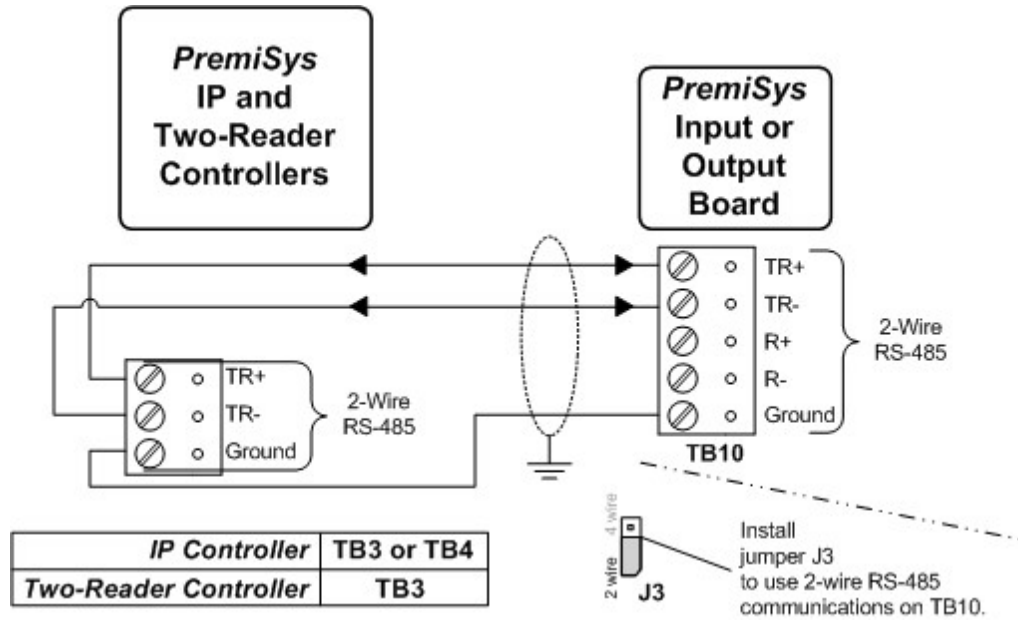
Port 2 on the Two-Reader Controller – RS-485 to TB 6 on the Two-Reader board

Two-wire RS-485 2,400-38,400 bps, asynchronous
Twisted pairs, 22 AWG (0.325 mm²), with overall shield
Maximum cable length: 4000 feet (1219 meters) of wire, total copper, including drops

Notes:

- You can connect up to 32 I/O boards to one Two-Reader Controller.
- All data wiring between the Two-Reader Controller and I/Os is two-wire RS-485.

Wiring a Two-Reader Controller to the Input Or Output Boards



IMPORTANT! Install Jumper J3 exactly as illustrated here! Four-wire RS-485 cannot be used!

TB 10 - Input or Output Board	
TB10-1	TR+
TB10-2	TR-
TB10-3	Not Used
TB10-4	Not Used
TB10-5	Ground

Port 2 on the Two-Reader Controller – RS-485 to TB 10 on the Input or Output boards	Two-wire RS-485 2,400-38,400 bps, asynchronous Twisted pairs, 22 AWG (0.325 mm ²), with overall shield Maximum cable length: 4000 feet (1219 meters) of wire, total copper, including drops
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Notes:

- You can connect up to 32 I/O boards to one Two-Reader Controller.

- All data wiring between the Two-Reader Controller and I/Os is two-wire RS-485.

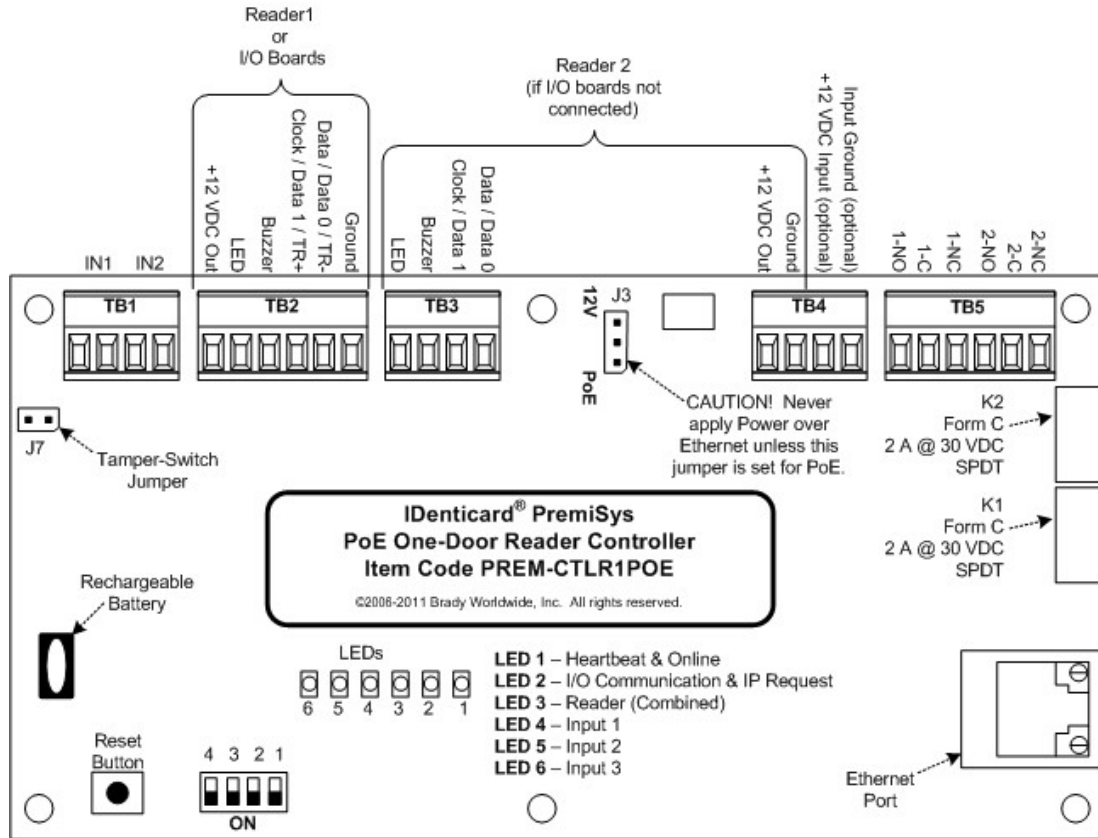
Two-Reader Controller LEDs

After initialization is complete the PremiSys™ Two-Reader Controller's LEDs have the following meanings while in run mode:

Reader LEDs		<u>FLASH</u>	
R1	Clock/Data or D1/D0	Reader 1 receiving data	
	RS-485 Mode	Reader 1 transmitting data	
R2	Clock/Data or D1/D0	Reader 1 receiving data	
	RS-485 Mode	Reader 1 transmitting data	
Ethernet Port LEDs	<u>OFF</u>	<u>ON</u>	<u>FLASH</u>
Red LED (D16)	No data transmitting	Data transmitting	
Yellow LED	10Mb/S Ethernet speed	100Mb/S Ethernet speed	N/A
Green LED	No link	Good link	Ethernet activity
Inputs			
	<u>OFF</u>	<u>ON</u>	<u>FLASH</u>
IN1	Input 1 inactive	Input 1 active	Trouble on input 1
IN2	Input 2 inactive	Input 2 active	Trouble on input 2
IN3	Input 3 inactive	Input 3 active	Trouble on input 3
IN4	Input 4 inactive	Input 4 active	Trouble on input 4
IN5	Input 5 inactive	Input 5 active	Trouble on input 5
IN6	Input 6 inactive	Input 6 active	Trouble on input 6
IN7	Input 7 inactive	Input 7 active	Trouble on input 7
IN8	Input 8 inactive	Input 8 active	Trouble on input 8
	<u>OFF</u>	<u>ON</u>	
K1	Relay 1 de-energized	Relay 1 energized	
K2	Relay 2 de-energized	Relay 2 energized	
K3	Relay 3 de-energized	Relay 3 energized	
K4	Relay 4 de-energized	Relay 4 energized	

PremiSys PoE One-Door Reader Controller

Important note about I/O boards used with the PoE One-Door Reader Controller:
 Connect downstream I/O boards to the RS-485 and ground pins on TB2. When using I/Os, Reader 2 effectively becomes Reader 1 and is the only reader that can be connected to the controller itself. In this case, the power and ground pins on TB2 can be used for the reader. The power and ground pins on TB4 are then available for auxiliary use.



Important note about powering door locks from the PoE One-Door Reader Controller:
 Pins 1 and 2 on TB 4 can be used to power a door lock, as long as the strike is rated for 12 volts and the total current required on both ports (for the reader and door lock) does not exceed 650 mA. Cable gauge must be factored in when calculating the current requirements. Wiring a door lock, however, takes away this reader port, so only one reader can be connected (on TB2) when this option is used. Connecting a reader on the Reader 1 block prevents the connection of any downstream RS-485 I/Os. So you cannot power a lock, connect downstream I/Os AND connect a reader, all on the same PoE One-Door Reader Controller.