



Connecting a Cisco Reader Module

Overview

The optional Cisco Reader Module (Figure 3-1) is similar to the Cisco Physical Access Gateway, providing the same ports for Wiegand readers and other input and output devices. The Cisco Reader Module is attached to a Cisco Physical Access Gateway to provide additional connections for one or two doors, but does not include Ethernet connections for the IP network. Power is supplied using the 2-pin connector for 12 to 24 VDC external power.

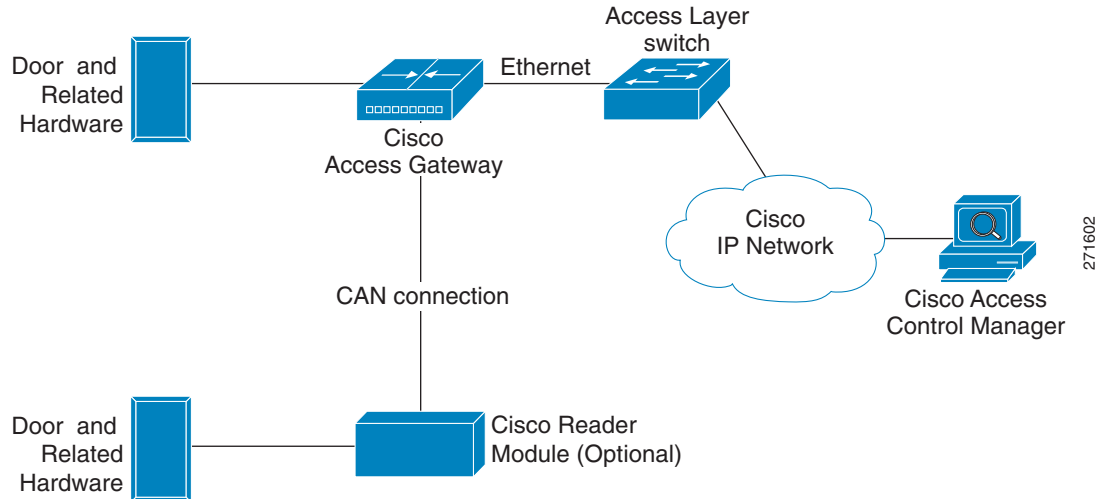
Figure 3-1 Cisco Reader Module



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The Cisco Reader Module is connected to a required Cisco Physical Access Gateway using a CAN connection, as shown in Figure 3-2.

Figure 3-2 Cisco Reader Module connected to the Cisco Physical Access Gateway



Package Contents

Each Cisco Reader Module includes the following:

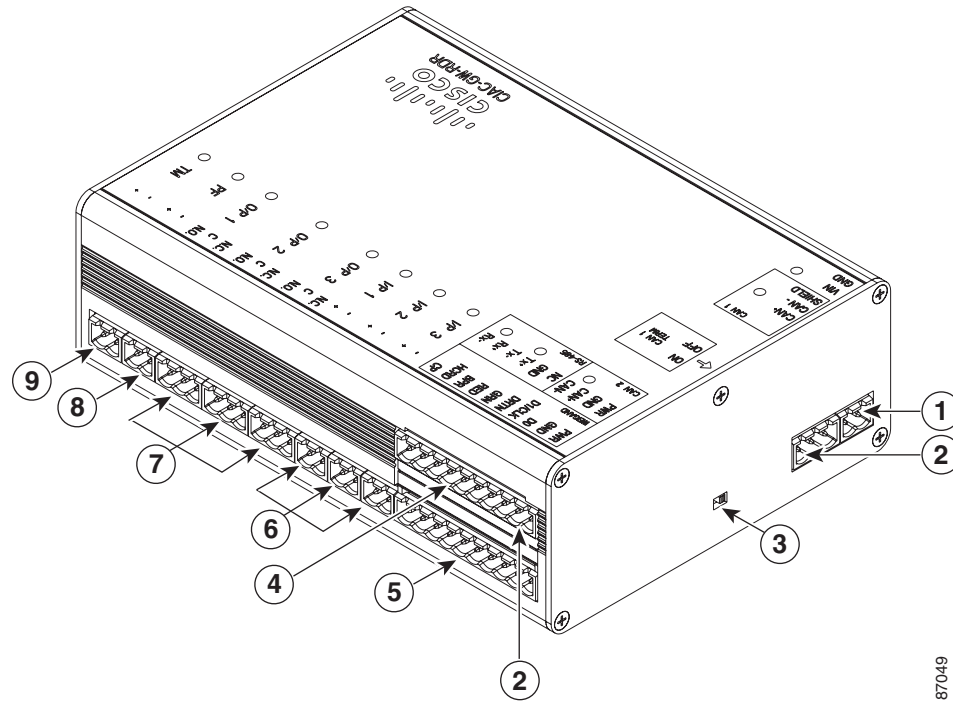
- Six resistors (1K) for input supervision
- Two mounting brackets, with 4 screws for each bracket
- Regulatory compliance and safety information
- Quick start guide
- Connector plugs, including the following:

Type	Quantity
10 Pin	1
3 Pin	4
2 Pin	6

Physical Overview and Port Description

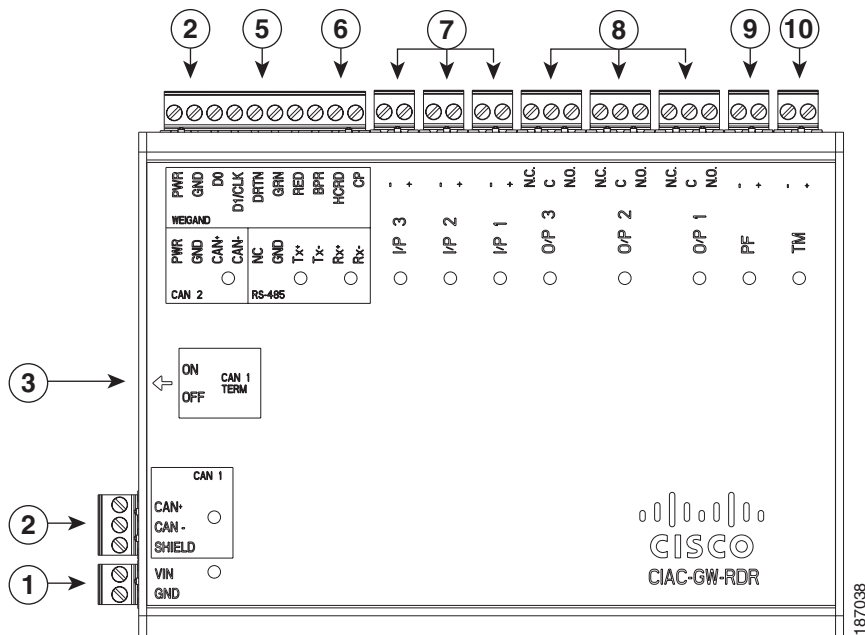
Each Cisco Reader Module includes ports for connecting up to two doors and associated input and output devices, as shown in [Figure 3-3](#) and [Figure 3-4](#).

Figure 3-3 Cisco Reader Module Ports and Connectors



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Figure 3-4 Cisco Reader Module Ports and Connectors: Top View



1	Power Two-pin connector for Voltage In (VIN) and Ground (GND) to connect a 12 to 24 VDC external power source.
2	CAN interfaces A 3-wire CAN bus is used to connect additional modules. Note Modules are connected using the CAN1 interface. The CAN2 interface is not supported in this release.
3	CAN terminator The CAN terminator switch is set to ON for the last device in a CAN wiring bus. This switch is set to set to OFF for all other devices in the CAN bus.
4	Serial Interface The RS-485 interface is not supported in this release.
5	Wiegand Interface One 10-pin Wiegand/clock and data reader interface. This interface can be configured as two 5-pin Wiegand/clock and data interfaces for installations where a 5-pin interface is sufficient. Note Disconnect power from the Gateway or Reader module before connecting reader devices to the modules. Connecting a reader device when the modules are powered can cause the Gateway or Reader module to malfunction.

6	<p>Input interfaces</p> <p>Three input interfaces used to sense the contact closure. Each input can be configured as supervised or unsupervised and can be configured to sense a Normally Open (NO) or Normally Closed (NC) contact.</p> <ul style="list-style-type: none"> • An unsupervised input senses a simple contact closure state, including Normal or Alarm. When connected to open contacts, the terminal voltage range is 4V to 5V. For closed contacts, the voltage range is 0V to 0.7V. • A supervised input senses four contact states, including Normal, Alarm, Open and Short. These inputs require 1K End-Of-Line (EOL) termination resistors installed at the contacts (two resistors are included in the accessory kits for each Input port).
7	<p>Output interfaces</p> <p>Three Form C (5A @ 30V) relay output interfaces. Each output can be configured as either Normally Closed (NC) or Normally Open (NO).</p> <ul style="list-style-type: none"> • C & NO connection: The relay is normally open. The circuit is closed when triggered. • C & NC connection: The relay is normally closed. The circuit is opened when triggered. <p>Notes:</p> <ul style="list-style-type: none"> • Install surge protection between the output device and the Cisco PAM module, as described in the “Installing Surge Suppressors on Output Device Connections” section on page 1-13. • Common (C) is always used, and either NC or NO is used to complete the connection. • All Generic Output devices installed in Cisco PAM systems prior to release 1.1.0, were connected to the Gateway, Reader, or Output modules with the wiring reversed. If upgrading to Cisco PAM release 1.1.0 from an earlier release, disconnect all Generic Output devices and do the following: <ul style="list-style-type: none"> – Connect Normally Open devices to the N.O. and C connectors on the Gateway, Reader, or Output module. – Connect Normally Closed devices to the N.C. and C connectors on the Gateway, Reader, or Output module.
8	<p>PF</p> <p>Power fail input: an unsupervised input that raises a “power fail” alarm when the circuit is open. Can be configured as an additional unsupervised port. An unsupervised input indicates only normal or alarm. The corresponding LED is red when circuit is open (when no input is connected).</p>
9	<p>TM</p> <p>Tamper input: an unsupervised input that raises a “tamper” alarm when the circuit is open. Can be configured as an additional unsupervised port. An unsupervised input indicates only normal or alarm. The corresponding LED is red when circuit is open (when no input is connected).</p>

Table 3-1 Wiegand Wiring

Chassis Label	One 10 Wire Wiegand	Two 5 Wire Wiegand	
		First 5 Wire Wiegand	Second 5 Wire Wiegand
PWR	PWR (red)	PWR (red)	PWR (red)
GND	GND (black)	GND (black)	GND (black)
D0	D0 (green)	D0 (green)	— — — —
D1/CLCK	D1/CLCK (white)	D1/CLCK (white)	— — — —
DRTN	DRTN (shield)	DRTN (shield)	DRTN (shield)
GRN	GRN (orange)	GRN (orange)	— — — —
RED	RED (brown)	— — — —	GRN (orange)
BPR	BPR (blue)	— — — —	— — — —
HCRD	HCRD (yellow)	— — — —	D1/CLCK (white)
CP	CP (purple)	— — — —	D0 (green)

Status LEDs

Table 3-2 describes the Gateway module status LEDs:

Table 3-2 Gateway LEDs

Status	Description
Input Port LEDs	
OFF	Input is not configured
GREEN	Input is configured and in normal state
BLINKING GREEN	Input is configured, and is receiving and alarm or other data.
BLINKING RED	Input is configured, short
RED	Input is configured, open
Output Port LEDs	
Off	Output not configured
Solid Green	Output configured and in default state
Blinking Green	Output configured and active

Installing the Cisco Reader Module

Installing the Cisco Reader Module is similar to installing the Gateway, except for the following:

- There are no Ethernet ports. The Cisco Reader Module is not directly connected to the IP network, and is not directly configured.
- The Cisco Reader Module does not support Power over Ethernet (PoE). The device is connected to a DC power source.

- The Cisco Reader Module must be terminated if it is the last device in a CAN wiring bus. See the [“CAN Bus Connections for Optional Modules”](#) section on page 1-7 for more information.

Before You Begin

Before you install a Cisco Reader Module, verify the following:

- Verify that the module has access to a power source. See the [“Power Options and Requirements”](#) section on page 1-12 for more information.
- Verify that you have the necessary mounting brackets or other hardware. See the [“Mounting a Gateway or Optional Module”](#) section on page 1-14.

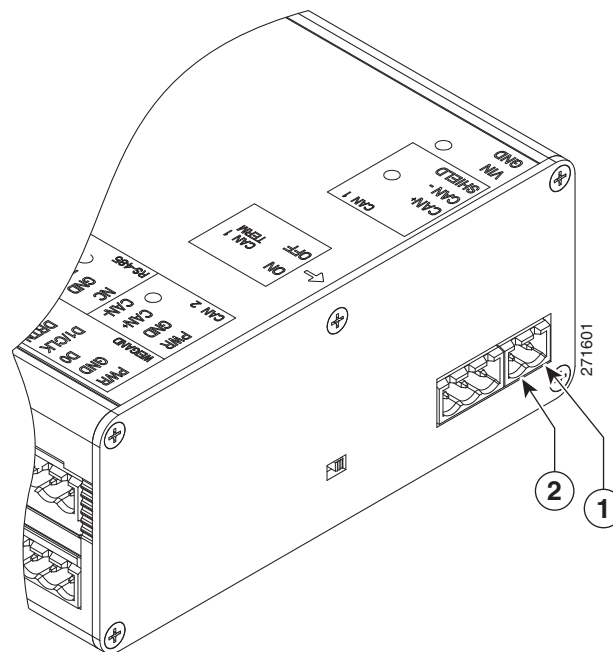
Procedure

To install the Cisco Reader Module, perform the following procedure:

- Step 1** Mount the module to a wall. See the [“Mounting a Gateway or Optional Module”](#) section on page 1-14 for more information.
- Step 2** Connect the module to the DC power source:
- Insert a two-pin connector plug into the DC power port (Figure 3-5)
 - Connect the Voltage In (VIN) and ground (GND) wires.

See the [“Power Options and Requirements”](#) section on page 1-12 for more information.

Figure 3-5 Power Connection: for the Cisco Reader Module



1	DC power GND (ground) Connects the DC ground wire to the module.
2	DC power Voltage In (VIN) Connects the DC Voltage In (VIN) wire to the module.

- Step 3** Connect the module to the Gateway using a CAN bus:
- Insert a three-pin connector plug into the CAN1 port, as shown in [Figure 3-6](#).
 - Connect the CAN wires to the CAN bus, as shown in [Figure 3-7](#)
 - Turn the CAN terminator ON if the device is the last device in a CAN wiring bus.

**Note**

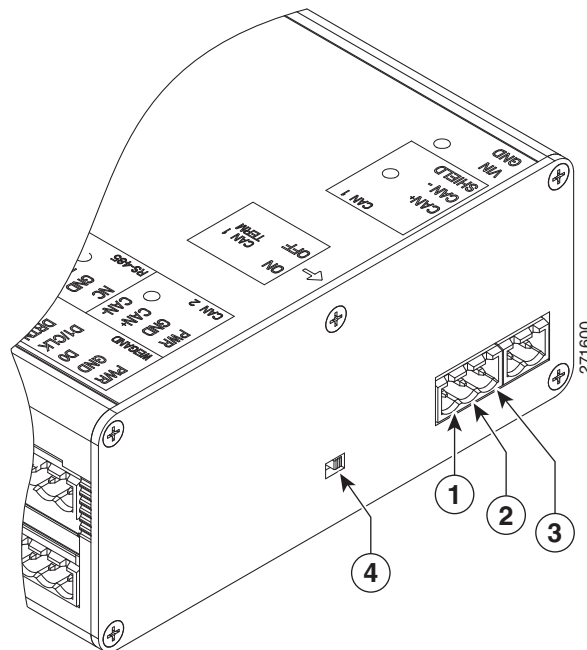
The CAN terminator switch is included on the Reader, Input and Output modules only (the Gateway is always the first device in the CAN bus). Set the terminator switch to OFF for all other modules in the CAN bus.

**Note**

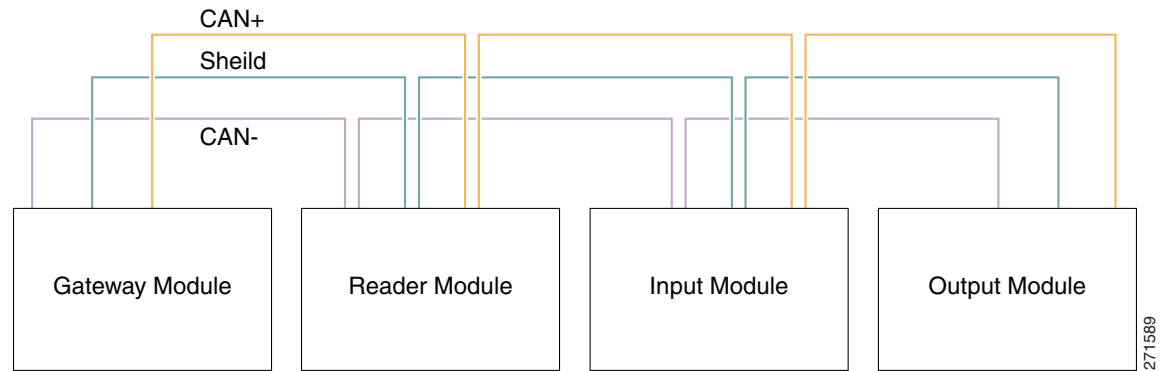
The CAN2 interface is not supported in this release.

See the “[Optional Expansion Modules](#)” section on [page 1-5](#) for more information:

Figure 3-6 CAN1 Connections: Cisco Physical Access Gateway and Reader Module



1	CAN+	Connects to the positive terminal of the CAN bus.
2	CAN-	Connects to the negative terminal of the CAN bus.
3	Shield	Connects to GND and/or Shield.
3	CAN Terminator	Turn the terminator ON if the device is the last device in a CAN wiring bus.

Figure 3-7 CAN Bus Wiring

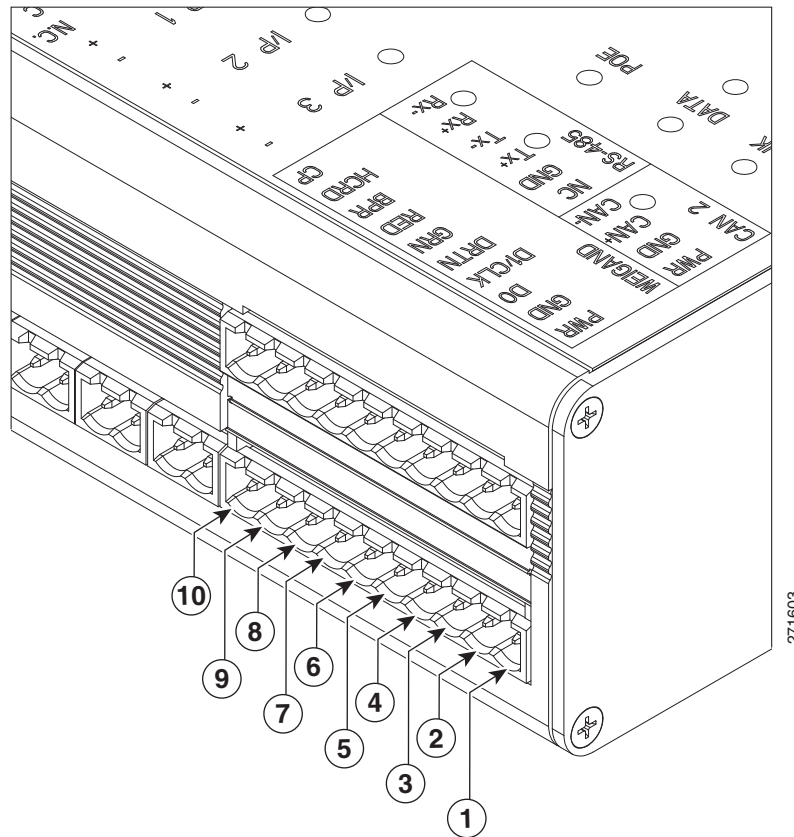
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Step 4 Connect one or two door reader devices to the Wiegand interface using one of the following configurations:

- Connect a single door reader using all 10 Wiegand interface pins.
- Connect one or two door readers using 5-pin Wiegand interface connections (for installations where a 5-pin interface is sufficient).

Figure 3-8 shows the location of the Wiegand interface connections. The table describes the connections for 10-pin and 5-pin reader interface connections. The wire connectors from the reader device are shown in parentheses. If attaching a second reader, use the alternative connections shown in the column on the far right.

Figure 3-8 Wiegand Interface on the Gateway and Reader Modules



Chassis Label	Description	One Reader 10 Wire Connection	First Reader in a 5 Wire Connection	Second Reader in a 5 Wire Connection
PWR	+12v	PWR (red) ¹	PWR (red)	PWR (red)
GND	Ground	GND (black)	GND (black)	GND (black)
D0	Data 0	D0 (green)	D0 (green)	-----
D1/CLCK	Data 1	D1/CLCK (white)	D1/CLCK (white)	-----
DRTN	Shield	DRTN (shield)	DRTN (shield)	DRTN (shield)
GRN	Output ²	GRN (orange)	GRN (orange)	-----
RED	Output	RED (brown)	----- ³	GRN (orange)
BPR	Output (Beeper)	BPR (yellow)	-----	-----

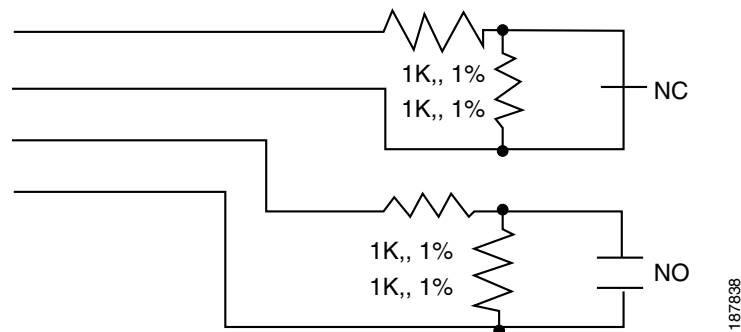
Chassis Label	Description	One Reader 10 Wire Connection	First Reader in a 5 Wire Connection	Second Reader in a 5 Wire Connection
HCRD	Hold Control	HCRD (blue)	-----	D1/CLCK (white)
CP	Card Present	CP (purple)	-----	D0 (green)

1. Wire colors are shown in parentheses.
2. Outputs show the LED color and reader wire color (in parentheses). For example, “GRN (orange)” supports a green LED. Attach the orange wire from the reader device.
3. ----- means the wire slot is not used.

Step 5 Connect input devices to the module:

- a. Insert two-pin connector plugs into the input ports (Figure 3-10).
- b. (Optional, for supervised input connections only). Install two End-Of-Line (EOL) 1K termination resistors in each supervised input interface (one terminator in each connector). Figure 3-9 shows the terminator installation for a Normally Closed (NC) and Normally Open (NO) input connection.

Figure 3-9 Input Connections: Cisco Physical Access Gateway and Reader Module

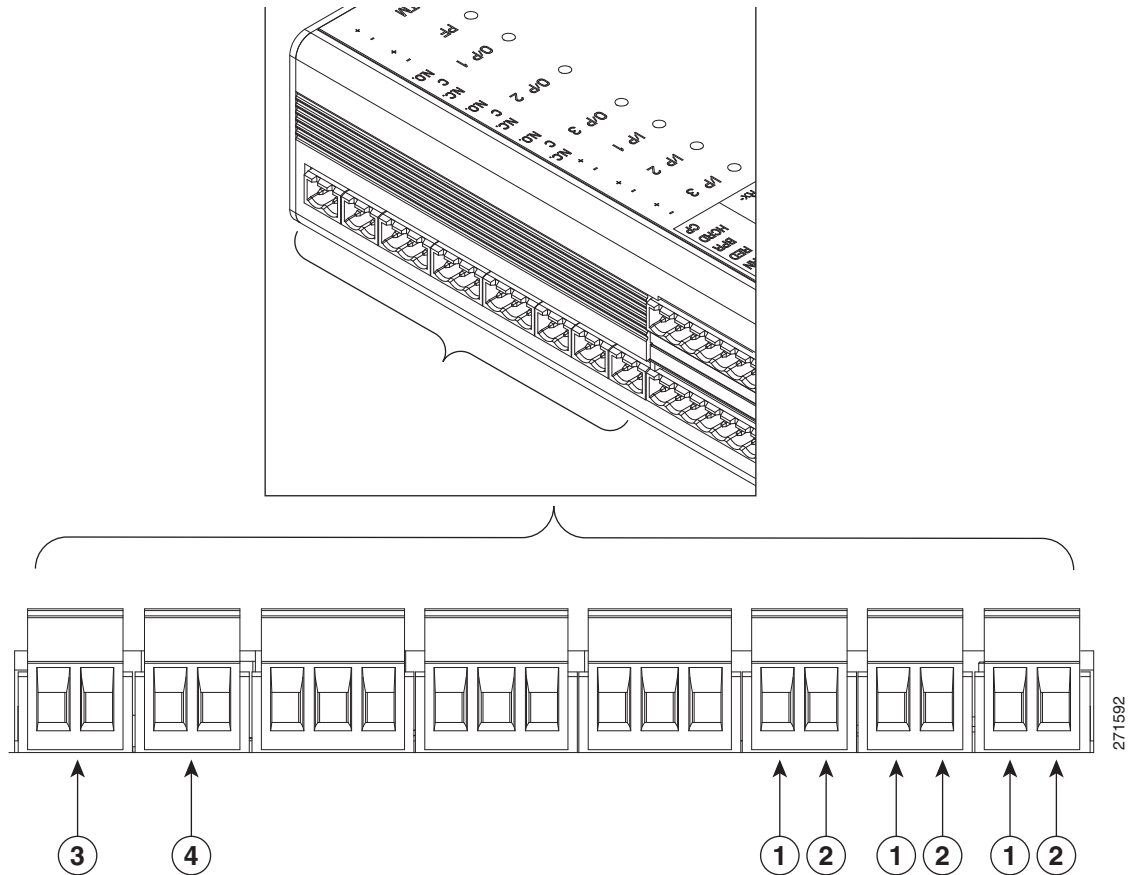


- c. Connect the wires from the input devices (Figure 3-10).



Note Each of the input connections can be configured as supervised or unsupervised. The tamper and power fail inputs can be configured as additional unsupervised ports. A supervised input supports four states: normal, alarm, open and short. An unsupervised input indicates only normal or alarm.

Figure 3-10 Input Connections: Cisco Physical Access Gateway and Reader Module



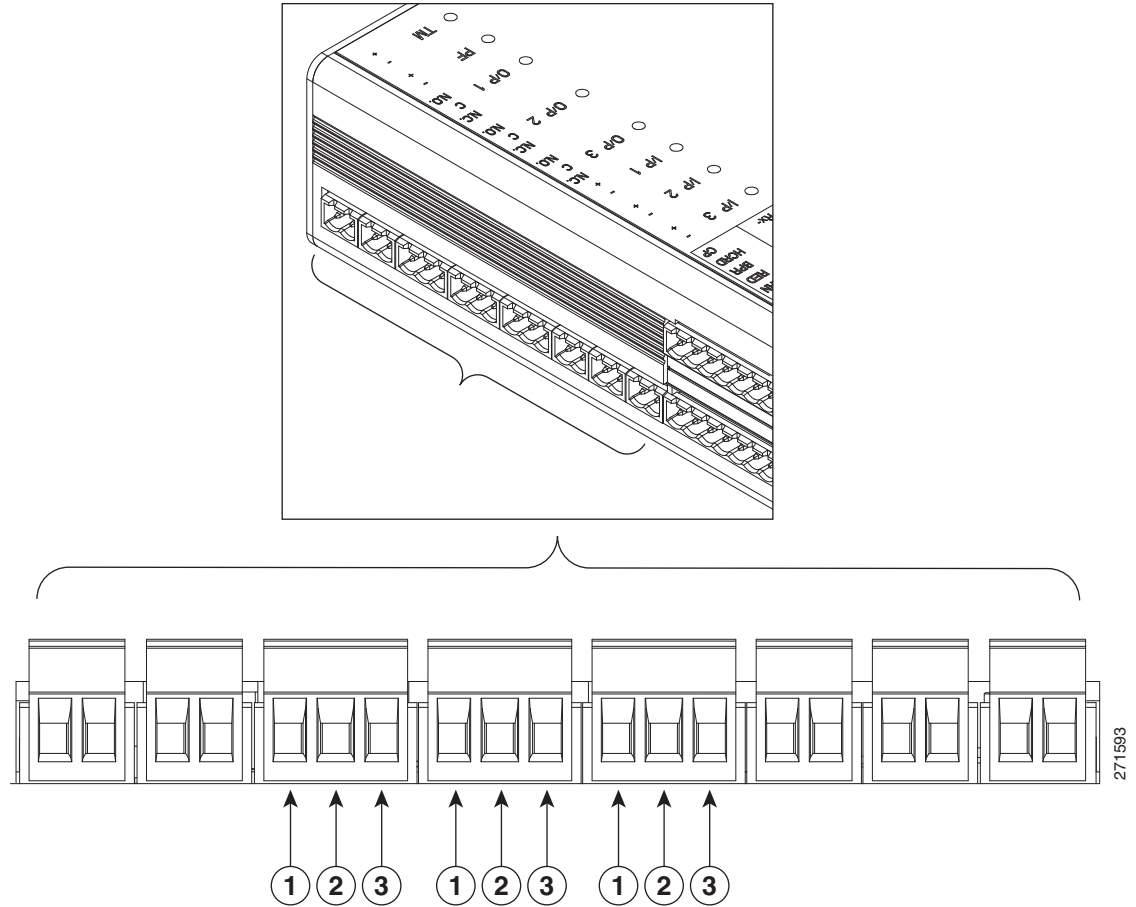
1	<p>Positive Input Connections</p> <p>Positive connection to an Input device.</p>
2	<p>Ground Input Connections</p> <p>Ground connection to an Input device.</p>
3	<p>TM</p> <p>Tamper input: an unsupervised input that raises a “tamper” alarm when the circuit is open. Can be configured as a general input device using the Cisco Physical Access Manager. The corresponding LED is red when circuit is open (when no input is connected).</p>
4	<p>PF</p> <p>Power fail input: an unsupervised input that raises a “power fail” alarm when the circuit is open. Can be configured as an additional unsupervised port. The corresponding LED is red when circuit is open (when no input is connected).</p>

Step 6 Connect output devices to the module:

- a. Insert three-pin connector plugs into the output ports (Figure 3-11).
- b. Connect the wires from the output devices.
 - Common (C) is always used, and either NC or NO is used to complete the connection.

- If the relay is normally open, use the C & NO connections. The circuit is closed when triggered.
- If the relay is normally closed, use the C & NC connections. The circuit is opened when triggered.

Figure 3-11 Output Connections: Cisco Physical Access Gateway and Reader Module



1	Normally Open (N.O.) connection	3	Normally Closed (N.O.) connection
2	C (Common)		

Step 7 See the [Cisco Physical Access Manager User Guide](#) for information to configure the module ports.

