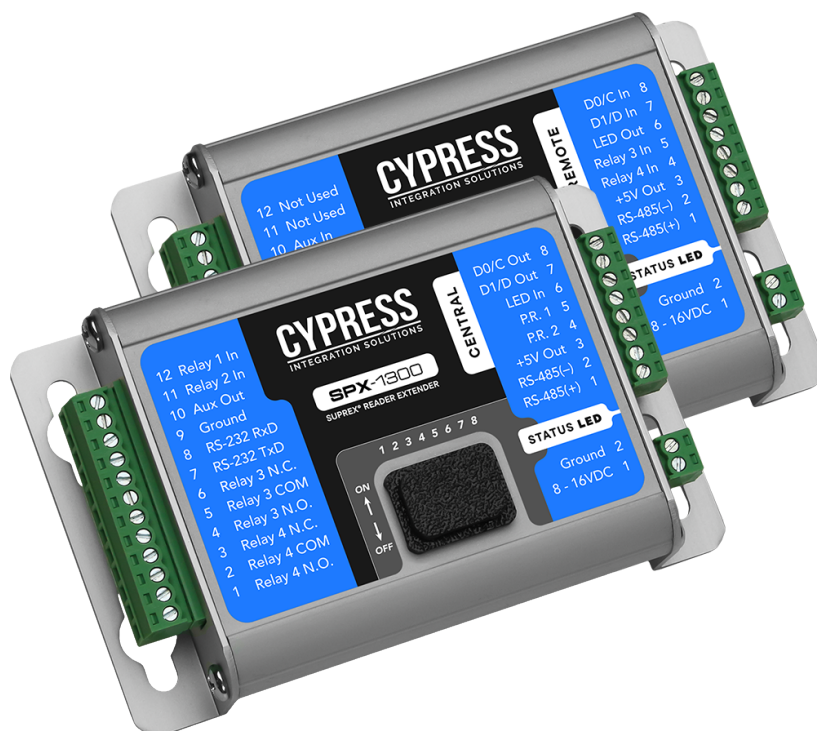




SPX-1300_MAN 261006

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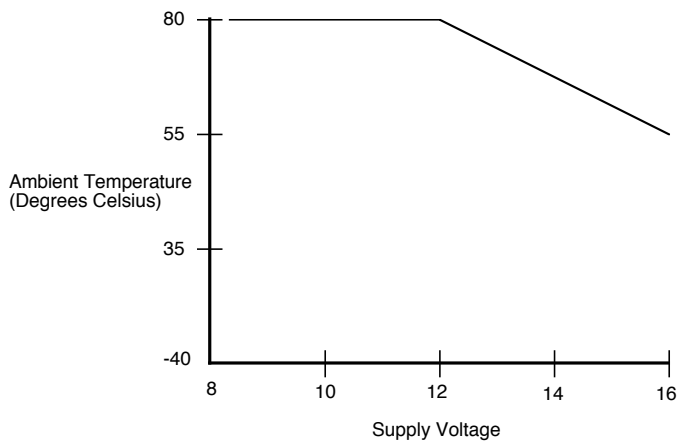
800-807-2977

Cypress Suprex® RS-485 Series - SPX-1300 Overview and Specifications

The Suprex RS-485 SPX-1300 makes it possible to connect a single card reader and its door I/O up to 2 miles from the access control panel, by providing a two-wire RS-485 link between the door or gate readers, and most manufacturers' panels. The Suprex includes both a Remote (door/gate) unit and a Central (Controller) unit.

Specifications			
Part Number	SPX-1300	816684003042	RS-485 Reader-Extender (pair of Central and Remote units)
Physical	SPX-1300 Enclosure		4.50" x 2.83" x 0.94" / 0.3 lbs (diagram below)
Environmental	Storage Temperature*		-40°C to 100°C
	Operating Temperature*		-30°C to 60°C
	*See notes on temperature and power ratings, below.		
Electrical	Central and Remote Supply Voltage		8-16Vdc Current 300mA
	Relays	Max Switching	220Vdc 30W (resistive) 1A / 250Vac 37.5VA 1A
		Running Spec with load	30Vdc 1A (resistive) / 125 Vac 0.3A (resistive), 1x10 ⁵ operations @ 20°C
Data I/O	Interface		Wiegand (maximum 248 bits - pass through), Strobed (Clock & Data), F/2F (Unsupervised), LED 0-30V
Range	Range: Up to 2 miles		
Additional Features	SPX-1300 includes complete solution with Central (panel) and Remote (reader/gate/door) interface		
	Onboard relays to control door/gate		
	Auxiliary I/O available for LED signal and door/gate/panel status signal		
	Status LED and Supervision Relay (default off) monitor connection status		

Electrical and Environmental Specifications



Temperature / Voltage de-rating curve

The SPX-1300 units should be operated with a filtered 12 Volt nominal DC supply. Any voltage between 8 and 16 volts can be utilized by following the temperature /voltage derating curve. Voltage should not exceed 16 VDC under normal operating conditions.

Digital Data (D0/D1) Inputs and Outputs are OpenCollector with switchable 1k pullup resistors.

Data I/O points are rated for the following voltages:

0-5Vdc with pullups on; 0-24Vdc with pullups off.

All digital inputs and outputs are 1-24 Vdc tolerant. Pullup resistors should be disabled when using I/O at voltages greater than 5Vdc to prevent excessive current draw and possible component damage.

Analog inputs are rated for 5Vdc max.

The Relay 3, Relay 4 inputs and programming resistor inputs are analog inputs and are limited to 5Vdc max.

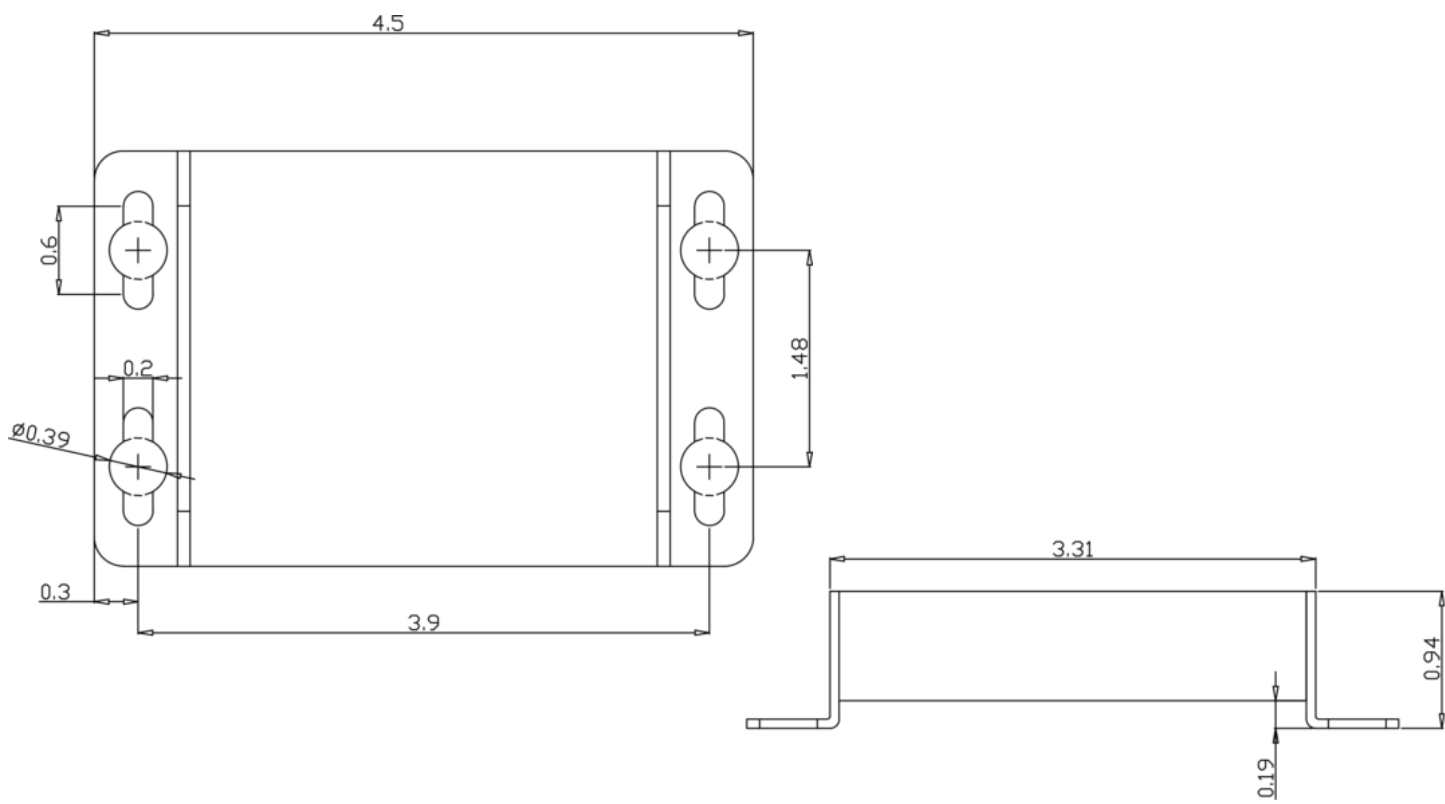
All inputs and outputs are provided with transient and static protection.

The RS-485 communication channel will provide the best performance using shielded twisted pair wiring. Other wire types can be used, and performance will depend upon actual field conditions. The Suprex units will typically function with Coax, THHN building wire, Cat 5 and Cat 3 cable, etc.

Cypress Suprex® RS-485 Series - SPX-1300 – Table of Contents

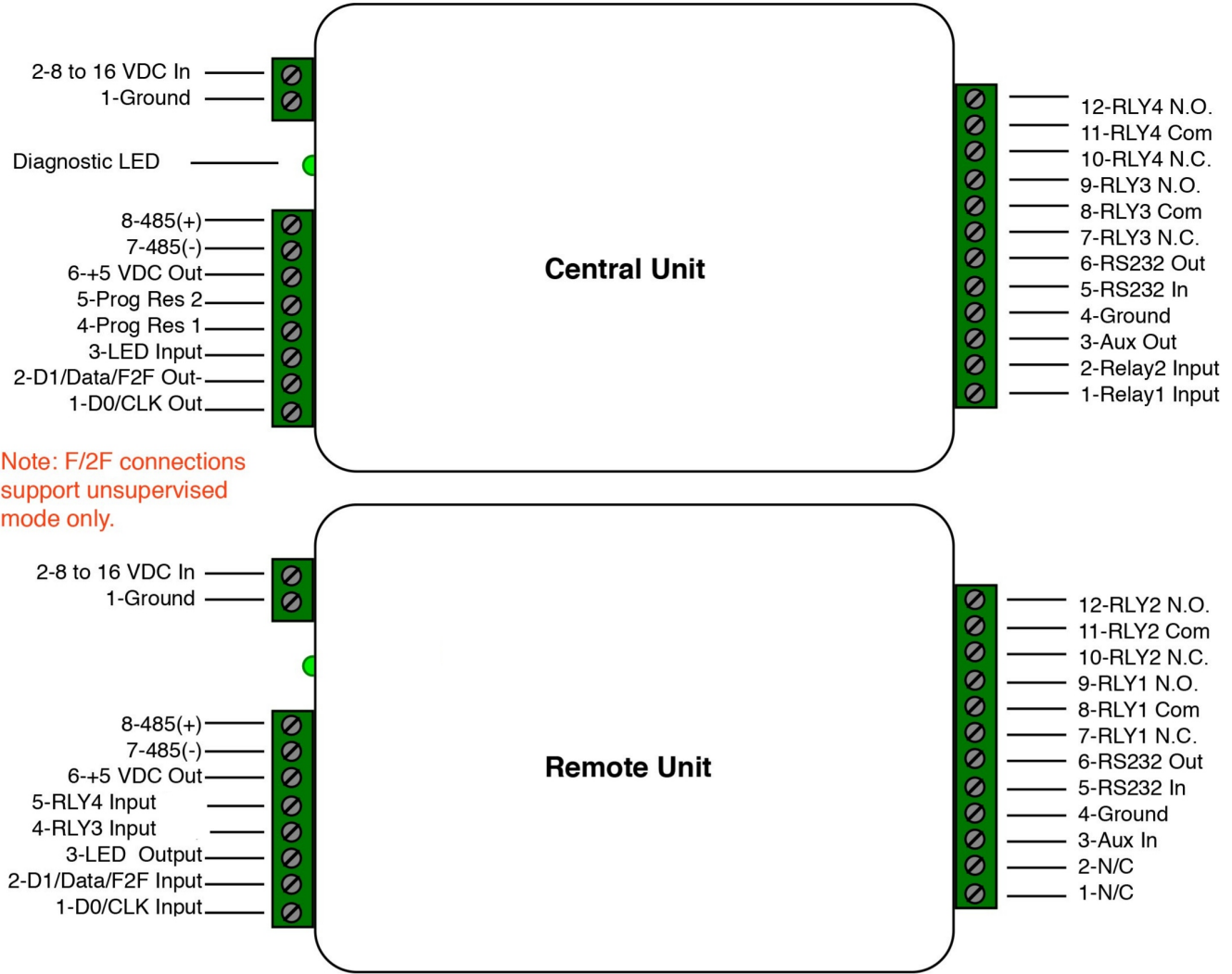
Table of Contents	
Topic	Page
Overview and Specifications	2
Physical Dimensions	4
Wire Recommendations	4
External Connections & DIP Switch Settings	5
Central and Remote Pin Layout	5
Troubleshooting Diagnostic Indicators	6
Suprex Operation & Initial Setup	7
Format setup and Remote Side Basic Reader Connections	8
Central Side Basic Panel Connections	9 - 10
LED Input & Output	11
Relay 1 Input and Output	12
Relay 2 Input and Output	13
Relay 3 Input and Output	14
Relay 4 Input and Output	15
Aux Input and Output	16

Cypress Suprex® RS-485 Series - SPX-1300 – Dimensions & Wire Recommendations



Wire Recommendations	
RS-485	PVC - Belden 9744 - 22 AWG 2 Twisted Pair, 4000 feet max Plenum - Belden 82741 - 22 AWG 2 Twisted Pair, 4000 feet max
Wiegand / LED	PVC - Belden 9942 or 8777 - 22 AWG 3 Pair Shielded, 250 feet max Plenum - Belden 82777 - 22 AWG 3 Pair Shielded, 250 feet max PVC - Belden 9873 - 20 AWG 3 Pair Shielded, 500 feet max Plenum - Belden 83606 or 85164 - 20 AWG 3 Pair Shielded, 500 feet max
Inputs / Outputs	PVC - Belden 8451 - 22 AWG 1 Pair, 1000 feet max Plenum - Belden 82761 - 22 AWG 1 Pair, 1000 feet max
Power	PVC - Belden 8461 - 18 AWG 1 Pair, 25 feet max Plenum - Belden 82740 - 18 AWG 1 Pair, 25 feet max

Cypress Suprex® RS-485 Series - SPX-1300 External Connections & DIP Switch Settings



Central Unit Settings

DIP Switch #1 ON
-Service Mode
DIP Switch #1 OFF
-Run Mode

Dip switch #4 is ON
-Disable Pullup resistors

Dip switch #4 is OFF
-Enable Pullup resistors

	Switch	6	7	8
Wiegand	0			
Wiegand / No Filter	1			x
Strobed Rising Edge (MR-5)	2		x	
Strobed Rising Edge (Dorad0 644)	3		x	x
Strobed Rising (Mag-Tek)	4	x		
Strobed Falling Edge	5	x		x
Reserved	6	x	x	
F2F	7	x	x	x

x = ON

Remote Unit Settings

DIP Switch #1 ON
-Service Mode
DIP Switch #1 OFF
-Run Mode

Dip switch #4 is ON
-Enable Pullup resistors

Dip switch #4 is OFF
-Disable Pullup resistors

	Switch	6	7	8
Wiegand	0			
Wiegand / No Filter	1			x
Strobed Rising Edge (MR-5)	2		x	
Strobed Rising Edge (Dorad0 644)	3		x	x
Strobed Rising (Mag-Tek)	4	x		
Strobed Falling Edge	5	x		x
Reserved	6	x	x	
F2F	7	x	x	x

x = ON

Cypress Suprex® RS-485 Series - SPX-1300 – Troubleshooting Diagnostic Indicators

When the Suprex units are operating correctly and have a valid communication channel between the Remote and Central units the Diagnostic indicators on each unit will flash green rapidly (2-3 flashed per second).

If the units are not communicating, viewing the diagnostic indicator LED's may help to determine the nature of the problem.

DIAGNOSTIC LED NOT ILLUMINATED:

If the LED(s) are not illuminated on the unit(s) then the unit is not getting power. The Diagnostic LED's will be illuminated when power is applied.

CENTRAL UNIT FLASHING BETWEEN RED/GREEN:

With power applied and no communication path between the Remote and Central, the Central unit will flash the diagnostic indicator alternately between Red and Green.

REMOTE UNIT ILLUMINATED RED:

The Remote unit will diagnostic LED will illuminate solid (not flashing) red if it is not receiving communication from the Central.

REMOTE AND CENTRAL UNITS FLASHING BETWEEN RED/GREEN:

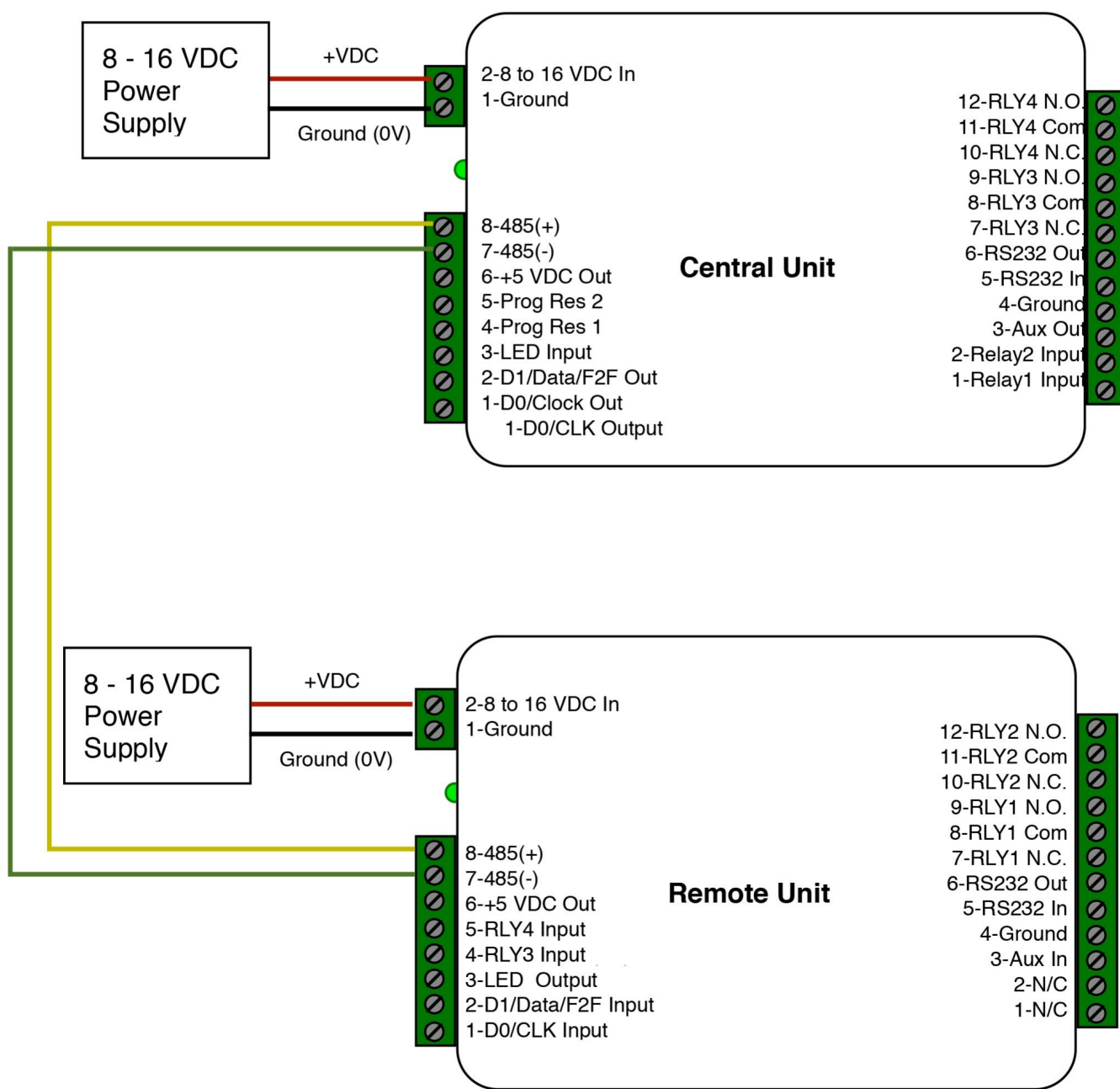
The Central is not Receiving communication from the Remote.

Suprex Operation and Initial Setup

Actual connections will differ based on the type of format, features utilized, and equipment interface. The following diagrams are an example of a typical installation using the Suprex 1300 and a Wiegand format Reader and Access Control Panel.

1. First connect units as shown below to verify basic function and communication. This should be done in a convenient location such as a bench top before installing units in the field. Both units can share the same power supply if the power supply has sufficient capacity.

When Connected as shown below, both units should have the Diagnostic LED flashing Green about 2-3 flashes per second (Rapid flashing)



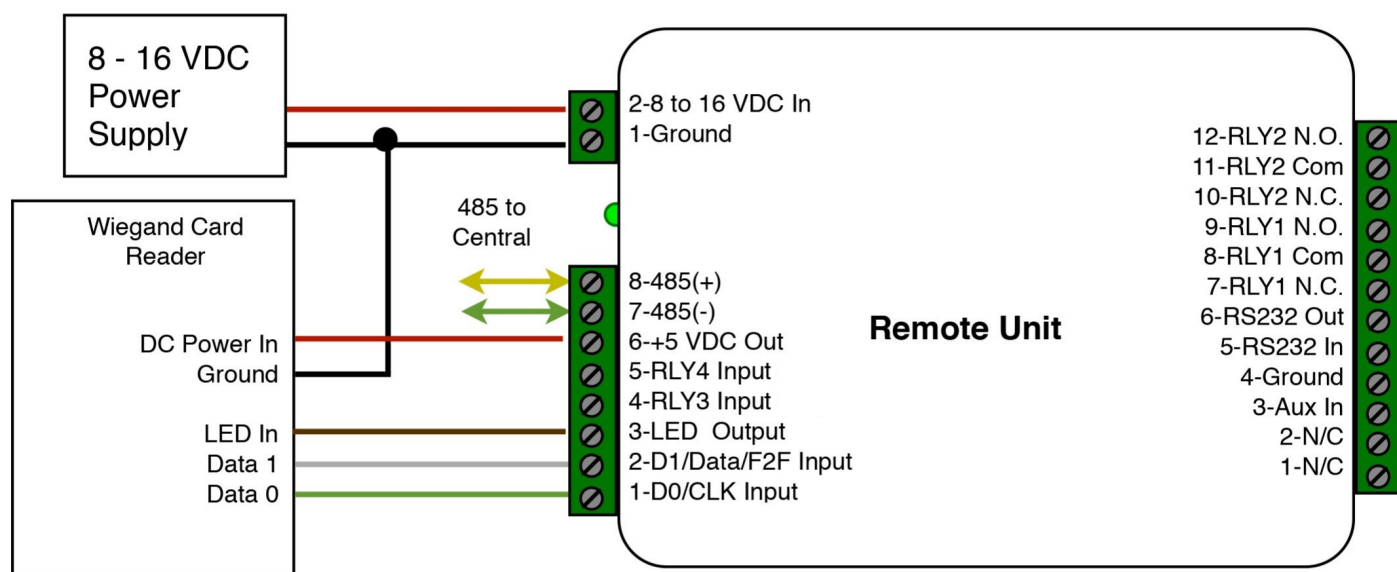
Format setup and Remote Side Basic Reader Connections

2. Remove power from the units and set DIP switches if necessary. The units are set for Wiegand format data as the default setting from the factory. If a Wiegand format reader is being used, it should not be necessary to change the DIP switch setting.

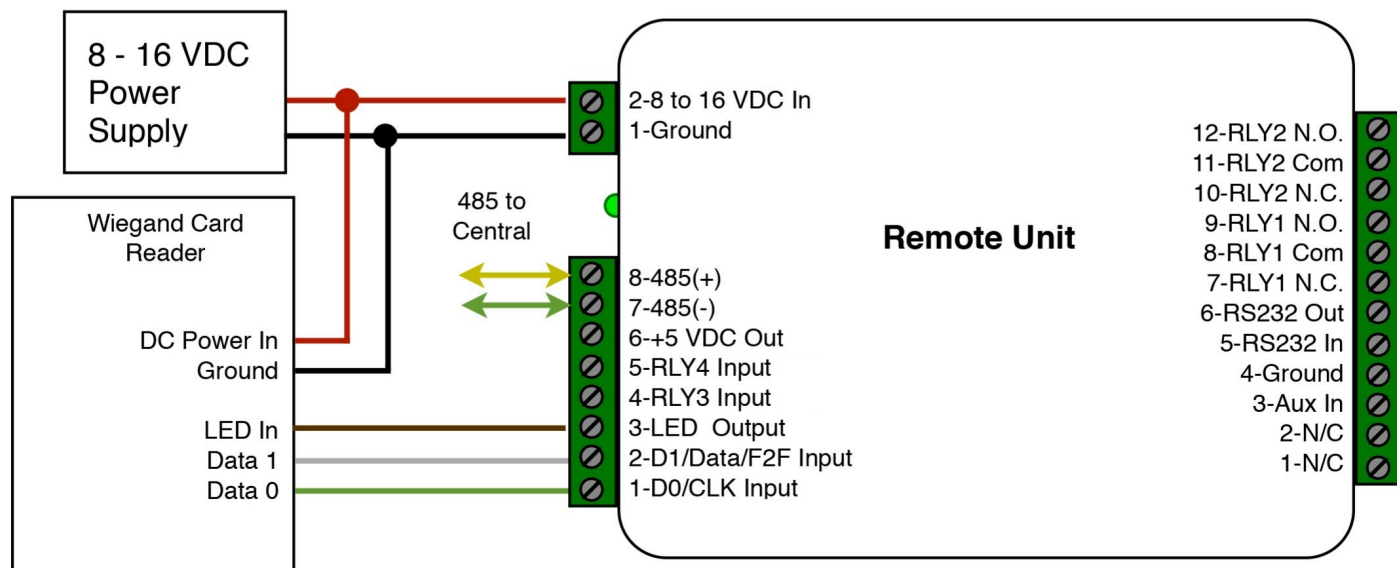
For applications that require a change in the DIP switch setting. Remove the board from the enclosure and set the DIP switch to the required format on both the Central and Remote units.
Refer to DIP switch diagram for the list of available formats.

3. Connect the Reader to the Remote unit. 2 different standard applications are shown as examples below.

Note: The LED and Door Strike operation of the SPX-1300 differs from previous versions.
The connection and operation is covered in the next 2 pages.



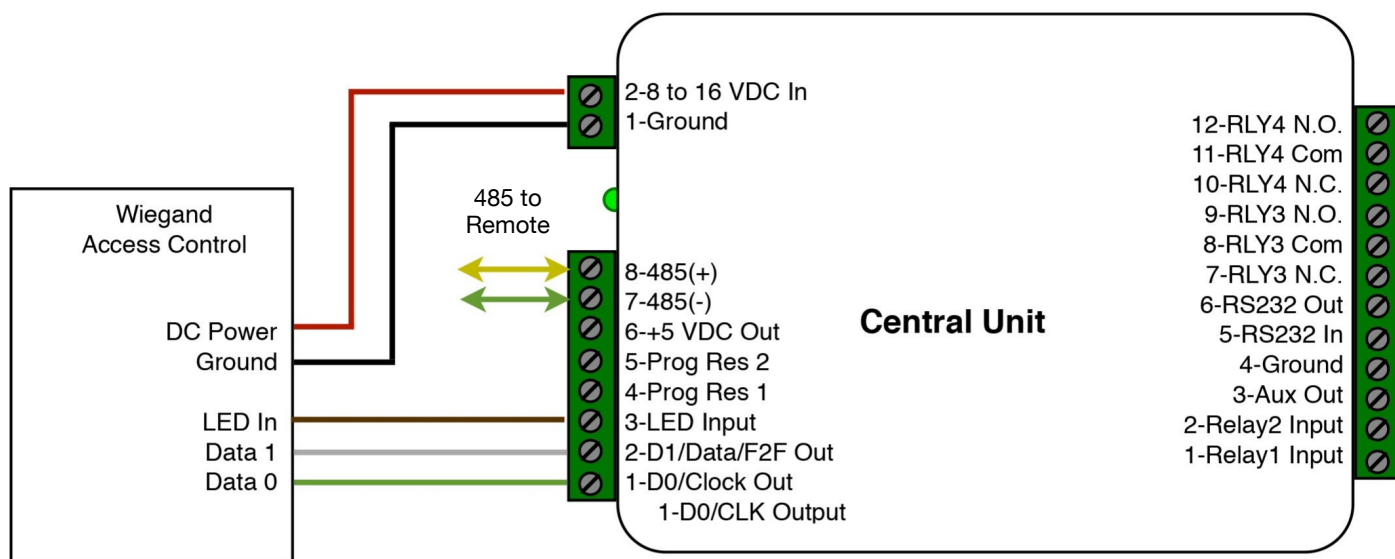
Wiegand Reader with 5 Volt power supplied by Suprex



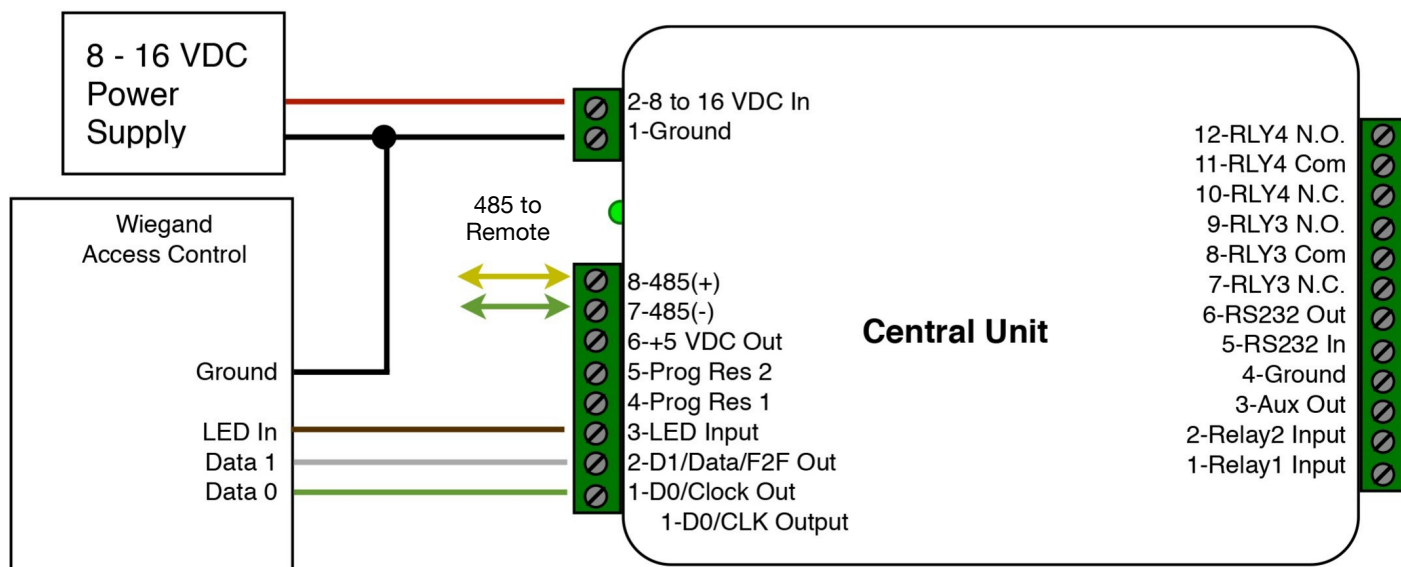
Wiegand Reader with 8-16 Volt power Connections

Central Side Basic Panel Connections

4. Connect the Central unit to the Access control panel. Power can be supplied by either the Access Control Panel or an External Power supply. A ground connection must be provided to the Suprex unit in either case.



Wiegand Format Access Control Panel with 8-16 Volt Power From Panel

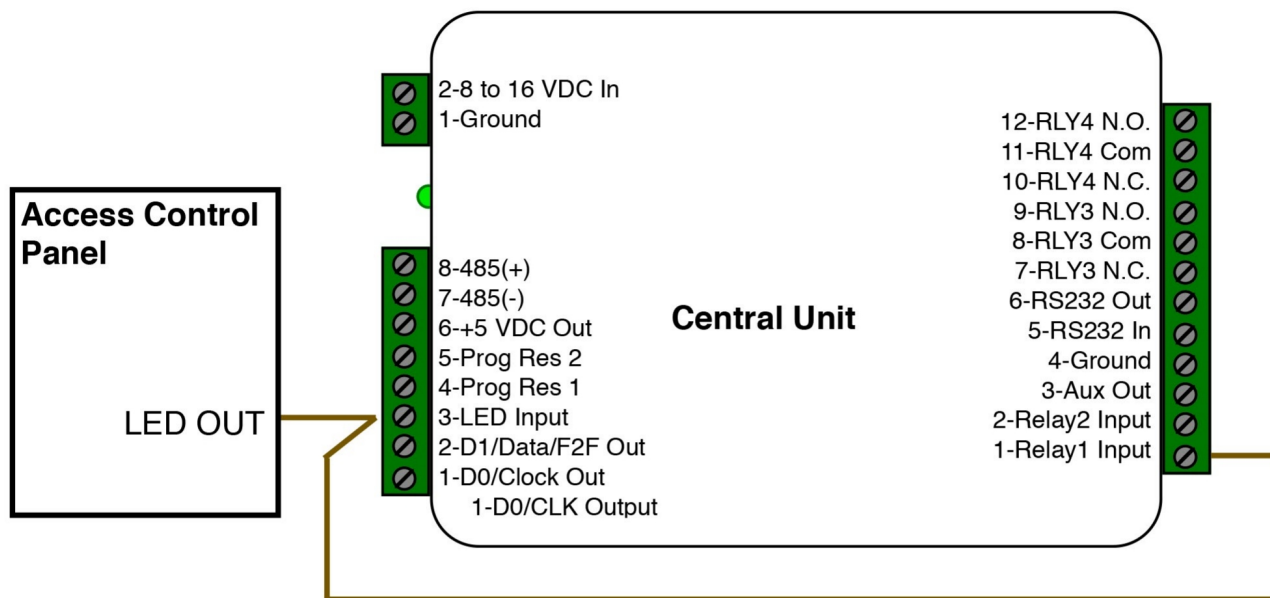


Wiegand Format Access Control Panel with 8-16 Volt Power From External Supply

Central Side Basic Panel Connections

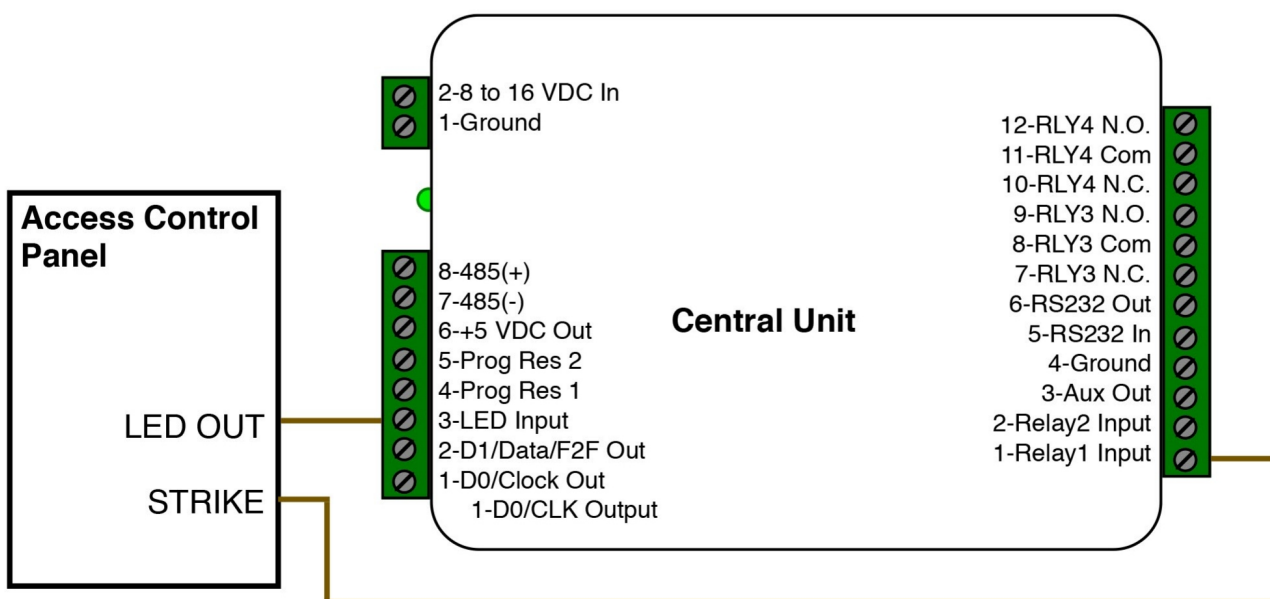
- To activate the relay on the Remote unit connect as shown below. These connections can be used to allow the Remote relay to operate a DOOR STRIKE, GATE, or other locking hardware. Refer to following pages in this document for details of each I/O operation and connection. The Relay inputs are active LOW and will activate the relay when connected to ground.

There are two relays available for accessory outputs at the Remote end. Either relay can be used to provide the Door Strike or Gate activation function. This example uses Relay 1.



Typical Access Control Panel Connection to activate Door Strike and reader LED. Strike follows LED

Only Relay and LED Connections are shown for clarity, refer to previous diagrams for Power, Data and communications connections.



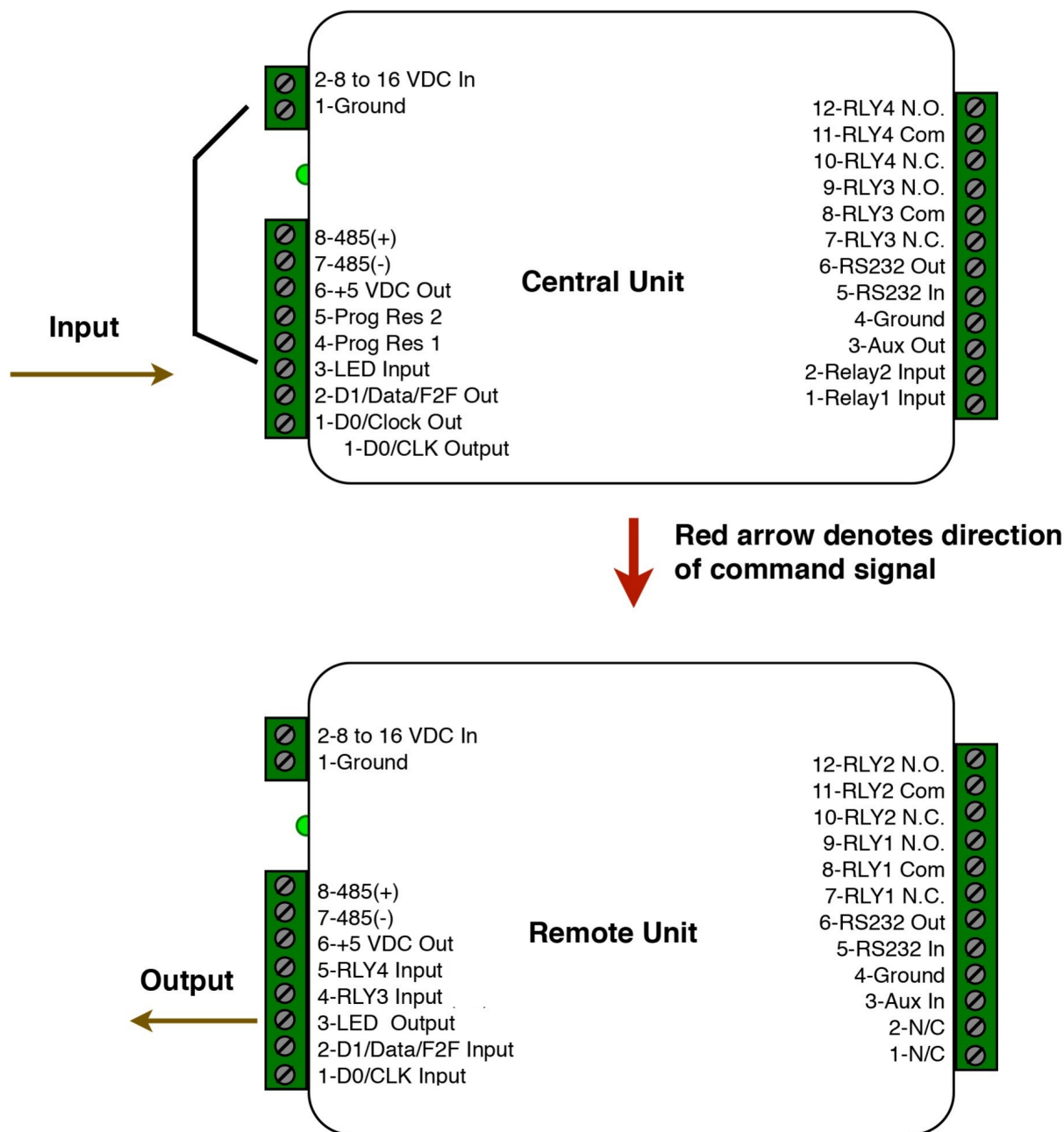
Typical Access Control Panel Connection to activate Door Strike and reader LED. Strike follows separate panel output.

I/O Controls

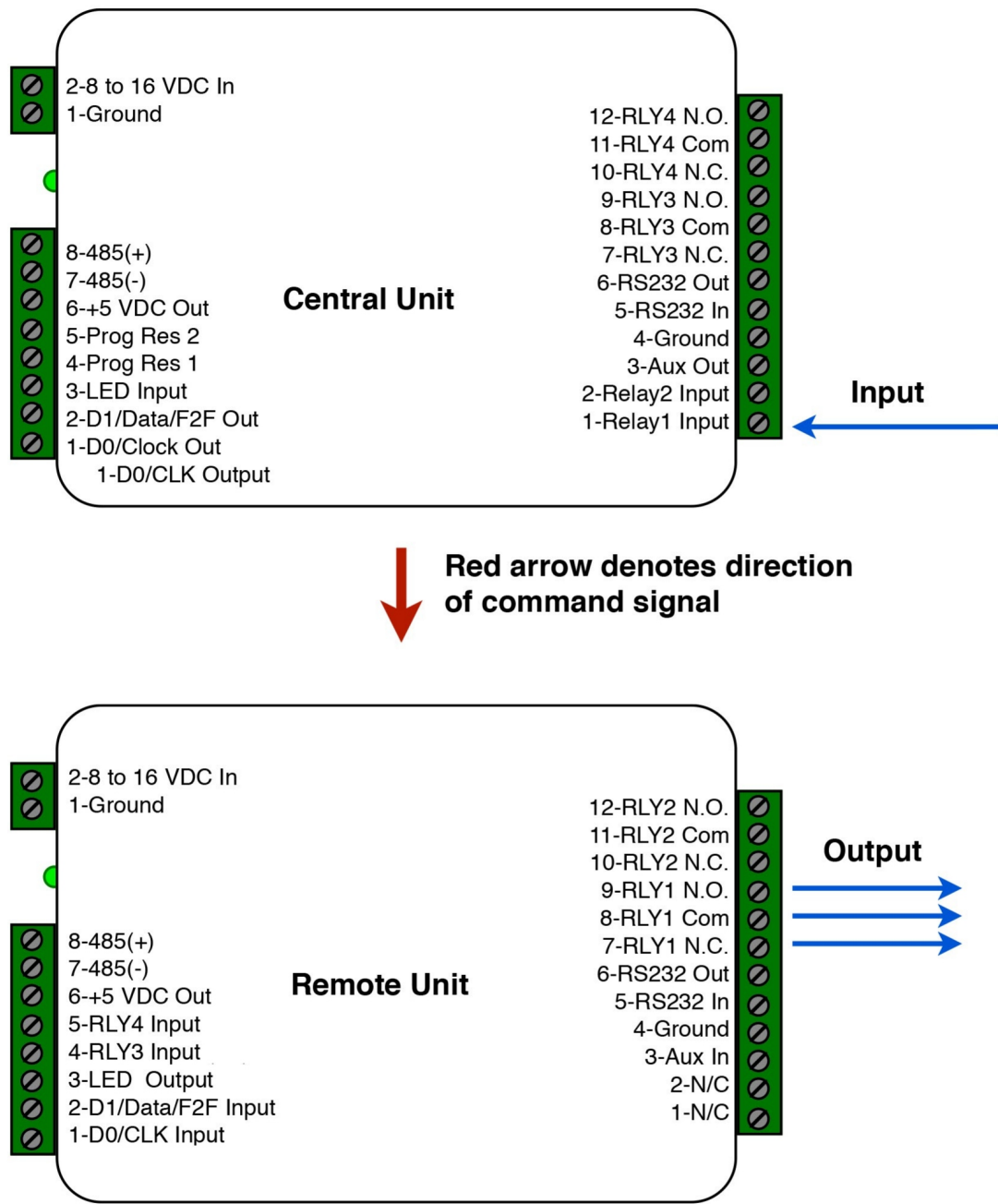
6. The Cypress SPX-1300 provides additional data channels to support access control hardware such as door strikes, tamper alarms, request to exit status, etc. These signals are sent to and from the Remote and Central units without the need to run additional wiring.

The accessory control I/O use active low inputs. When the inputs are floating (nothing connected) the associated output will be set to a high level. When the input is set to 0Volts (Ground) the input will activate its associated output. All Accessory outputs are Open Collector type and will switch to Ground when activated.

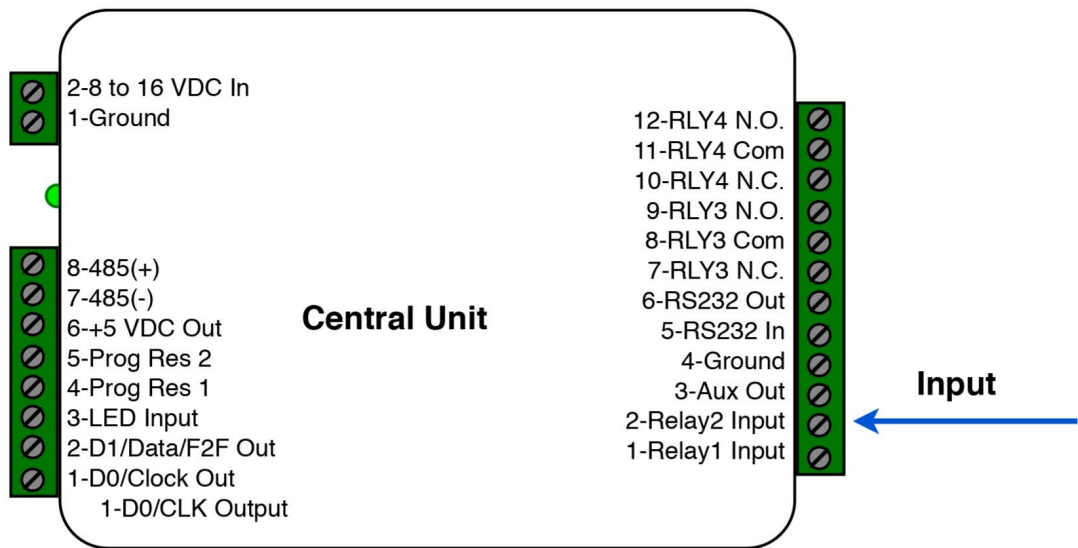
Each input will have an associated output. See the following pages for a diagram of each I/O pair. Inputs can be tested by making a jumper connection to ground and monitoring the associated output.



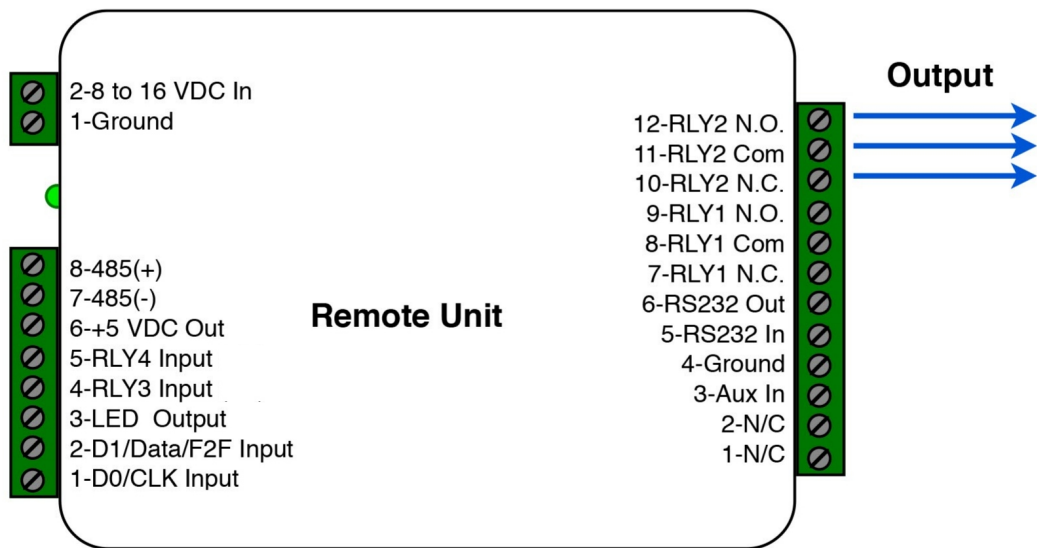
I/O Controls



I/O Controls

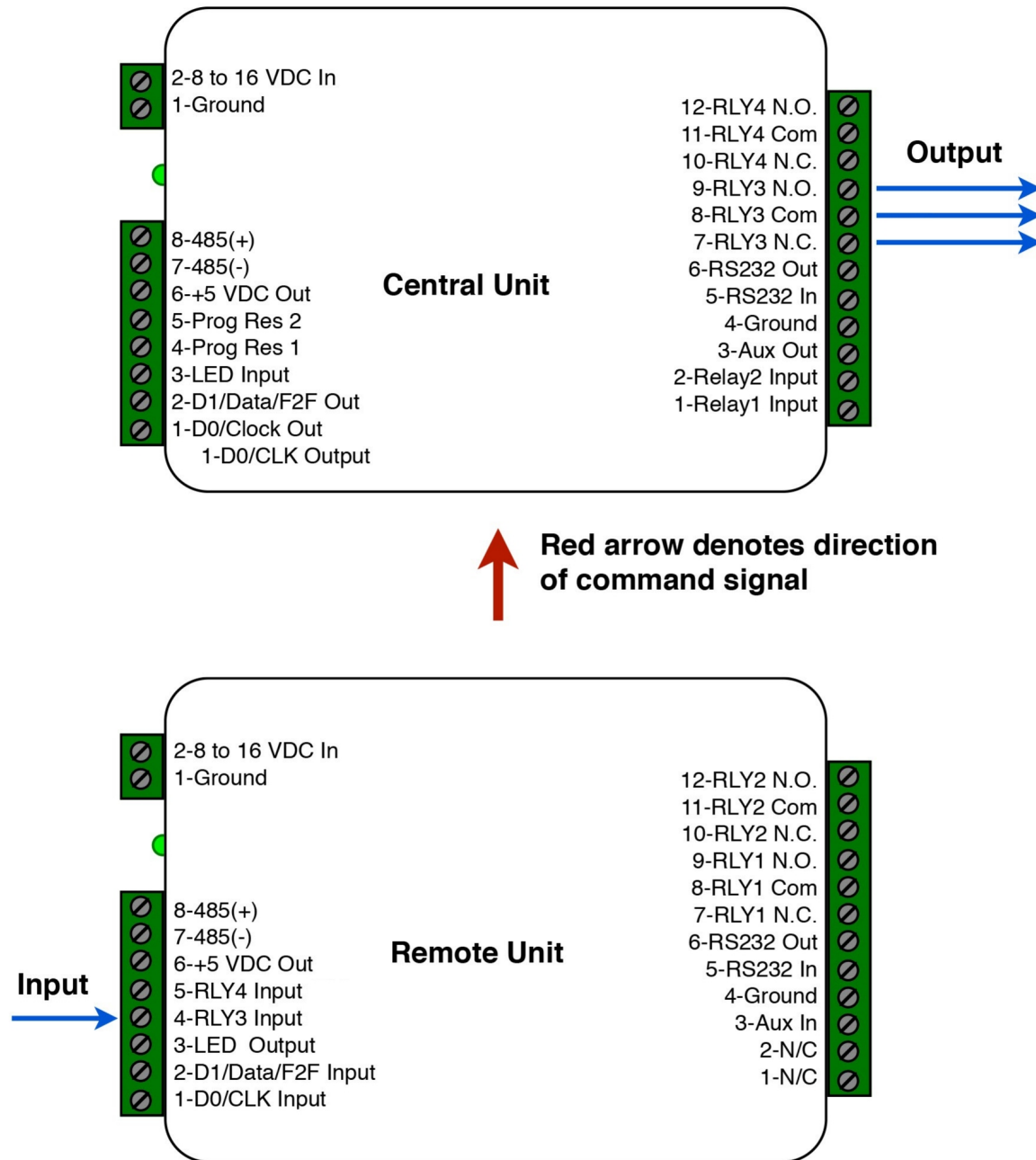


Red arrow denotes direction of command signal



Relay 2 Input and Output

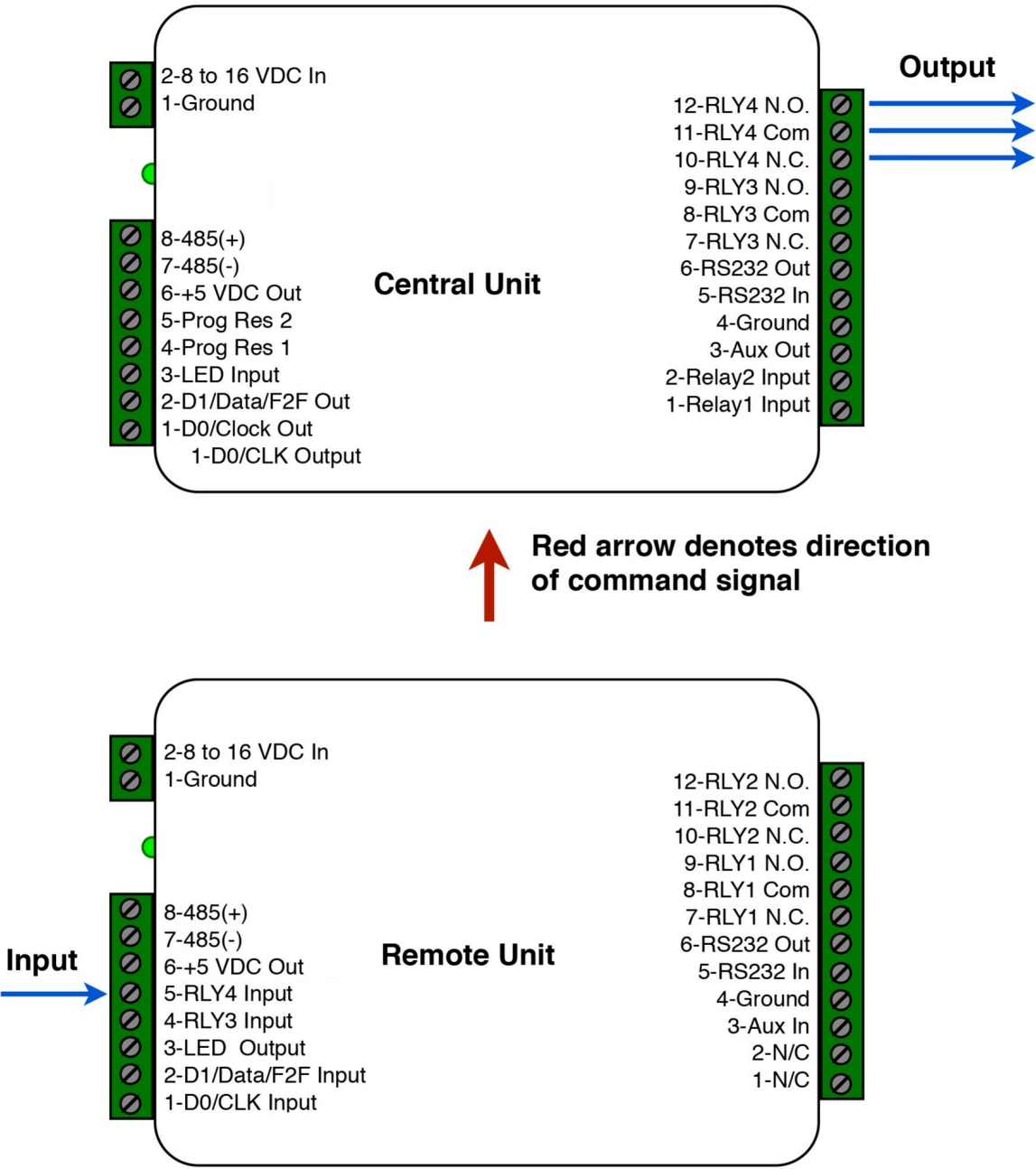
I/O Controls



Relay 3 Input and Output

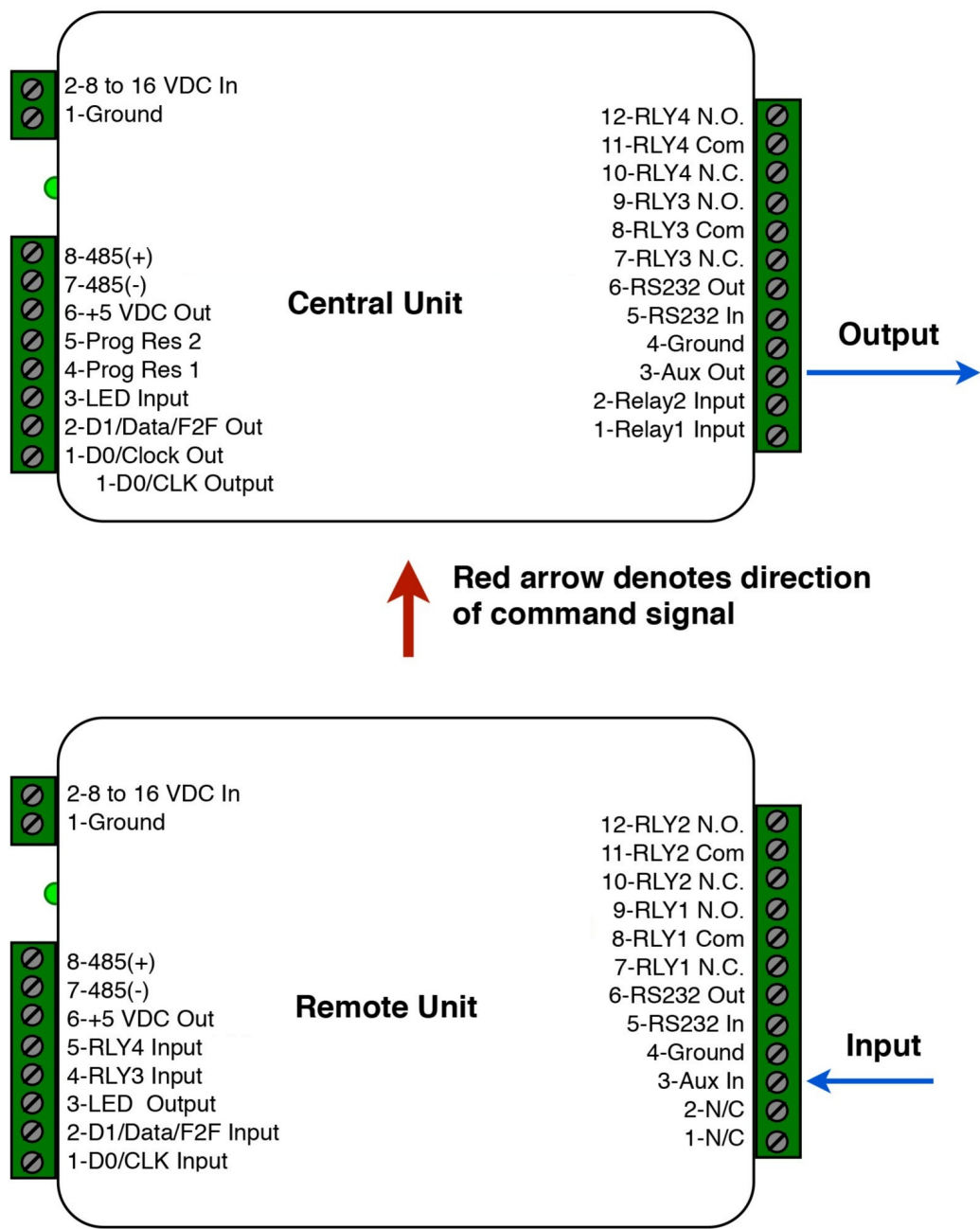
Relay 3 functions as an Alarm relay and monitors the condition of the communication link between the Central and Remote units. Relay 3 is activated when power is applied and the communication link between the Central and Remote is functioning. Relay 3 will become deactivated (Alarm condition) when either the Relay 3 input on the remote is active OR the Remote unit is unable to communicate with the Central unit.

I/O Controls



Relay 4 Input and Output

I/O Controls



Aux Input and Output