SPX-1300

Operations Manual

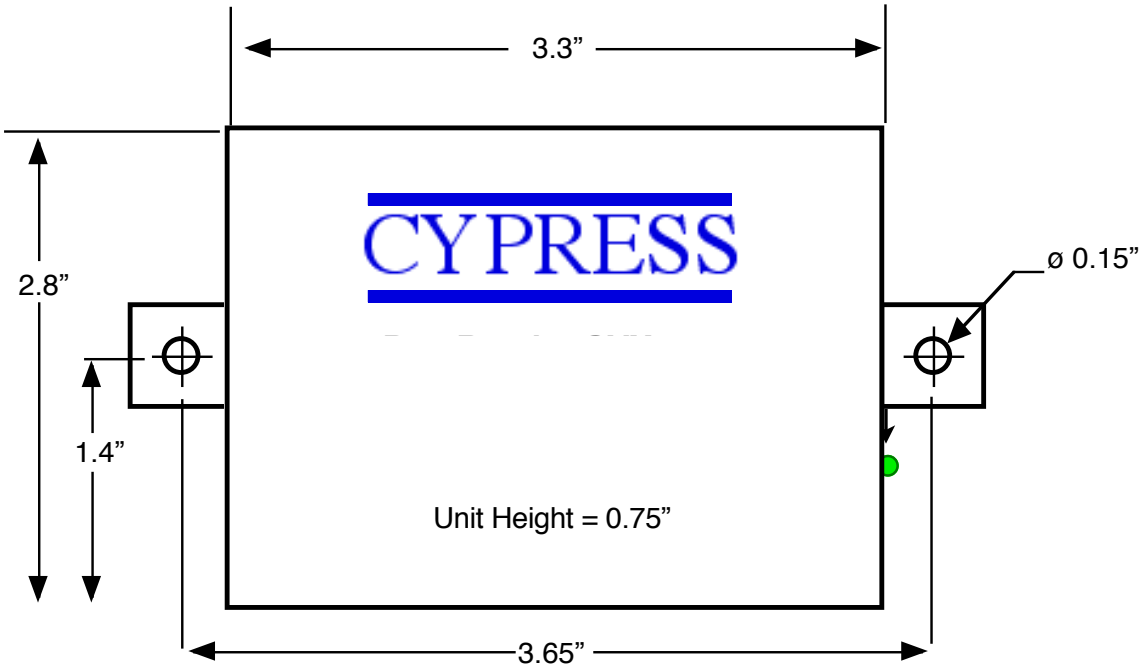
Cypress Suprex® Reader Extender

SPX-1300_MAN_030513

Electrical and Mechanical Specifications

Physical	SPX-1300 Aluminum Enclosure 3.5" x 2.75" x .75"	
Temp	Storage(-55˚C to + 150˚C) Operating(-40˚C to +80˚C)	
Humidity	95% (non-condensing)	
Power	Input	Unreg Input 8 to 16 VDC* @ 200mA Max
	Output	+5VDC @100mA
Data I/O Voltage Ratings	Interface	Reader 0- 30VDC LED - 0 - 30VDC Analog 0 - 5 VDC

*See Notes on following page for temperature and power ratings



External Dimensions and Mounting Holes

This complies with part 15 of the FCC rules

Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

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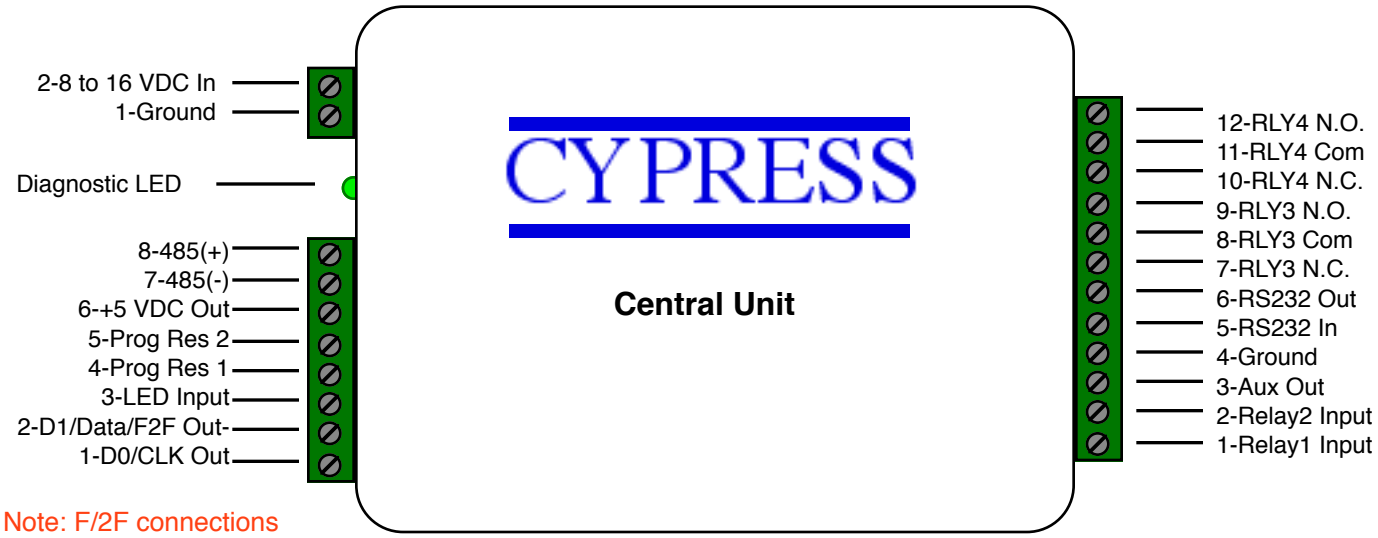
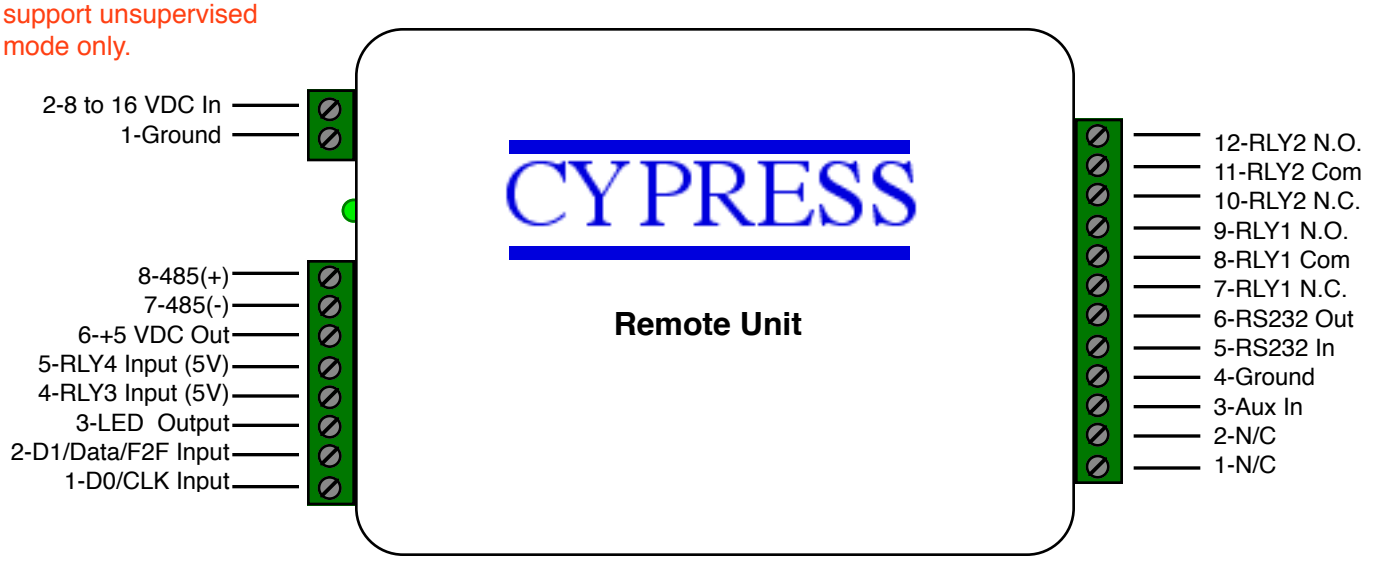
External connections and DIP Switch Settings

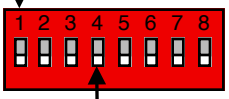


Note: F/2F connections support unsupervised mode only.



Central Unit Settings

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



Dip switch #4 is ON
-Disable Pullup resistors

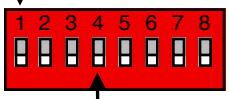
Dip switch #4 is OFF
-Enable Pullup resistors

	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



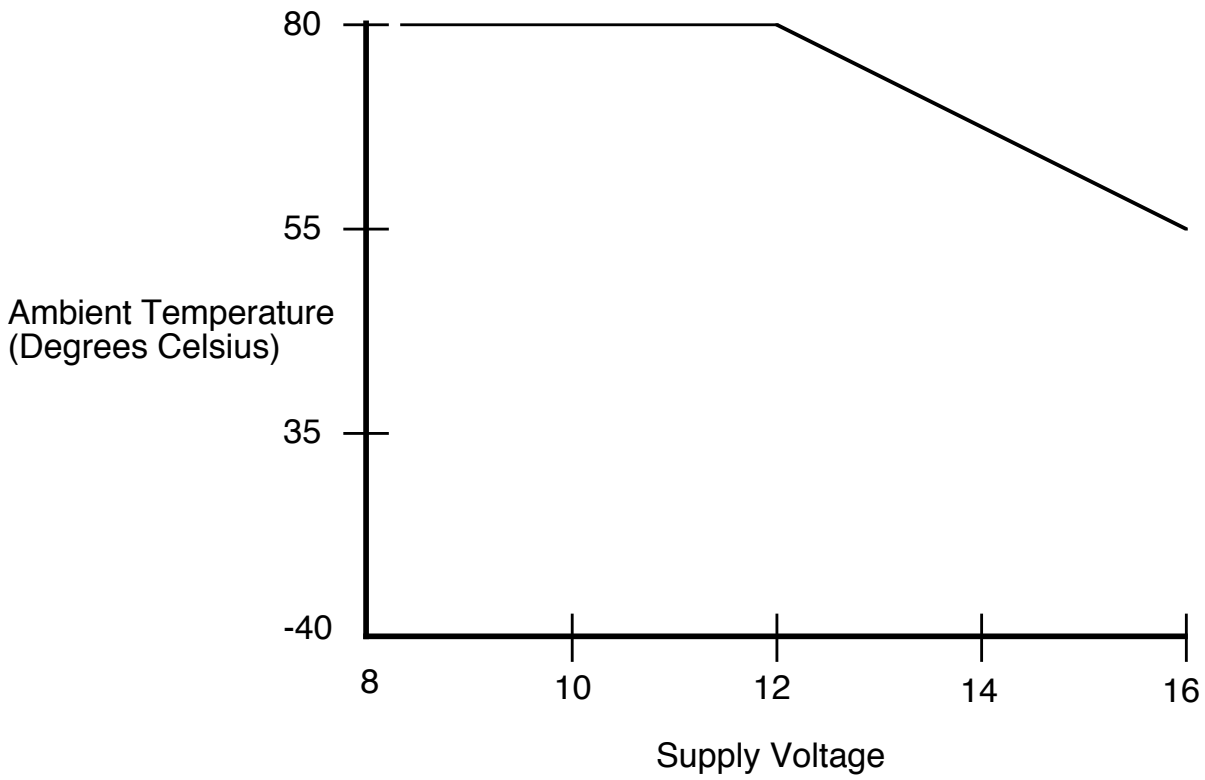
Dip switch #4 is ON
-Enable Pullup resistors

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

Electrical and Environmental Specifications



Temperature/Voltage de-rating curve

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

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 - 5 VDC with pullups on
0- 24 VDC with pullups off

All Digital Inputs and Outputs are 0 - 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 5 VDC max.
The Relay 3, Relay 4 inputs and Programming resistor inputs are analog inputs and are limited to 5 volts DC Maximum.

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, Cat5 and Cat 3 cable, etc.

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:

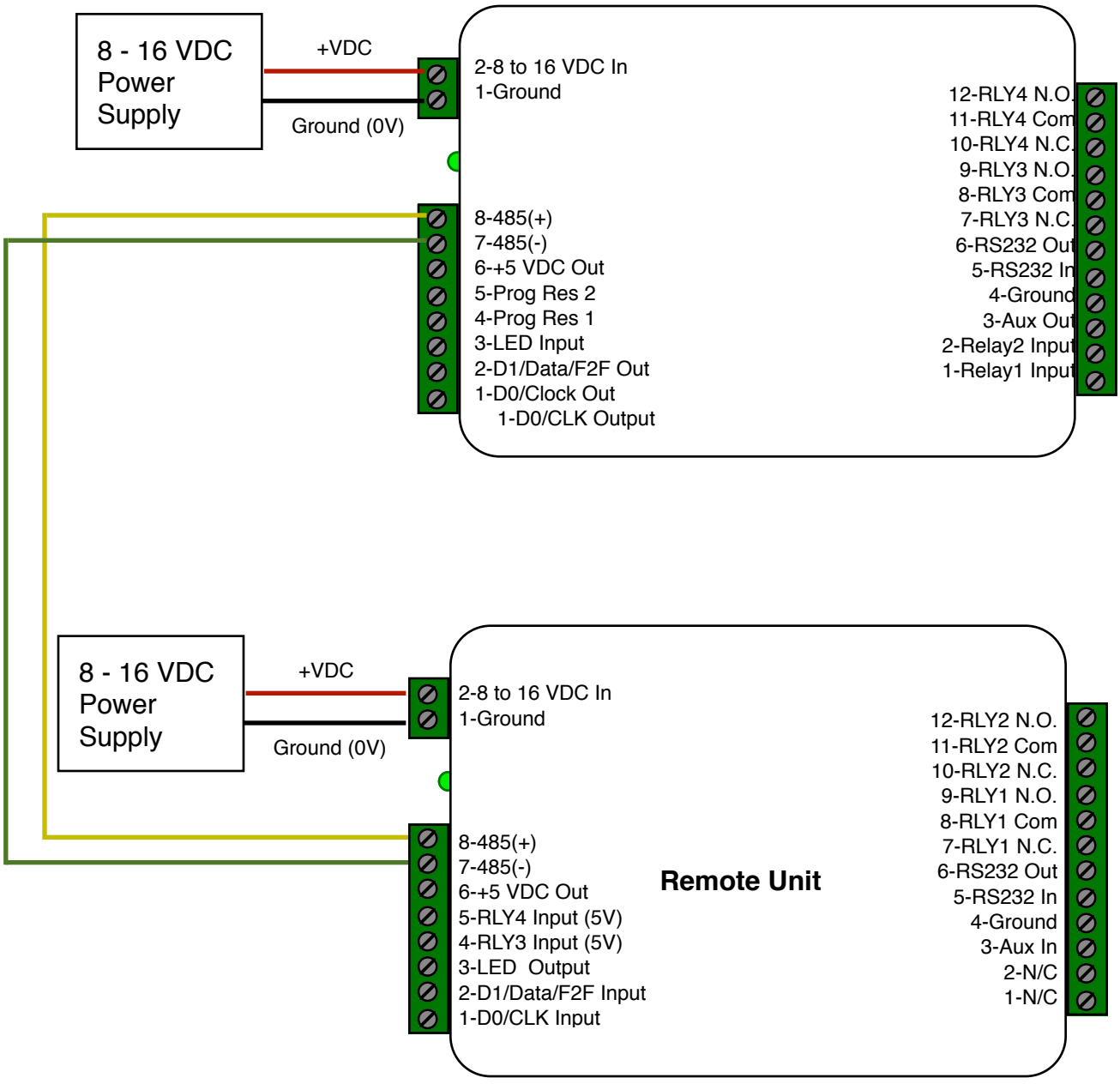
The Central is not Receiving communication from the Remote.

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)



Suprex Operation and Initial Setup

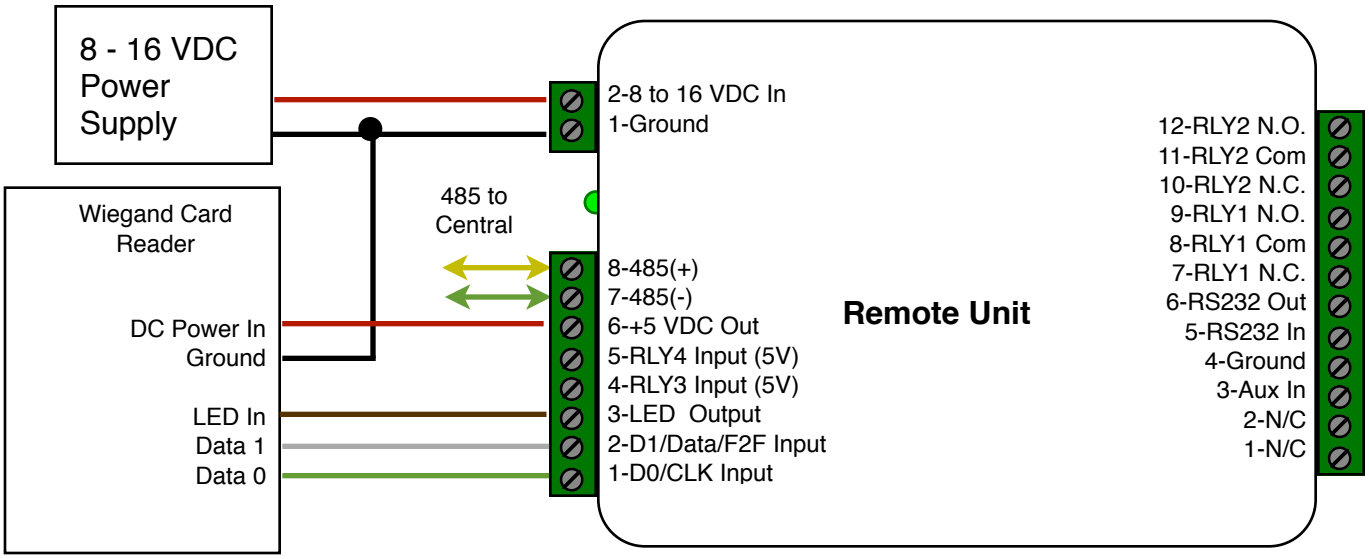
Format setup and Remote Side Basic Reader Connections

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.

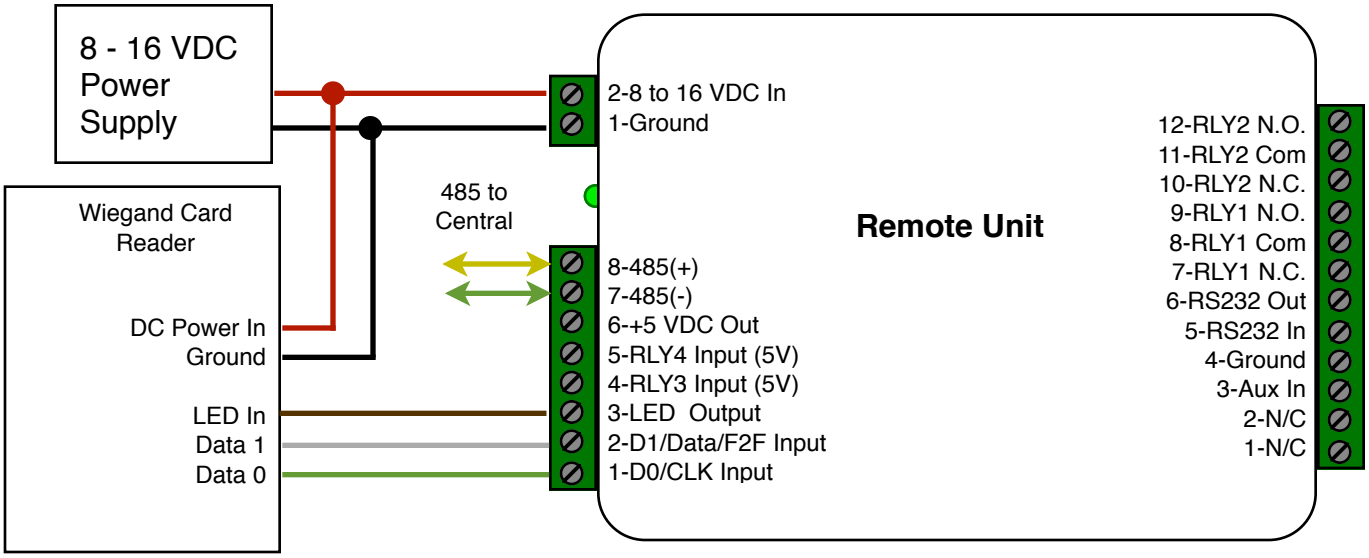
For applications that require a change in the DIP switch setting. Remove the board from the enclosure and set the DIP switch to the required format on both the Central and Remote units.
Refer to DIP switch diagram for the list of available formats.

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

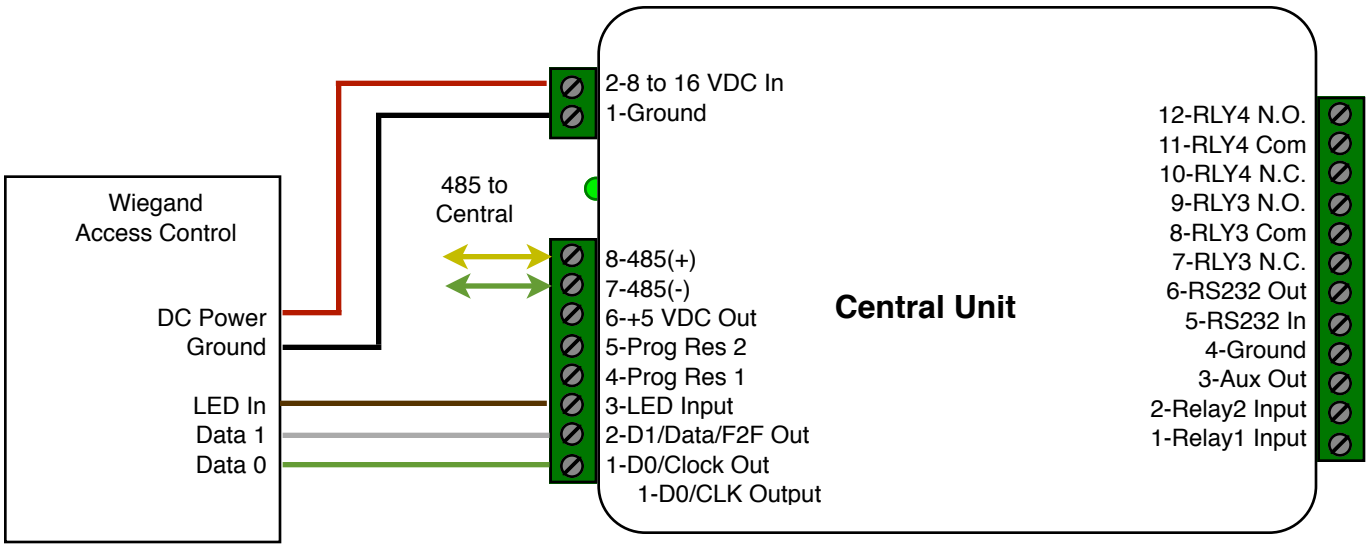


Wiegand Reader with 8-16 Volt power Connections

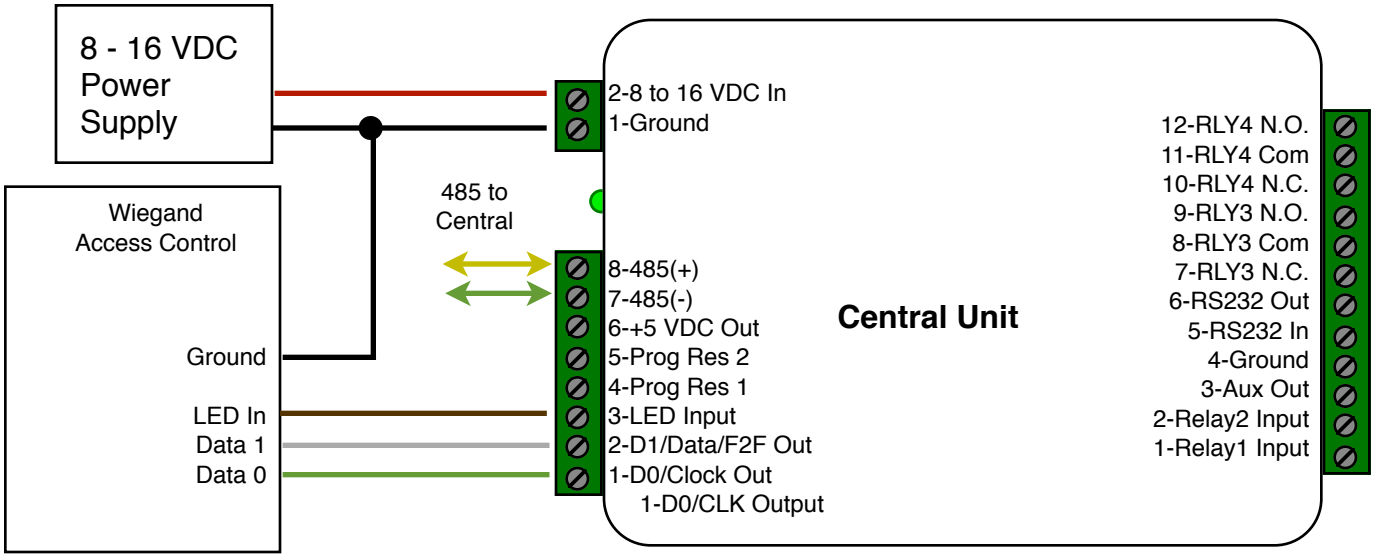
Suprex Operation and Initial Setup

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



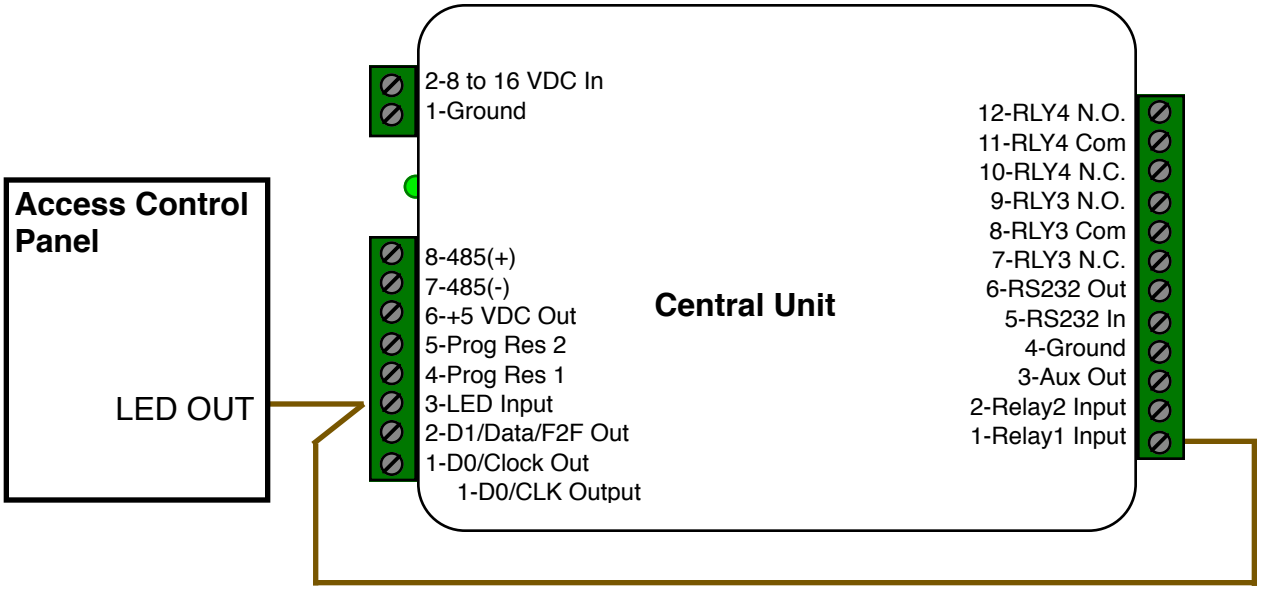
Wiegand Format Access Control Panel with 8-16 Volt Power From External Supply

Suprex Operation and Initial Setup

Central Side Basic Panel Connections

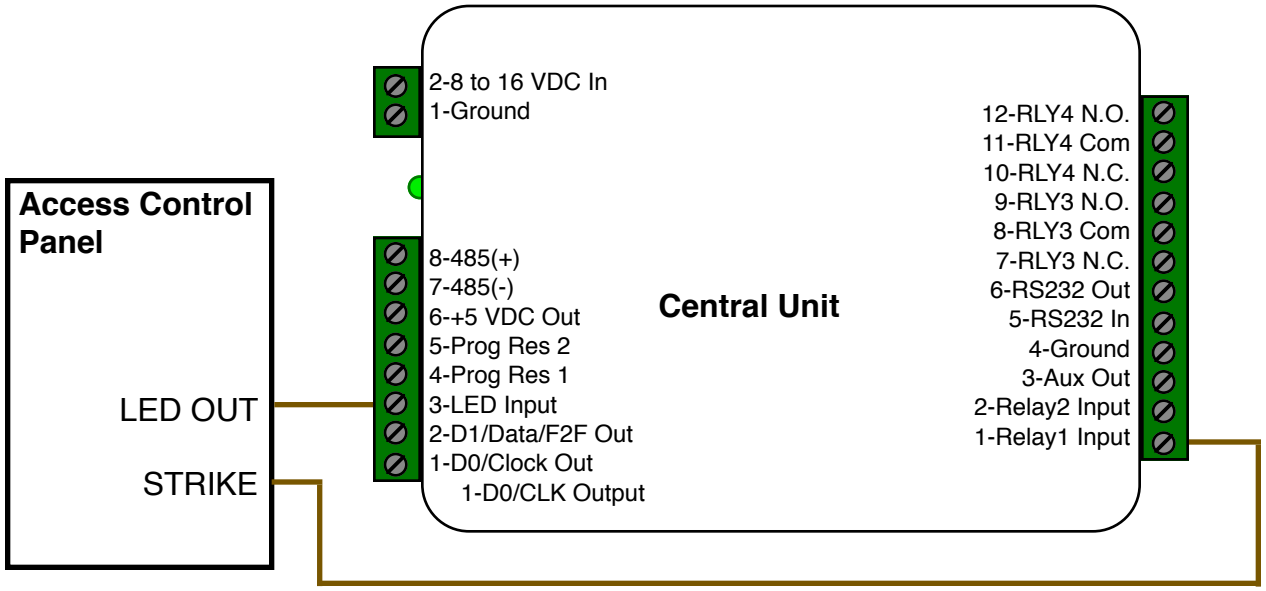
5. To activate the relay on the Remote unit connect as shown below. These connections can be used to allow the Remote relay to operate a DOOR STRIKE, GATE, or other locking hardware. Refer to following pages in this document for details of each I/O operation and connection. The Relay inputs are active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

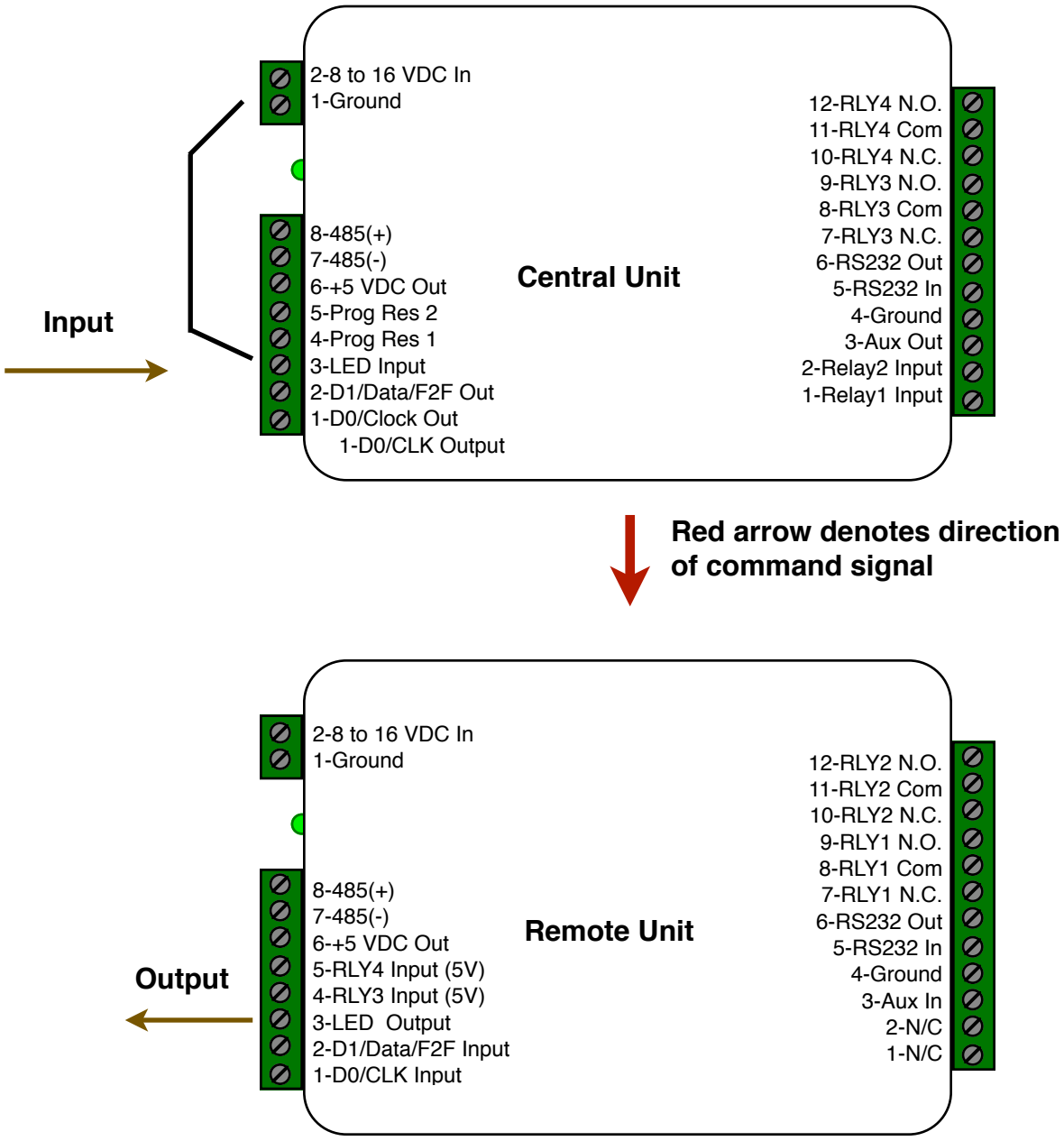
Suprex Operation and Initial Setup

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.

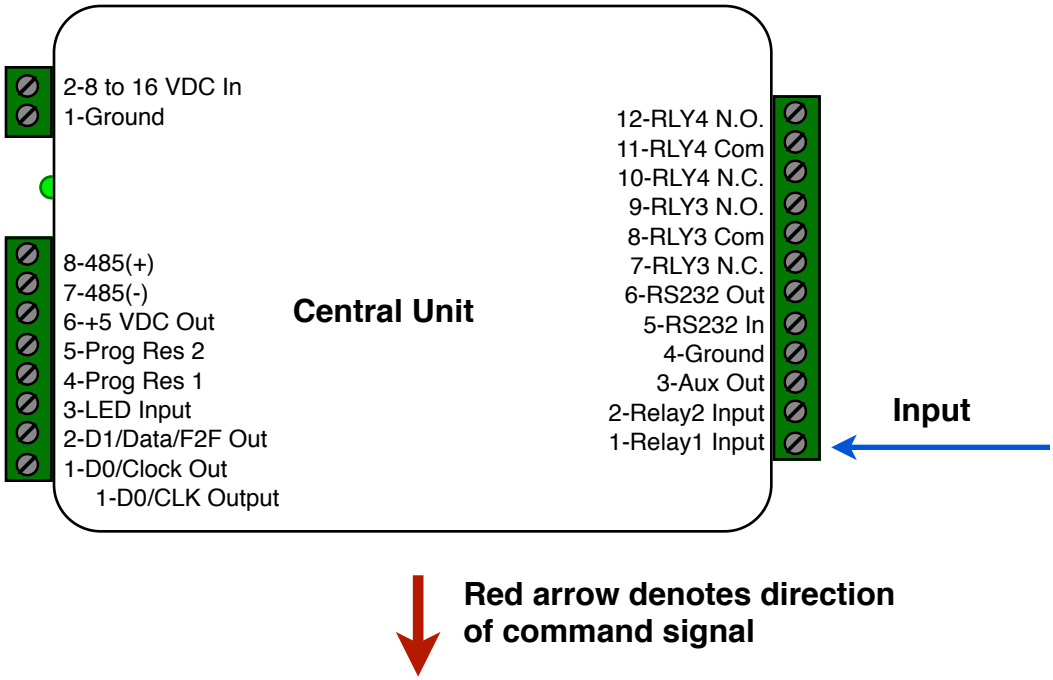
Each input will have an associated output. See the following pages for a diagram of each I/O pair.
Inputs can be tested by making a jumper connection to ground and monitoring the associated output.



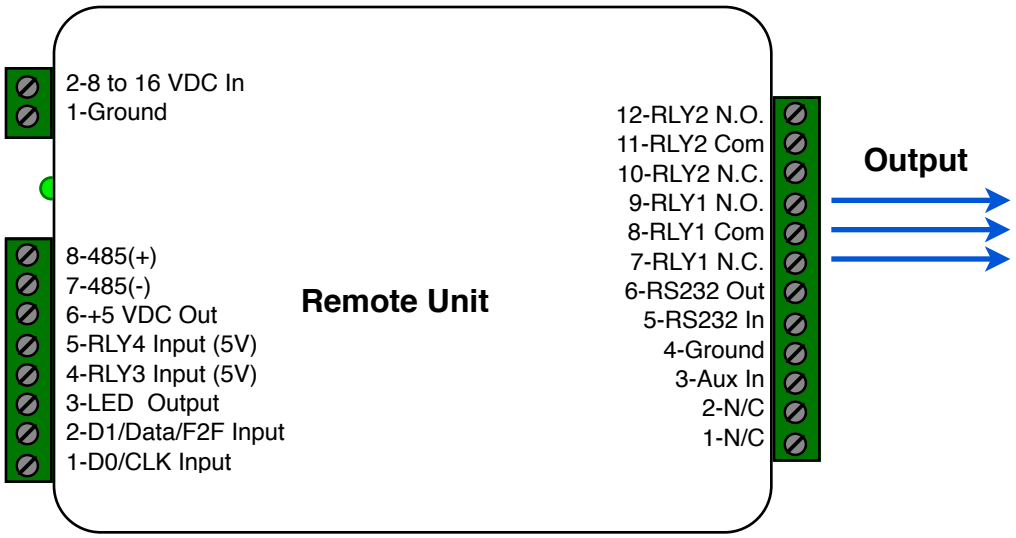
LED Input and Output

Suprex Operation and Initial Setup

I/O Controls



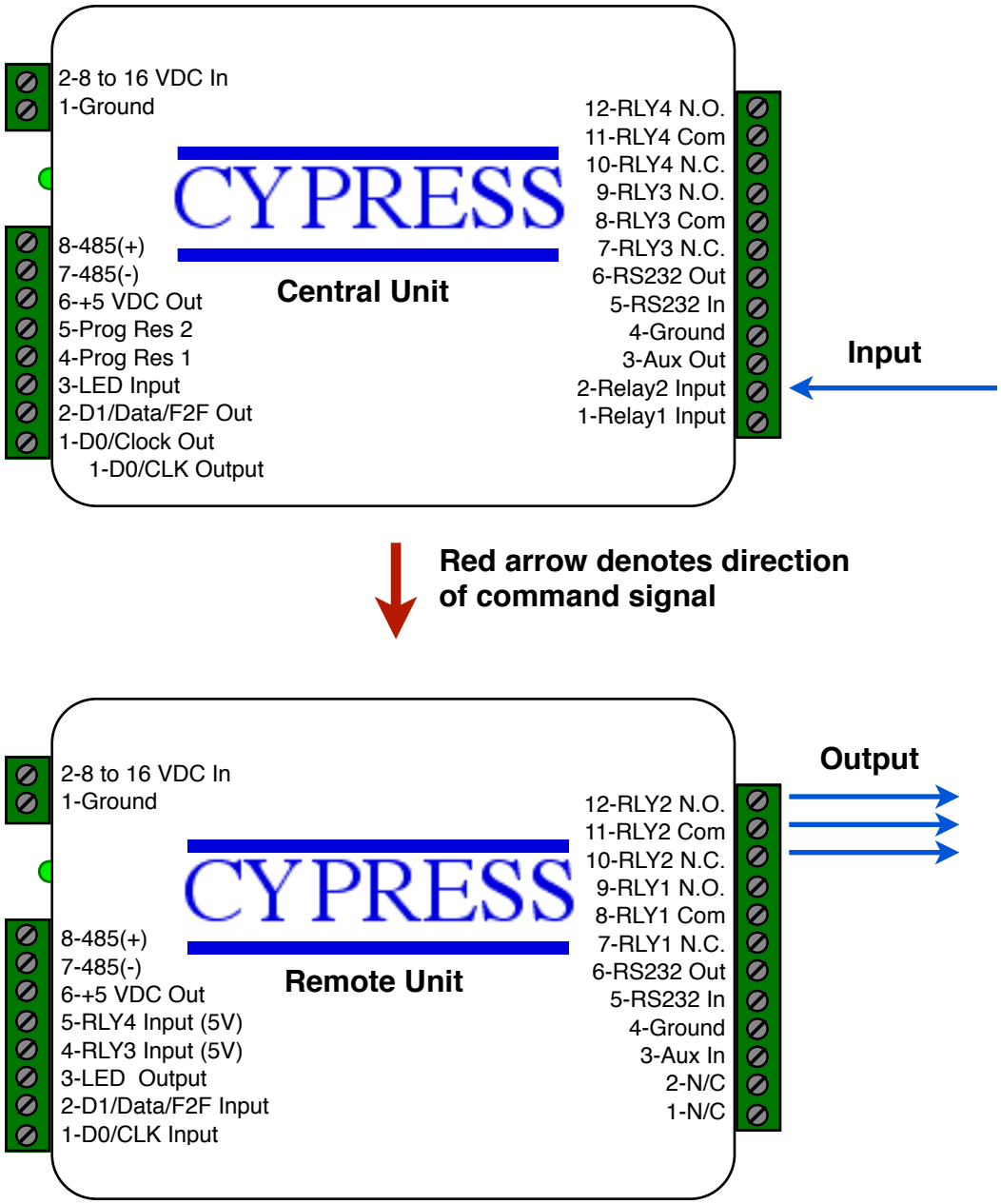
Red arrow denotes direction of command signal



Relay 1 Input and Output

Suprex Operation and Initial Setup

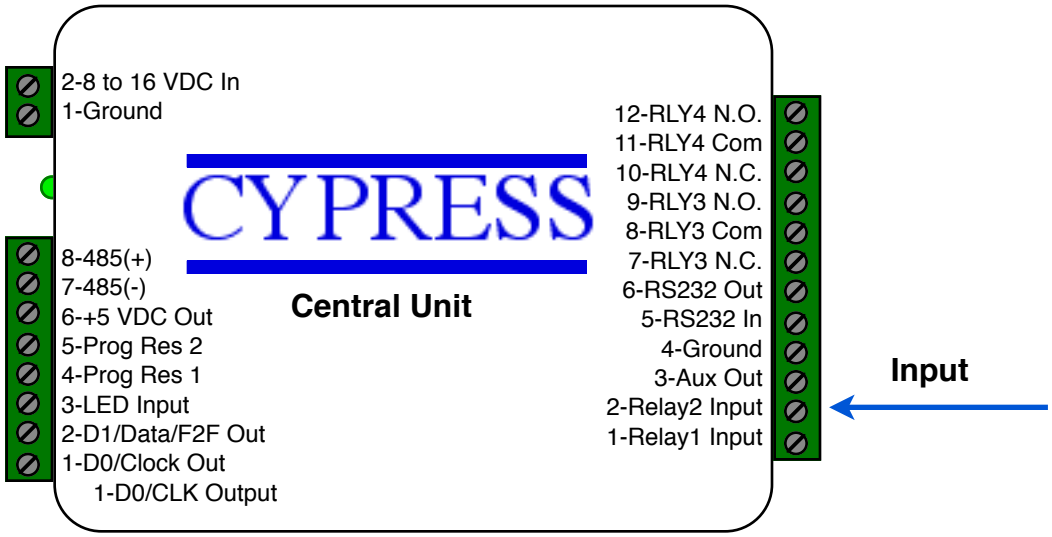
I/O Controls



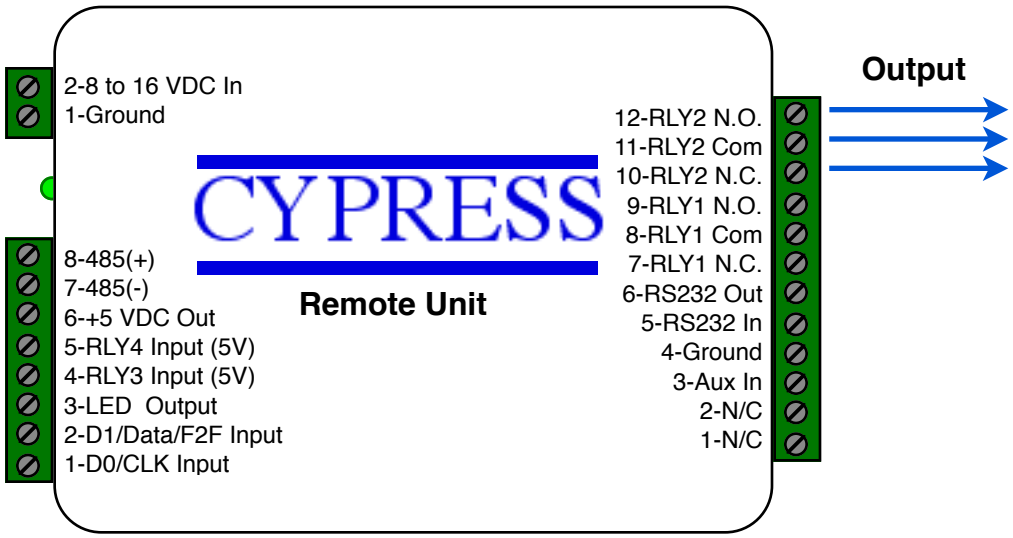
Relay 2 Input and Output

Suprex Operation and Initial Setup

I/O Controls



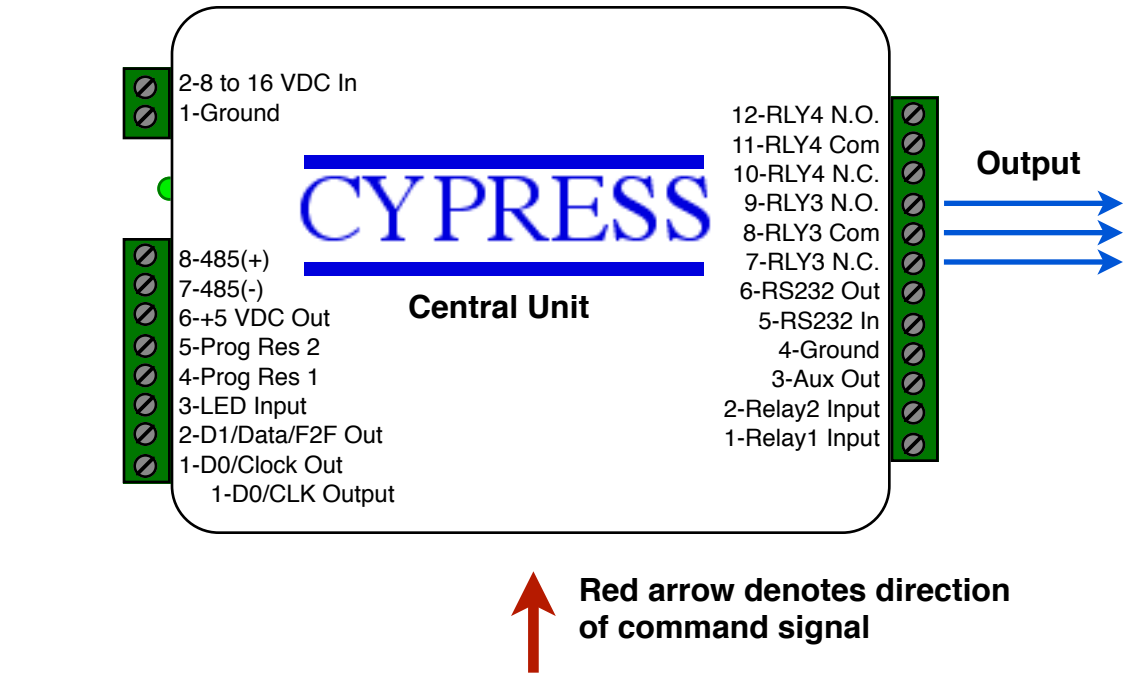
Red arrow denotes direction of command signal



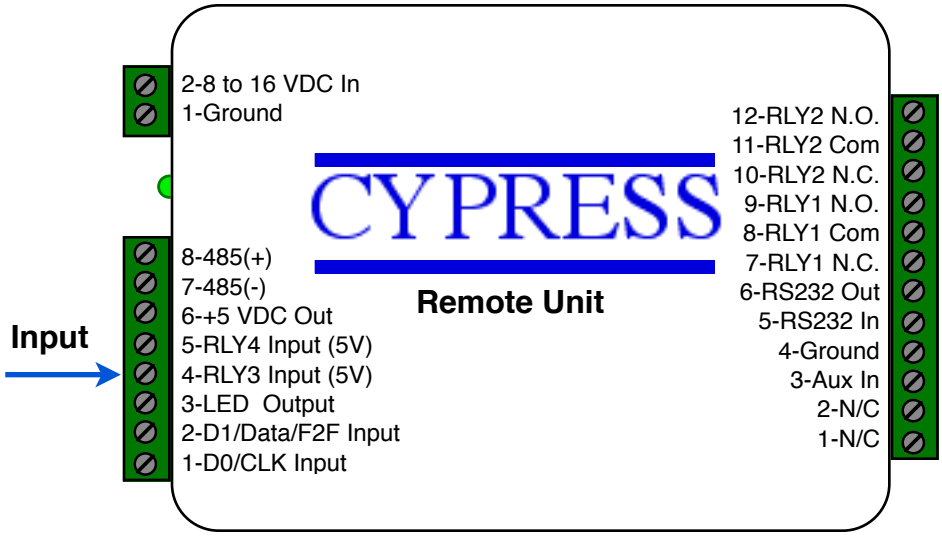
Relay 2 Input and Output

Suprex Operation and Initial Setup

I/O Controls



Red arrow denotes direction of command signal

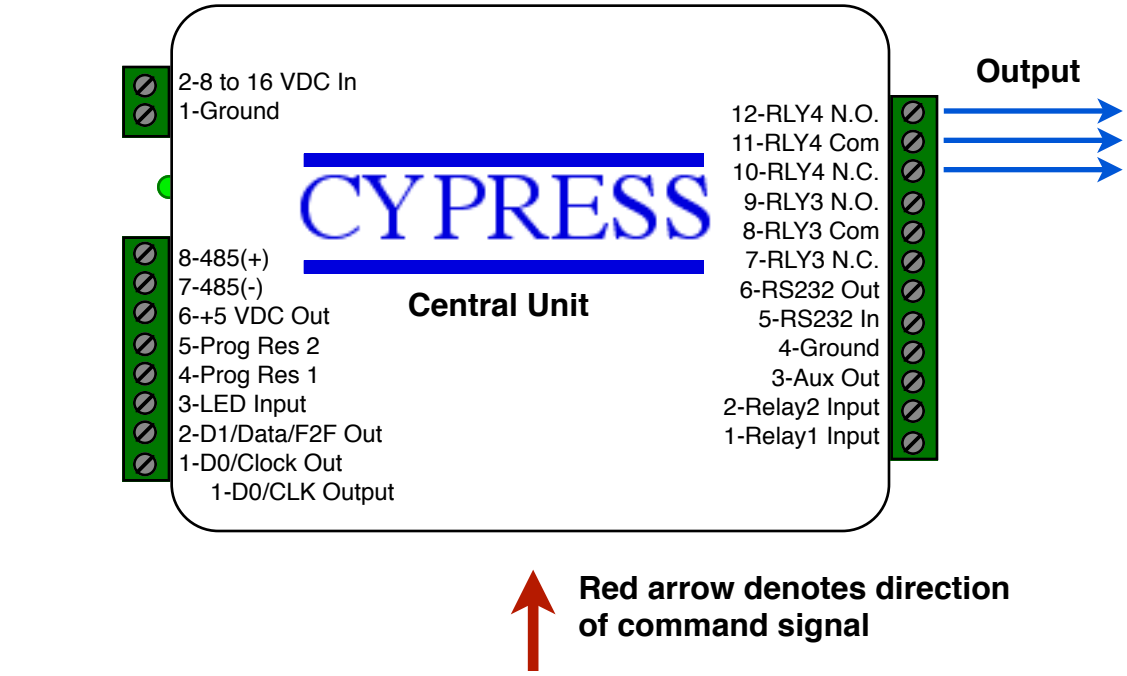


Relay 3 Input and Output

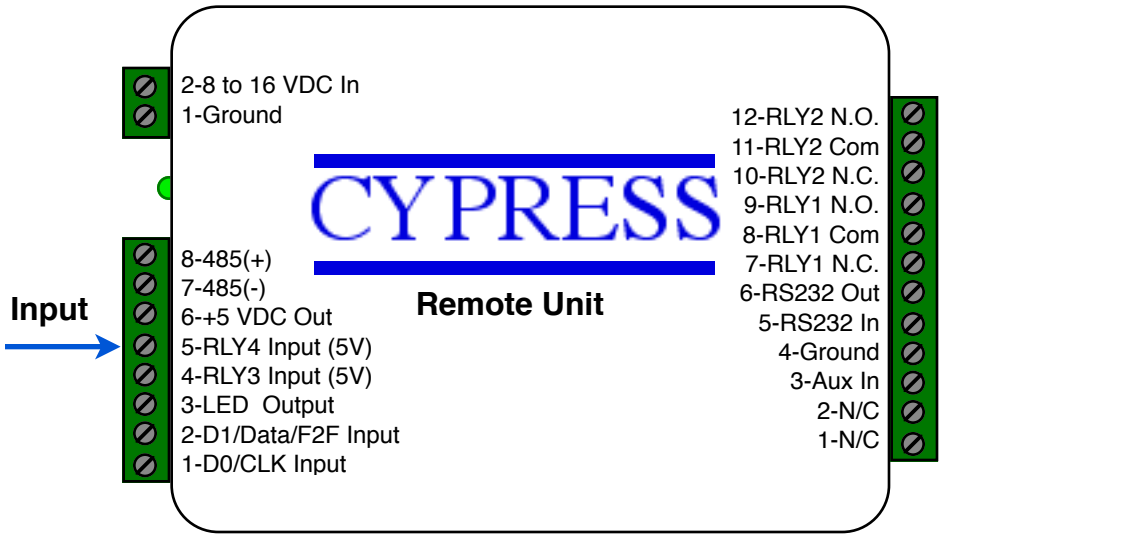
Relay 3 functions as an Alarm relay and monitors the condition of the communication link between the Central and Remote units. Relay 3 is activated when power is applied and the communication link between the Central and Remote is functioning. Relay 3 will become deactivated (Alarm condition) when either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

Suprex Operation and Initial Setup

I/O Controls



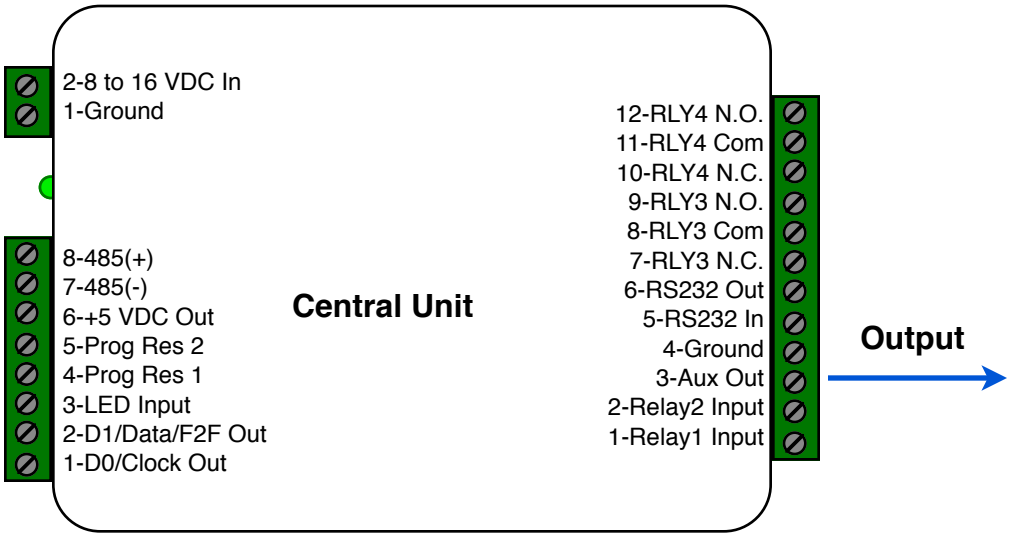
Red arrow denotes direction of command signal



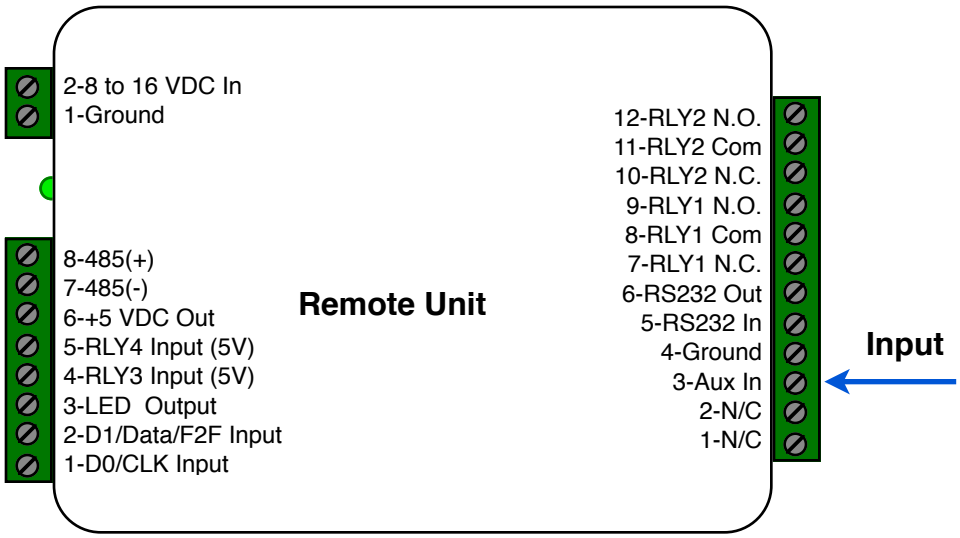
Relay 4 Input and Output

Suprex Operation and Initial Setup

I/O Controls



Red arrow denotes direction of command signal

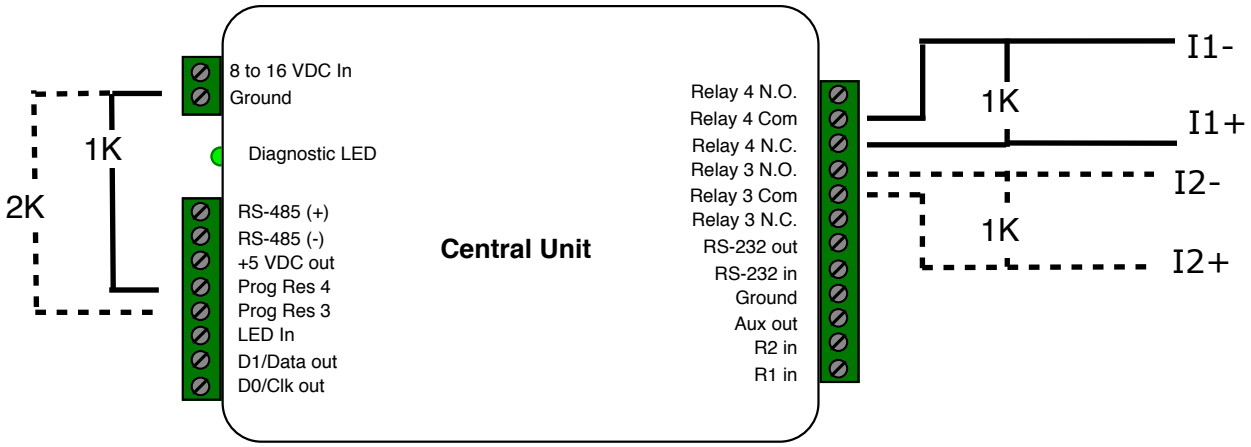
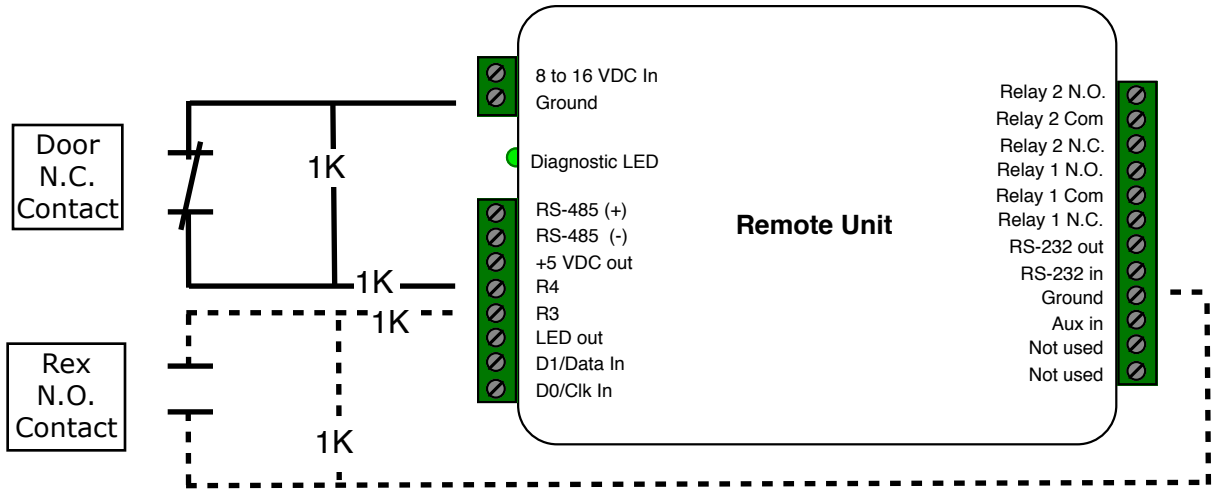


Aux Input and Output

SPX-XXXX Application Note

Using Supervised Contacts with the SPX-series Extenders

Applies to the following products: SPX-1300 and EXP series products.

This application note describes the connections necessary to convey supervised contact status over a Suprex® communication link. The configurations described in this app note should apply to most panels that utilize supervised contacts. When connected as described, the Suprex® system will provide a supervised signal to the panel interface by reading the supervised status of the contacts connected to the Suprex® Remote unit.

Theory of operation: The Access control panel is looking for a certain value of resistance connected to the supervised contact terminals. The Suprex® Central unit will provide these resistance values locally at the panel so that the correct supervised status is maintained. At the same time, the Remote unit must maintain supervision of the wires connected to the relays and switches that are connected to the remote access point. The contact supervision is provided by the Remote unit. The Suprex® system does this by comparing the value of programming resistor at the Central unit with the resistance seen at the Remote interface terminals. When there is a difference in the two values, the Relay on the Central unit is activated.
There are two different examples. One example is monitoring a normally closed contact at the Remote unit, and the other example is monitoring a normally open contact at the Remote unit. In the examples given, a normally closed contact will require a programming resistor of 1K and a normally open contact will require a programming resistor of 2K. Other resistor values can be used but 1K resistors are the most common. Other resistance values will require different value(s) for the programming resistor(s).