

SCP Hardware Quick Reference

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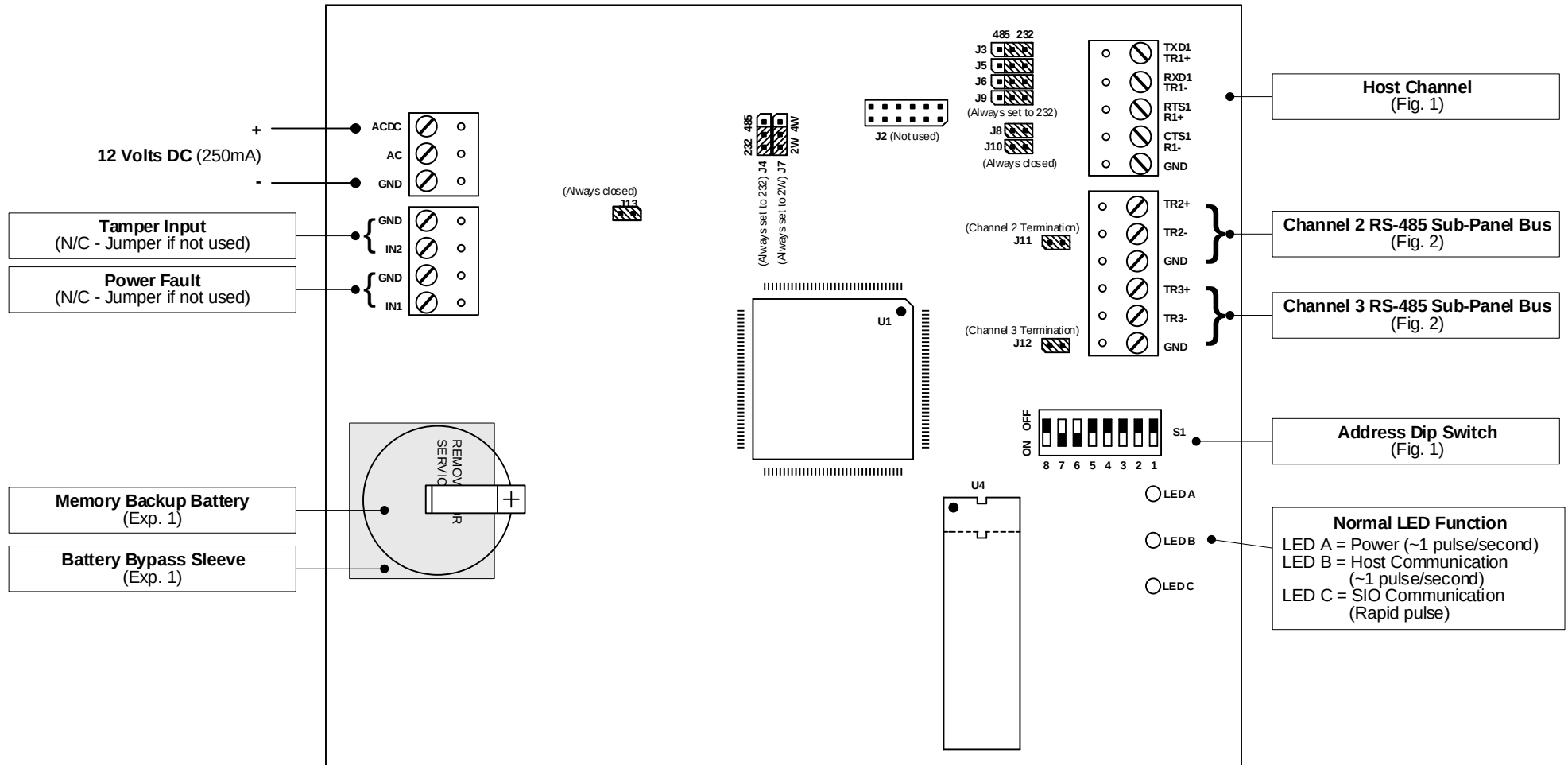


Figure 1: Host Channel and Address Dip Switch Configuration

S1 - RS-232 Hardwired Address Dip Switch

Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off

S1 - Dialup Address Dip Switch

Address	1	2	3	4	5	6	7	8
1	On	Off	Off	Off	On	On	On	Off

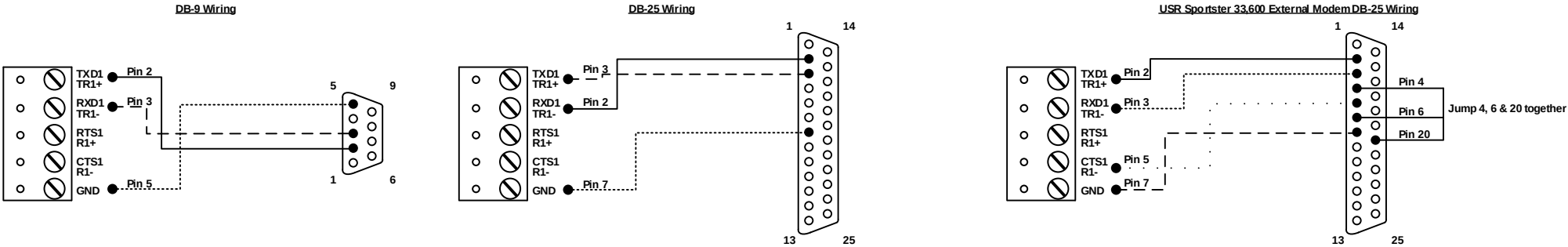
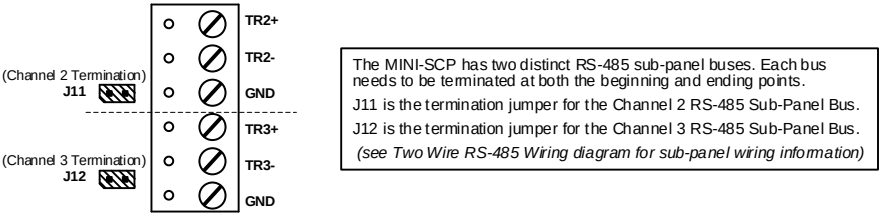


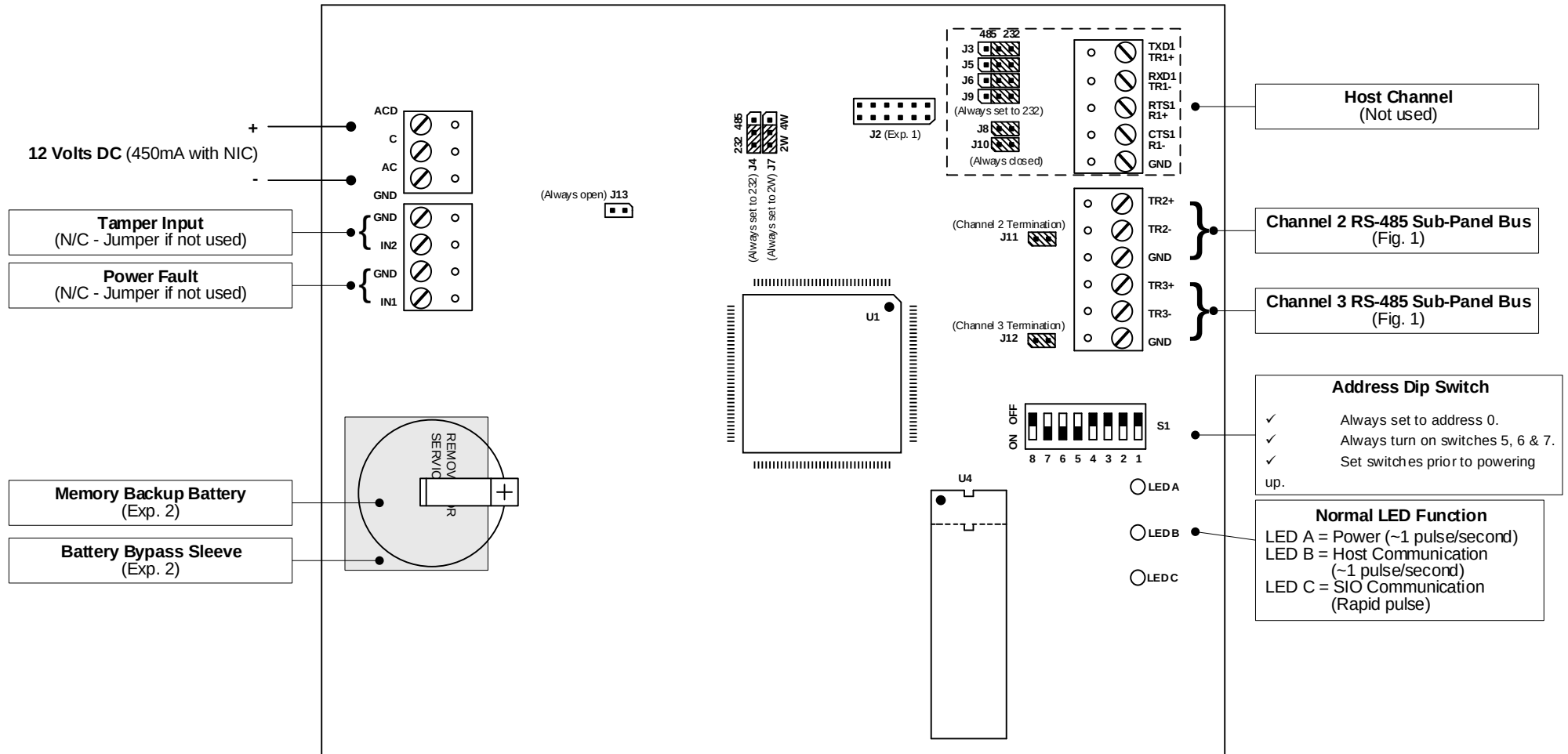
Figure 2: RS-485 Sub-Panel Bus Termination



Explanation 1: Memory Backup Battery

If the MINI-SCP should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The MINI-SCP will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2325 lithium battery or equivalent.

NOTE: When setting up or servicing the MINI-SCP, it is recommended to leave the battery bypass sleeve in place until all system testing is completed. By keeping the battery bypass sleeve in between the battery and the '+' post, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be certain to remove the battery bypass sleeve and store it within the enclosure for future use.



Network Interface Card Setup

The 10Base-T Network Interface Card (NIC) has been installed on the MINI-SCPE by the factory and acts as the interface between the software and the MINI-SCPE. The NIC will require an IP Address, Subnet Mask and Gateway in order for the software to communicate with it. To program this information into the NIC, a MAC Address is required. Every NIC has a unique MAC Address which can be found on the white tag that is attached to it. A sample of a MAC Address would be 00-20-4A-74-0F-7F and can be found under the model number of the NIC (CO-E1-11AA). Programming the NIC can be performed through one of three methods.

Method One: RS2 Programmer (P/N: RS2-PROG-TOOL)

The RS2 Programmer comes with a cross-over cable which is used to connect the programmer to the MINI-SCPEs NIC. After connecting the programmer to the NIC, power up the MINI-SCPE and the RS2 Programmer. The programming software will automatically launch.

Enter the NICs MAC Address into the MAC Address fields. Enter the desired IP Address, Gateway and Subnet Mask into their respective fields. Select the appropriate SCP type and software application from their respective drop lists and then click the 'Set Configuration' button. One of two messages will appear, 'Configuration set' if the programming was successful or 'Panel timeout' if the programming failed.

Method Two: Access It!® Ultra SCPE IP Programmer

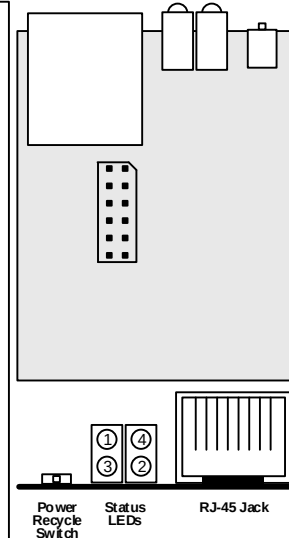
Access It!® Ultra installs a utilities folder which contains the SCPE IP Programmer. If the computer resides on the same subnet as the NIC being programmed, you may program it while connected to the network. From the start menu, click Start|Programs|Access It! Ultra|Utilities|SCPE IP Programmer to run the SCP-E/MINI SCP-E Programmer utility.

Enter the NICs MAC Address into the MAC Address fields. Enter the desired IP Address, Gateway and Subnet Mask into their respective fields. Select the appropriate SCP type and software application from their respective drop lists and then click the 'Set Configuration' button. One of two messages will appear, 'Configuration set' if the programming was successful or 'Panel timeout' if the programming failed.

Method Three: Manually

The manual ARP command is a tedious, but effective method in programming the NIC. This method should be used only as a last resort. If the computer resides on the same subnet as the NIC being programmed, you may program it while connected to the network. From the start menu, click Start|Run followed by typing 'cmd' for NT 4.0, 2000 and XP or 'command' for 98 and Me. This will open a Command Prompt window from which the following commands will be run from.

Command Prompt Window Portion		
Command	Variable Reference	General Command Information
arp -s xxx.xxx.xxx.xxx yy-yy-yy-yy-yy-yy<Enter>	xxx.xxx.xxx.xxx = IP Address yy-yy-yy-yy-yy-yy = MAC Address	Temporarily sets the IP Address.
telnet xxx.xxx.xxx.xxx 1<Enter>	xxx.xxx.xxx.xxx = IP Address	The telnet connection will fail, but the NIC will change its IP Address.
telnet xxx.xxx.xxx.xxx 9999	xxx.xxx.xxx.xxx = IP Address	Opens a telnet session for further programming.
Telnet Session Window Portion		
Command	Variable Reference	General Command Information
<Enter>		Enters the NICs Setup Mode.
0<Enter>		Selects option 0 Server configuration.
xxx<Enter>	xxx = First IP octet	Programs the NICs first IP octet.
xxx<Enter>	xxx = Second IP octet	Programs the NICs second IP octet.
xxx<Enter>	xxx = Third IP octet	Programs the NICs third IP octet.
xxx<Enter>	xxx = Fourth IP octet	Programs the NICs fourth IP octet.
Y	Y = Yes	Enables Gateway to be programmed.
xxx<Enter>	xxx = First Gateway octet	Programs the NICs first Gateway octet.
xxx<Enter>	xxx = Second Gateway octet	Programs the NICs second Gateway octet.
xxx<Enter>	xxx = Third Gateway octet	Programs the NICs third Gateway octet.
xxx<Enter>	xxx = Fourth Gateway octet	Programs the NICs fourth Gateway octet.
xx<Enter>	xx = Number of bits to mask (08) class C 24/8 bits (255.255.255.000) (16) class B 16/16 bits (255.255.000.000) (24) class A 8/24 bits (255.000.000.000)	Programs the NICs Subnet Mask
<Enter>		Bypasses the 'Change telnet config password' option.
1<Enter>		Selects option 1 Channel 1 configuration.
38400<Enter>		Programs the Baudrate to 38,400.
4C<Enter>		Programs the I/F Mode to 4C.
02<Enter>		Programs the Flow to 02.
xxxxx<Enter>	xxxxx = Network TCP port (03001) Default Access It!® setting (14001) If running Access It!® Lite or Access It!® UltraLite.	Programs the Port No to 03001 or 14001 IMPORTANT NOTE: Only set the Port No to 14001, when running Access It!® Lite or Access It!® UltraLite which require the Lantronix Redirector Software!
C0<Enter>		Programs the ConnectMode to C0.
<Enter>		Bypasses the first 'Remote IP Address' octet option.
<Enter>		Bypasses the second 'Remote IP Address' octet option.
<Enter>		Bypasses the third 'Remote IP Address' octet option.
<Enter>		Bypasses the fourth 'Remote IP Address' octet option.
<Enter>		Bypasses the 'Remote Port' option.
<Enter>		Bypasses the 'DisConnMode' option.
<Enter>		Bypasses the 'FlushMode' option.
<Enter>		Bypasses the hours 'DisConnTime' option.
<Enter>		Bypasses the minutes 'DisConnTime' option.
<Enter>		Bypasses the 'SendChar 1' option.
<Enter>		Bypasses the 'SendChar 2' option.
5<Enter>		Selects option 5 Expert settings.
45<Enter>		Programs the TCP Keepalive time to 45 seconds.
9<Enter>		Selects option 9 Save and exit.

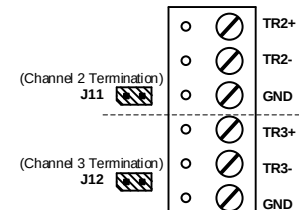


LED	Description	LED Functions
1 (Green)	Serial Port Channel 1 Status	Lights solid green to indicate Channel 1 is idle. Blinks green to indicate Channel 1 is connected to the network and active.
2 (Yellow)	Serial Port Channel 2 Status	Lights solid yellow to indicate Channel 2 is idle. Blinks yellow to indicate Channel 2 is connected to the network and active.
3 (Red)	Diagnostics	Blinks or lights solid red in combination with the green (Channel 1) LED to indicate diagnostics and error detection. Red solid, green (Channel 1) blinking: 1x: EPROM checksum error 2x: RAM error 3x: Network controller error 4x: EEPROM checksum error 5x: Duplicated IP address on the network* 6x: Software does not match hardware* Red blinking, green (Channel 1) blinking: 4x: Faulty network connection* 5x: No DHCP response received*
4 (Green)	Network Link Status	Lights solid green to indicate network port is connected to the network
*non-fatal error		

Explanation 2: Memory Backup Battery

If the MINI-SCPE should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The MINI-SCPE will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2325 lithium battery or equivalent.

NOTE: When setting up or servicing the MINI-SCPE, it is recommended to leave the battery bypass sleeve in place until all system testing is completed. By keeping the battery bypass sleeve in between the battery and the '+' post, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be certain to remove the battery bypass sleeve and store it within the enclosure for future use.

Figure 1: RS-485 Sub-Panel Bus Termination

The MINI-SCPE has two distinct RS-485 sub-panel buses. Each bus needs to be terminated at both the beginning and ending points. J11 is the termination jumper for the Channel 2 RS-485 Sub-Panel Bus. J12 is the termination jumper for the Channel 3 RS-485 Sub-Panel Bus. (see Two Wire RS-485 Wiring diagram for sub-panel wiring information)

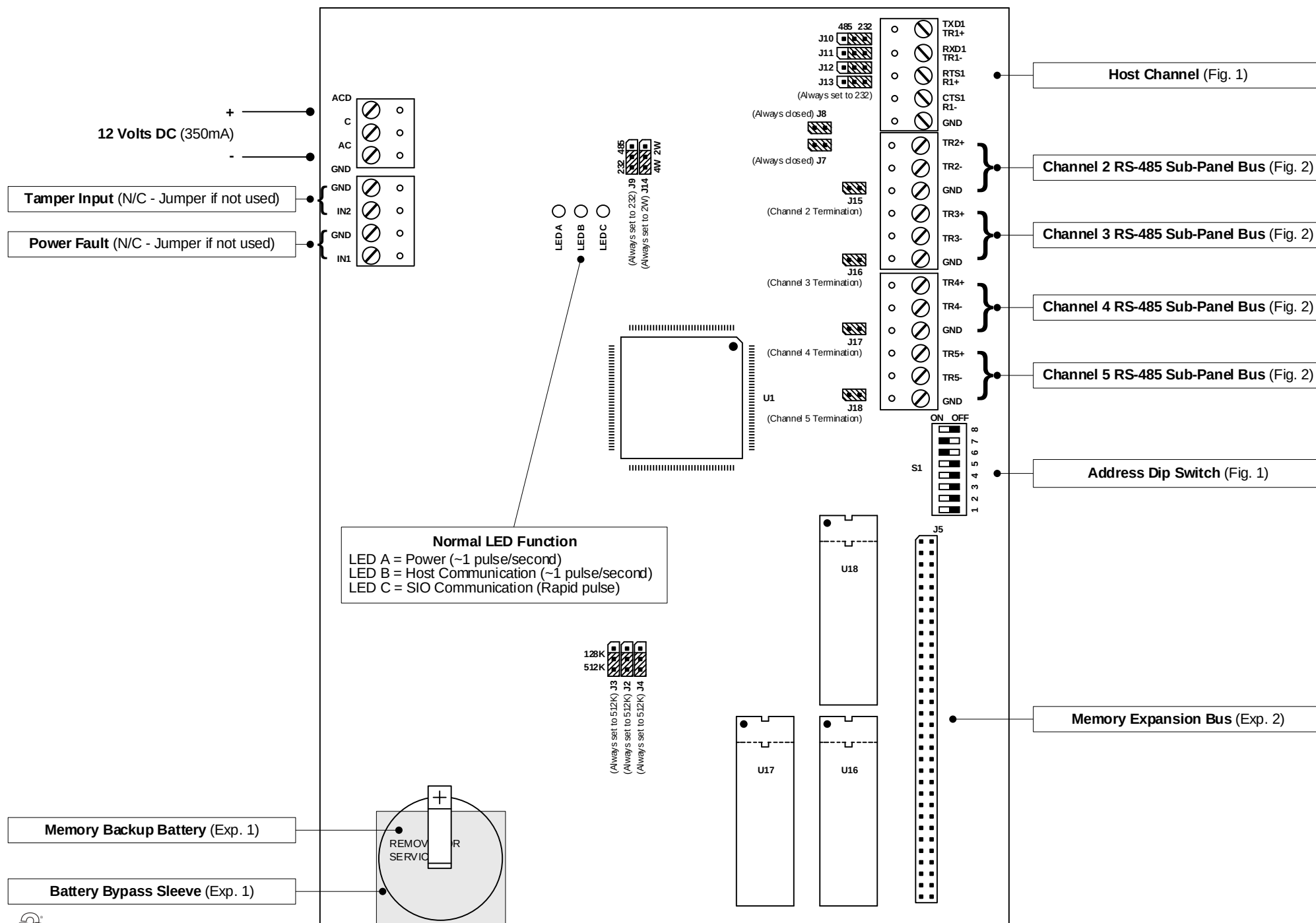


Figure 1: Host Channel and Address Dip Switch Configuration

S1 - RS-232 Hardwired Address Dip Switch

Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off

S1 - Dialup Address Dip Switch

Address	1	2	3	4	5	6	7	8
1	On	Off	Off	Off	On	On	On	Off

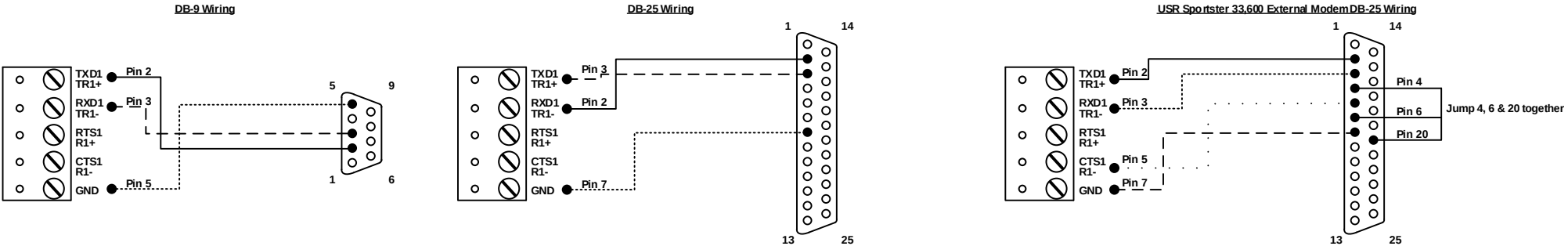
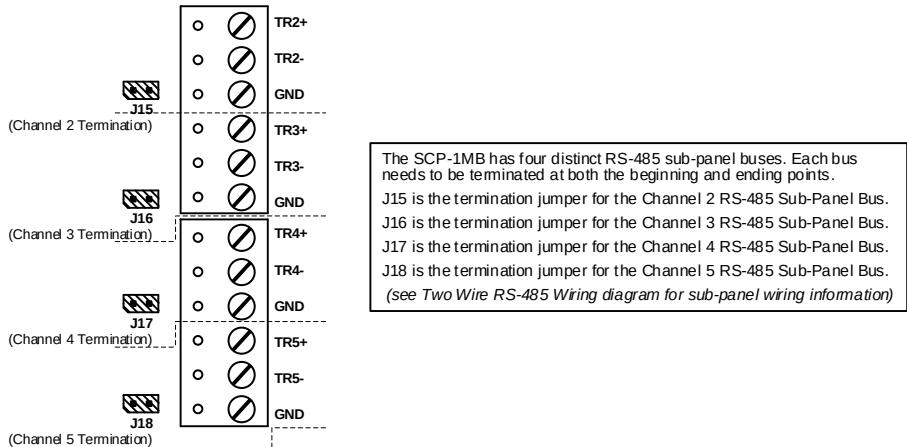


Figure 2: RS-485 Sub-Panel Bus Termination



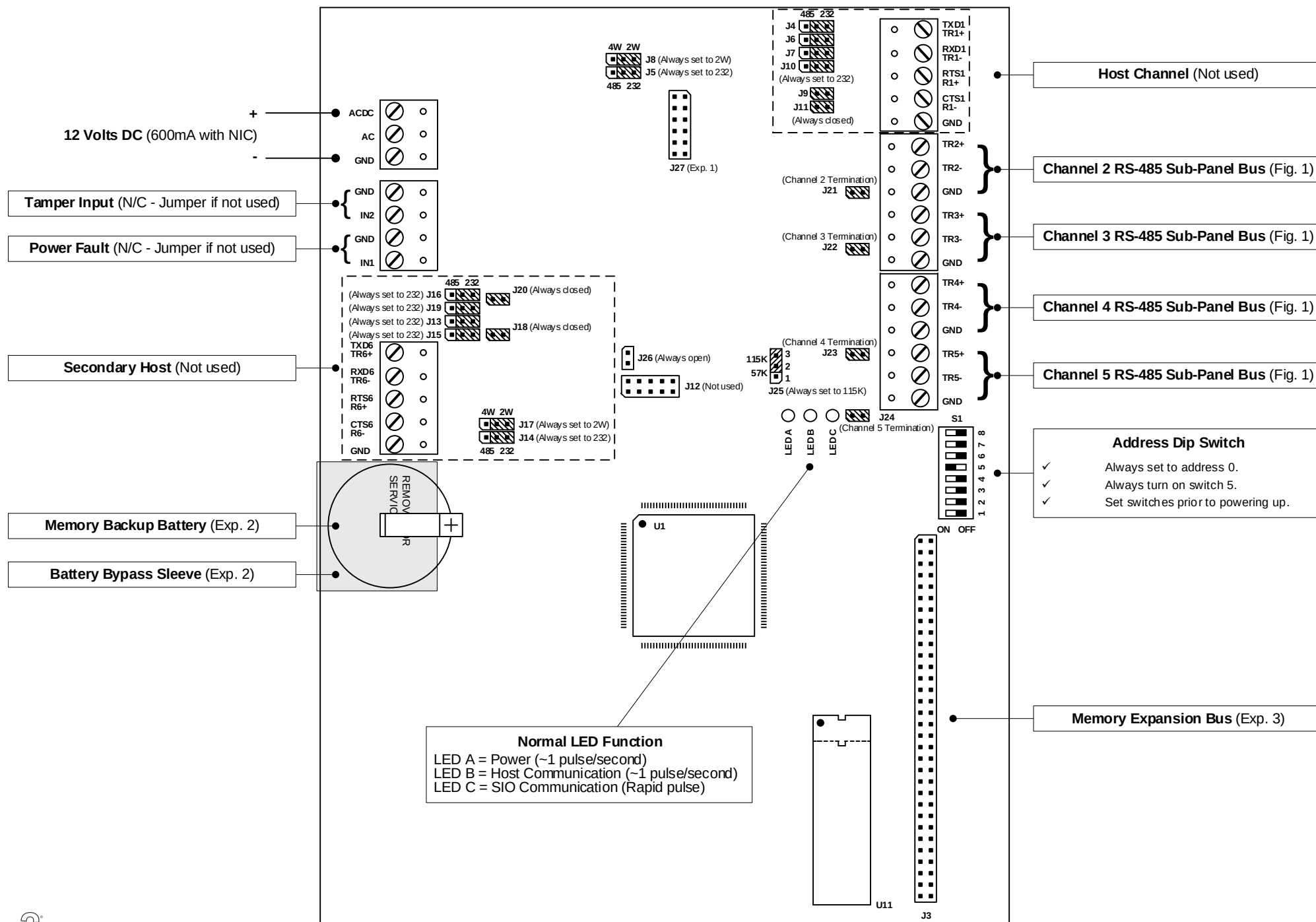
Explanation 1: Memory Backup Battery

If the SCP-1MB should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The SCP-1MB will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2325 lithium battery or equivalent.

NOTE: When setting up or servicing the SCP-1MB, it is recommended to leave the battery bypass sleeve in place until all system testing is completed. By keeping the battery bypass sleeve in between the battery and the "+" post, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be certain to remove the battery bypass sleeve and store it within the enclosure for future use.

Explanation 2: Memory Expansion

The SCP-1MB is equipped with 1MB of upgradeable RAM. A maximum of 4MB may be achieved by adding the SCP-MEM3. Please refer to the SCP-MEM3 Quick Reference for detailed installation instructions.



Network Interface Card Setup

The 10Base-T Network Interface Card (NIC) has been installed on the SCP-E by the factory and acts as the interface between the software and the SCP-E. The NIC will require an IP Address, Subnet Mask and Gateway in order for the software to communicate with it. To program this information into the NIC, a MAC Address is required. Every NIC has a unique MAC Address which can be found on the white tag that is attached to it. A sample of a MAC Address would be 00-20-4A-74-0F-7F and can be found under the model number of the NIC (CO-E1-11AA). Programming the NIC can be performed through one of three methods.

Method One: RS2 Programmer (P/N: RS2-PROG-TOOL)

The RS2 Programmer comes with a cross-over cable which is used to connect the programmer to the SCP-Es NIC. After connecting the programmer to the NIC, power up the SCP-E and the RS2 Programmer. The programming software will automatically launch.

Enter the NICs MAC Address into the MAC Address fields. Enter the desired IP Address, Gateway and Subnet Mask into their respective fields. Select the appropriate SCP type and software application from their respective drop lists and then click the 'Set Configuration' button. One of two messages will appear, 'Configuration set!' if the programming was successful or 'Panel timeout' if the programming failed.

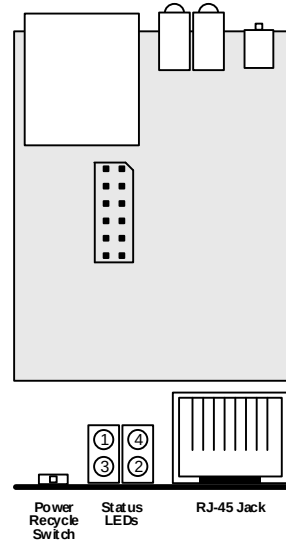
Method Two: Access It!® Ultra SCPe IP Programmer

Access It!® Ultra installs a utilities folder which contains the SCPe IP Programmer. If the computer resides on the same subnet as the NIC being programmed, you may program it while connected to the network. From the start menu, click Start|Programs|Access It!|Utilities|SCPe IP Programmer to run the SCP-E/MINI SCP-E Programmer utility.

Enter the NICs MAC Address into the MAC Address fields. Enter the desired IP Address, Gateway and Subnet Mask into their respective fields. Select the appropriate SCP type and software application from their respective drop lists and then click the 'Set Configuration' button. One of two messages will appear, 'Configuration set!' if the programming was successful or 'Panel timeout' if the programming failed.

Method Three: Manually

The manual ARP command is a tedious, but effective method in programming the NIC. This method should be used only as a last resort. If the computer resides on the same subnet as the NIC being programmed, you may program it while connected to the network. From the start menu, click Start|Run followed by typing 'cmd' for NT 4.0, 2000 and XP or 'command' for 98 and Me. This will open a Command Prompt window from which the following commands will be run from.



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4 (Green)	Network Link Status	Lights solid green to indicate network port is connected to the network

*non-fatal error

Explanation 2: Memory Backup Battery

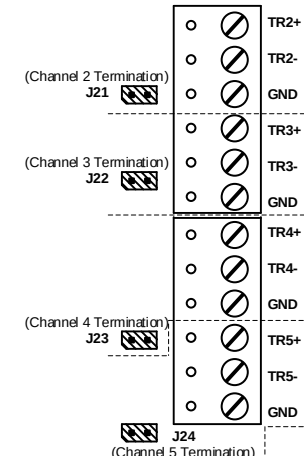
If the SCP-E should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The SCP-E will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2325 lithium battery or equivalent.

NOTE: When setting up or servicing the SCP-E, it is recommended to leave the battery bypass sleeve in place until all system testing is completed. By keeping the battery bypass sleeve in between the battery and the '+' post, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be certain to remove the battery bypass sleeve and store it within the enclosure for future use.

Explanation 3: Memory Expansion

The SCP-E is equipped with 1MB of upgradeable RAM. A maximum of 8MB may be achieved by adding the SCP-MEM7 or 4MB by adding the SCP-MEM3.

Please refer to the SCP-MEM7 Quick Reference and the SCP-MEM3 Quick Reference for detailed installation instructions.

Figure 1: RS-485 Sub-Panel Bus Termination

The SCP-E has four distinct RS-485 sub-panel buses. Each bus needs to be terminated at both the beginning and ending points.
J21 is the termination jumper for the Channel 2 RS-485 Sub-Panel Bus.
J22 is the termination jumper for the Channel 3 RS-485 Sub-Panel Bus.
J23 is the termination jumper for the Channel 4 RS-485 Sub-Panel Bus.
J24 is the termination jumper for the Channel 5 RS-485 Sub-Panel Bus.
(see Two Wire RS-485 Wiring diagram for sub-panel wiring information)

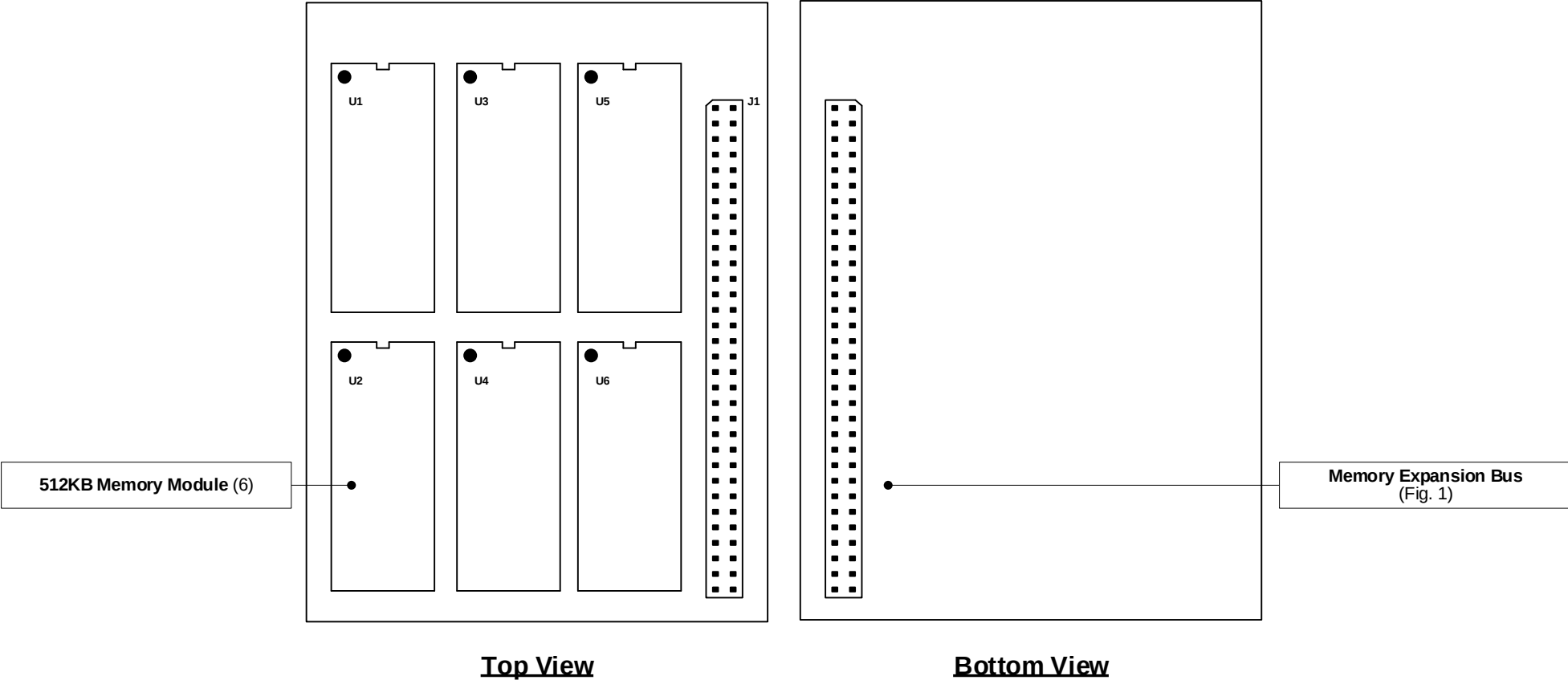
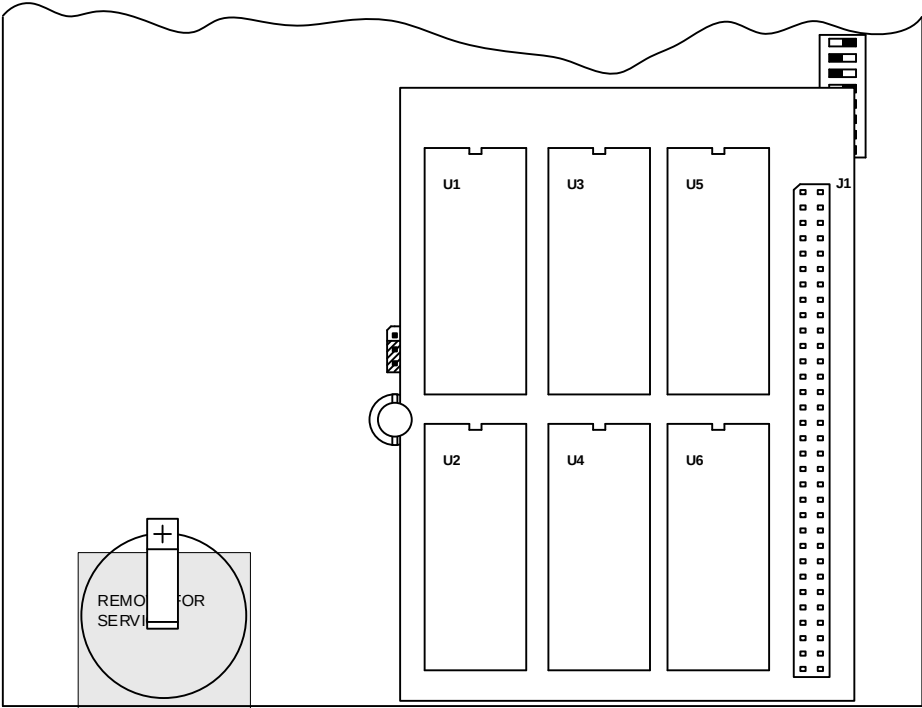
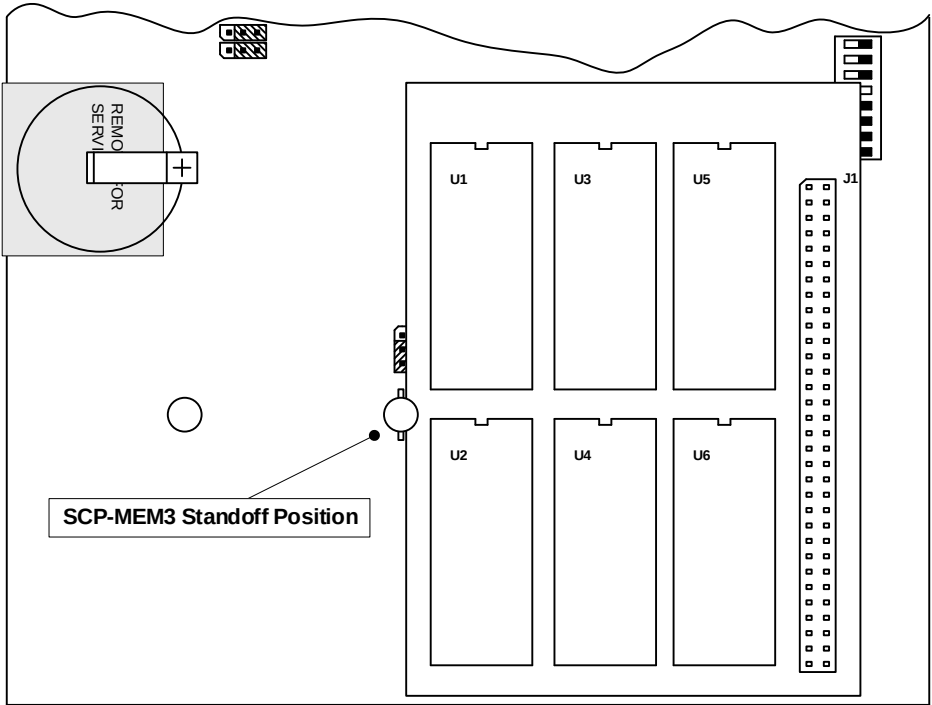


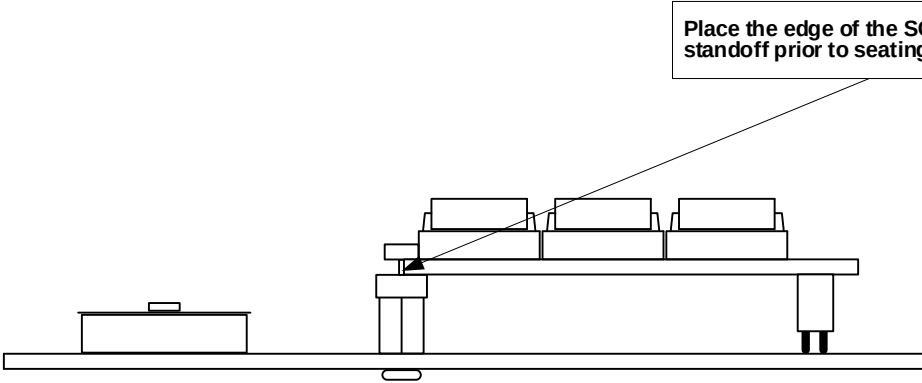
Figure 1: Proper Mounting



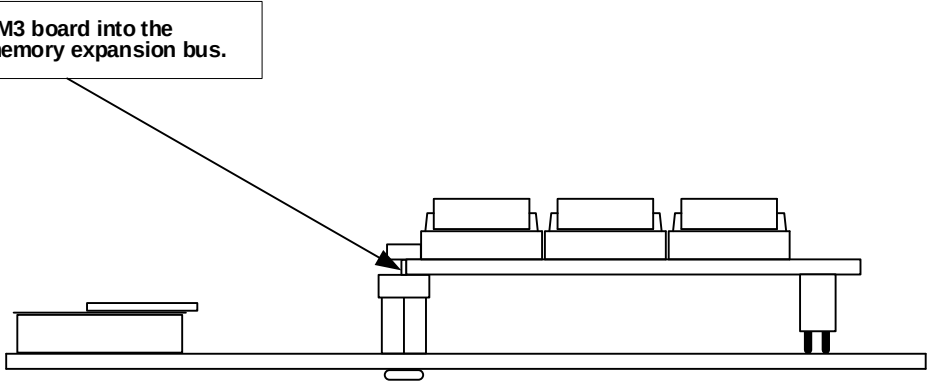
SCP-1MB Top View



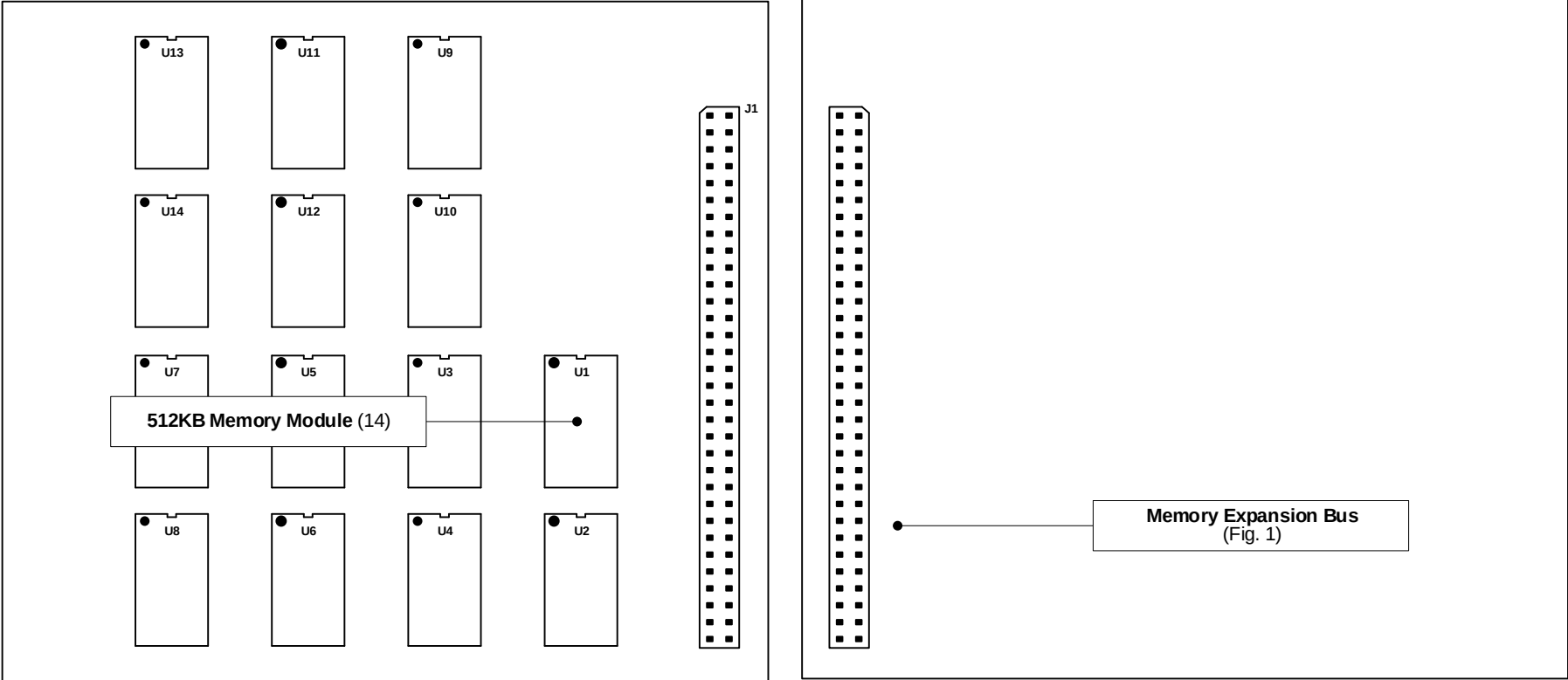
SCP-E Top View



SCP-1MB Side View



SCP-E Side View

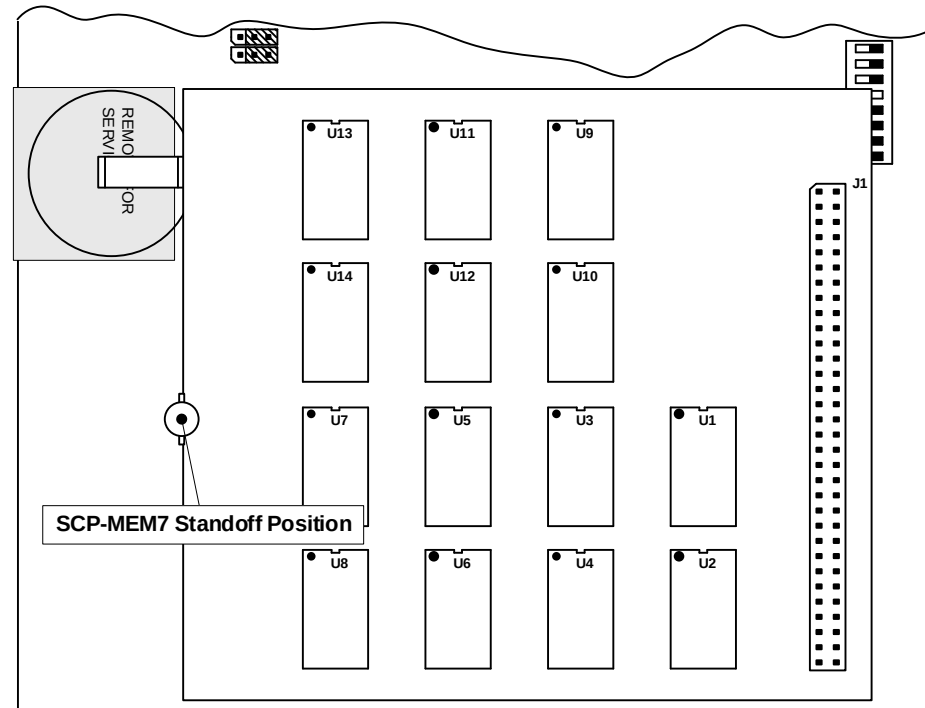
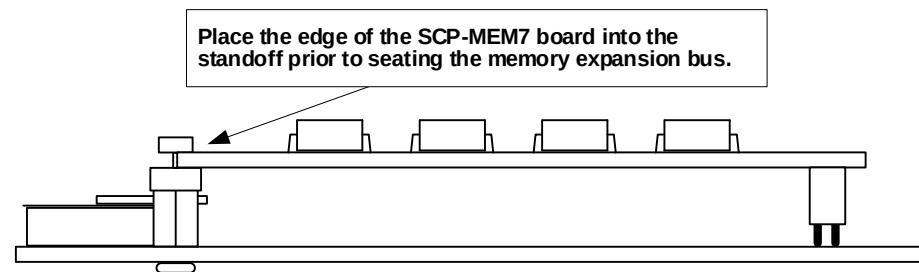


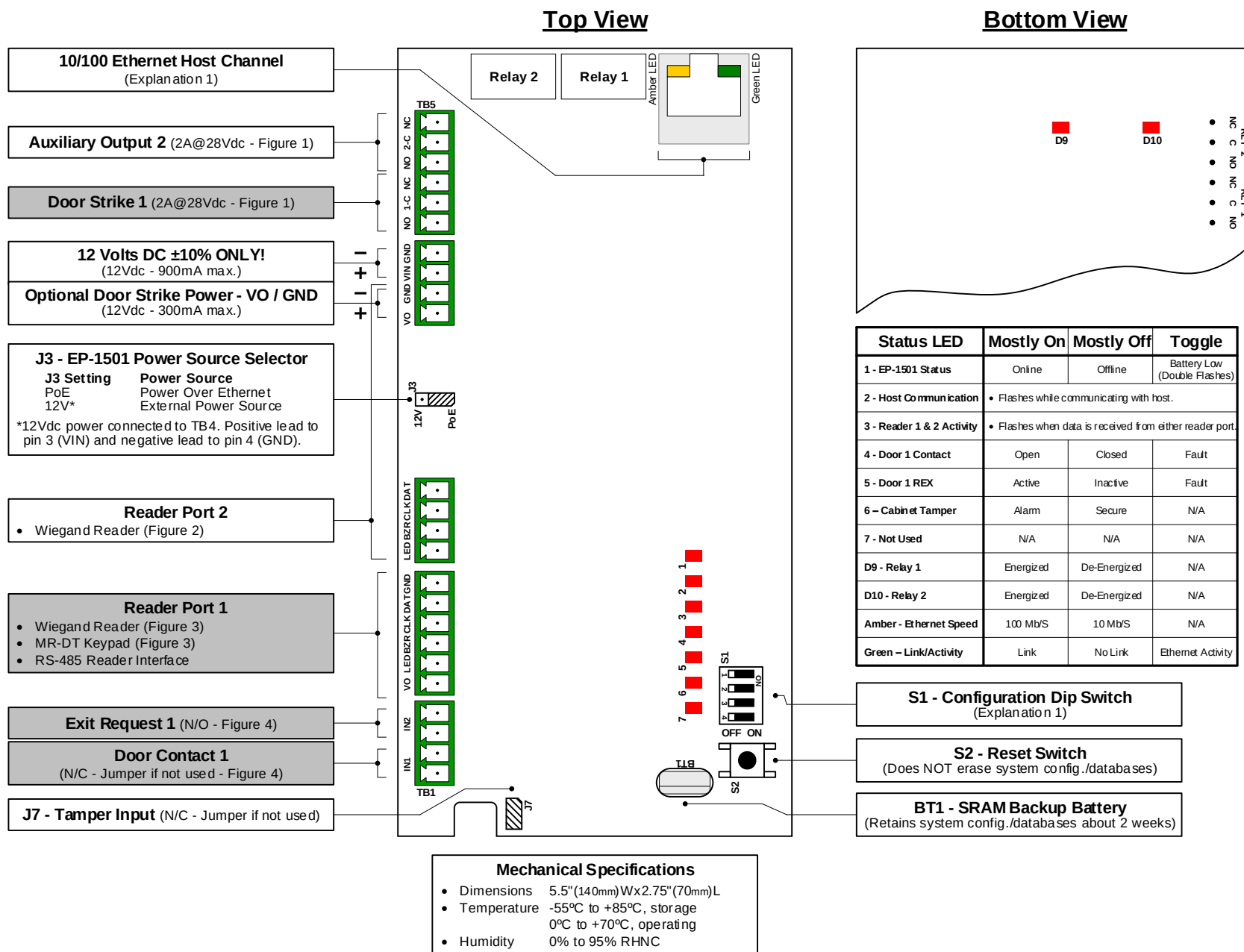
Top View

Bottom View

Figure 1: Proper Mounting

The SCP-MEM7 ONLY works on the SCP-E and is only supported with Access It!® Ultra, Access It!® Ultra Titanium Edition and Access It!® Enterprise Edition.

**SCP-E Top View****SCP-E Side View**



Configuring Primary 10/100 Ethernet Host Channel For DHCP Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the EP-1501
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **EP-1501**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<MACxx xxxxxx xxxxx>**
If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC000FE500034B.
 - Port Number: **3001**
 - Encryption Settings: **None**

NOTE: If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Configuring Primary 10/100 Ethernet Host Channel For A Static IP Address

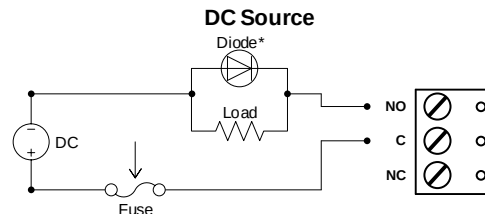
- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the EP-1501
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to EP-1501
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on '**Click Here to Login**'
- Click on '**Continue to this website (not recommended).**'
- Enter a Username of **admin**
- Enter a Password of **password**
- Click '**Network**' from the left hand menu
- Select '**Use Static IP configuration:**'
 - IP Address: **<Set accordingly>**
 - Subnet Mask: **<Set accordingly>**
 - Default Gateway: **<Set accordingly>**
- Click '**OK**'
- Click '**Apply Setting**' from the left hand menu
- Click '**Apply, Reboot**' button
- Wait 60 seconds for EP-1501 to reboot
- Remove power from the EP-1501
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the EP-1501
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **EP-1501**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<Set accordingly>**
 - Port Number: **3001**
 - Encryption Settings: **None**

Figure 1: Output Wiring Options

Bulk Erasing The System Configuration And Cardholder Databases

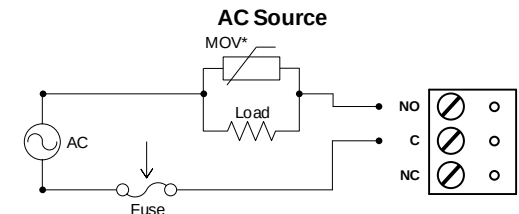
- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the EP-1501
 - LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
 - LED 2 flashes at a 2 second rate as memory is being erased
 - WARNING! DO NOT CYCLE POWER**
Erasing memory takes approximately 60 seconds to complete.
 - LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the EP-1501 reboots
- The EP-1501 is now ready to be configured as needed

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.



*Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical



*MOV Selection – Inductive Load

Clamp Voltage > 1.5x Vac RMS
24Vac Strike, Panasonic ERZ-C07DK470 Typical

Figure 2: Reader Port 2

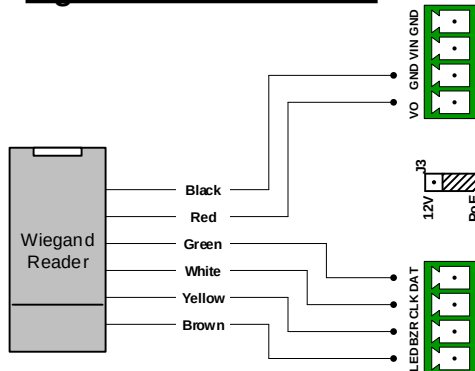


Figure 3: Reader Port 1

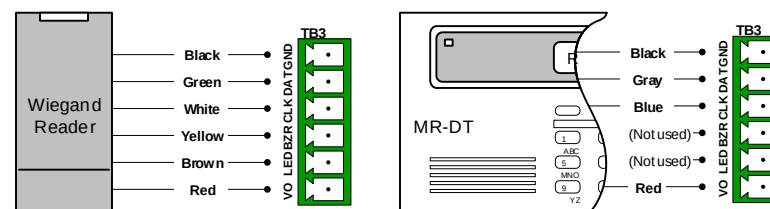
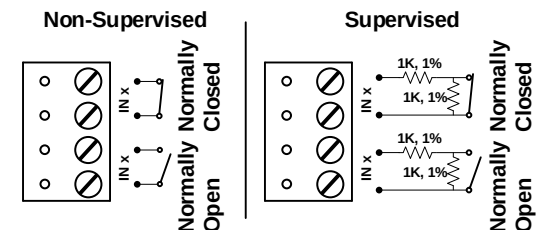
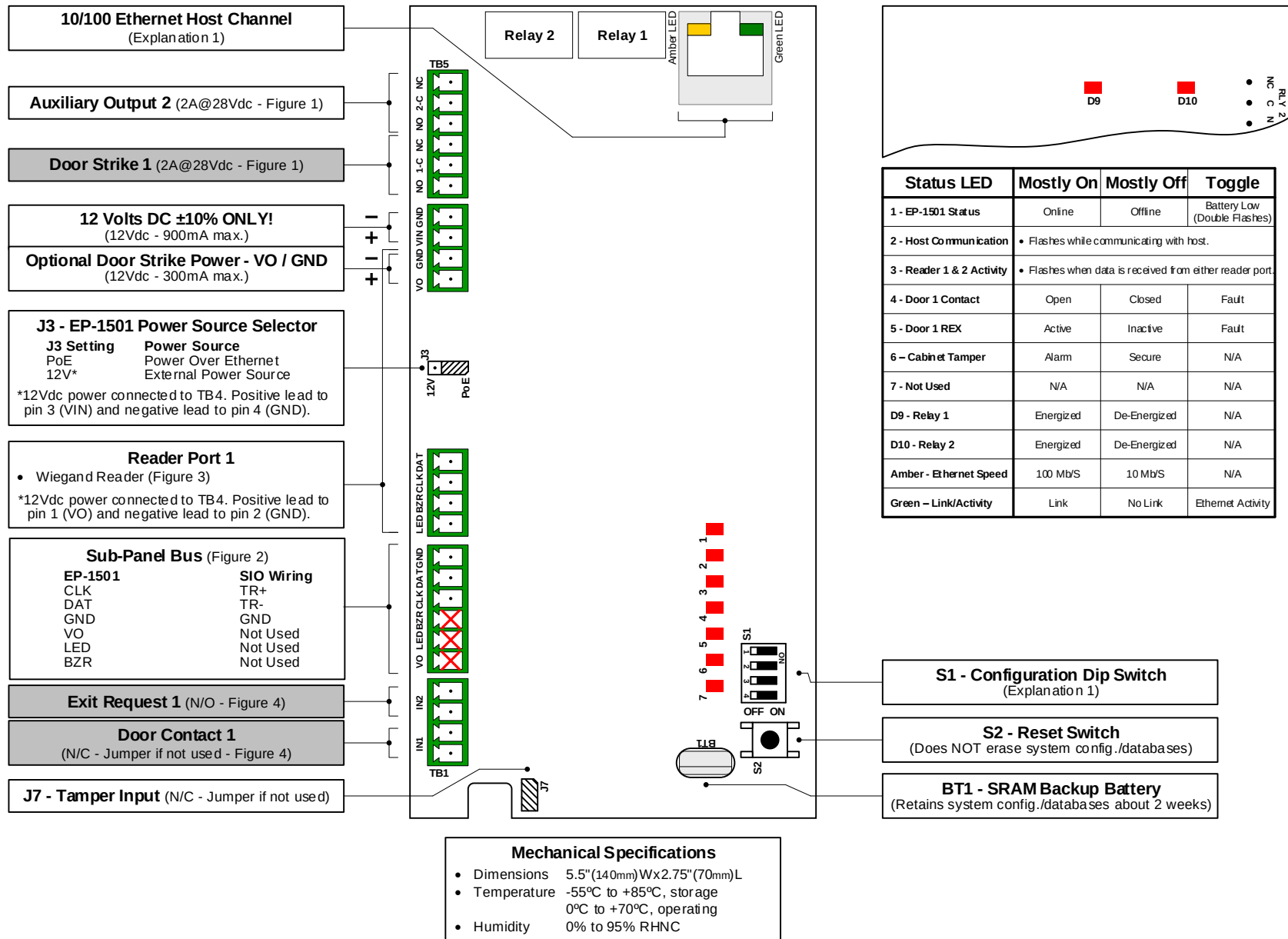


Figure 4: Input Wiring Options



Top View



Configuring Primary 10/100 Ethernet Host Channel For DHCP Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the EP-1501
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **EP-1501**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<MACxx xxxxxx xxxxx>**
If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC00FE500034B.
 - Port Number: **3001**
 - Encryption Settings: **None**

NOTE: If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Configuring Primary 10/100 Ethernet Host Channel For A Static IP Address

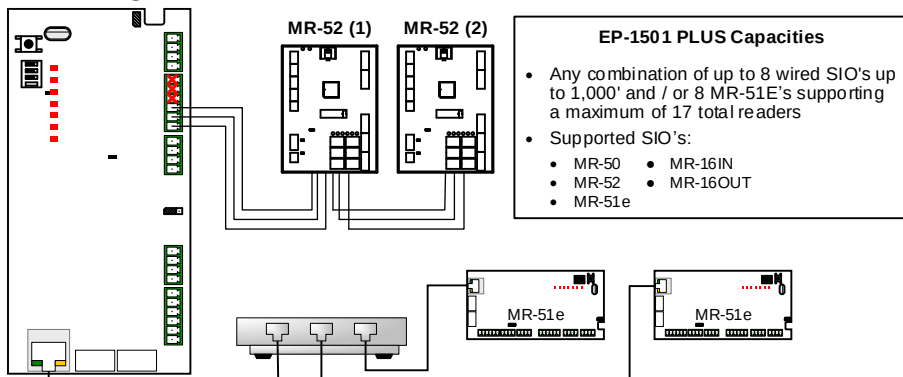
- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the EP-1501
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to EP-1501
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on '**Click Here to Login**'
- Click on '**Continue to this website (not recommended).**'
- Enter a Username of **admin**
- Enter a Password of **password**
- Click '**Network**' from the left hand menu
- Select '**Use Static IP configuration:**'
 - IP Address: **<Set accordingly>**
 - Subnet Mask: **<Set accordingly>**
 - Default Gateway: **<Set accordingly>**
- Click '**OK**'
- Click '**Apply Setting**' from the left hand menu
- Click '**Apply, Reboot**' button
- Wait 60 seconds for EP-1501 to reboot
- Remove power from the EP-1501
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the EP-1501
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **EP-1501**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<Set accordingly>**
 - Port Number: **3001**
 - Encryption Settings: **None**

Figure 1: Output Wiring Options

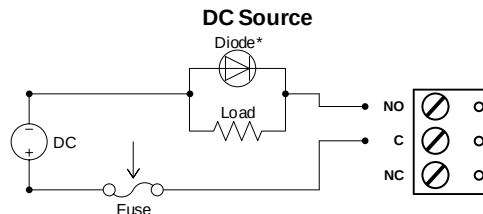
Bulk Erasing The System Configuration And Cardholder Databases

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the EP-1501
 - LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
 - LED 2 flashes at a 2 second rate as memory is being erased
 - WARNING! DO NOT CYCLE POWER**
Erasing memory takes approximately 60 seconds to complete.
 - LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the EP-1501 reboots
- The EP-1501 is now ready to be configured as needed

Figure 2: Sub-Panel Communication

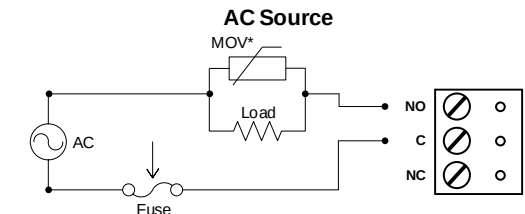


Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.



*Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical



*MOV Selection – Inductive Load

Clamp Voltage > 1.5x Vac RMS
24Vac Strike, Panasonic ERZ-C07DK470 Typical

Figure 3: Reader Port 1

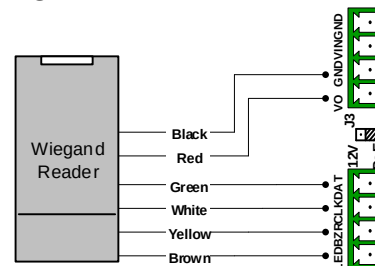
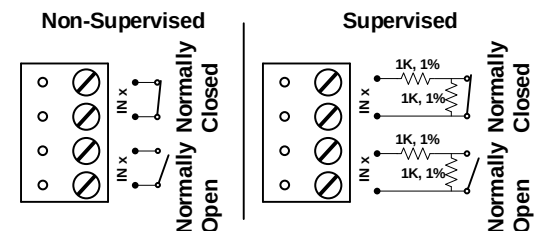
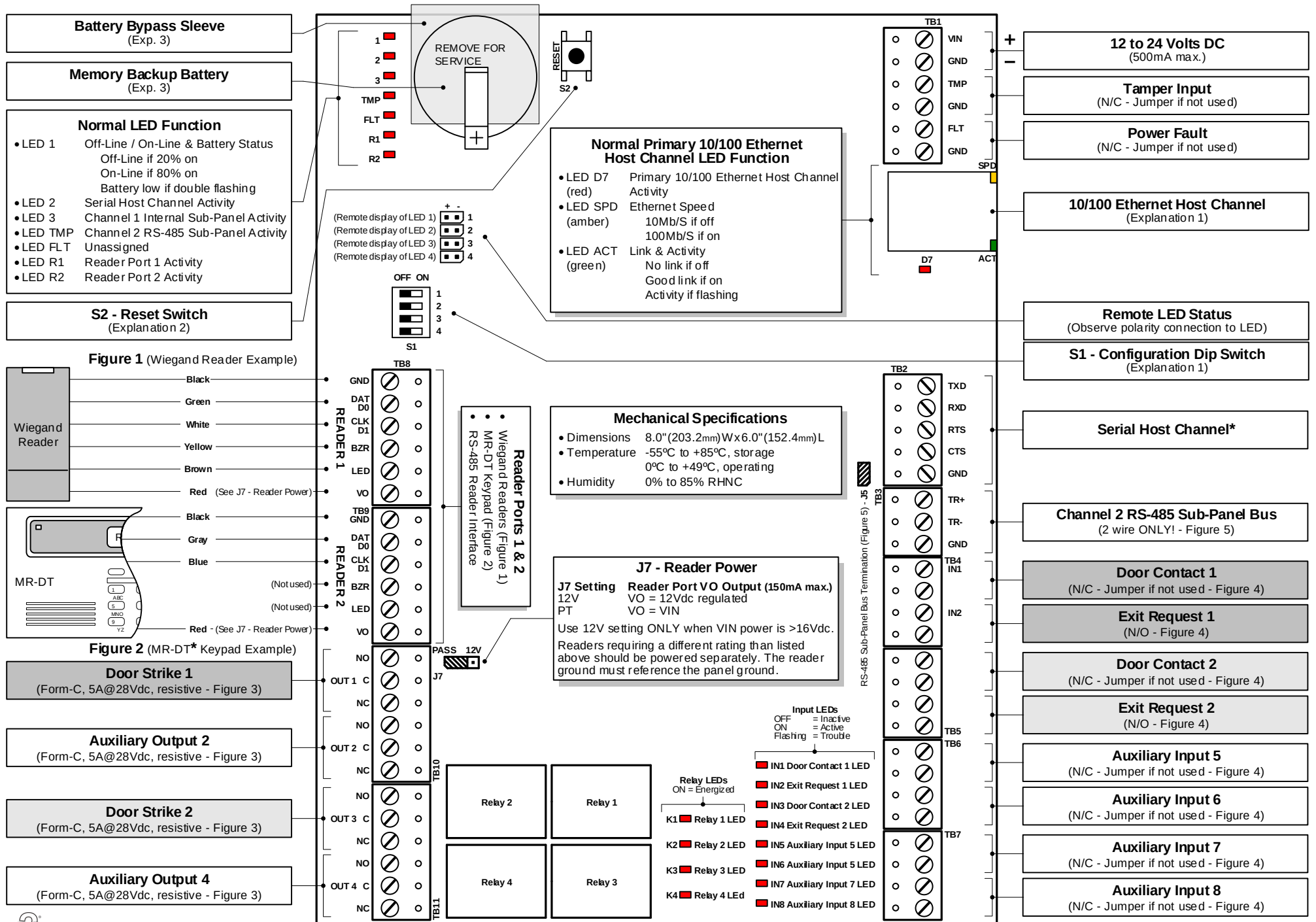


Figure 4: Input Wiring Options





Configuring Primary 10/100 Ethernet Host Channel For DHCP Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the EP-1502
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **EP-1502**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - SIO Port Speed
 - Port 1: **38400**
 - Port 2: **38400**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<MACxxxxxx>**

If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC00FE500034B.

 - Port Number: **3001**
 - Encryption Settings: **None**

NOTE: If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Bulk Erasing The System Configuration And Cardholder Databases

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the EP-1502
 - LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
 - LED 2 flashes at a 2 second rate as memory is being erased
 - WARNING! DO NOT CYCLE POWER**
Erasing memory takes approximately 60 seconds to complete.
 - LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the EP-1502 reboots
- The EP-1502 is now ready to be configured as needed

Explanation 2: S2 - Reset Switch

Pressing the S2 - Reset Switch will cause the EP-1502 to reboot.
This process will NOT erase the system configuration and cardholder databases.

Explanation 3: Memory Backup Battery

If the EP-1502 should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The EP-1502 will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2325, BR2330, or CR2330 lithium battery or equivalent.

For UL installations, refer to NCL-12UL Hardware Installation Manual DOCNCL12UL-R0 for replacement procedures.

NOTE: When setting up or servicing the EP-1502, it is recommended to leave the battery bypass sleeve in place until all system testing is completed. By keeping the battery bypass sleeve in between the battery and the '+' post, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be certain to remove the battery bypass sleeve and store it within the enclosure for future use.

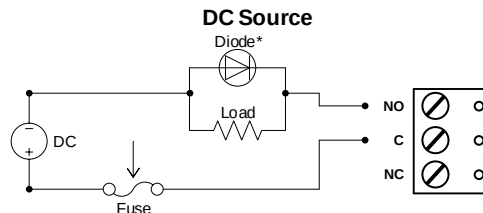
Only Stand-Alone system was evaluated by UL

Configuring Primary 10/100 Ethernet Host Channel For A Static IP Address

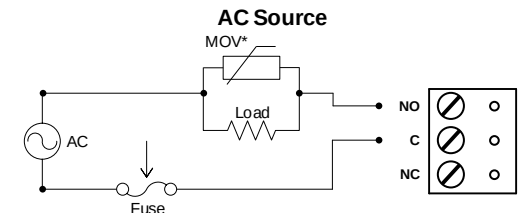
- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the EP-1502
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to EP-1502
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on 'Click Here to Login'
- Click on 'Continue to this website (not recommended).'
- Enter a Username of **admin**
- Enter a Password of **password**
- Click 'Network' from the left hand menu
- Select 'Use Static IP configuration:'
 - IP Address: **<Set accordingly>**
 - Subnet Mask: **<Set accordingly>**
 - Default Gateway: **<Set accordingly>**
- Click 'OK'
- Click 'Apply Setting' from the left hand menu
- Click 'Apply, Reboot' button
- Wait 60 seconds for EP-1502 to reboot
- Remove power from the EP-1502
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the EP-1502
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **EP-1502**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - SIO Port Speed
 - Port 1: **38400**
 - Port 2: **38400**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<Set accordingly>**
 - Port Number: **3001**
 - Encryption Settings: **None**

Figure 3: Output Wiring Options

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.



***Diode Selection – Inductive Load**
Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical



***MOV Selection – Inductive Load**
Clamp Voltage > 1.5x Vac RMS
24Vac Strike, Panasonic ERZ-C07DK470 Typical

Figure 4: Input Wiring Options

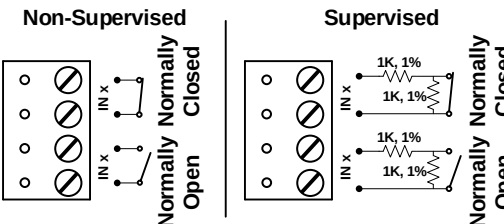
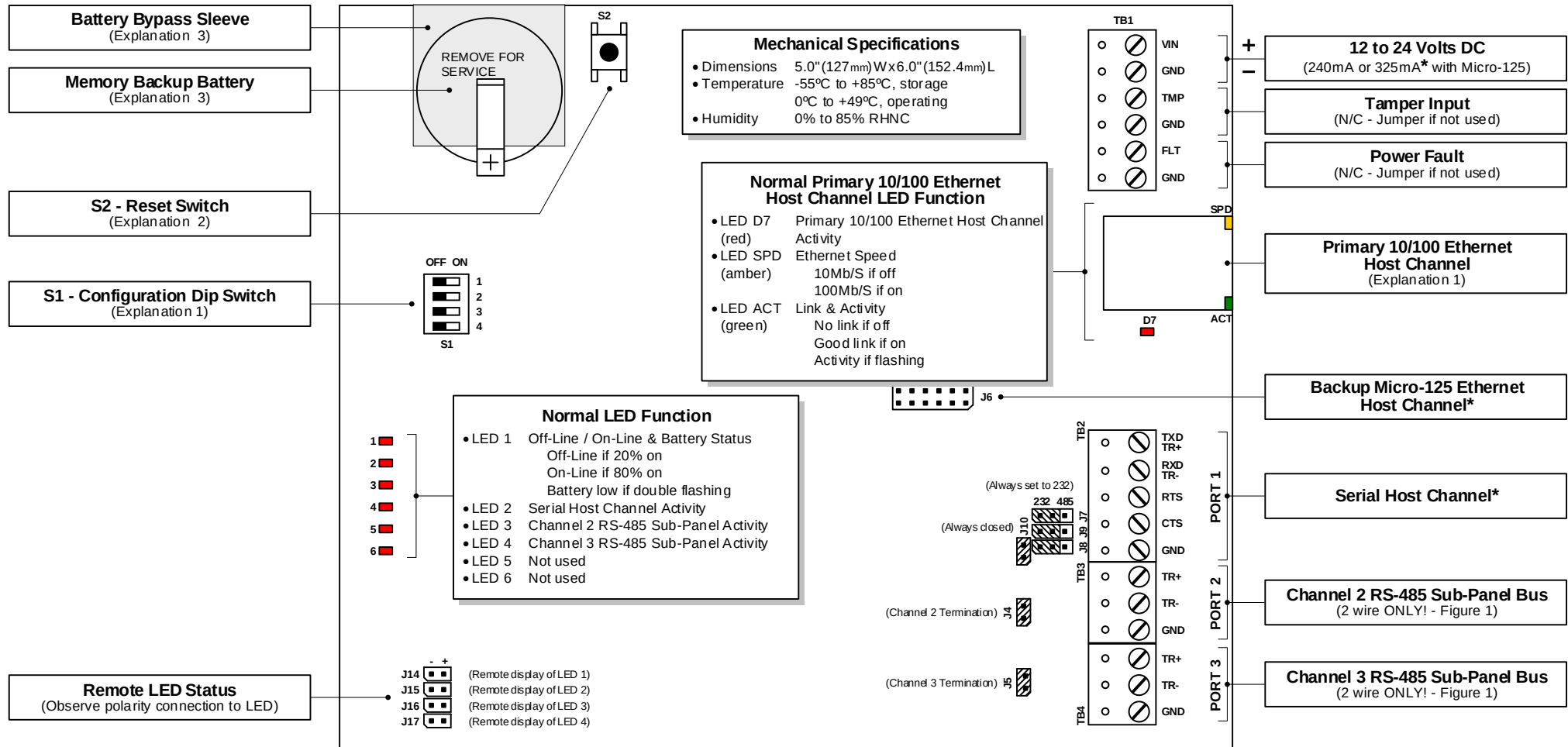


Figure 5: RS-485 Sub-Panel Bus Termination

The EP-1502 has one RS-485 sub-panel bus and must be terminated at the beginning and ending point.
J5 is the termination jumper for the Channel 2 RS-485 Sub-Panel Bus.
(see Two Wire RS-485 Wiring diagram for sub-panel wiring information)

Refer to NCL-12UL Hardware Installation Manual DOCNCL12UL-R1



Configuring Primary 10/100 Ethernet Host Channel For DHCP Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the EP-2500
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal
- Create a new Channel
Channel Enabled: **X**
Protocol Type: **SCP**
Channel Type: **IP Server**
- Create a new SCP
General Tab
Model: **EP-2500**
Device Installed: **X**
SCP Time Zone: **<Set accordingly>**
Initialization String: **<Leave blank>**
Address: **0**
SIO Port Speed
Port 1: **38400**
Port 2: **38400**
Comm Tab
Channel: **<Set to the newly created channel>**
TCP/IP Settings
IP Address: **<MACxxxxxxxx>**
If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC00FE500034B.
Port Number: **3001**
Encryption Settings: **None**

NOTE: If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Bulk Erasing The System Configuration And Cardholder Databases

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the EP-2500
LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
LED 2 flashes at a 2 second rate as memory is being erased
WARNING! DO NOT CYCLE POWER
Erasing memory takes approximately 60 seconds to complete.
LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the EP-2500 reboots
- The EP-2500 is now ready to be configured as needed

Explanation 2: S2 - Reset Switch

Pressing the S2 - Reset Switch will cause the EP-2500 to reboot.
This process will NOT erase the system configuration and cardholder databases.

Configuring Primary 10/100 Ethernet Host Channel For A Static IP Address

- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the EP-2500
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to EP-2500
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on '**Click Here to Login**'
- Click on '**Continue to this website (not recommended).**'
- Enter a Username of **admin**
- Enter a Password of **password**
- Click '**Network**' from the left hand menu
- Select '**Use Static IP configuration:**'
IP Address: **<Set accordingly>**
Subnet Mask: **<Set accordingly>**
Default Gateway: **<Set accordingly>**
- Click '**OK**'
- Click '**Apply Setting**' from the left hand menu
- Click '**Apply, Reboot**' button
- Wait 60 seconds for EP-2500 to reboot
- Remove power from the EP-2500
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the EP-2500
- Run Access It! Universal
- Create a new Channel
Channel Enabled: **X**
Protocol Type: **SCP**
Channel Type: **IP Server**
- Create a new SCP
General Tab
Model: **EP-2500**
Device Installed: **X**
SCP Time Zone: **<Set accordingly>**
Initialization String: **<Leave blank>**
Address: **0**
SIO Port Speed
Port 1: **38400**
Port 2: **38400**
Comm Tab
Channel: **<Set to the newly created channel>**
TCP/IP Settings
IP Address: **<Set accordingly>**
Port Number: **3001**
Encryption Settings: **None**

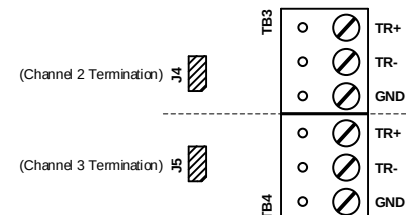
Explanation 3: Memory Backup Battery

If the EP-2500 should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The EP-2500 will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2325, BR2330, or CR2330 lithium battery or equivalent.

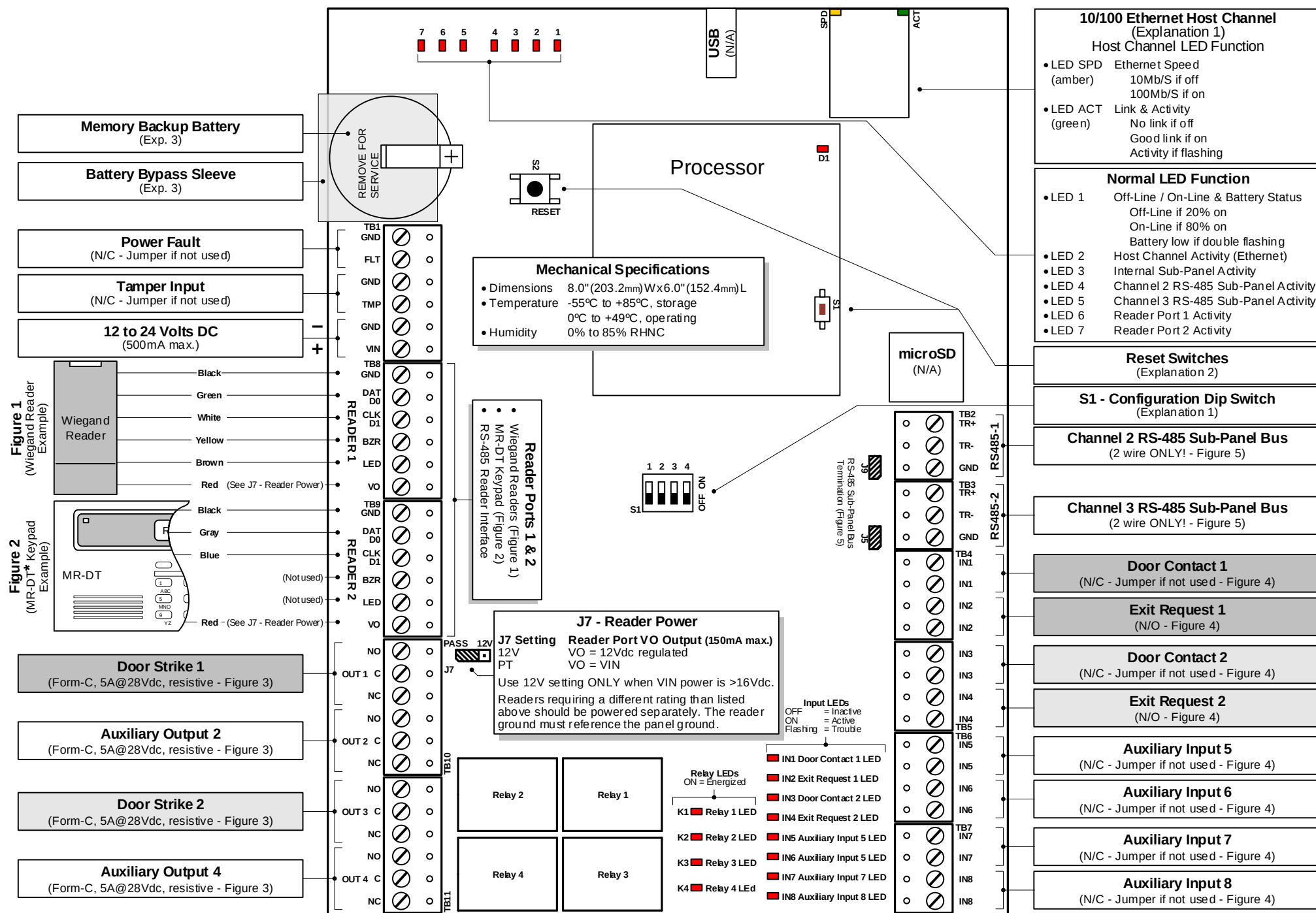
For UL installations, refer to NCL-12UL Hardware Installation Manual DOCNCL12UL-R0 for replacement procedures.

NOTE: When setting up or servicing the EP-2500, it is recommended to leave the battery bypass sleeve in place until all system testing is completed. By keeping the battery bypass sleeve in between the battery and the '+' post, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be certain to remove the battery bypass sleeve and store it within the enclosure for future use.

Figure 1: RS-485 Sub-Panel Bus Termination



The EP-2500 has two distinct 2 wire RS-485 sub-panel buses. Each bus needs to be terminated at both the beginning and ending points.
J4 is the termination jumper for the Channel 2 RS-485 Sub-Panel Bus.
J5 is the termination jumper for the Channel 3 RS-485 Sub-Panel Bus.
(see Two Wire RS-485 Wiring diagram for sub-panel wiring information)



Configuring Primary 10/100 Ethernet Host Channel (DHCP IP)

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the EP-4502
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **EP-4502 xMB**
 - xMB = Default card database size is 32MB, value can be adjusted within EP web browser.
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - SIO Port Speed
 - Port 1: **38400**
 - Port 2: **38400**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<MACxx xxxxx xxxxx>**
 - If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC00FE500034B.
 - Port Number: **3001**
 - Encryption Settings: **None**

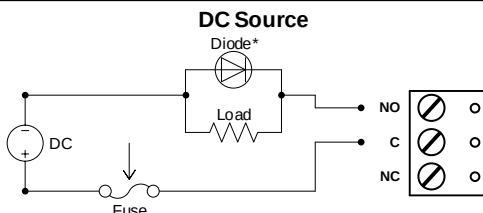
If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Configuring Primary 10/100 Ethernet Host Channel (Static IP)

- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the EP-4502
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to EP-4502
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on 'Click Here to Login'
- Click on 'Continue to this website (not recommended).'
- Enter a Username of **admin** and a Password of **password**
- Click 'Network' from the left hand menu
- Select 'Use Static IP configuration:'
 - IP Address: **<Set accordingly>**
 - Subnet Mask: **<Set accordingly>**
 - Default Gateway: **<Set accordingly>**
- Click 'Accept'
- Click 'Auto-Save' from the left hand menu
 - Card Database Size: **<Set accordingly>**
- Click 'Apply Setting' from the left hand menu
- Click 'Apply, Reboot' button
- Wait 60 seconds for EP-4502 to reboot
- Remove power from the EP-4502
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the EP-4502
- Within Access It! Universal.NET create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Within Access It! Universal.NET create a new SCP
 - General Tab
 - Model: **EP-4502 xMB**
 - xMB = Card database size configured in step 14.
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - SIO Port Speed
 - Port 1: **38400**
 - Port 2: **38400**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<Set accordingly>**
 - Port Number: **3001**
 - Encryption Settings: **None**

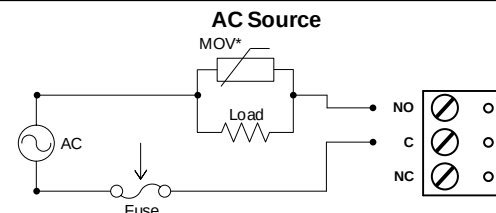
Figure 3: Output Wiring Options

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.



*Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
 Diode Break Down Voltage: 4x Strike Voltage
 12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical



*MOV Selection – Inductive Load

Clamp Voltage > 1.5x Vac RMS
 24Vac Strike, Panasonic ERZ-C07DK470 Typical

Bulk Erasing The System Configuration And Cardholder Databases

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the EP-4502
 - LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
 - LED 2 flashes at a 2 second rate as memory is being erased
 - WARNING! DO NOT CYCLE POWER**
Erasing memory takes approximately 60 seconds to complete.
 - LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the EP-4502 reboots
- The EP-4502 is now ready to be configured as needed

Explanation 2: S2 - Reset Switches

Pressing the S1 or S2 - Reset Switches will cause the EP-4502 to reboot.
 This process will NOT erase the system configuration and cardholder databases.

Explanation 3: Memory Backup Battery

If the EP-4502 should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The EP-4502 will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2325, BR2330, or CR2330 lithium battery or equivalent.

NOTE: When setting up or servicing the EP-4502, it is recommended to leave the battery bypass sleeve in place until all system testing is completed. By keeping the battery bypass sleeve in between the battery and the '+' post, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be certain to remove the battery bypass sleeve and store it within the enclosure for future use.

Figure 4: Input Wiring Options

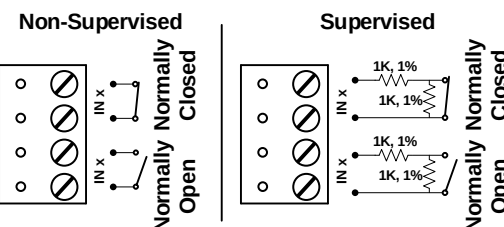
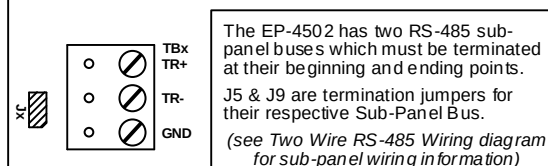
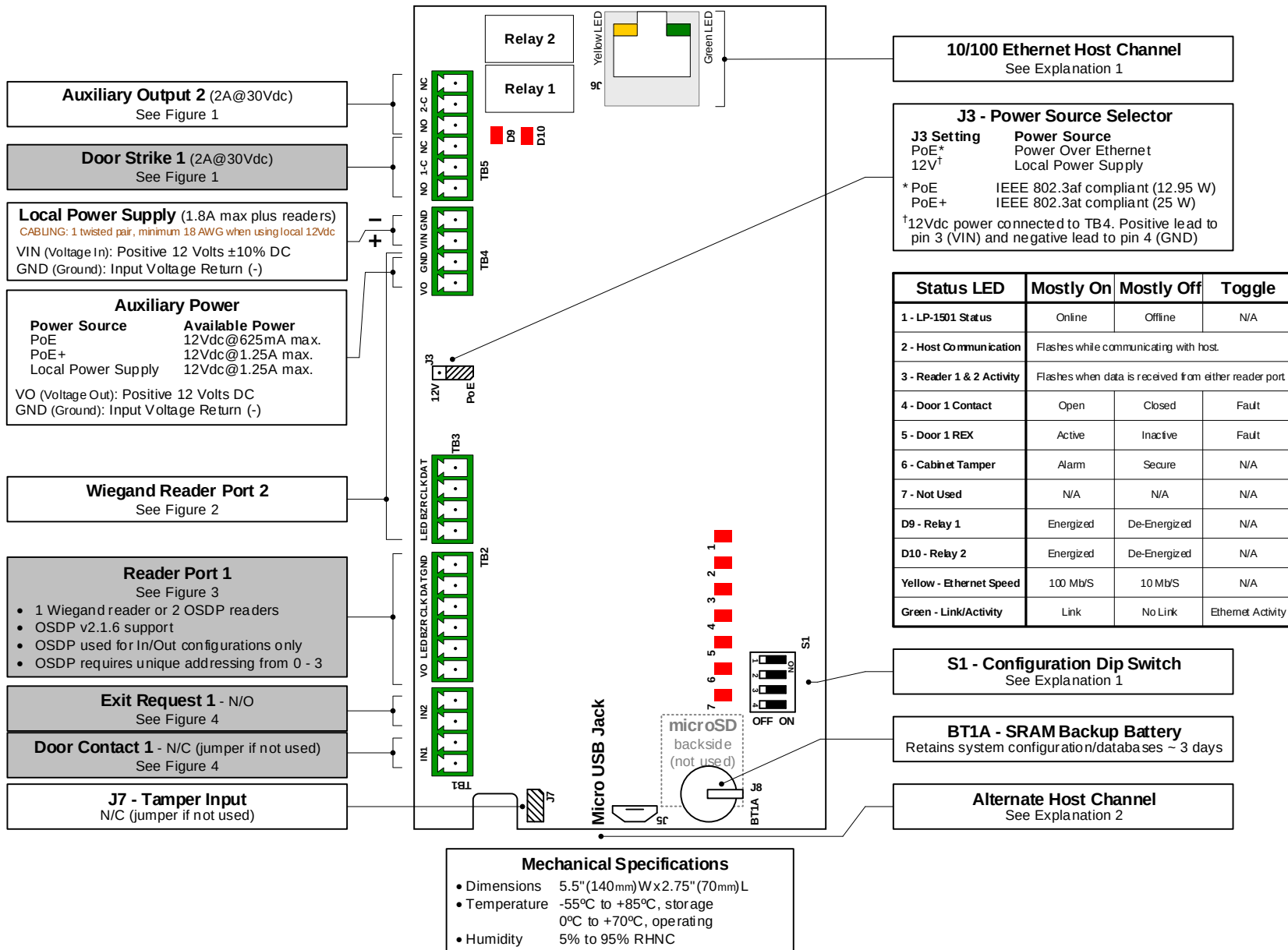


Figure 5: RS-485 Sub-Panel Bus Termination





Configuring 10/100 Ethernet Host Channel For DHCP And DNS Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the LP-1501
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **LP-1501**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<MACxxxxxxxxxxxx>**

If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC00FE500034B.

Port Number: **3001**

Encryption Settings: **None**

If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Configuring 10/100 Ethernet Host Channel For A Static IP Address

- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the LP-1501
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to LP-1501
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on 'Click Here to Login'
- Click on 'Continue to this website (not recommended).'
- Enter a Username of **admin**
- Enter a Password of **password**
- Click 'Network' from the left hand menu
- Select 'Use Static IP configuration:'
 - IP Address: **<Set accordingly>**
 - Subnet Mask: **<Set accordingly>**
 - Default Gateway: **<Set accordingly>**
- Click 'OK'
- Click 'Apply Setting' from the left hand menu
- Click 'Apply, Reboot' button
- Wait 60 seconds for LP-1501 to reboot
- Remove power from the LP-1501
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the LP-1501
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **LP-1501**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<Set accordingly>**

Port Number: **3001**

Encryption Settings: **None**

Bulk Erasing The System Configuration And Cardholder Databases

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the LP-1501
 - LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
 - LED 2 flashes at a 2 second rate as memory is being erased

WARNING! DO NOT CYCLE POWER
Erasing memory takes approximately 60 seconds to complete.

LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the LP-1501 reboots
- The LP-1501 is now ready to be configured as needed

Explanation 2:
Alternate Host Channel

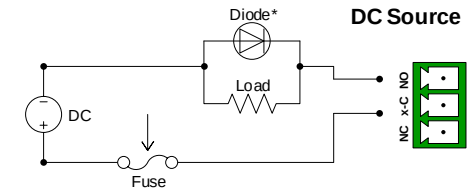
A micro USB Ethernet adapter may be used to enable alternate host channel communication. Alternate host channel communication is only used to communicate to the server machine and not to downstream Ethernet enabled SIOs.

Manufacturer: Pluggable
Model: USB20TGE100

Figure 1: Output Wiring Options

CABLING: As required for the load

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.



*Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

Figure 2: Wiegand Reader Port 2

CABLING: 6-conductor, 18 AWG, 500 feet (150 m) max

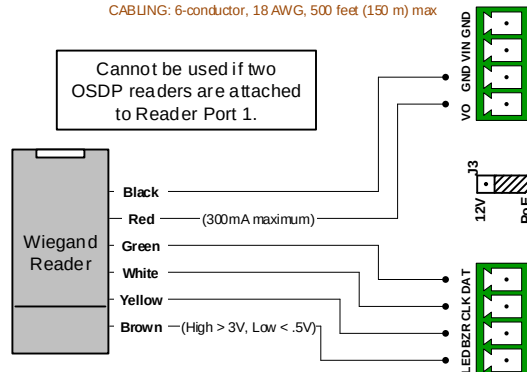
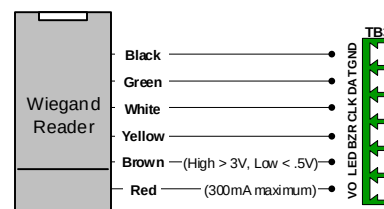


Figure 3: Reader Port 1 Options

Wiegand Reader Example

CABLING: 6-conductor, 18 AWG, 500 feet (150 m) max



OSDP / RS-485 Reader Example

CABLING: 1 twisted pair, 18 AWG for power and 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance, 2,000 feet (610 m) max for communication

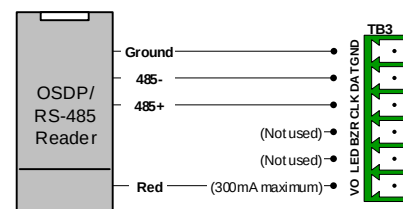
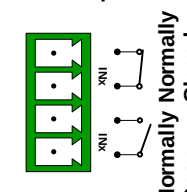


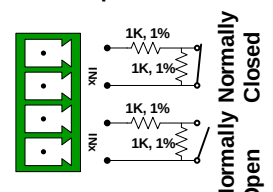
Figure 4: Input Wiring Options

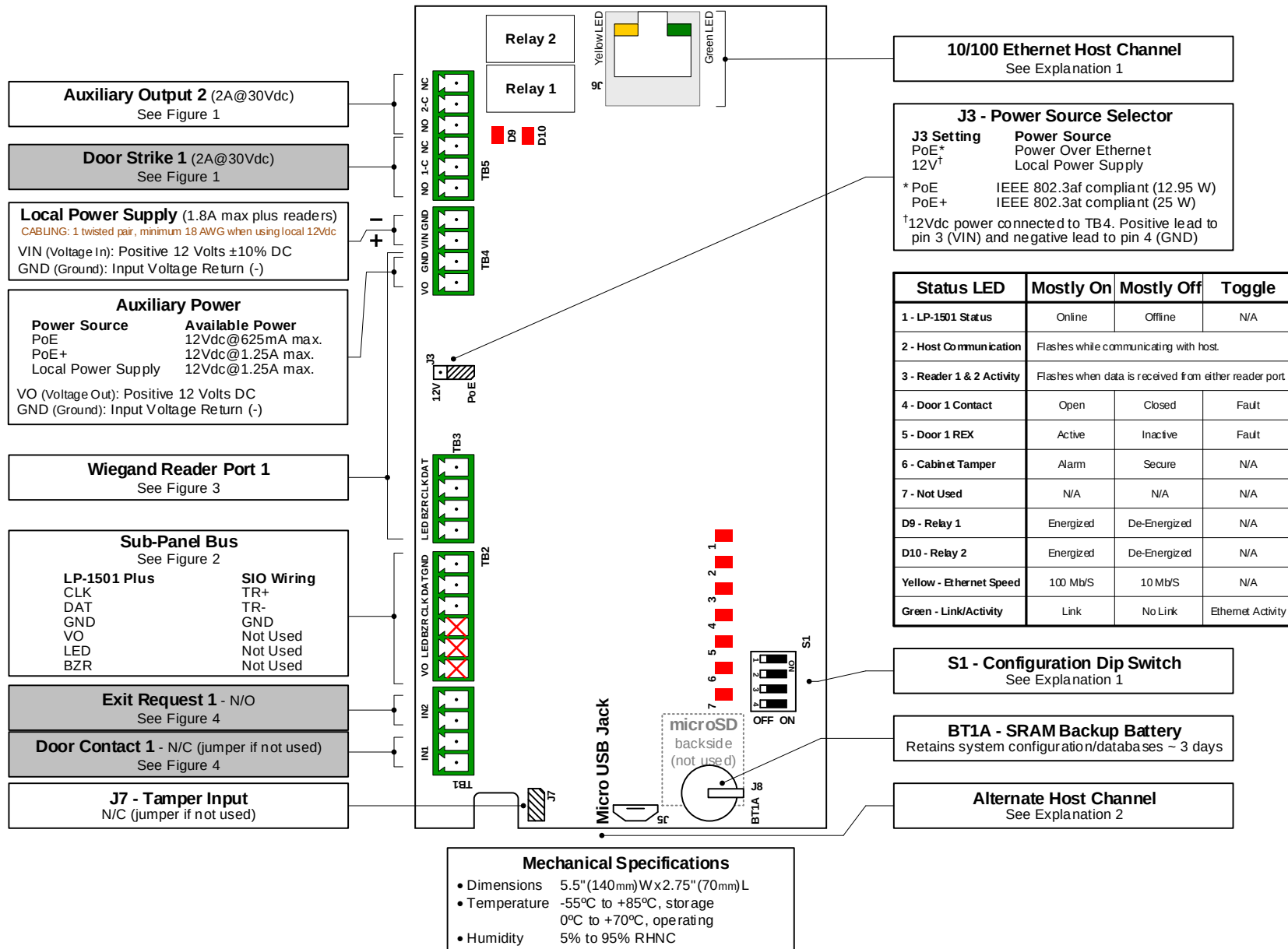
CABLING: 1 twisted pair per input, 30Ω maximum

Non-Supervised



Supervised





Configuring 10/100 Ethernet Host Channel For DHCP And DNS Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the LP-1501 Plus
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **LP-1501 Plus**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<MACxxxxxxxxxxxx>**

If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC00FE50034B.

Port Number: **3001**

Encryption Settings: **None**

If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Configuring 10/100 Ethernet Host Channel For A Static IP Address

- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the LP-1501 Plus
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to LP-1501 Plus
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on 'Click Here to Login'
- Click on 'Continue to this website (not recommended).'
- Enter a Username of **admin**
- Enter a Password of **password**
- Click 'Network' from the left hand menu
- Select 'Use Static IP configuration:'
 - IP Address: **<Set accordingly>**
 - Subnet Mask: **<Set accordingly>**
 - Default Gateway: **<Set accordingly>**
- Click 'OK'
- Click 'Apply Setting' from the left hand menu
- Click 'Apply, Reboot' button
- Wait 60 seconds for LP-1501 Plus to reboot
- Remove power from the LP-1501 Plus
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the LP-1501 Plus
- Run Access It! Universal
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **LP-1501 Plus**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<Set accordingly>**

Port Number: **3001**

Encryption Settings: **None**

Bulk Erasing The System Configuration And Cardholder Databases

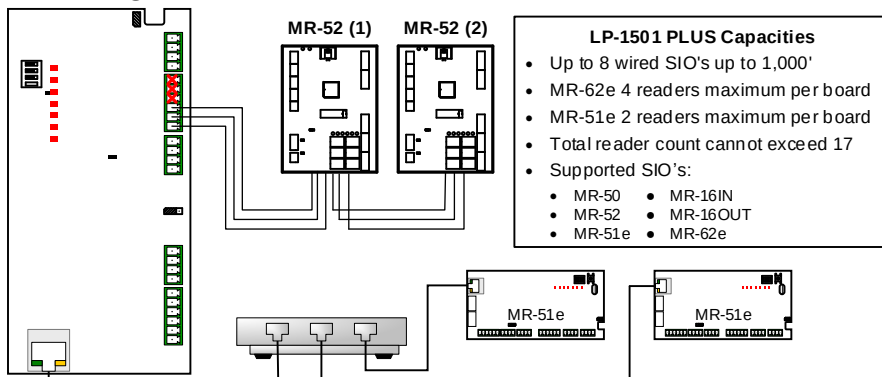
- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the LP-1501 Plus
 - LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
 - LED 2 flashes at a 2 second rate as memory is being erased

WARNING! DO NOT CYCLE POWER
Erasing memory takes approximately 60 seconds to complete.

LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the LP-1501 Plus reboots

- The LP-1501 Plus is now ready to be configured as needed

Figure 2: Sub-Panel Communication



Explanation 2: Alternate Host Channel

A micro USB Ethernet adapter may be used to enable alternate host channel communication. Alternate host channel communication is only used to communicate to the server machine and not to downstream Ethernet enabled SIOs.

Manufacturer: Pluggable
Model: USB20TGE100

Figure 3: Wiegand Reader Port 1

CABLING: 6-conductor, 18 AWG, 500 feet (150 m) max

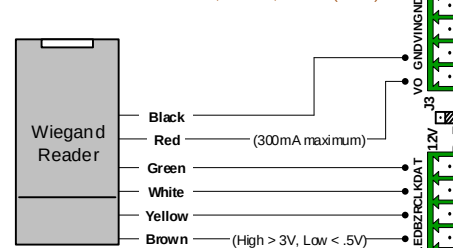
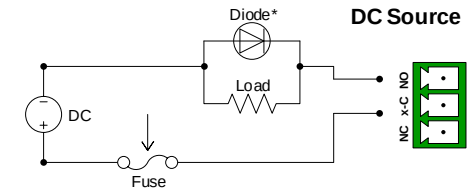


Figure 1: Output Wiring Options

CABLING: As required for the load

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.

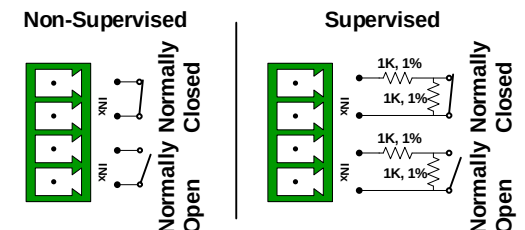


*Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

Figure 4: Input Wiring Options

CABLING: 1 twisted pair per input, 300Ω maximum



Normal LED Function

- LED 1 Off-Line / On-Line and Battery Status
Off-Line if 20% on
On-Line if 80% on
Battery low if double flashing
- LED 2 Host Channel Activity (Ethernet)
- LED 3 Channel 1 Internal Sub-Panel Activity
- LED 4 Channel 2 RS-485 Sub-Panel Activity
- LED 5 Not used
- LED R1 Reader Port 1 Activity
- LED R2 Reader Port 2 Activity

S1 - Configuration Dip Switch
See Explanation 1

Figure 1

Wiegand Reader Example

CABLING: 6-conductor, 18 AWG, 500 feet (150 m) max

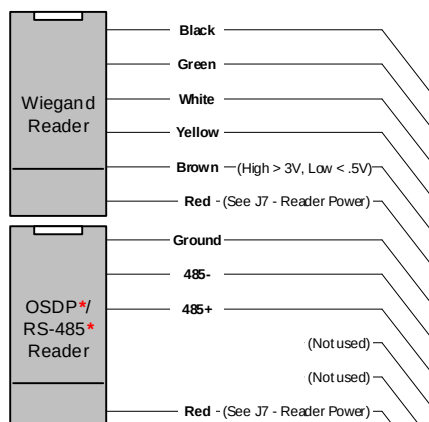


Figure 2

OSDP* / RS-485* Reader Example

CABLING: 1 twisted pair, 18 AWG for power and 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance, 2,000 feet (610 m) max for communication

Door Strike 1

Normally Open Wiring: 5A@30Vdc resistive
Normally Closed Wiring: 3A@30Vdc resistive
See Figure 3

Auxiliary Output 2

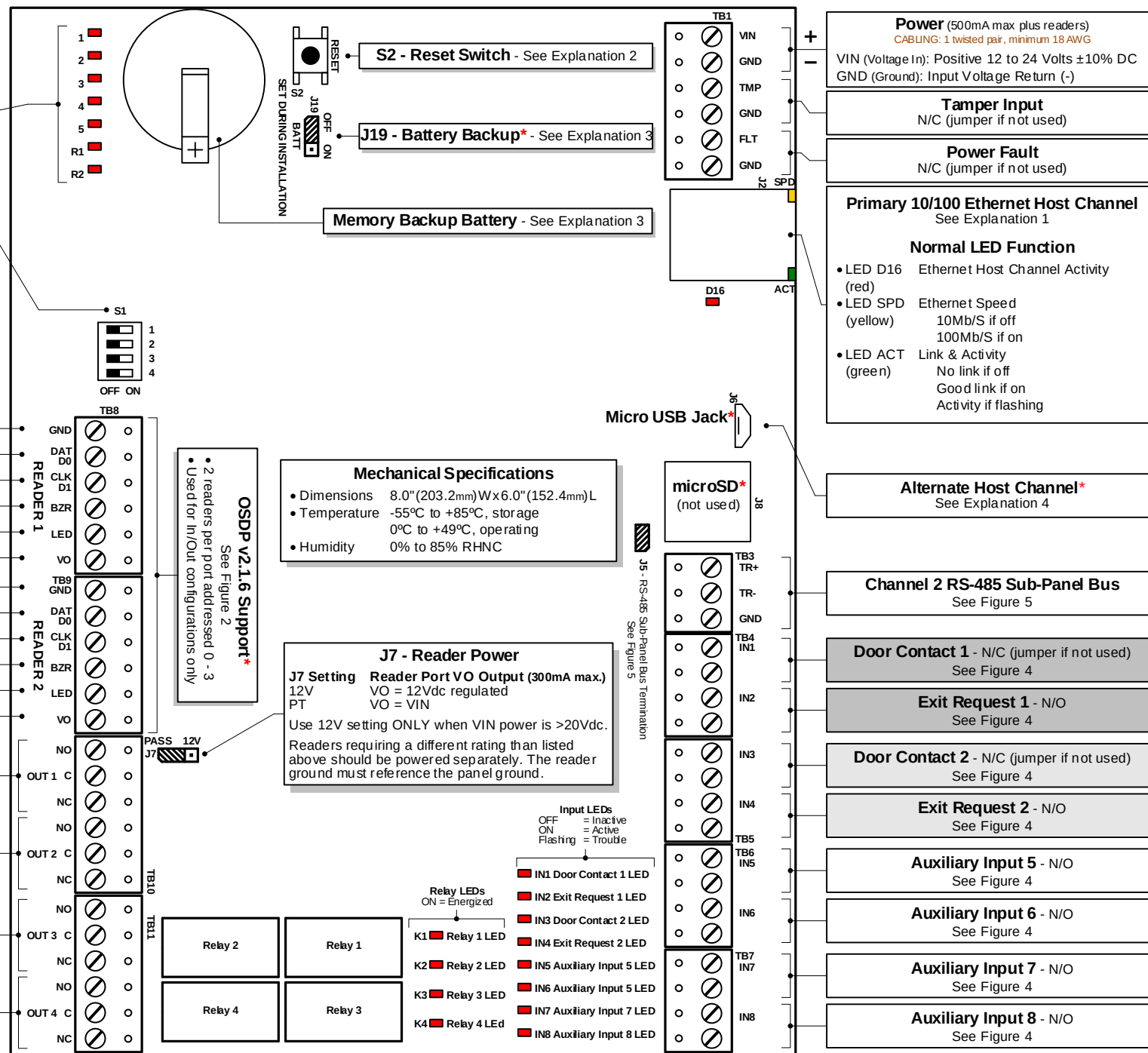
Normally Open Wiring: 5A@30Vdc resistive
Normally Closed Wiring: 3A@30Vdc resistive
See Figure 3

Door Strike 2

Normally Open Wiring: 5A@30Vdc resistive
Normally Closed Wiring: 3A@30Vdc resistive
See Figure 3

Auxiliary Output 4

Normally Open Wiring: 5A@30Vdc resistive
Normally Closed Wiring: 3A@30Vdc resistive
See Figure 3



Configuring Primary 10/100 Ethernet Host Channel For DHCP And DNS Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the LP-1502
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal.NET*
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **LP-1502**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - SIO Port Speed
 - Port 1: **38400**
 - Port 2: **38400**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<MACxx xxxxxx xxxxx>**

If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC000FE500034B.

 - Port Number: **3001**
 - Encryption Settings: **None**

If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Bulk Erasing The System Configuration And Cardholder Databases

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the LP-1502
 - LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
 - LED 2 flashes at a 2 second rate as memory is being erased
 - WARNING! DO NOT CYCLE POWER**
Erasing memory takes approximately 60 seconds to complete.
 - LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the LP-1502 reboots
- The LP-1502 is now ready to be configured as needed

Explanation 2: Reset Switch

Pressing the S2 - Reset Switch will cause the LP-1502 to reboot.
This process will NOT erase the system configuration and cardholder databases.

Explanation 3: Memory Backup Battery

If the LP-1502 should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The LP-1502 will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR 2330 or CR2330 lithium battery or equivalent.

For UL installations, refer to NCL-12UL Hardware Installation Manual DOCNCL12UL-R1 for replacement procedures.

NOTE*: When setting up or servicing the LP-1502, it is recommended to leave the J19 - Battery Backup jumper OFF until all system testing is completed. By keeping the J19 - Battery Backup jumper OFF, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be sure to set the J19 - Battery Backup jumper ON.

Only Stand-Alone system was evaluated by UL

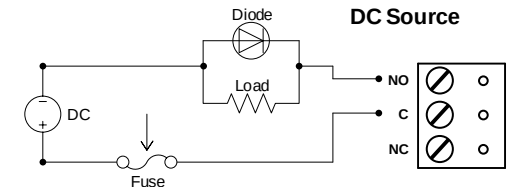
Configuring Primary 10/100 Ethernet Host Channel For A Static IP Address

- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the LP-1502
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to LP-1502
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on 'Click Here to Login'
- Click on 'Continue to this website (not recommended).'
- Enter a Username of **admin**
- Enter a Password of **password**
- Click 'Network' from the left hand menu
- Select 'Use Static IP configuration:'
 - IP Address: **<Set accordingly>**
 - Subnet Mask: **<Set accordingly>**
 - Default Gateway: **<Set accordingly>**
- Click 'OK'
- Click 'Apply Setting' from the left hand menu
- Click 'Apply, Reboot' button
- Wait 60 seconds for LP-1502 to reboot
- Remove power from the LP-1502
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the LP-1502
- Run Access It! Universal.NET*
- Create a new Channel
 - Channel Enabled: **X**
 - Protocol Type: **SCP**
 - Channel Type: **IP Server**
- Create a new SCP
 - General Tab
 - Model: **LP-1502**
 - Device Installed: **X**
 - SCP Time Zone: **<Set accordingly>**
 - Initialization String: **<Leave blank>**
 - Address: **0**
 - SIO Port Speed
 - Port 1: **38400**
 - Port 2: **38400**
 - Comm Tab
 - Channel: **<Set to the newly created channel>**
 - TCP/IP Settings
 - IP Address: **<Set accordingly>**
 - Port Number: **3001**
 - Encryption Settings: **None**

Figure 3: Output Wiring Options

CABLING: As required for the load

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.



Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

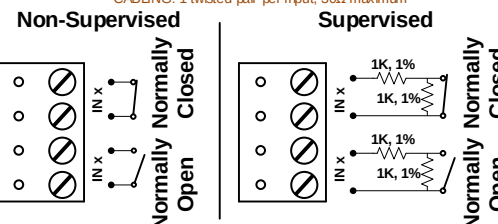
Explanation 4:
Alternate Host Channel*

A micro USB Ethernet adapter may be used to enable alternate host channel communication. Alternate host channel communication is only used to communicate to the server machine and not to downstream Ethernet enabled SIOs.

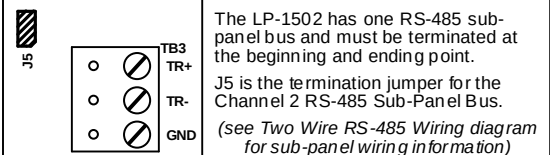
Manufacturer: Plugable
Model: USB20TGE100

Figure 4: Input Wiring Options

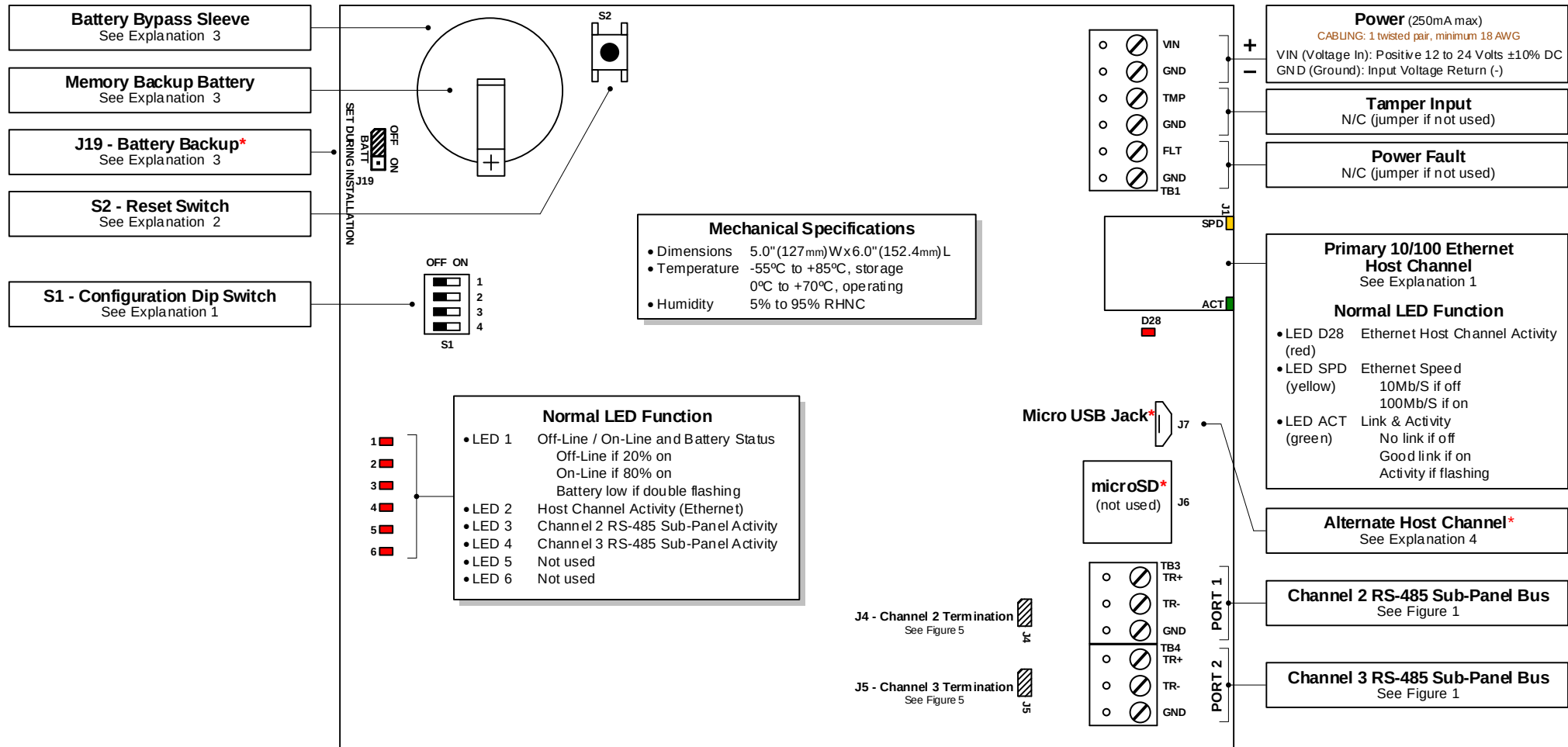
CABLING: 1 twisted pair per input, 30Ω maximum

Figure 5: RS-485 Sub-Panel
Bus Termination

CABLING: 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance



Refer to NCL-12UL Hardware Installation Manual DOCNCL12UL-R1



Configuring Primary 10/100 Ethernet Host Channel For DHCP And DNS Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the LP-2500
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal.NET*
- Create a new Channel
Channel Enabled: **X**
Protocol Type: **SCP**
Channel Type: **IP Server**
- Create a new SCP
General Tab
Model: **LP-2500**
Device Installed: **X**
SCP Time Zone: **<Set accordingly>**
Initialization String: **<Leave blank>**
Address: **0**
SIO Port Speed
Port 1: **38400**
Port 2: **38400**
Comm Tab
Channel: **<Set to the newly created channel>**
TCP/IP Settings
IP Address: **<MACxx xxxxx xxxxx>**
If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC000FE500034B.
Port Number: **3001**
Encryption Settings: **None**

If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Bulk Erasing The System Configuration And Cardholder Databases

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the LP-2500
LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
LED 2 flashes at a 2 second rate as memory is being erased
WARNING! DO NOT CYCLE POWER
Erasing memory takes approximately 60 seconds to complete.
LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the LP-2500 reboots
- The LP-2500 is now ready to be configured as needed

Explanation 2: Reset Switch

Pressing the S2 - Reset Switch will cause the LP-2500 to reboot.
This process will NOT erase the system configuration and cardholder databases.

Configuring Primary 10/100 Ethernet Host Channel For A Static IP Address

- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the LP-2500
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to LP-2500
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on 'Click Here to Login'
- Click on 'Continue to this website (not recommended).'
- Enter a Username of **admin**
- Enter a Password of **password**
- Click 'Network' from the left hand menu
- Select 'Use Static IP configuration:'
IP Address: **<Set accordingly>**
Subnet Mask: **<Set accordingly>**
Default Gateway: **<Set accordingly>**
- Click 'Accept'
- Click 'Apply Setting' from the left hand menu
- Click 'Apply Settings, Reboot' button
- Wait 60 seconds for LP-2500 to reboot
- Remove power from the LP-2500
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the LP-2500
- Run Access It! Universal.NET*
- Create a new Channel
Channel Enabled: **X**
Protocol Type: **SCP**
Channel Type: **IP Server**
- Create a new SCP
General Tab
Model: **LP-2500**
Device Installed: **X**
SCP Time Zone: **<Set accordingly>**
Initialization String: **<Leave blank>**
Address: **0**
SIO Port Speed
Port 1: **38400**
Port 2: **38400**
Comm Tab
Channel: **<Set to the newly created channel>**
TCP/IP Settings
IP Address: **<Set accordingly>**
Port Number: **3001**
Encryption Settings: **None**

Explanation 3: Memory Backup Battery

If the LP-2500 should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The LP-2500 will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2330 or CR2330 lithium battery or equivalent.

For UL installations, refer to NCL-12UL Hardware Installation Manual DOCNCL12UL-R1 for replacement procedures.

NOTE*: When setting up or servicing the LP-2500, it is recommended to leave the J19 - Battery Backup jumper OFF until all system testing is completed. By keeping the J19 - Battery Backup jumper OFF, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be sure to set the J19 - Battery Backup jumper ON.

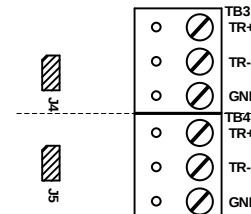
Explanation 4: Alternate Host Channel*

A micro USB Ethernet adapter may be used to enable alternate host channel communication. Alternate host channel communication is only used to communicate to the server machine and not to downstream Ethernet enabled SIOs.

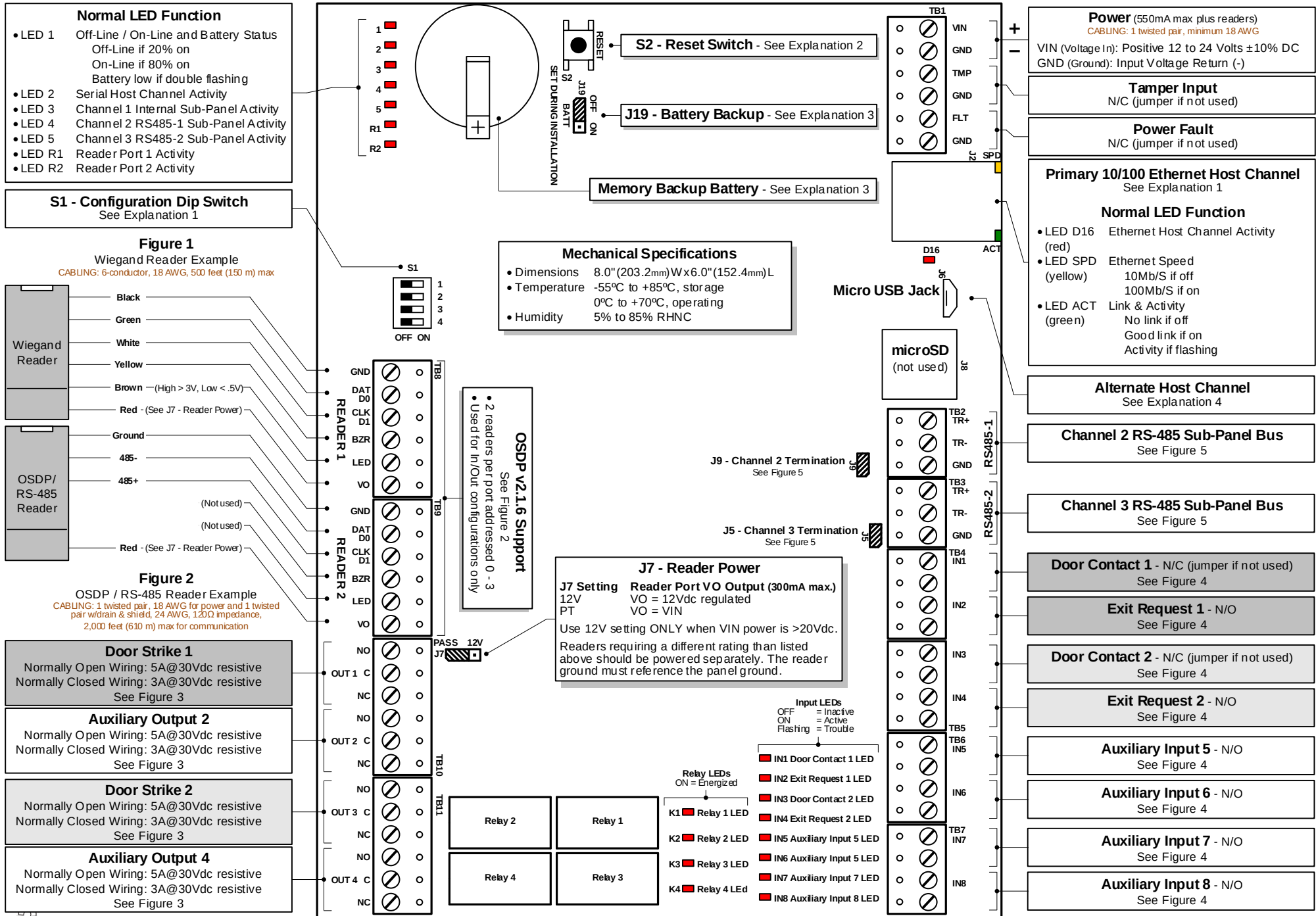
Manufacturer: Plugable
Model: USB20TGE100

Figure 1: RS-485 Sub-Panel Bus Termination

CABLING: 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance



The LP-2500 has two distinct 2 wire RS-485 sub-panel buses. Each bus needs to be terminated at both the beginning and ending points.
J4 is the termination jumper for the Channel 2 RS-485 Sub-Panel Bus.
J5 is the termination jumper for the Channel 3 RS-485 Sub-Panel Bus.
(see Two Wire RS-485 Wiring diagram for sub-panel wiring information)



Configuring Primary 10/100 Ethernet Host Channel For DHCP And DNS Enabled Networks

- Set all S1 - Configuration DIP Switch DIPs OFF
- Apply power to the LP-4502
- Make note of the MAC address located on the side of the RJ45 jack
- Run Access It! Universal
- Create a new Channel
Channel Enabled: **X**
Protocol Type: **SCP**
Channel Type: **IP Server**
- Create a new SCP
General Tab
Model: **LP-4502 xMB**
xMB = Default card database size is 32MB, value can be adjusted within LP web browser.
Device Installed: **X**
SCP Time Zone: **<Set accordingly>**
Initialization String: **<Leave blank>**
Address: **0**
SIO Port Speed
Port 1: **38400**
Port 2: **38400**
Comm Tab
Channel: **<Set to the newly created channel>**
TCP/IP Settings
IP Address: **<MACxx xxxxx xxxxx>**
If the MAC address from step 3 was 00-0F-E5-00-03-4B then the IP Address field must be entered as the Host Name of MAC000FE500034B.
Port Number: **3001**
Encryption Settings: **None**
If unable to resolve the Host Name to an IP Address, contact your local network administrator.

Bulk Erasing The System Configuration And Cardholder Databases

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the LP-4502
LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
LED 2 flashes at a 2 second rate as memory is being erased
WARNING! DO NOT CYCLE POWER
Erasing memory takes approximately 60 seconds to complete.
LEDs 1 & 4 flash for 10 seconds after the memory has been erased, then the LP-4502 reboots
- The LP-L502 is now ready to be configured as needed

Explanation 2: Reset Switch

Pressing the S2 - Reset Switch will cause the LP-4502 to reboot.
This process will NOT erase the system configuration and cardholder databases.

Explanation 3: Memory Backup Battery

If the LP-4502 should experience a complete power loss, the 3 volt lithium memory backup battery provides power to the onboard memory which contains the card file, activity transactions and system configuration data. The LP-4502 will retain all database information during a power failure for up to 60 days. For optimum reliability, the memory backup battery should be replaced yearly using only a type BR2330 or CR2330 lithium battery or equivalent.

NOTE: When setting up or servicing the LP-4502, it is recommended to leave the J19 - Battery Backup jumper OFF until all system testing is completed. By keeping the J19 - Battery Backup jumper OFF, you can be certain that the memory is being completely flushed during power cycles. Upon completion, be sure to set the J19 - Battery Backup jumper ON.

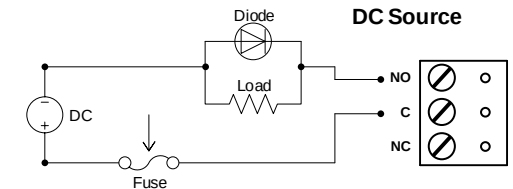
Configuring Primary 10/100 Ethernet Host Channel For A Static IP Address

- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the LP-4502
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to LP-4502
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on 'Click Here to Login'
- Click on 'Continue to this website (not recommended).'
- Enter a Username of **admin** and a Password of **password**
- Click 'Network' from the left hand menu
- Select 'Use Static IP configuration.'
- IP Address: **<Set accordingly>**
Subnet Mask: **<Set accordingly>**
Default Gateway: **<Set accordingly>**
- Click 'Accept'
- Click 'Auto-Save' from the left hand menu
Card Database Size: **<Set accordingly>**
- Click 'Apply Setting' from the left hand menu
- Click 'Apply, Reboot' button
- Wait 60 seconds for LP-4502 to reboot
- Remove power from the LP-4502
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the LP-4502
- Within Access It! Universal.NET create a new Channel
Channel Enabled: **X**
Protocol Type: **SCP**
Channel Type: **IP Server**
- Within Access It! Universal.NET create a new SCP
General Tab
Model: **LP-4502 xMB**
xMB = Card database size configured in step 14.
Device Installed: **X**
SCP Time Zone: **<Set accordingly>**
Initialization String: **<Leave blank>**
Address: **0**
SIO Port Speed
Port 1: **38400**
Port 2: **38400**
Comm Tab
Channel: **<Set to the newly created channel>**
TCP/IP Settings
IP Address: **<Set accordingly>**
Port Number: **3001**
Encryption Settings: **None**

Figure 3: Output Wiring Options

CABLING: As required for the load

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.



Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

Explanation 4: Alternate Host Channel

A micro USB Ethernet adapter may be used to enable alternate host channel communication. Alternate host channel communication is only used to communicate to the server machine and not to downstream Ethernet enabled SIOs.

Manufacturer: Plugable
Model: USB200TGE100

Figure 4: Input Wiring Options

CABLING: 1 twisted pair per input, 30Ω maximum

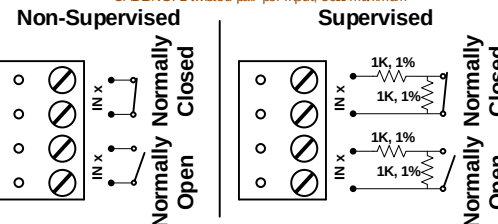
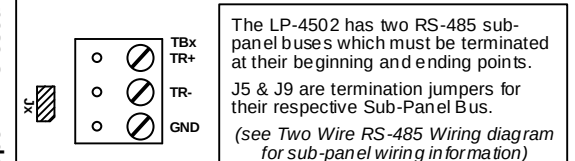


Figure 5: RS-485 Sub-Panel Bus Termination

CABLING: 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance



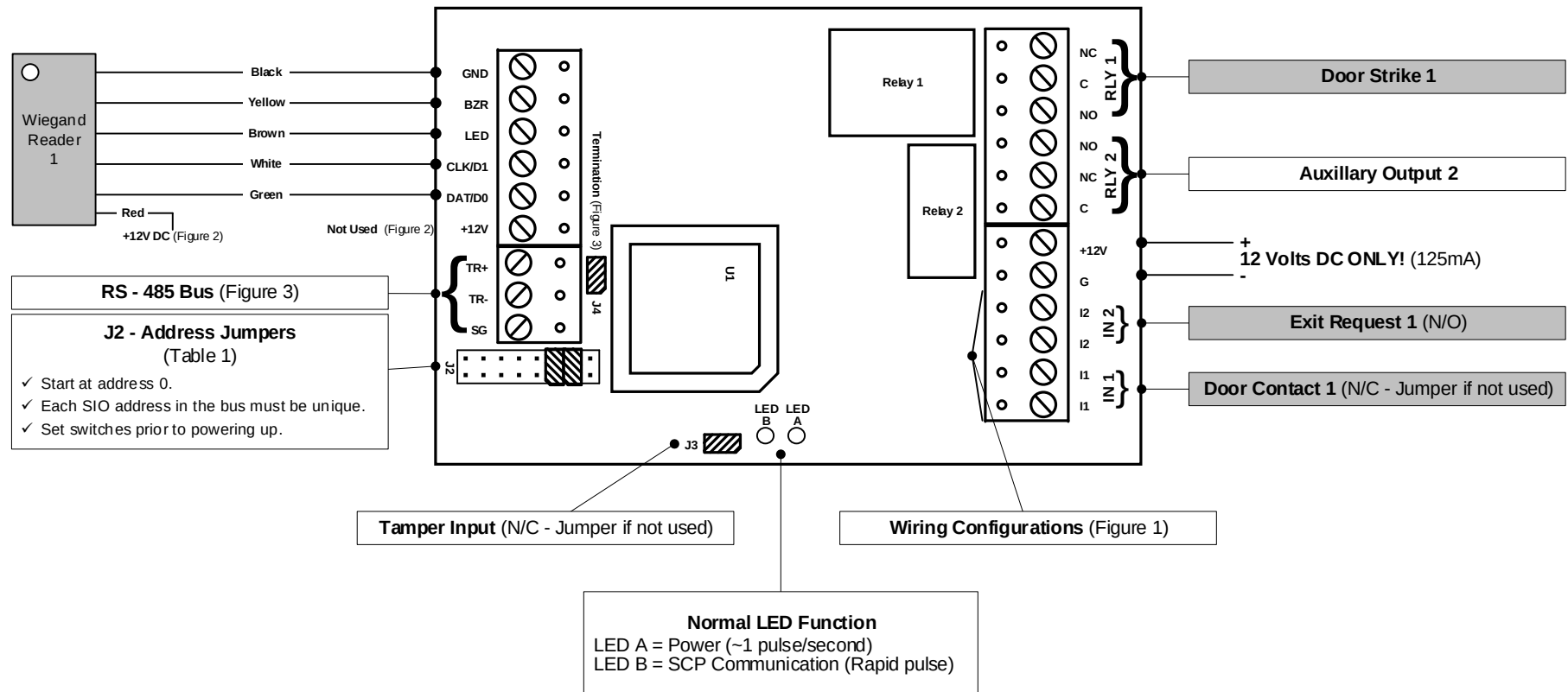


Table 1: J2 - Address Jumpers

Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off
1	On	Off	Off	Off	Off	On	On	Off
2	Off	On	Off	Off	Off	On	On	Off
3	On	On	Off	Off	Off	On	On	Off
4	Off	Off	On	Off	Off	On	On	Off
5	On	Off	On	Off	Off	On	On	Off
6	Off	On	On	Off	Off	On	On	Off
7	On	On	On	Off	Off	On	On	Off
8	Off	Off	Off	On	Off	On	On	Off
9	On	Off	Off	On	Off	On	On	Off
10	Off	On	Off	On	Off	On	On	Off
11	On	On	Off	On	Off	On	On	Off
12	Off	Off	On	On	Off	On	On	Off
13	On	Off	On	On	Off	On	On	Off
14	Off	On	On	On	Off	On	On	Off
15	On	On	On	On	Off	On	On	Off
16	Off	Off	Off	Off	On	On	On	Off
17	On	Off	Off	Off	On	On	On	Off
18	Off	On	Off	Off	On	On	On	Off
19	On	On	Off	Off	On	On	On	Off
20	Off	Off	On	Off	On	On	On	Off
21	On	Off	On	Off	On	On	On	Off
22	Off	On	On	Off	On	On	On	Off
23	On	On	On	Off	On	On	On	Off
24	Off	Off	Off	On	On	On	On	Off
25	On	Off	Off	On	On	On	On	Off
26	Off	On	Off	On	On	On	On	Off
27	On	On	Off	On	On	On	On	Off
28	Off	Off	On	On	On	On	On	Off
29	On	Off	On	On	On	On	On	Off
30	Off	On	On	On	On	On	On	Off
31	On	On	On	On	On	On	On	Off

Figure 1: Wiring Configurations

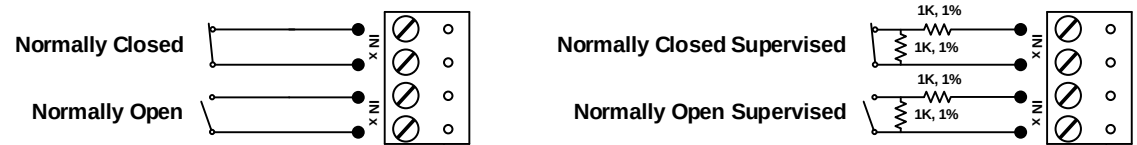


Figure 2: Reader Power Wiring

When wiring readers which require more than 50mA of current, it is recommended to use the default wiring method reflected in the drawing below. This wiring method will work in all cases. Notice the +12V lead (Red) of the reader is directly connected to the power supply. This ensures the full amount of current needed by the reader is being supplied for proper reader functionality. The Ground lead (Black) of the reader must reference the same ground as the MR-50 and may be wired to the GND of the reader wiring block.

In cases where the reader current draw is less than 50mA of current, it is possible to connect the positive lead (Red) of the reader to the (+12V) of the reader wiring block.

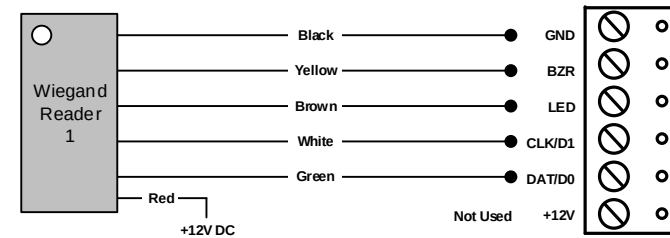
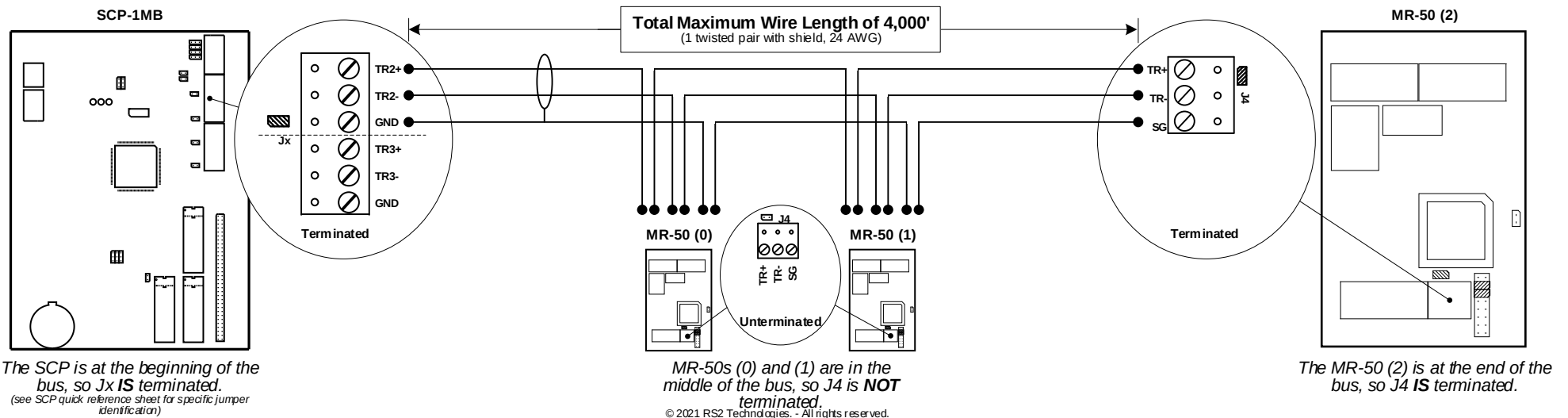
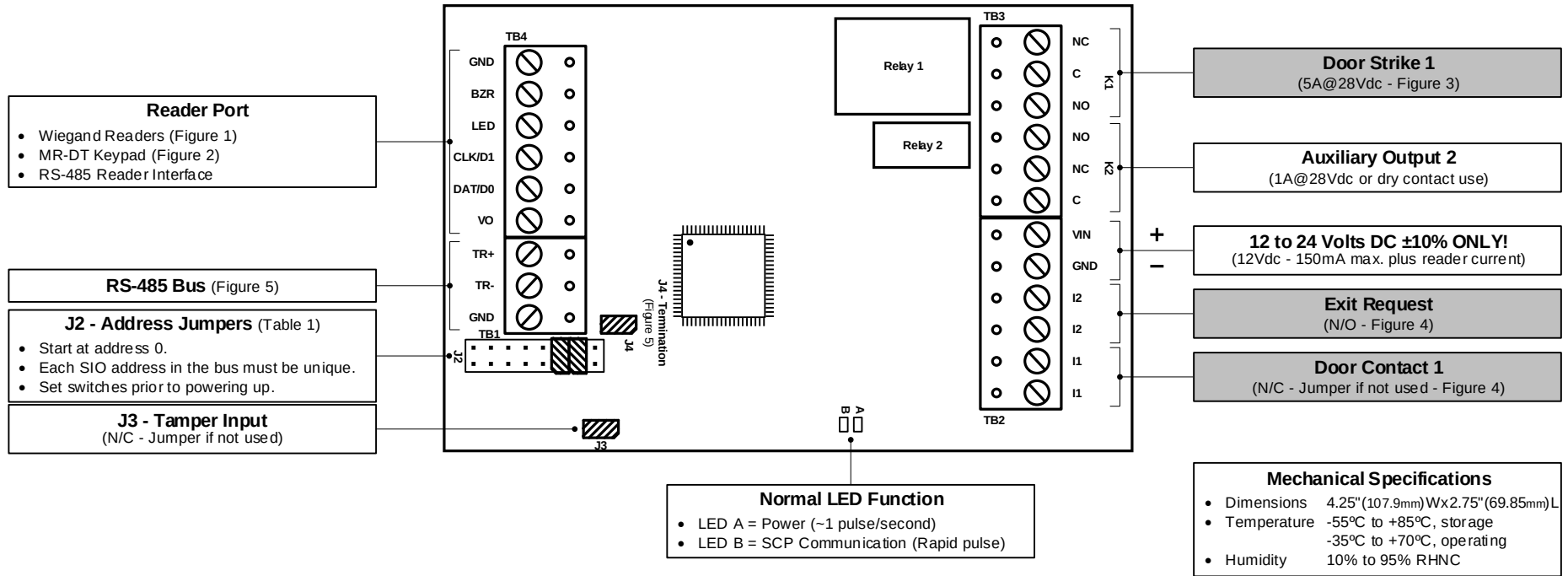


Figure 3: Two Wire RS-485 Wiring





Reader Port Wiring

Reader Port Power VO=VIN

Readers requiring a different rating must be powered separately. The reader ground must reference the MR-50 ground.

Figure 1 (Wiegand Reader Wiring)

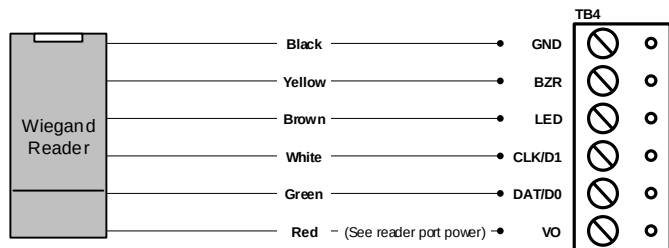


Figure 2 (MR-DT Keypad Wiring)

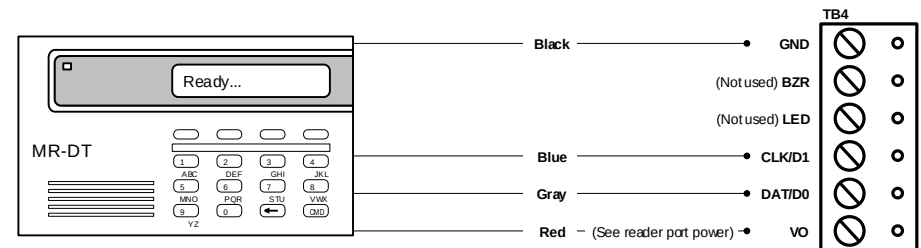


Table 1: J2 - Address Jumpers

Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off
1	On	Off	Off	Off	Off	On	On	Off
2	Off	On	Off	Off	Off	On	On	Off
3	On	On	Off	Off	Off	On	On	Off
4	Off	Off	On	Off	Off	On	On	Off
5	On	Off	On	Off	Off	On	On	Off
6	Off	On	On	Off	Off	On	On	Off
7	On	On	On	Off	Off	On	On	Off
8	Off	Off	Off	On	Off	On	On	Off
9	On	Off	Off	On	Off	On	On	Off
10	Off	On	Off	On	Off	On	On	Off
11	On	On	Off	On	Off	On	On	Off
12	Off	Off	On	On	Off	On	On	Off
13	On	Off	On	On	Off	On	On	Off
14	Off	On	On	On	Off	On	On	Off
15	On	On	On	On	Off	On	On	Off
16	Off	Off	Off	Off	On	On	On	Off
17	On	Off	Off	Off	On	On	On	Off
18	Off	On	Off	Off	On	On	On	Off
19	On	On	Off	Off	On	On	On	Off
20	Off	Off	On	Off	On	On	On	Off
21	On	Off	On	Off	On	On	On	Off
22	Off	On	On	Off	On	On	On	Off
23	On	On	On	Off	On	On	On	Off
24	Off	Off	Off	On	On	On	On	Off
25	On	Off	Off	On	On	On	On	Off
26	Off	On	Off	On	On	On	On	Off
27	On	On	Off	On	On	On	On	Off
28	Off	Off	On	On	On	On	On	Off
29	On	Off	On	On	On	On	On	Off
30	Off	On	On	On	On	On	On	Off
31	On	On	On	On	On	On	On	Off

Figure 3: Output Wiring Configurations

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.

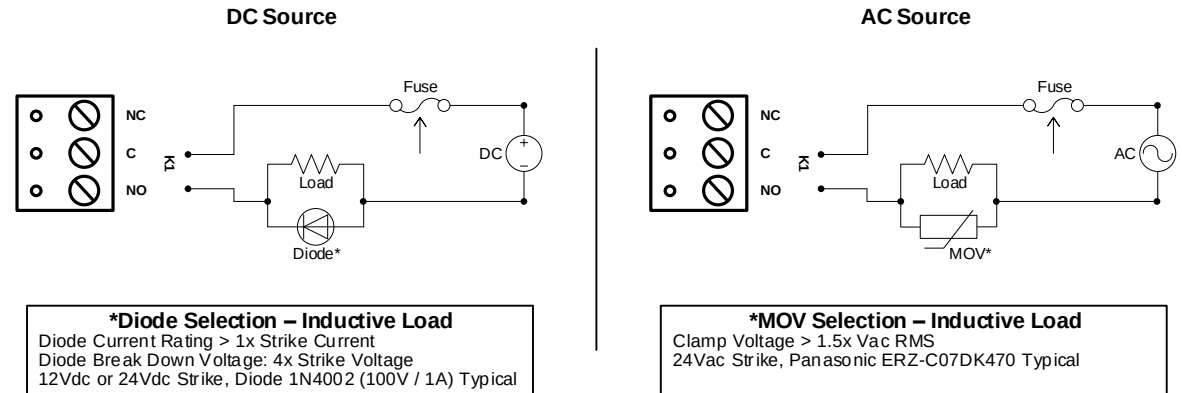


Figure 4: Input Wiring Configurations

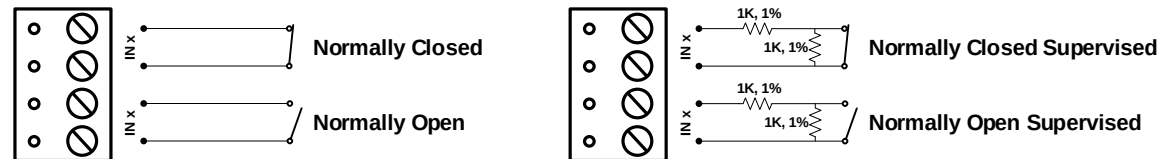
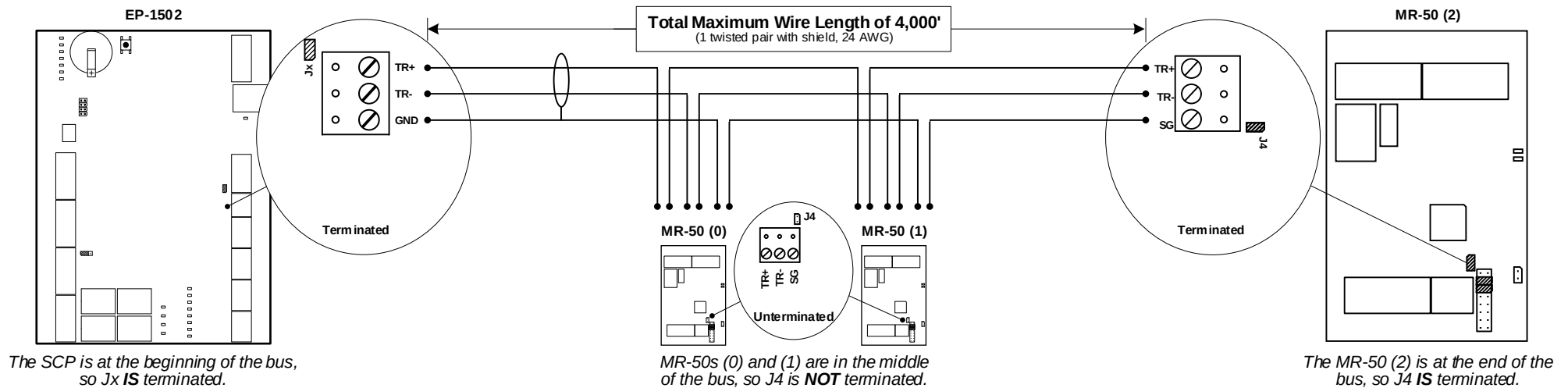
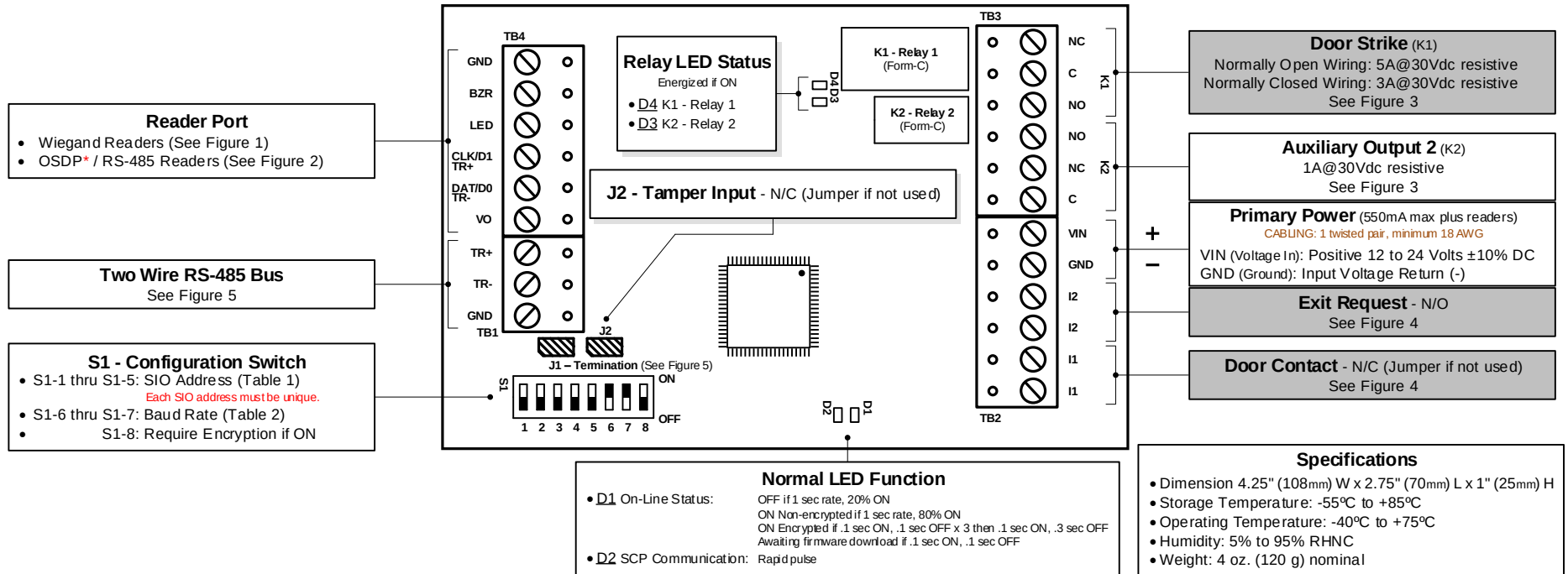


Figure 5: Two Wire RS-485 Wiring





Reader Port Wiring

Reader Port Power

The input power is passed through to the reader terminal strip and is available for powering a reader. Readers that require different voltage requirements must be powered separately. Care must be taken to insure that the input voltage is within the voltage range of the reader. The reader power output terminal, TB4-6 (VO), is not current limited.

Figure 1

Wiegand Reader Example

CABLING: 6-conductor, 18 AWG, 500 feet (150 m) max

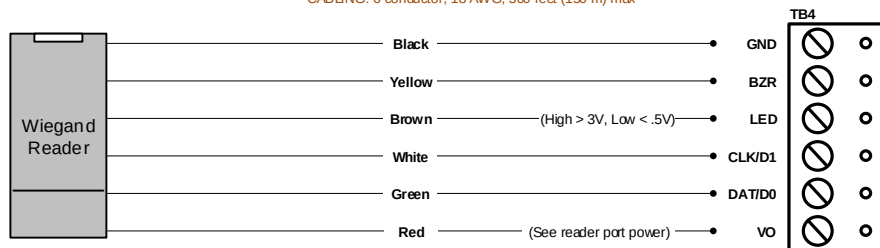
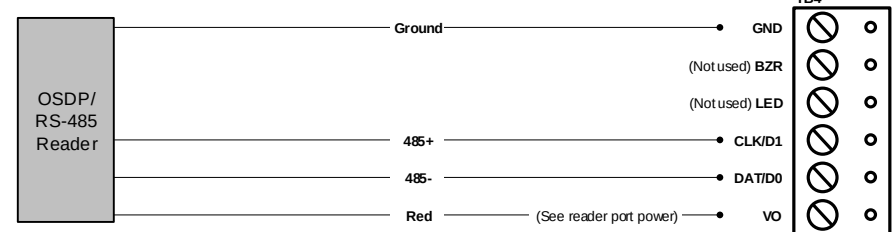


Figure 2

OSDP* / RS-485 Reader Example

CABLING: 1 twisted pair, 18 AWG for power and 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance, 2,000 feet (610 m) max for communication



*OSDP v2.1.6 Support

- 2 readers per port addressed 0 – 3
- Used for In/Out configurations only

Table 1: SIO Address

Address	S1-1	S1-2	S1-3	S1-4	S1-5	Address	S1-1	S1-2	S1-3	S1-4	S1-5
0	OFF	OFF	OFF	OFF	OFF	16	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	17	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	18	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	19	ON	ON	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	20	OFF	OFF	ON	OFF	ON
5	ON	OFF	ON	OFF	OFF	21	ON	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF	OFF	22	OFF	ON	ON	OFF	ON
7	ON	ON	ON	OFF	OFF	23	ON	ON	ON	OFF	ON
8	OFF	OFF	OFF	ON	OFF	24	OFF	OFF	OFF	ON	ON
9	ON	OFF	OFF	ON	OFF	25	ON	OFF	OFF	ON	ON
10	OFF	ON	OFF	ON	OFF	26	OFF	ON	OFF	ON	ON
11	ON	ON	OFF	ON	OFF	27	ON	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	28	OFF	OFF	ON	ON	ON
13	ON	OFF	ON	ON	OFF	29	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	30	OFF	ON	ON	ON	ON
15	ON	ON	ON	ON	OFF	31	ON	ON	ON	ON	ON

Table 2: Baud Rate

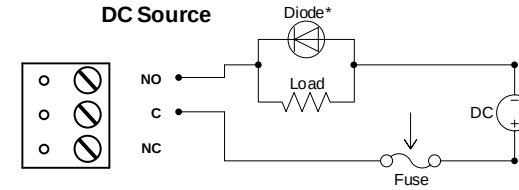
S1-6	S1-7	Baud Rate
ON*	ON*	38,400 bps
OFF	ON	19,200 bps
ON	OFF	9,600 bps
OFF	OFF	115,200 bps

*Access I! Universal.NET default value.

Figure 3: Output Wiring Options

CABLING: As required for the load

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.



*Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

Figure 4: Input Wiring Options

CABLING: 1 twisted pair per input, 30Ω maximum

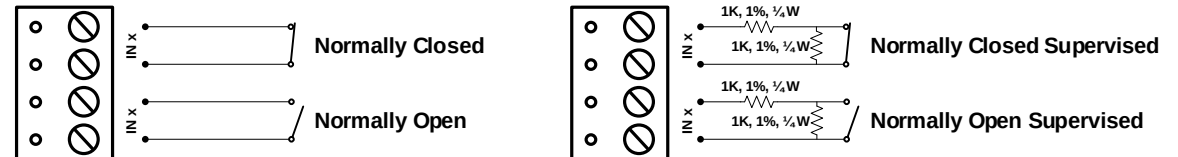
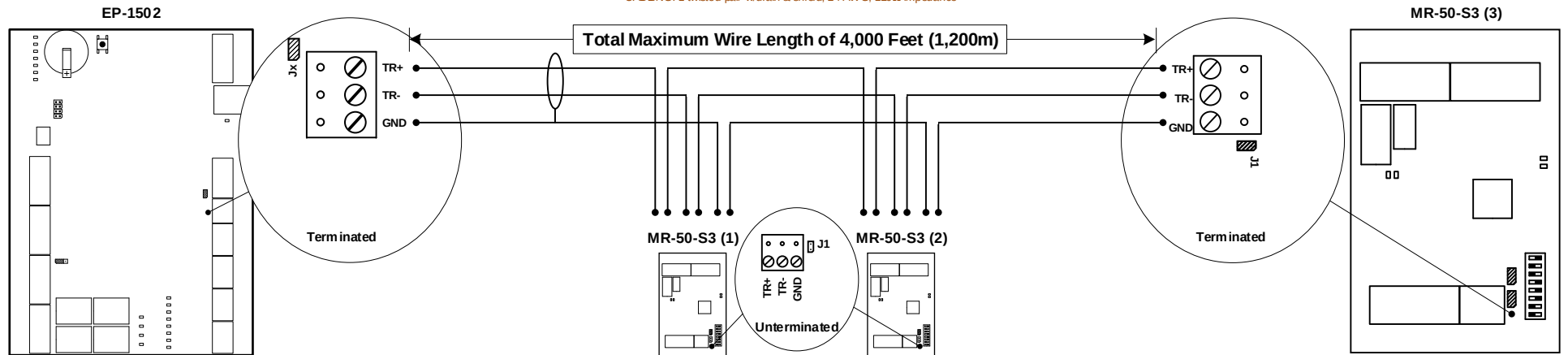


Figure 5: Two Wire RS-485 Wiring

CABLING: 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance

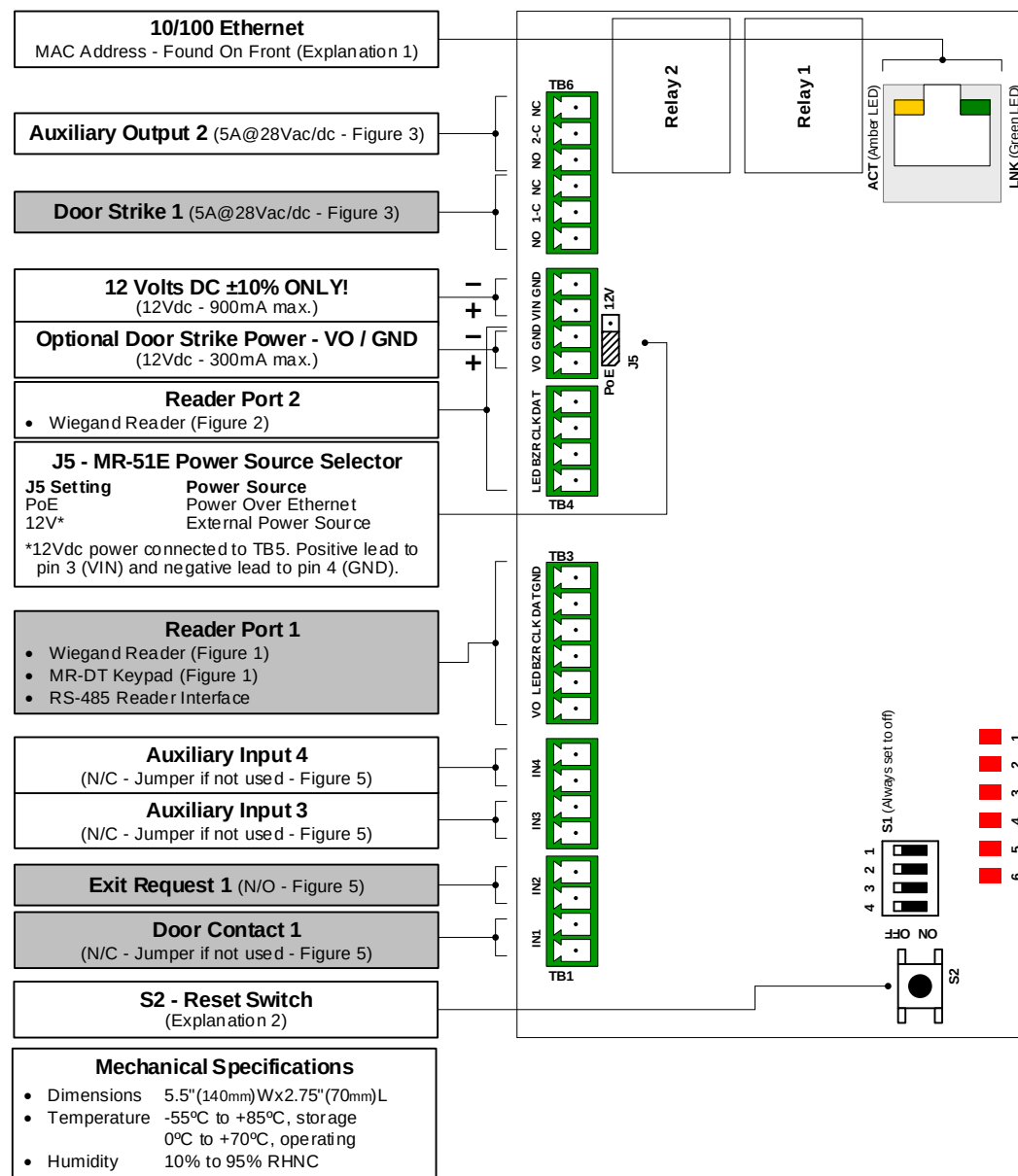


The SCP is at the beginning of the bus, so Jx IS terminated.
(see SCP quick reference for specific jumper identification)

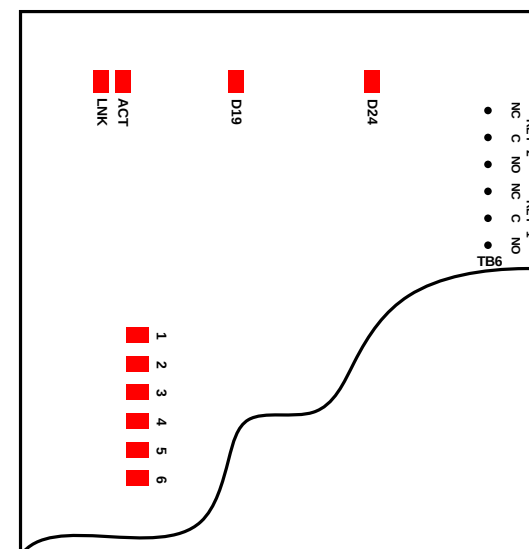
MR-50-S3s (1) and (2) are in the middle of the bus, so J1 is NOT terminated.

The MR-50-S3 (3) is at the end of the bus, so J1 IS terminated.

Top View



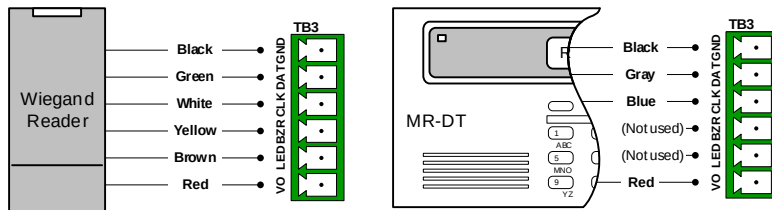
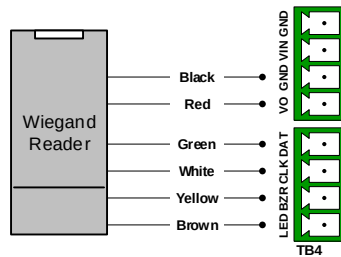
Bottom View



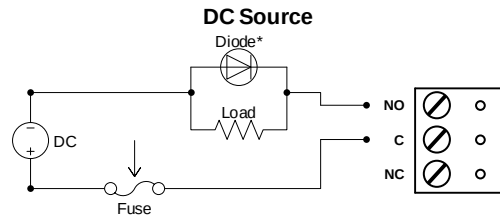
Status LED	Mostly On	Mostly Off	Toggle
1 - Awaiting IP Address	N/A	Offline	N/A
1 - Obtained IP Address	• Four (4) pulses per second when online.		
2 - Awaiting IP Address	N/A	N/A	Awaiting IP Address
2 - Obtained IP Address	• Flashes when data is received from the SCP.		
3 - Reader 1 & 2 Activity	• Flashes when data is received from either reader port.		
4 - Door 1 Contact	Open	Closed	Fault
5 - Door 1 REX	Active	Inactive	Fault
6 - Auxiliary Input 3	Open	Closed	Fault
D19 - Relay 1	Energized	De-Energized	N/A
D24 - Relay 2	Energized	De-Energized	N/A
ACT - Network Activity	Activity	No Activity	N/A
LNK - Network Link	Link	No Link	N/A

MR-51E Requirements

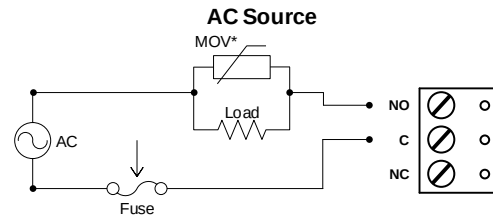
- Compatible Processors EP-2500 or EP-1502
Minimum Firmware: 1.107
- Minimum MR-51E Firmware 1.2.2

Figure 1: Reader Port 1**Figure 2: Reader Port 2****Figure 3: Output Wiring Options**

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.

***Diode Selection – Inductive Load**

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

***MOV Selection – Inductive Load**

Clamp Voltage > 1.5x Vac RMS
24Vac Strike, Panasonic ERZ-C07DK470 Typical

Explanation 1: 10/100 Ethernet**Configuring Primary 10/100 Ethernet Host Channel**

1. Set all S1 - Configuration DIP Switch DIPs OFF
2. Apply power to the MR-51E
3. Run Access It! Universal
4. From the File Menu, select Go|Main|Hardware
5. Click the plus sign (+) to expand the SCPs
6. Click the plus sign (+) to expand the SCP the MR-51E will be installed on
7. Select the SIOs branch, not the plus sign(+)
8. A list of all available SIOs appear in the pane to the right of the hardware tree
9. Edit the first uninstalled SIO from the right hand pane

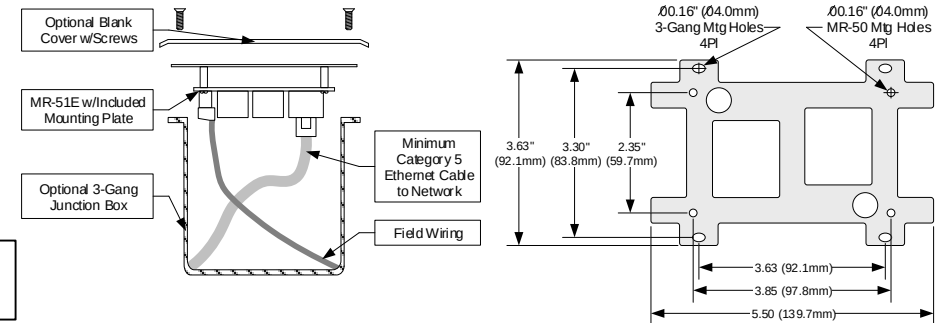
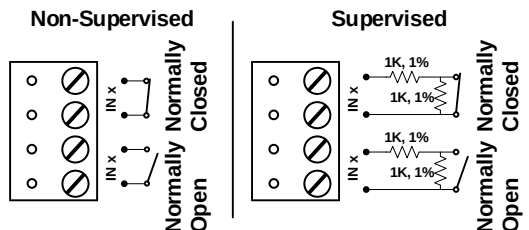
General TabModel: **MR-51E**Device Installed: **X**IP Address: **<Enter IP Address to be assigned to MR-51E>**MAC Address: **<MAC Address of MR-51E>**

10. Click Save button

NOTE: The IP Address is downloaded to the EP controller, then automatically assigned to the MR-51E when power is applied. It is strongly suggested MR-51E is attached to the same physical switch as the EP controller

Explanation 2: S2 - Reset Switch

Pressing the S2 - Reset Switch will cause the MR-51E to reset.

Figure 4: Mounting Information**Figure 5: Input Wiring Options**

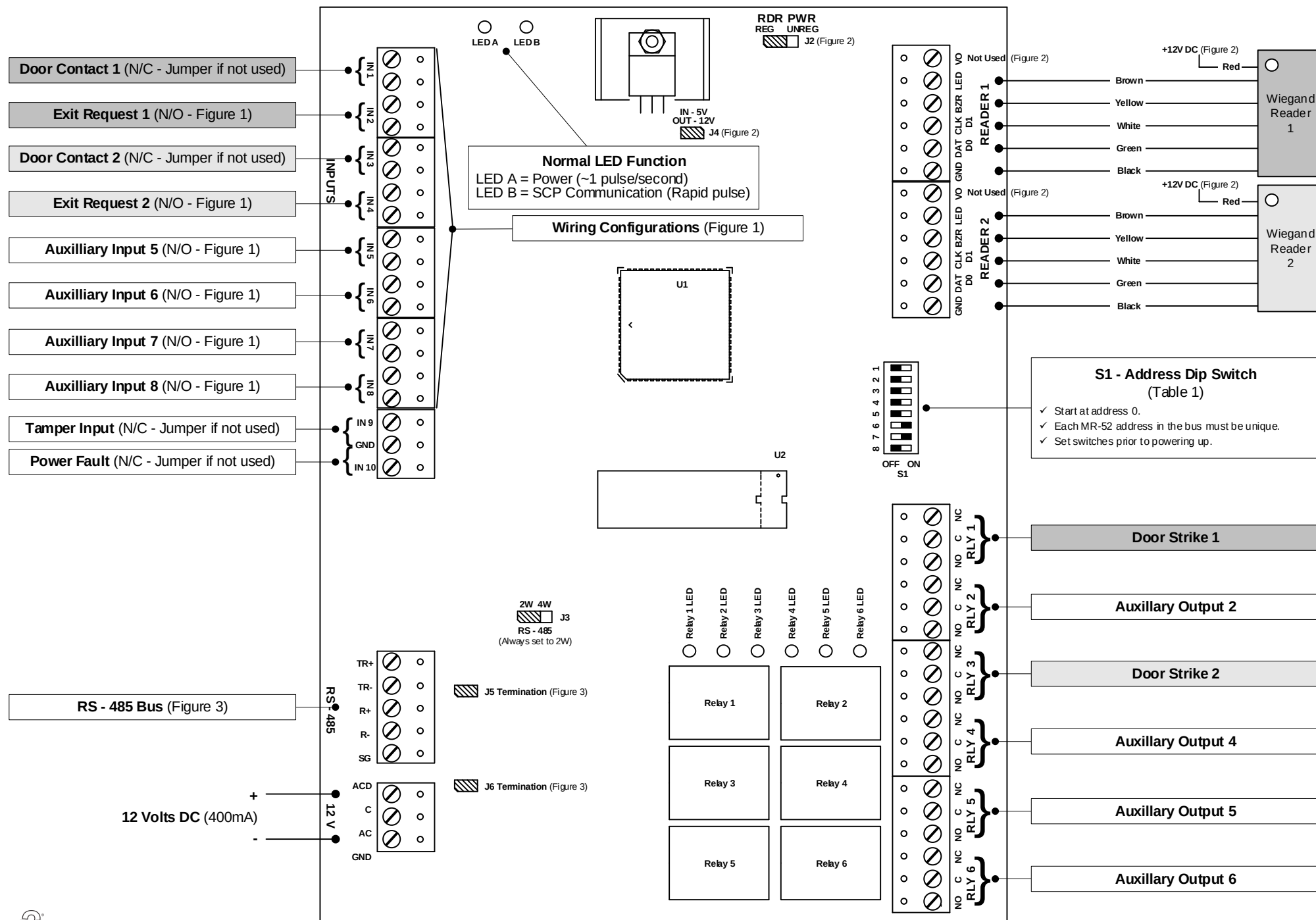


Table 1: S1 - Address Dip Switch

Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off
1	On	Off	Off	Off	Off	On	On	Off
2	Off	On	Off	Off	Off	On	On	Off
3	On	On	Off	Off	Off	On	On	Off
4	Off	Off	On	Off	Off	On	On	Off
5	On	Off	On	Off	Off	On	On	Off
6	Off	On	On	Off	Off	On	On	Off
7	On	On	On	Off	Off	On	On	Off
8	Off	Off	Off	On	Off	On	On	Off
9	On	Off	Off	On	Off	On	On	Off
10	Off	On	Off	On	Off	On	On	Off
11	On	On	Off	On	Off	On	On	Off
12	Off	Off	On	On	Off	On	On	Off
13	On	Off	On	On	Off	On	On	Off
14	Off	On	On	On	Off	On	On	Off
15	On	On	On	On	Off	On	On	Off
16	Off	Off	Off	Off	On	On	On	Off
17	On	Off	Off	Off	On	On	On	Off
18	Off	On	Off	Off	On	On	On	Off
19	On	On	Off	Off	On	On	On	Off
20	Off	Off	On	Off	On	On	On	Off
21	On	On	On	Off	On	On	On	Off
22	Off	On	On	Off	On	On	On	Off
23	On	On	On	Off	On	On	On	Off
24	Off	Off	Off	On	On	On	On	Off
25	On	Off	Off	On	On	On	On	Off
26	Off	On	Off	On	On	On	On	Off
27	On	On	Off	On	On	On	On	Off
28	Off	Off	On	On	On	On	On	Off
29	On	Off	On	On	On	On	On	Off
30	Off	On	On	On	On	On	On	Off
31	On	On	On	On	On	On	On	Off

Figure 1: Wiring Configurations

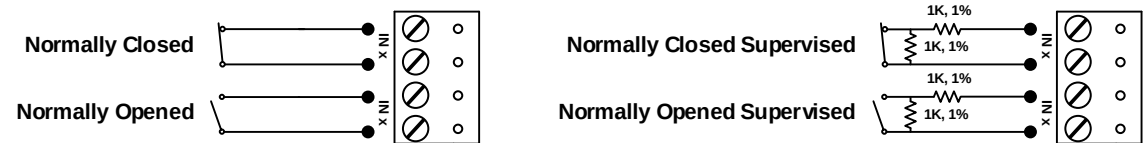


Figure 2: Reader Power Wiring

When wiring readers which require more than 75mA of current, it is recommended to use the default wiring method reflected in the drawing below. This wiring method will work in all cases. Notice the +12V lead (Red) of the reader is directly connected to the power supply. This ensures the full amount of current needed by the reader is being supplied for proper reader functionality. The Ground lead (Black) of the reader must reference the same ground as the MR-52 and may be wired to the GND of the reader wiring block.

In cases where the reader current draw is less than 75mA of current, it is possible to connect the positive lead (Red) of the reader to the (VO) of the reader wiring block. Note however, that J4 determines the reader voltage output of 5 volts jumpered or 12 volts un-jumpered of terminal (VO). Also note that when powering readers from the reader wiring block that J2 may be set to REG for regulated power or UNREG for unregulated power.

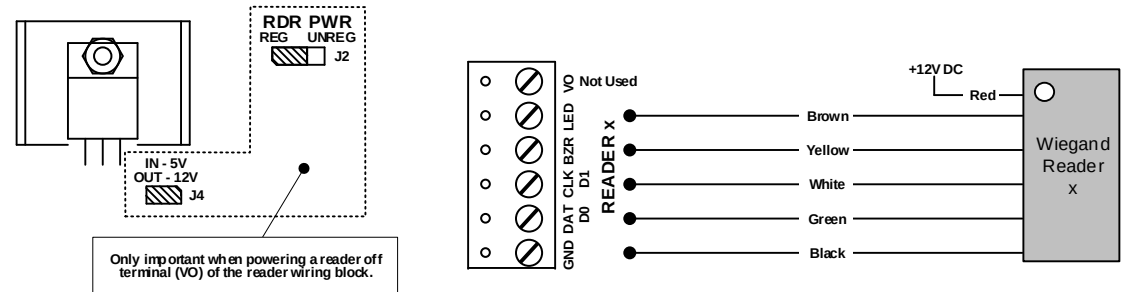
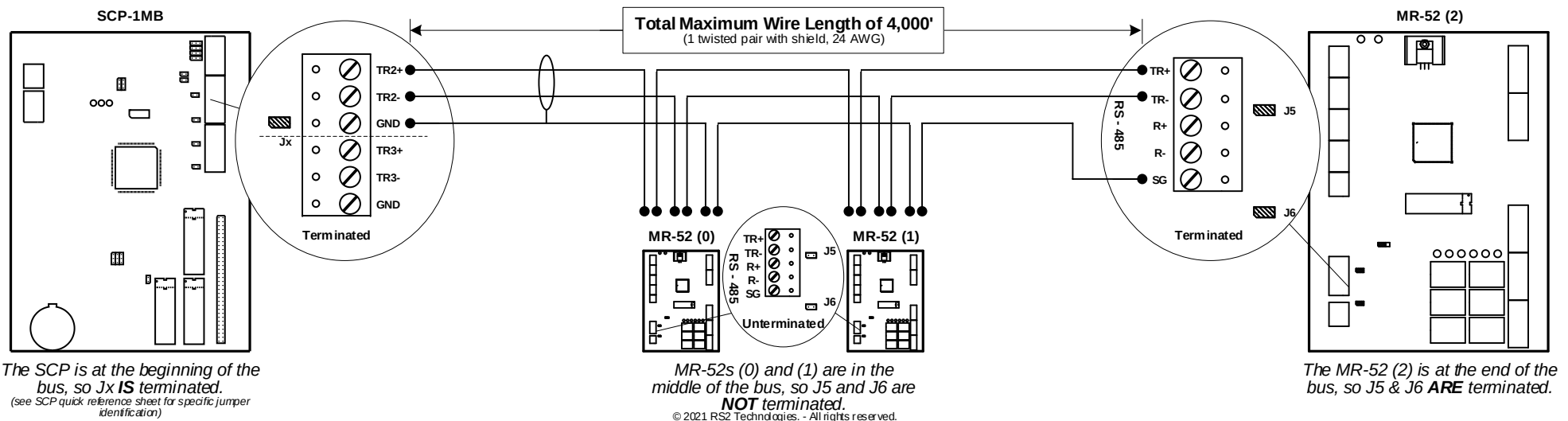


Figure 3: Two Wire RS-485 Wiring



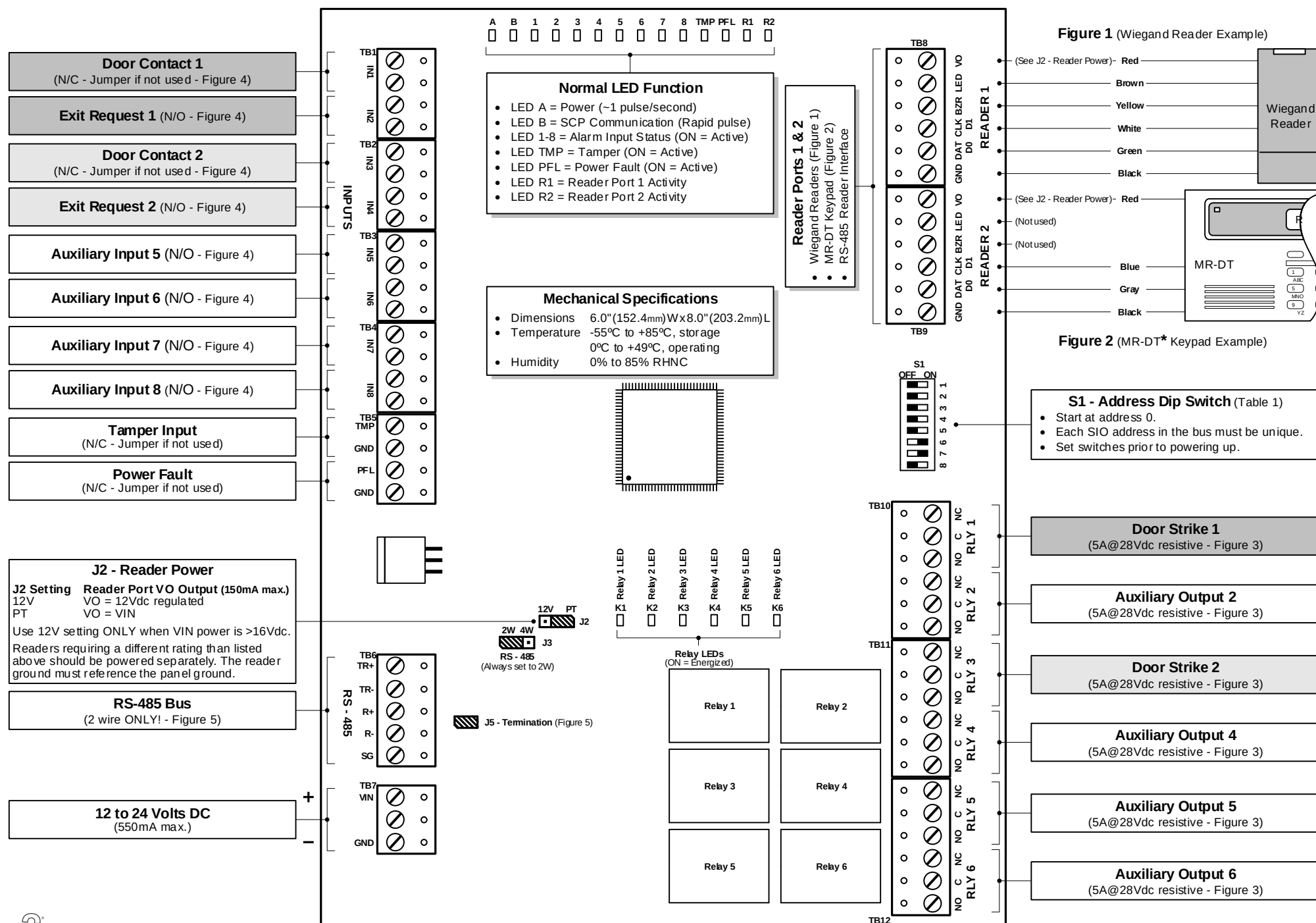


Table 1: S1 - Address Dip Switch

Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off
1	On	Off	Off	Off	Off	On	On	Off
2	Off	On	Off	Off	Off	On	On	Off
3	On	On	Off	Off	Off	On	On	Off
4	Off	Off	On	Off	Off	On	On	Off
5	On	Off	On	Off	Off	On	On	Off
6	Off	On	On	Off	Off	On	On	Off
7	On	On	On	Off	Off	On	On	Off
8	Off	Off	Off	On	Off	On	On	Off
9	On	Off	Off	On	Off	On	On	Off
10	Off	On	Off	On	Off	On	On	Off
11	On	On	Off	On	Off	On	On	Off
12	Off	Off	On	On	Off	On	On	Off
13	On	Off	On	On	Off	On	On	Off
14	Off	On	On	On	Off	On	On	Off
15	On	On	On	On	Off	On	On	Off
16	Off	Off	Off	Off	On	On	On	Off
17	On	Off	Off	Off	On	On	On	Off
18	Off	On	Off	Off	On	On	On	Off
19	On	On	Off	Off	On	On	On	Off
20	Off	Off	On	Off	On	On	On	Off
21	On	Off	On	Off	On	On	On	Off
22	Off	On	On	Off	On	On	On	Off
23	On	On	On	Off	On	On	On	Off
24	Off	Off	Off	On	On	On	On	Off
25	On	Off	Off	On	On	On	On	Off
26	Off	On	Off	On	On	On	On	Off
27	On	On	Off	On	On	On	On	Off
28	Off	Off	On	On	On	On	On	Off
29	On	Off	On	On	On	On	On	Off
30	Off	On	On	On	On	On	On	Off
31	On	On	On	On	On	On	On	Off

Figure 3: Output Wiring Configurations

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.

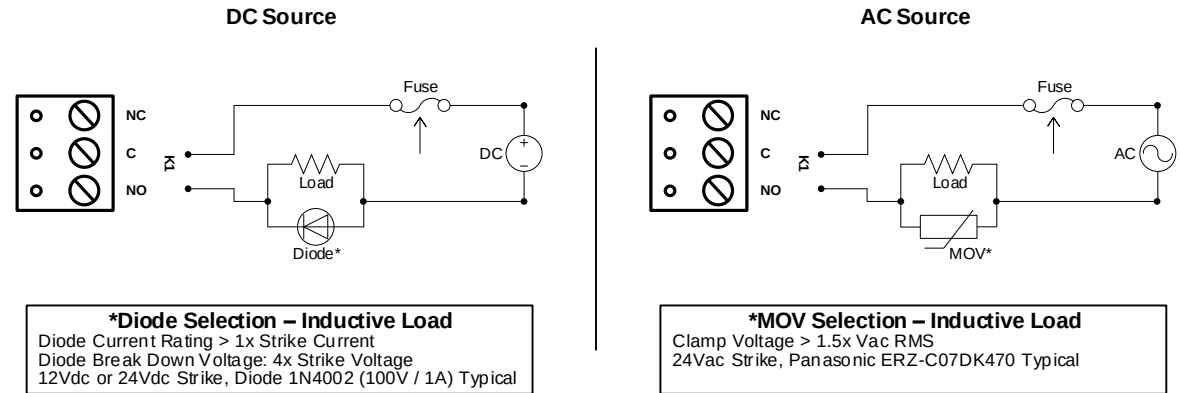


Figure 4: Input Wiring Configurations

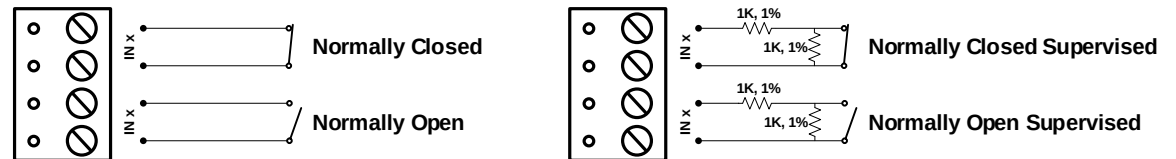
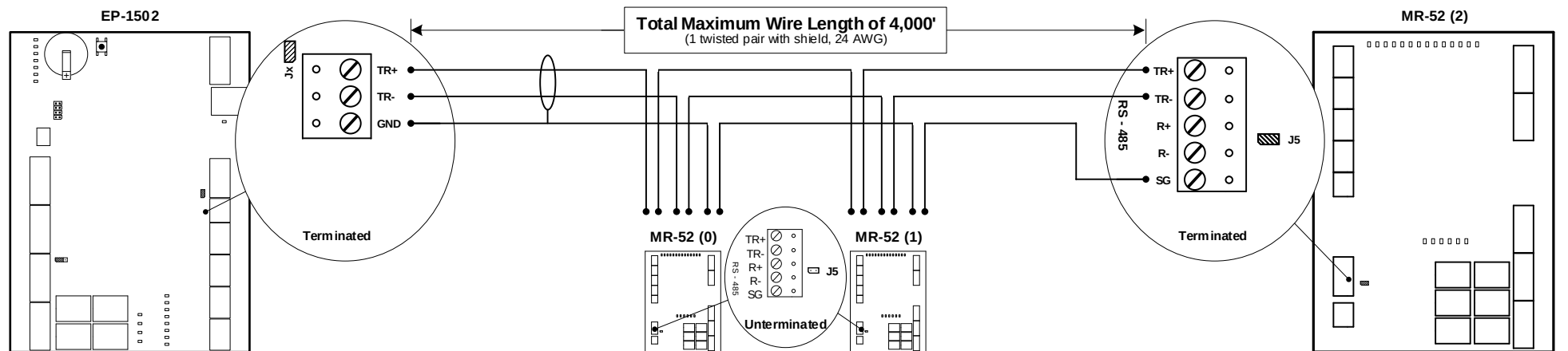


Figure 5: Two Wire RS-485 Wiring



The SCP is at the beginning of the bus, so Jx **IS** terminated.
 (see SCP quick reference for specific jumper identification)

MR-52s (0) and (1) are in the middle of the bus, so J5 is **NOT** terminated.

The MR-52 (2) is at the end of the bus, so J5 **IS** terminated.

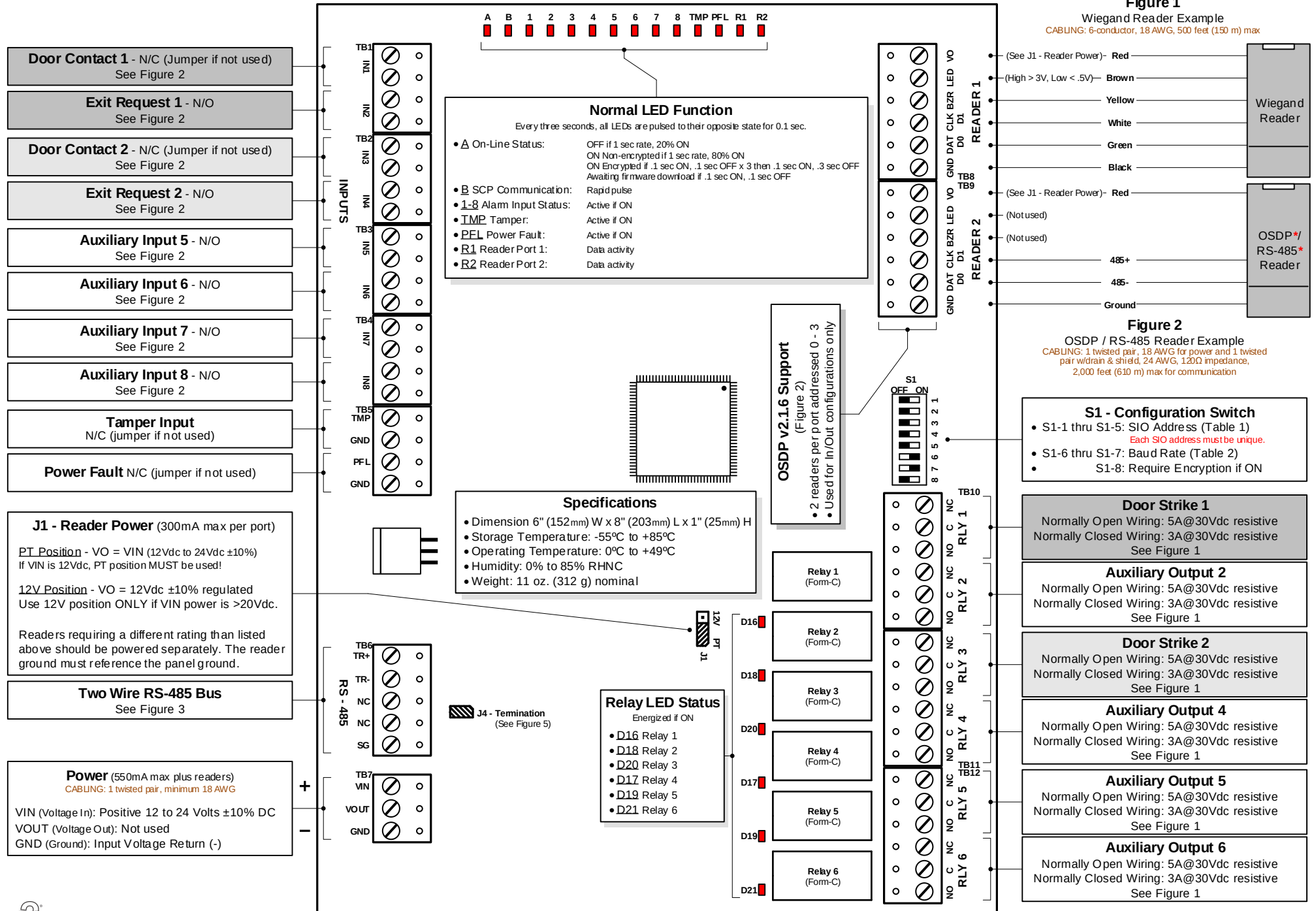
**Not evaluated by UL*

Table 1: SIO Address

Address	S1-1	S1-2	S1-3	S1-4	S1-5	Address	S1-1	S1-2	S1-3	S1-4	S1-5
0	OFF	OFF	OFF	OFF	OFF	16	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	17	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	18	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	19	ON	ON	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	20	OFF	OFF	ON	OFF	ON
5	ON	OFF	ON	OFF	OFF	21	ON	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF	OFF	22	OFF	ON	ON	OFF	ON
7	ON	ON	ON	OFF	OFF	23	ON	ON	ON	OFF	ON
8	OFF	OFF	OFF	ON	OFF	24	OFF	OFF	OFF	ON	ON
9	ON	OFF	OFF	ON	OFF	25	ON	OFF	OFF	ON	ON
10	OFF	ON	OFF	ON	OFF	26	OFF	ON	OFF	ON	ON
11	ON	ON	OFF	ON	OFF	27	ON	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	28	OFF	OFF	ON	ON	ON
13	ON	OFF	ON	ON	OFF	29	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	30	OFF	ON	ON	ON	ON
15	ON	ON	ON	ON	OFF	31	ON	ON	ON	ON	ON

Table 2: Baud Rate

S1-6	S1-7	Baud Rate
ON	ON	38,400 bps [†]
OFF	ON	19,200 bps*
ON	OFF	9,600 bps*
OFF	OFF	115,200 bps*

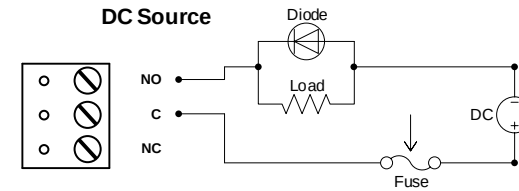
[†]Access IT! Universal.NET default value.

*Not evaluated by UL

Figure 1: Output Wiring Options

CABLING: As required for the load

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.



Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

Figure 2: Input Wiring Options

CABLING: 1 twisted pair per input, 30Ω maximum

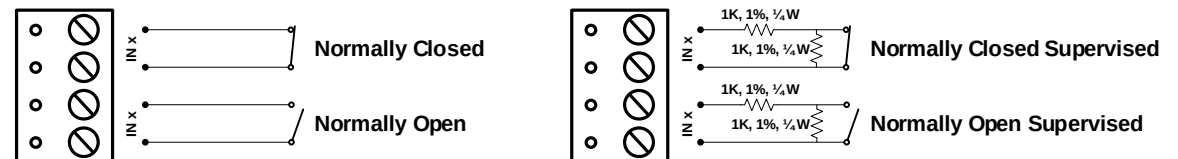
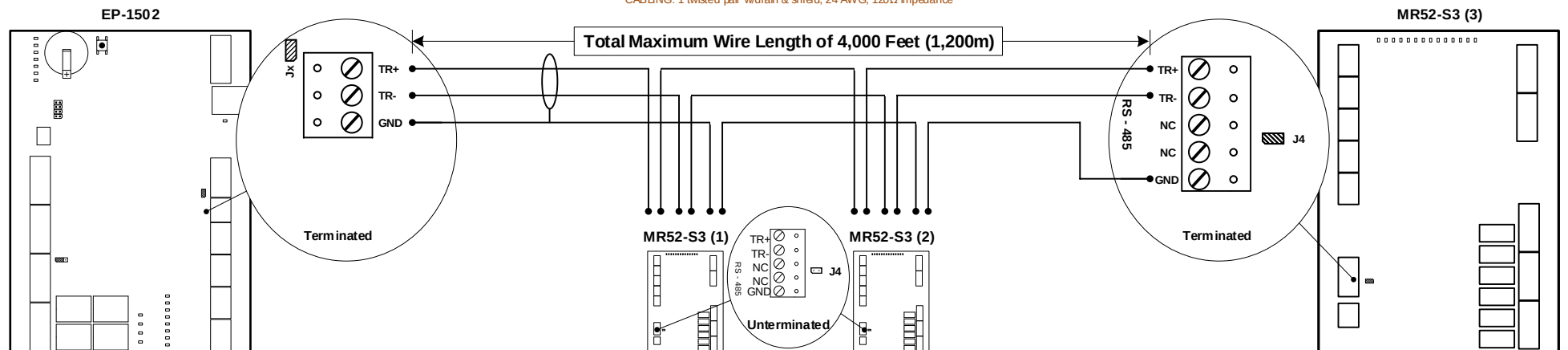


Figure 3: Two Wire RS-485 Wiring

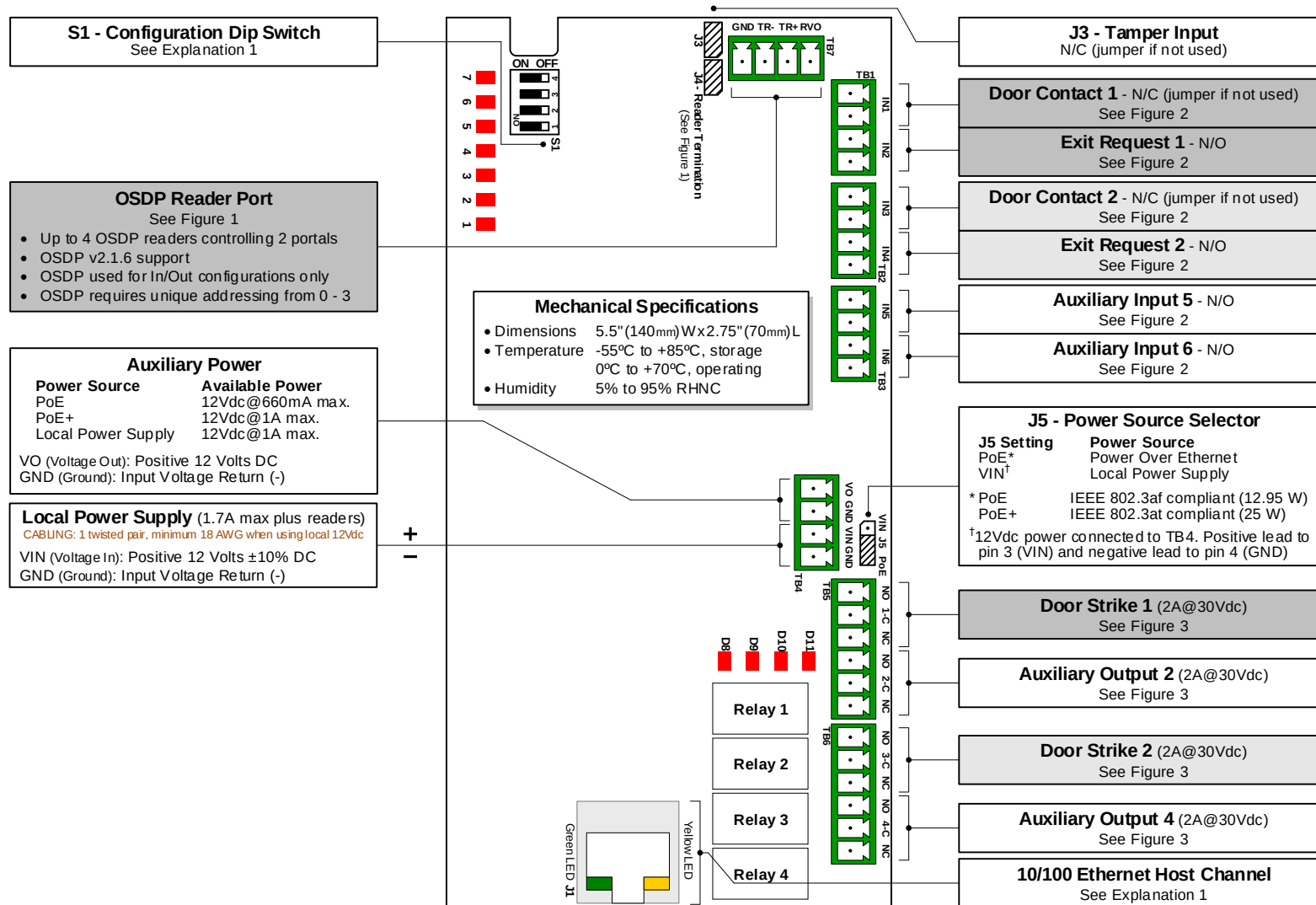
CABLING: 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance



The SCP is at the beginning of the bus, so Jx IS terminated.
(see SCP quick reference for specific jumper identification)
Only Stand-Alone system was evaluated by UL

MR52-S3s (1) and (2) are in the middle of the bus, so J4 is NOT terminated.

The MR52-S3 (3) is at the end of the bus, so J4 IS terminated.



Normal LED Function

At power up, LED 1 turns ON then LEDs 2 through 7 are turned ON then OFF in sequence.

LED	Description	Status
1	On-line Status	On-line = 4 pulses/sec; 0.1 sec ON, 0.1 sec OFF, OFF for .3 sec Off-line = 0.2 sec ON, 0.8 sec OFF Awaiting firmware download = 0.1 sec ON, 0.1 sec OFF
2*	Door 1 Contact	ON: Open, OFF: Closed, Flashing: Fault
3*	Door 1 REX	ON: Active, OFF: Inactive, Flashing: Fault
4*	Door 2 Contact	ON: Open, OFF: Closed, Flashing: Fault
5*	Door 2 REX	ON: Active, OFF: Inactive, Flashing: Fault
6*	Auxiliary Input 4	ON: Active, OFF: Inactive, Flashing: Fault
7*	Auxiliary Input 5	ON: Active, OFF: Inactive, Flashing: Fault
Yellow	Ethernet Speed	10 Mb/S, 100 Mb/S, N/A
Green	Link/Ethernet Activity	No Link, Link, Ethernet Activity

*Every 3 seconds the LED is pulsed to its opposite state for 0.1 seconds, otherwise the LED is OFF.

Explanation 1: 10/100 Ethernet

Configuring Primary 10/100 Ethernet Host Channel For A Static IP Address

- Set S1 - Configuration DIP Switch DIP 2 ON
- Set S1 - Configuration DIP Switch DIPs 1, 3 & 4 OFF
- Apply power to the MR-62E
- Manually configure a computer to 192.168.0.100
- Using a crossover cable, connect computer to MR-62E
- Open a web browser and go to 192.168.0.251
- Set S1 - Configuration DIP Switch DIP 1 ON
- Click on **'Click Here to Login'**
- Click on **'Continue to this website (not recommended).'**
- Enter a Username of **admin**
- Enter a Password of **password**
- Click **'Network'** from the left hand menu
- Select **'Use Static IP configuration:'**
 IP Address: **<Set accordingly>**
 Subnet Mask: **<Set accordingly>**
 Default Gateway: **<Set accordingly>**
Select DHCP if needed.
- Click **'Accept'**
- Click **'Apply Setting'** from the left hand menu
- Click **'Apply and Reboot'** button
- Wait 60 seconds for MR-62E to reboot
- Remove power from the MR-62E
- Set all S1 - Configuration DIP Switch DIPs OFF
- Remove crossover cable and connect to network
- Apply power to the MR-62E
- Run Access It! Universal.NET
- Navigate to the Hardware section
- Click the arrow to expand the SCPs
- Click the arrow to expand the SCP the MR-62E will be installed under
- Select SIOs
A list of all available SIOs appear in the pane to the right of the hardware tree.
- Edit the first uninstalled SIO from the right hand pane
 General Tab
 Model: **MR-62E**
 Device Installed: **X**
 IP Address: **<Enter IP Address to be assigned to MR-62E>**
 MAC Address: **<MAC Address of MR-62E>**
- Click Save button

Bulk Erasing MR-62E

- Set S1 - Configuration DIP Switch DIPs 1 & 2 ON
- Set S1 - Configuration DIP Switch DIPs 3 & 4 OFF
- Apply power to the MR-62E
 LEDs 1 & 2 and LEDs 3 & 4 flash alternately at a .5 second rate.
- Within 10 seconds, switch S1 - Configuration DIP Switch DIP 1 OFF
 LEDs 1 & 2 alternately flash at a 0.5 second rate while memory is erased.
WARNING! DO NOT CYCLE POWER
Erasing memory takes approximately 60 seconds to complete.
 Once memory is erased, LED 1 will be on for ~3 seconds, then the MR-62E reboots.
- The MR-62E is now ready to be configured as needed

Figure 1: OSDP Reader Port

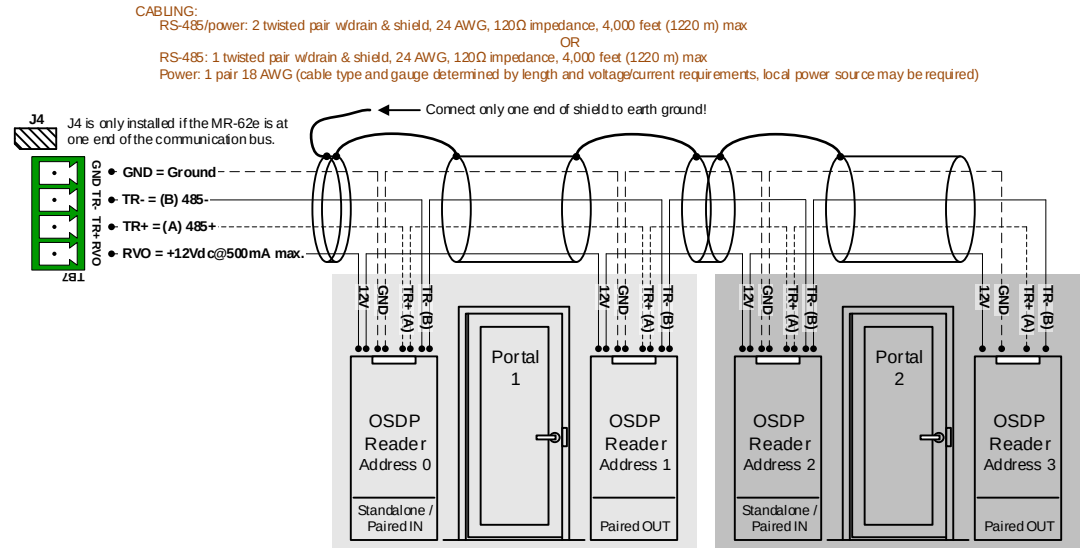


Figure 2: Input Wiring Options

CABLING: 1 twisted pair per input, 30Ω maximum

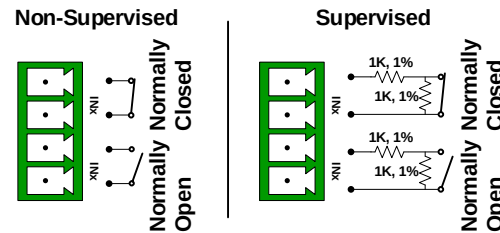
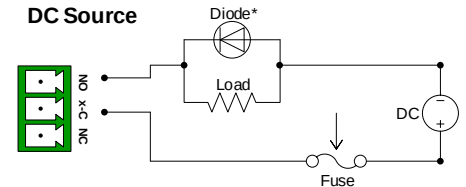


Figure 3: Output Wiring Options

CABLING: As required for the load

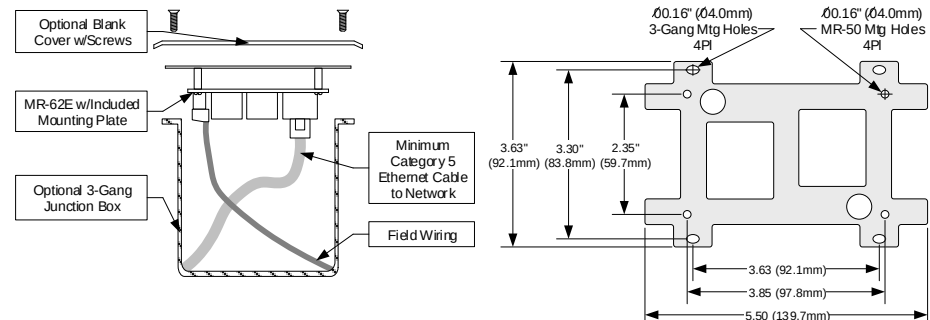
Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.

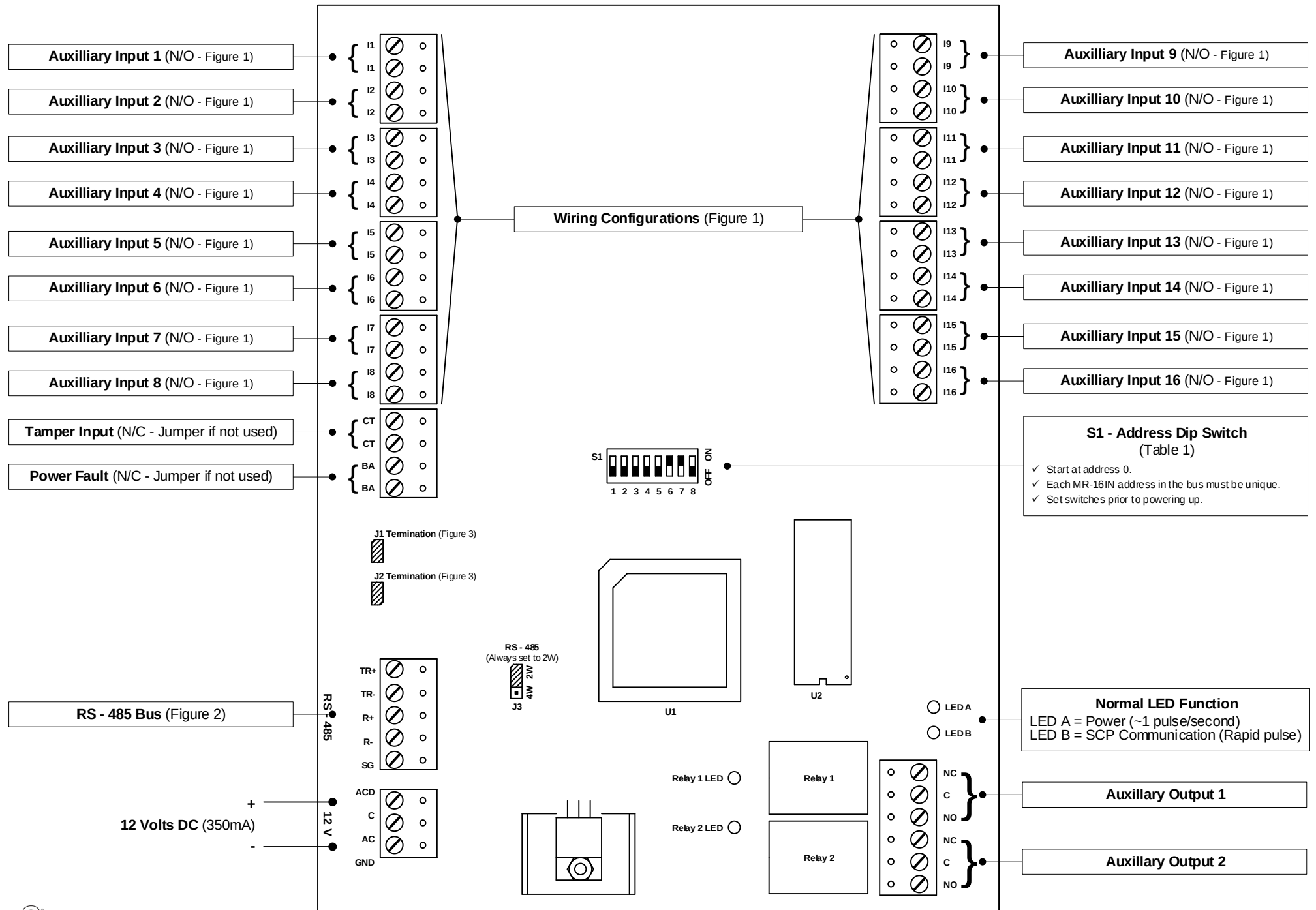


*Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
 Diode Break Down Voltage: 4x Strike Voltage
 12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

Figure 4: Mounting Information





Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off
1	On	Off	Off	Off	Off	On	On	Off
2	Off	On	Off	Off	Off	On	On	Off
3	On	On	Off	Off	Off	On	On	Off
4	Off	Off	On	Off	Off	On	On	Off
5	On	Off	On	Off	Off	On	On	Off
6	Off	On	On	Off	Off	On	On	Off
7	On	On	On	Off	Off	On	On	Off
8	Off	Off	Off	On	Off	On	On	Off
9	On	Off	Off	On	Off	On	On	Off
10	Off	On	Off	On	Off	On	On	Off
11	On	On	Off	On	Off	On	On	Off
12	Off	Off	On	On	Off	On	On	Off
13	On	Off	On	On	Off	On	On	Off
14	Off	On	On	On	Off	On	On	Off
15	On	On	On	On	Off	On	On	Off
16	Off	Off	Off	Off	On	On	On	Off
17	On	Off	Off	Off	On	On	On	Off
18	Off	On	Off	Off	On	On	On	Off
19	On	On	Off	Off	On	On	On	Off
20	Off	Off	On	Off	On	On	On	Off
21	On	Off	On	Off	On	On	On	Off
22	Off	On	On	Off	On	On	On	Off
23	On	On	On	Off	On	On	On	Off
24	Off	Off	Off	On	On	On	On	Off
25	On	Off	Off	On	On	On	On	Off
26	Off	On	Off	On	On	On	On	Off
27	On	On	Off	On	On	On	On	Off
28	Off	Off	On	On	On	On	On	Off
29	On	Off	On	On	On	On	On	Off
30	Off	On	On	On	On	On	On	Off
31	On	On	On	On	On	On	On	Off

Figure 1: Wiring Configurations

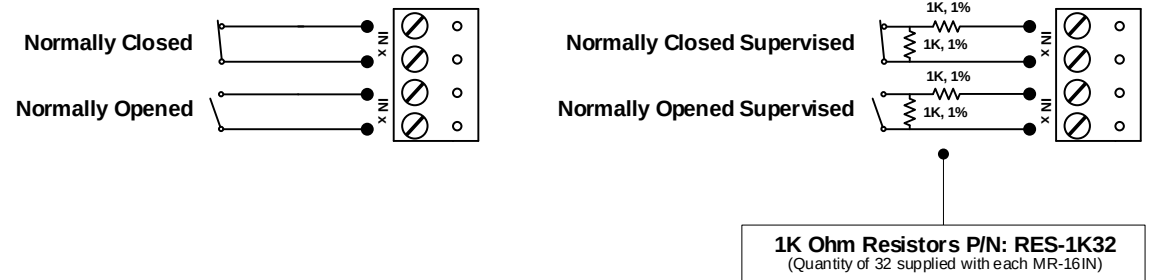
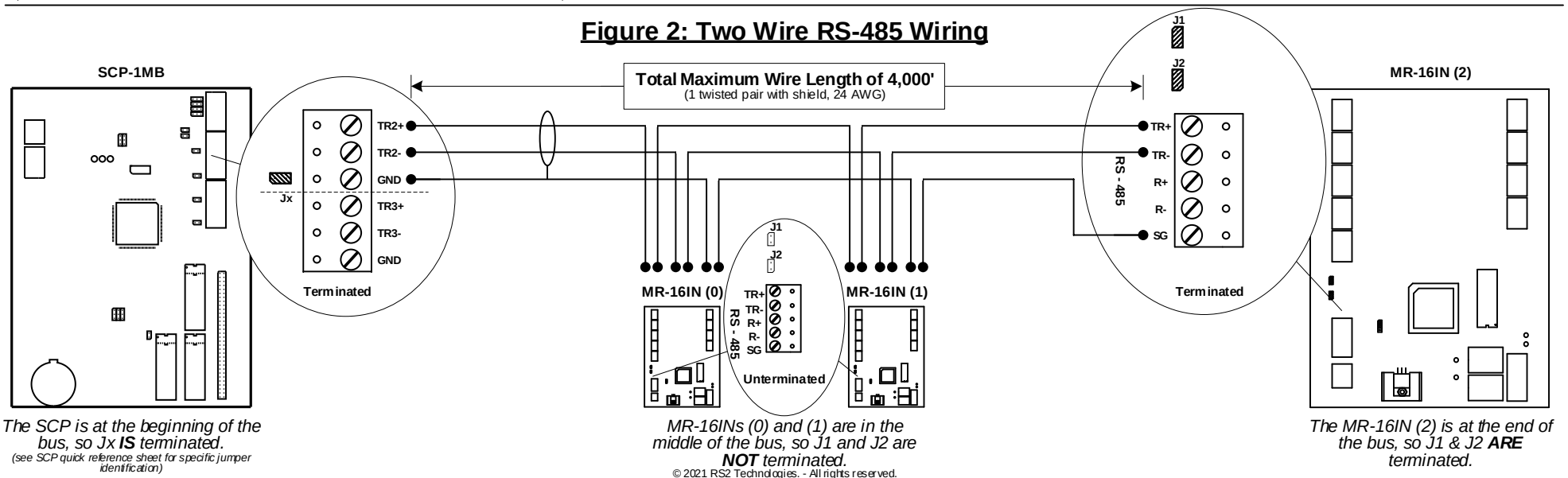


Figure 2: Two Wire RS-485 Wiring



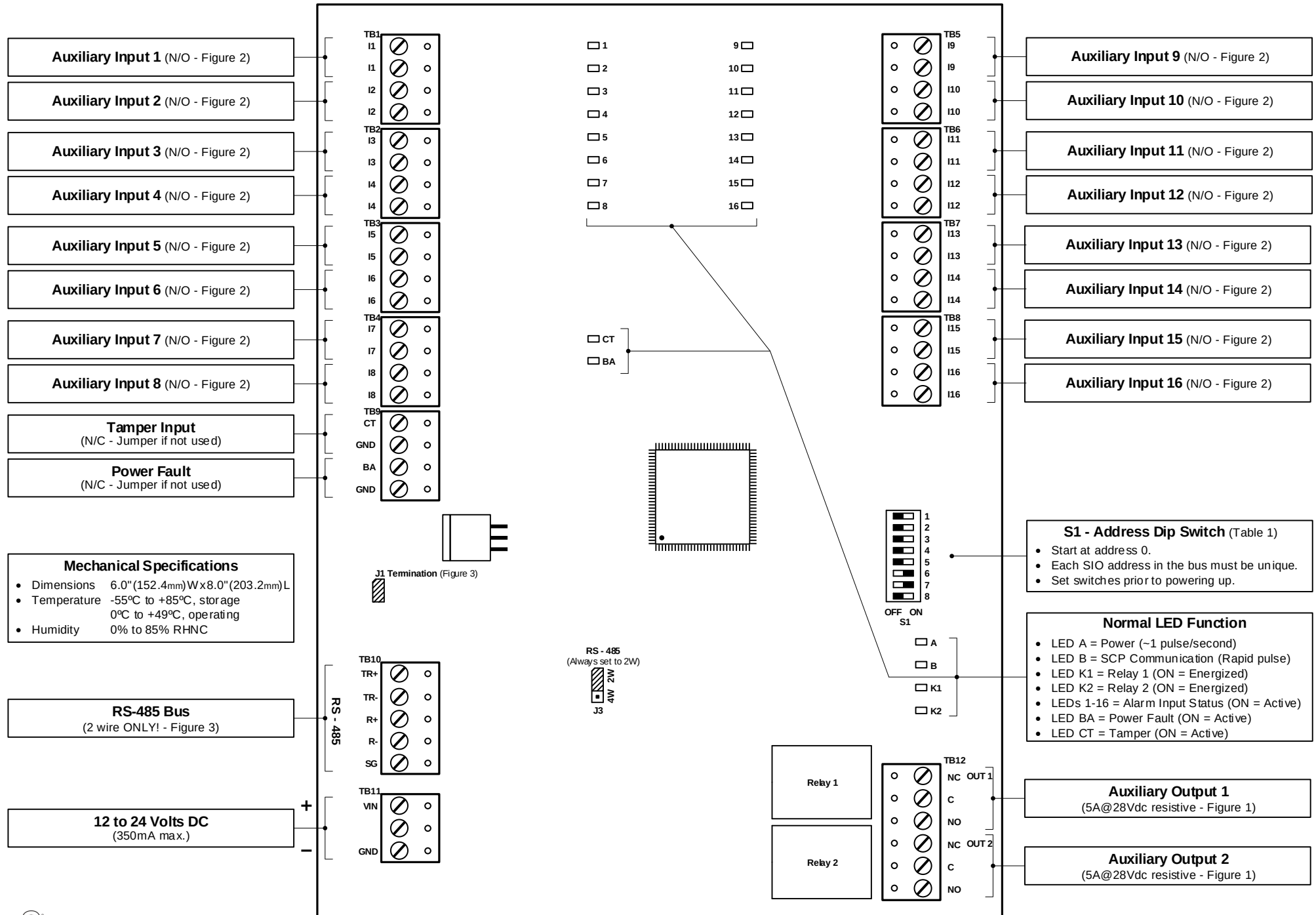


Table 1: S1 - Address Dip Switch

Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off
1	On	Off	Off	Off	Off	On	On	Off
2	Off	On	Off	Off	Off	On	On	Off
3	On	On	Off	Off	Off	On	On	Off
4	Off	Off	On	Off	Off	On	On	Off
5	On	Off	On	Off	Off	On	On	Off
6	Off	On	On	Off	Off	On	On	Off
7	On	On	On	Off	Off	On	On	Off
8	Off	Off	Off	On	Off	On	On	Off
9	On	Off	Off	On	Off	On	On	Off
10	Off	On	Off	On	Off	On	On	Off
11	On	On	Off	Off	Off	On	On	Off
12	Off	Off	On	On	Off	On	On	Off
13	On	Off	On	On	Off	On	On	Off
14	Off	On	On	On	Off	On	On	Off
15	On	On	On	On	Off	On	On	Off
16	Off	Off	Off	Off	On	On	On	Off
17	On	Off	Off	Off	On	On	On	Off
18	Off	On	Off	Off	On	On	On	Off
19	On	On	Off	Off	On	On	On	Off
20	Off	Off	On	Off	On	On	On	Off
21	On	Off	On	Off	On	On	On	Off
22	Off	On	On	Off	On	On	On	Off
23	On	On	On	Off	On	On	On	Off
24	Off	Off	Off	On	On	On	On	Off
25	On	Off	Off	On	On	On	On	Off
26	Off	On	Off	On	On	On	On	Off
27	On	On	Off	On	On	On	On	Off
28	Off	Off	On	On	On	On	On	Off
29	On	Off	On	On	On	On	On	Off
30	Off	On	On	On	On	On	On	Off
31	On	On	On	On	On	On	On	Off

Figure 1: Output Wiring Configurations

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.

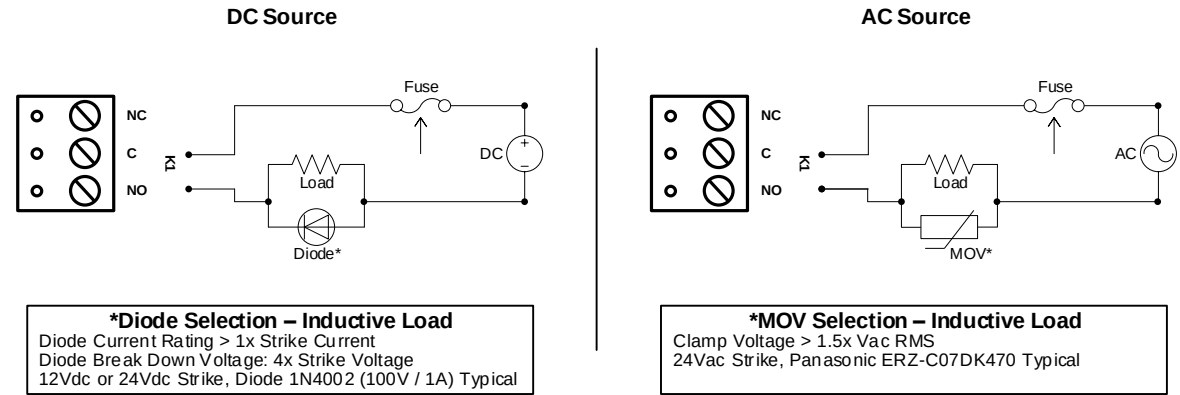


Figure 2: Input Wiring Configurations

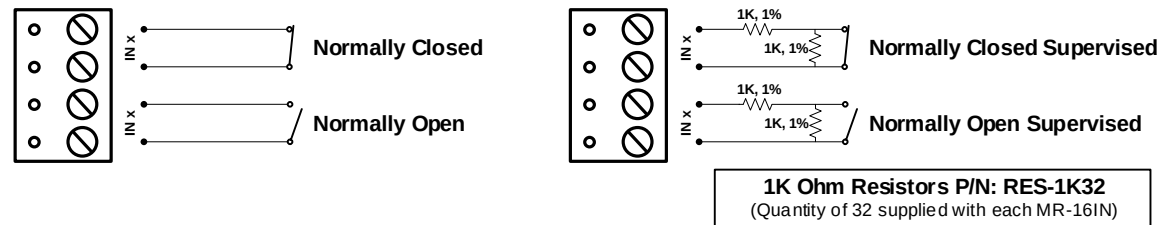
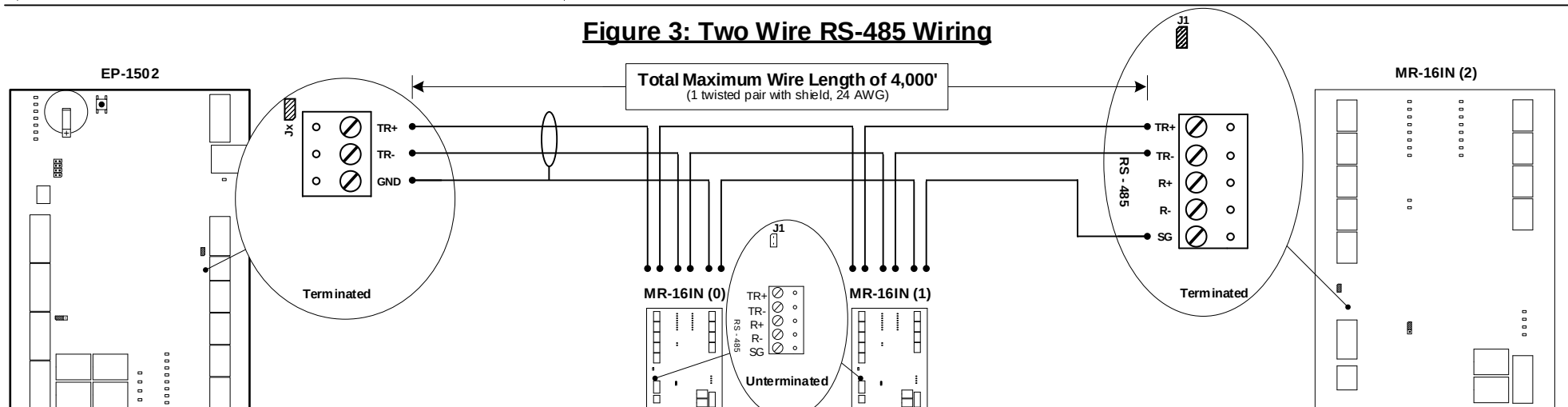


Figure 3: Two Wire RS-485 Wiring



The SCP is at the beginning of the bus, so Jx **IS** terminated.
(see SCP quick reference for specific jumper identification)

MR-16INs (0) and (1) are in the middle of the bus, so J1 is **NOT** terminated.

The MR-16IN (2) is at the end of the bus, so J1 **IS** terminated.

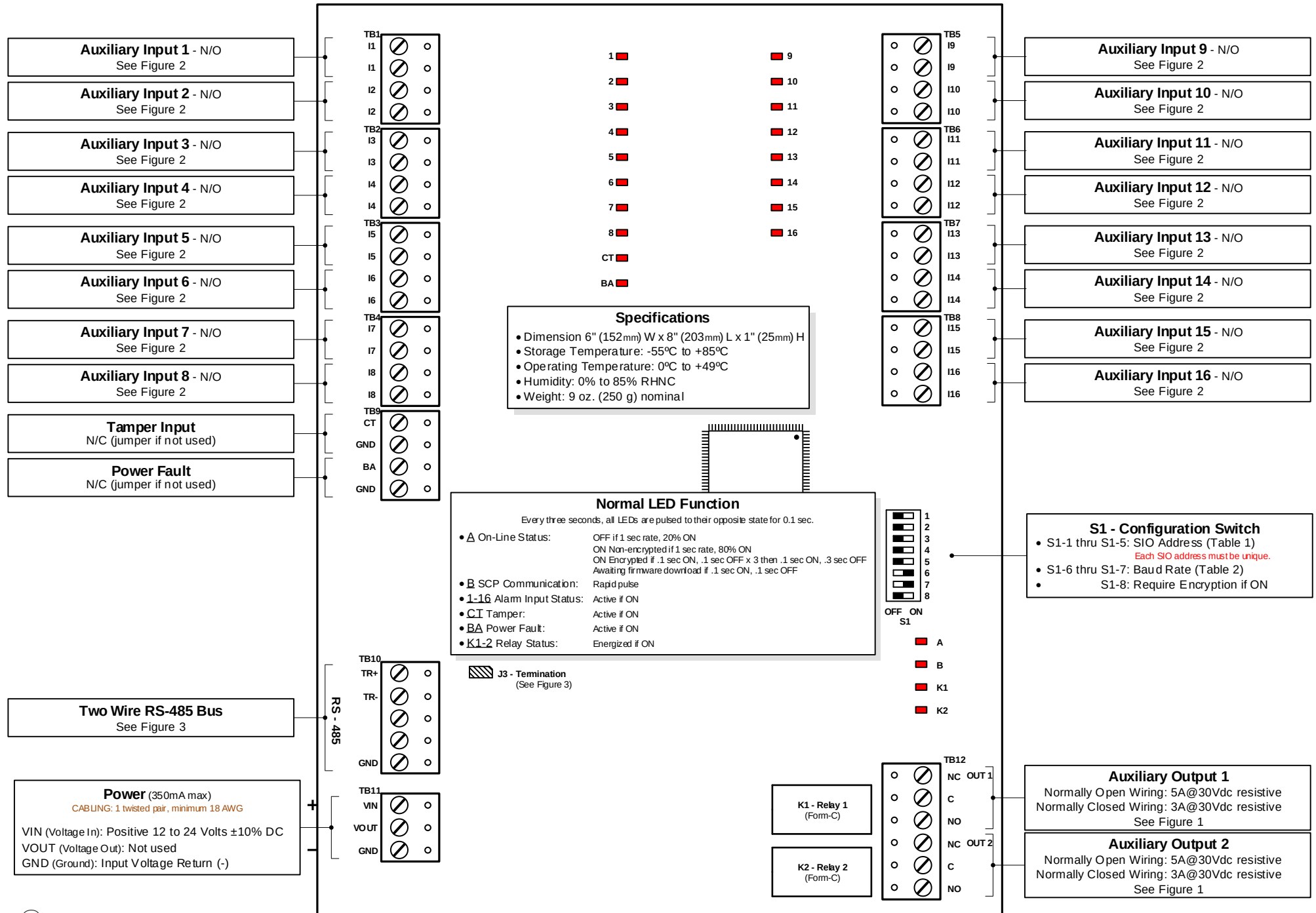


Table 1: SIO Address

Address	S1-1	S1-2	S1-3	S1-4	S1-5	Address	S1-1	S1-2	S1-3	S1-4	S1-5
0	OFF	OFF	OFF	OFF	OFF	16	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	17	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	18	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	19	ON	ON	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	20	OFF	OFF	ON	OFF	ON
5	ON	OFF	ON	OFF	OFF	21	ON	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF	OFF	22	OFF	ON	ON	OFF	ON
7	ON	ON	ON	OFF	OFF	23	ON	ON	ON	OFF	ON
8	OFF	OFF	OFF	ON	OFF	24	OFF	OFF	OFF	ON	ON
9	ON	OFF	OFF	ON	OFF	25	ON	OFF	OFF	ON	ON
10	OFF	ON	OFF	ON	OFF	26	OFF	ON	OFF	ON	ON
11	ON	ON	OFF	ON	OFF	27	ON	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	28	OFF	OFF	ON	ON	ON
13	ON	OFF	ON	ON	OFF	29	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	30	OFF	ON	ON	ON	ON
15	ON	ON	ON	ON	OFF	31	ON	ON	ON	ON	ON

Table 2: Baud Rate

S1-6	S1-7	Baud Rate
ON	ON	38,400 bps [†]
OFF	ON	19,200 bps*
ON	OFF	9,600 bps*
OFF	OFF	115,200 bps*

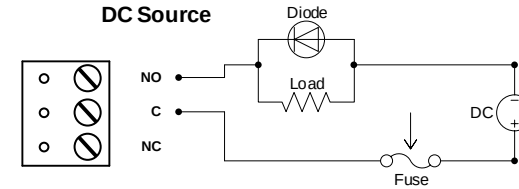
[†]Access I! Universal.NET default value.

*Not evaluated by UL

Figure 1: Output Wiring Options

CABLING: As required for the load

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.



Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

Figure 2: Input Wiring Options

CABLING: 1 twisted pair per input, 30Ω maximum

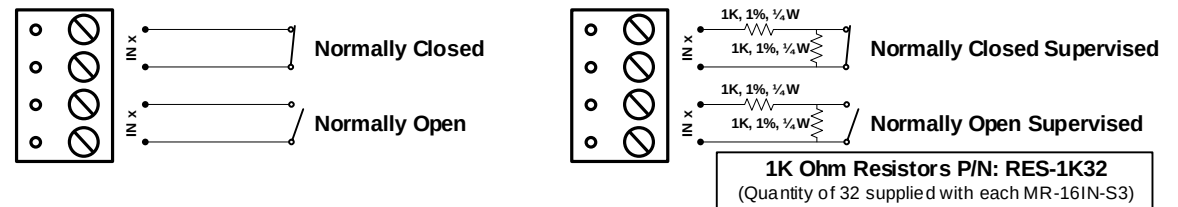
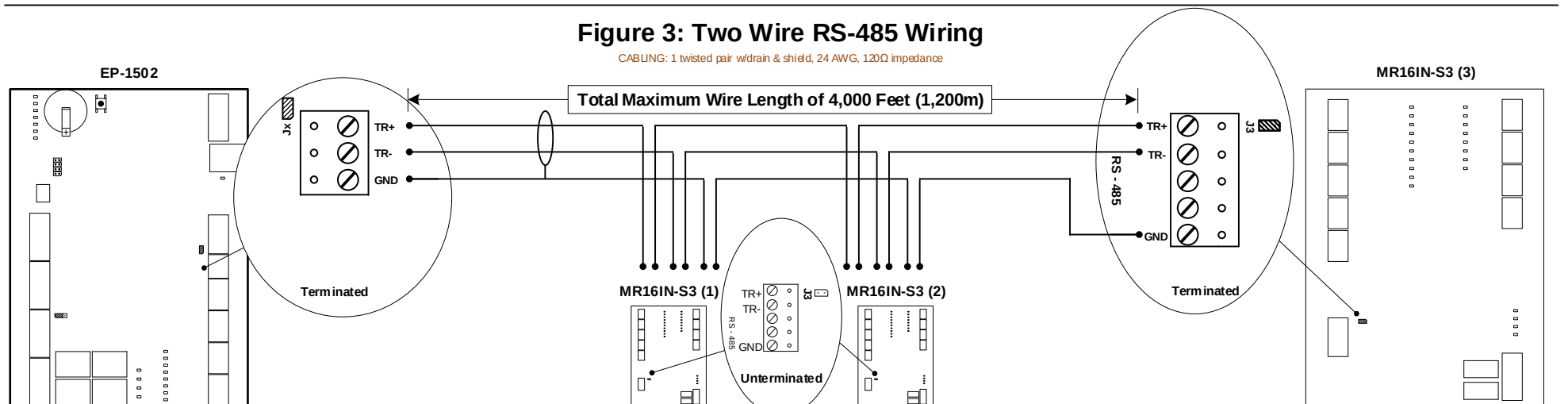


Figure 3: Two Wire RS-485 Wiring

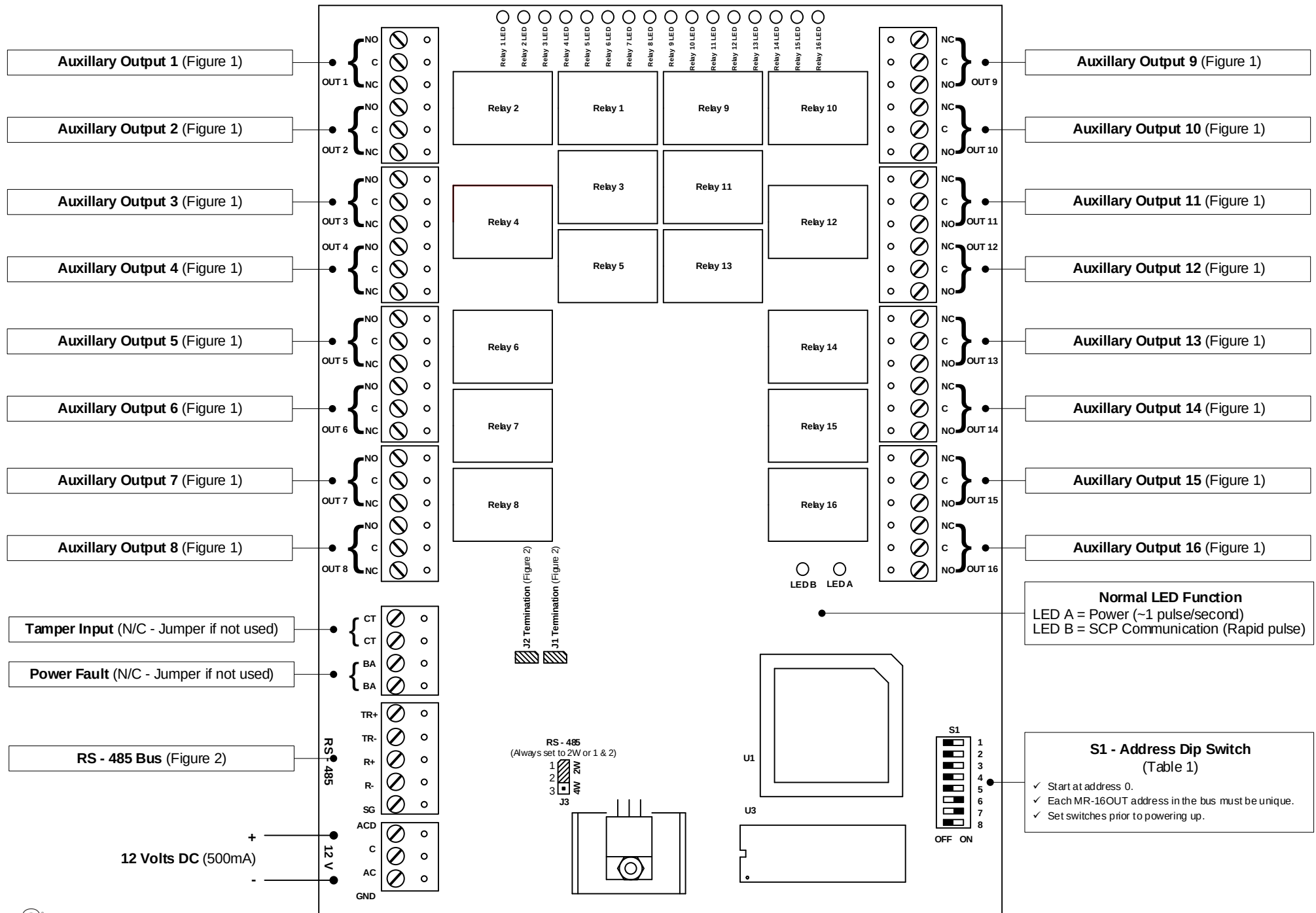
CABLING: 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance



The SCP is at the beginning of the bus, so Jx IS terminated.
(see SCP quick reference for specific jumper identification)
Only Stand-Alone system was evaluated by UL

MR16IN-S3s (1) and (2) are in the middle of the bus, so J3 is NOT terminated.

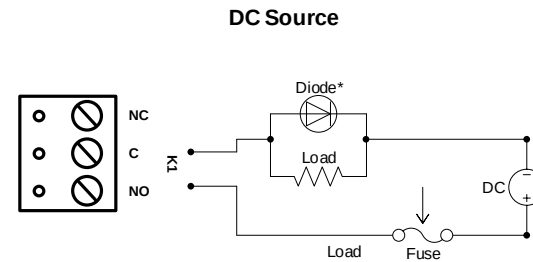
The MR16IN-S3 (3) is at the end of the bus, so J3 IS terminated.



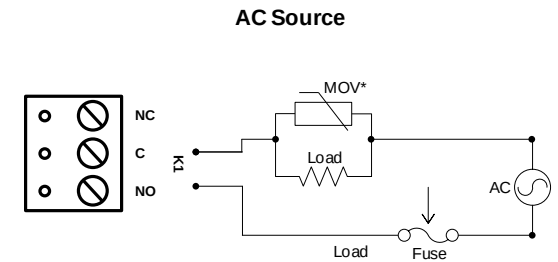
Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off
1	On	Off	Off	Off	Off	On	On	Off
2	Off	On	Off	Off	Off	On	On	Off
3	On	On	Off	Off	Off	On	On	Off
4	Off	Off	On	Off	Off	On	On	Off
5	On	Off	On	Off	Off	On	On	Off
6	Off	On	On	Off	Off	On	On	Off
7	On	On	On	Off	Off	On	On	Off
8	Off	Off	Off	On	Off	On	On	Off
9	On	Off	Off	On	Off	On	On	Off
10	Off	On	Off	On	Off	On	On	Off
11	On	On	Off	On	Off	On	On	Off
12	Off	Off	On	On	Off	On	On	Off
13	On	Off	On	On	Off	On	On	Off
14	Off	On	On	On	Off	On	On	Off
15	On	On	On	On	Off	On	On	Off
16	Off	Off	Off	Off	On	On	On	Off
17	On	Off	Off	Off	On	On	On	Off
18	Off	On	Off	Off	On	On	On	Off
19	On	On	Off	Off	On	On	On	Off
20	Off	Off	On	Off	On	On	On	Off
21	On	On	On	Off	On	On	On	Off
22	Off	On	On	Off	On	On	On	Off
23	On	On	On	Off	On	On	On	Off
24	Off	Off	Off	On	On	On	On	Off
25	On	Off	Off	On	On	On	On	Off
26	Off	On	Off	On	On	On	On	Off
27	On	On	Off	On	On	On	On	Off
28	Off	Off	On	On	On	On	On	Off
29	On	Off	On	On	On	On	On	Off
30	Off	On	On	On	On	On	On	Off
31	On	On	On	On	On	On	On	Off

Figure 1: Output Wiring

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring an in-line fuse to the C (common) side of the relay as shown below.

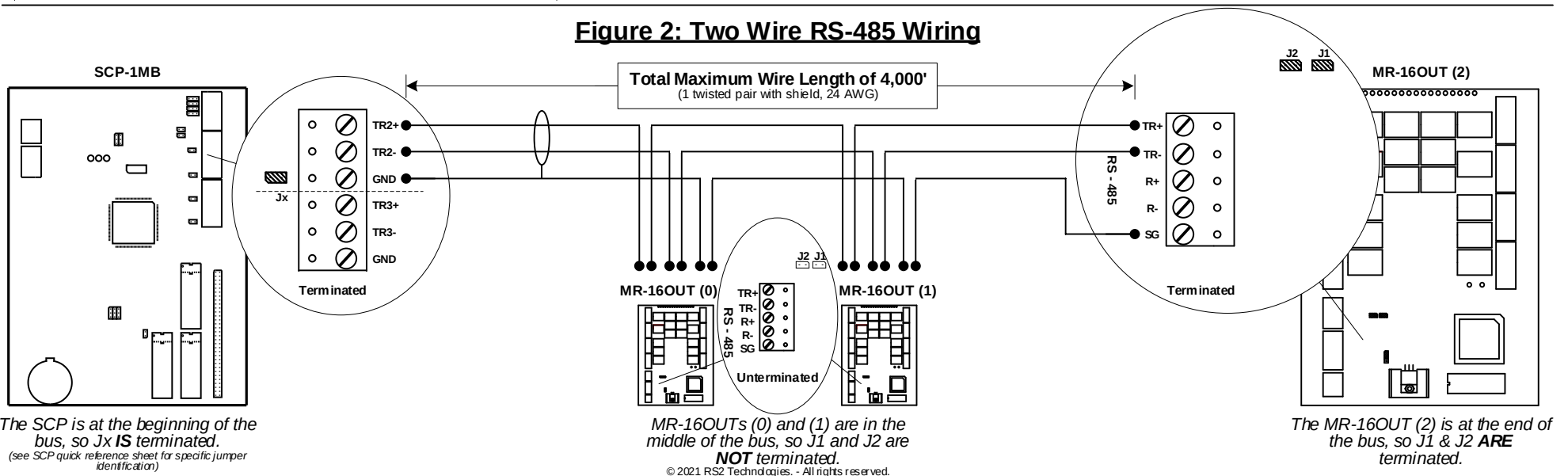


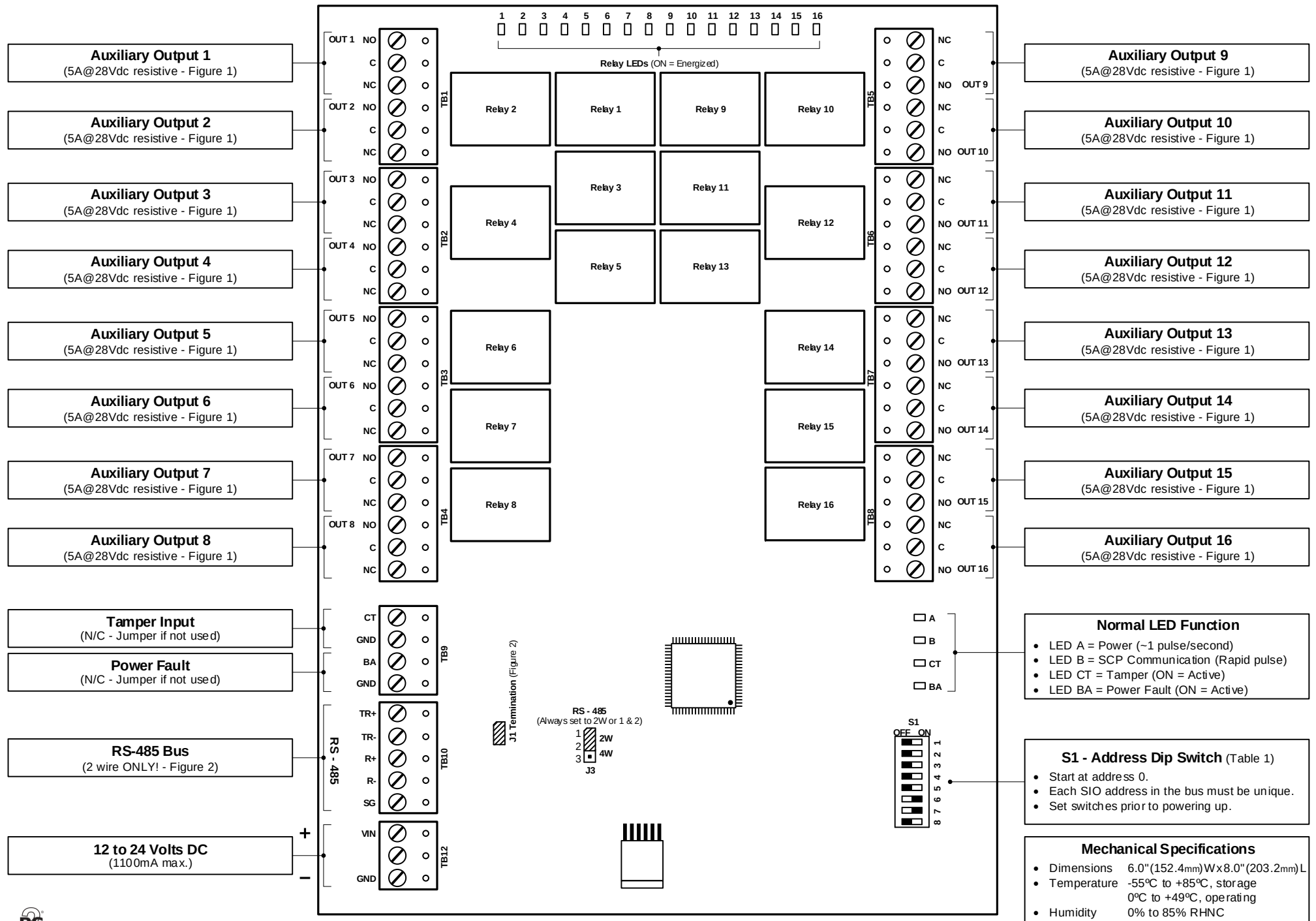
***Diode Selection – Inductive Load**
 Diode Current Rating > 1x Strike Current
 Diode Break Down Voltage: 4x Strike Voltage
 12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical



***MOV Selection – Inductive Load**
 Clamp Voltage > 1.5x Vac RMS
 24Vac Strike, Panasonic ERZ-C07DK470 Typical

Figure 2: Two Wire RS-485 Wiring

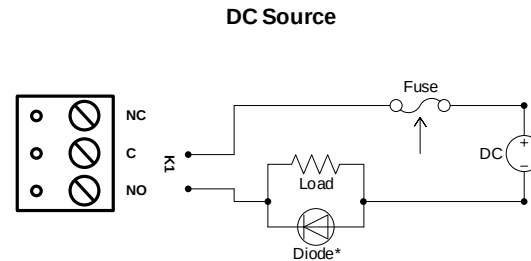




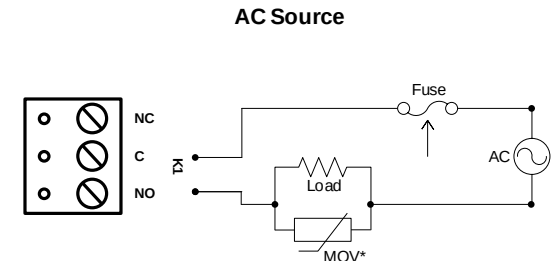
Address	1	2	3	4	5	6	7	8
0	Off	Off	Off	Off	Off	On	On	Off
1	On	Off	Off	Off	Off	On	On	Off
2	Off	On	Off	Off	Off	On	On	Off
3	On	On	Off	Off	Off	On	On	Off
4	Off	Off	On	Off	Off	On	On	Off
5	On	Off	On	Off	Off	On	On	Off
6	Off	On	On	Off	Off	On	On	Off
7	On	On	On	Off	Off	On	On	Off
8	Off	Off	Off	On	Off	On	On	Off
9	On	Off	Off	On	Off	On	On	Off
10	Off	On	Off	On	Off	On	On	Off
11	On	On	Off	On	Off	On	On	Off
12	Off	Off	On	On	Off	On	On	Off
13	On	Off	On	On	Off	On	On	Off
14	Off	On	On	On	Off	On	On	Off
15	On	On	On	On	Off	On	On	Off
16	Off	Off	Off	Off	On	On	On	Off
17	On	Off	Off	Off	On	On	On	Off
18	Off	On	Off	Off	On	On	On	Off
19	On	On	Off	Off	On	On	On	Off
20	Off	Off	On	Off	On	On	On	Off
21	On	Off	On	Off	On	On	On	Off
22	Off	On	On	Off	On	On	On	Off
23	On	On	On	Off	On	On	On	Off
24	Off	Off	Off	On	On	On	On	Off
25	On	Off	Off	On	On	On	On	Off
26	Off	On	Off	On	On	On	On	Off
27	On	On	Off	On	On	On	On	Off
28	Off	Off	On	On	On	On	On	Off
29	On	Off	On	On	On	On	On	Off
30	Off	On	On	On	On	On	On	Off
31	On	On	On	On	On	On	On	Off

Figure 1: Output Wiring Configurations

Depending on your power source, use one of the two methods of transient clamping shown below to protect the relay contacts and to reduce electromagnetic interference (EMI emissions). Always protect against accidental overloads by wiring in an inline fuse to the C (common) side of the relay as shown below.

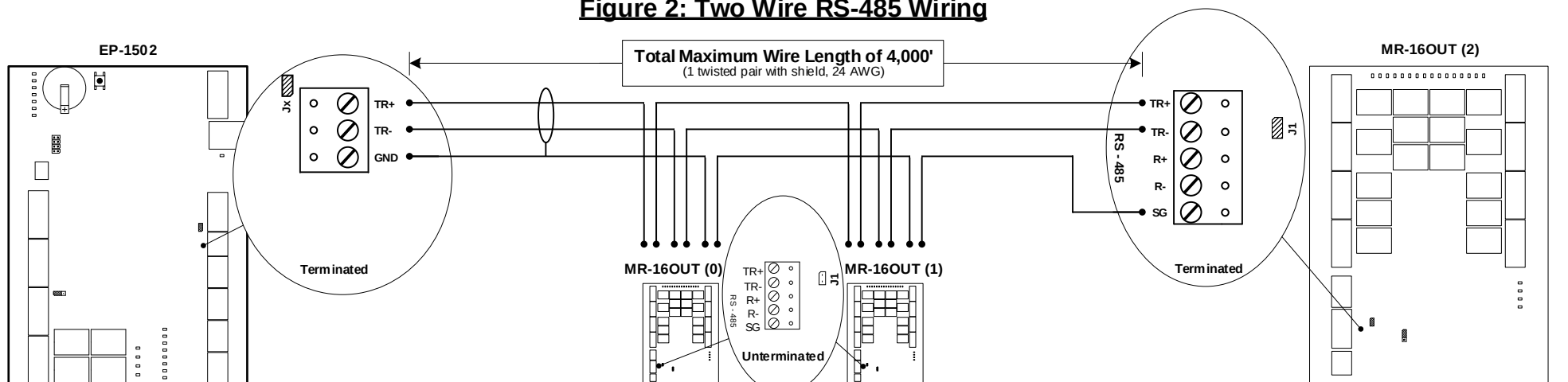


***Diode Selection – Inductive Load**
 Diode Current Rating > 1x Strike Current
 Diode Break Down Voltage: 4x Strike Voltage
 12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical



***MOV Selection – Inductive Load**
 Clamp Voltage > 1.5x Vac RMS
 24Vac Strike, Panasonic ERZ-C07DK470 Typical

Figure 2: Two Wire RS-485 Wiring



The SCP is at the beginning of the bus, so Jx **IS** terminated.
 (see SCP quick reference for specific jumper identification)

MR-16OUTs (0) and (1) are in the middle of the bus, so J1 is **NOT** terminated.

The MR-16OUT (2) is at the end of the bus, so J1 **IS** terminated.

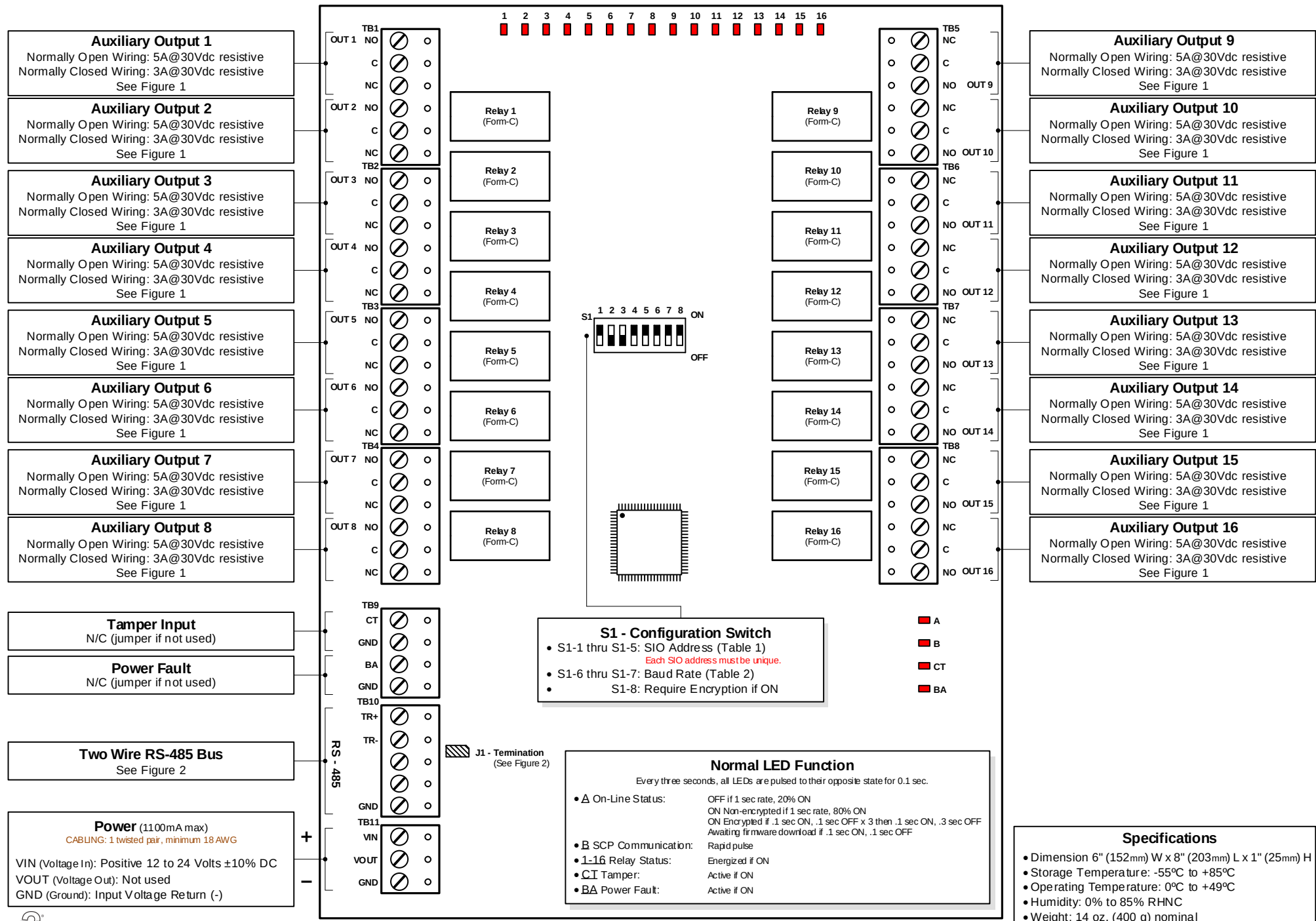


Table 1: SIO Address

Address	S1-1	S1-2	S1-3	S1-4	S1-5	Address	S1-1	S1-2	S1-3	S1-4	S1-5
0	OFF	OFF	OFF	OFF	OFF	16	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	17	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	18	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	19	ON	ON	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	20	OFF	OFF	ON	OFF	ON
5	ON	OFF	ON	OFF	OFF	21	ON	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF	OFF	22	OFF	ON	ON	OFF	ON
7	ON	ON	ON	OFF	OFF	23	ON	ON	ON	OFF	ON
8	OFF	OFF	OFF	ON	OFF	24	OFF	OFF	OFF	ON	ON
9	ON	OFF	OFF	ON	OFF	25	ON	OFF	OFF	ON	ON
10	OFF	ON	OFF	ON	OFF	26	OFF	ON	OFF	ON	ON
11	ON	ON	OFF	ON	OFF	27	ON	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	28	OFF	OFF	ON	ON	ON
13	ON	OFF	ON	ON	OFF	29	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	30	OFF	ON	ON	ON	ON
15	ON	ON	ON	ON	OFF	31	ON	ON	ON	ON	ON

Table 2: Baud Rate

S1-6	S1-7	Baud Rate
ON	ON	38,400 bps [†]
OFF	ON	19,200 bps*
ON	OFF	9,600 bps*
OFF	OFF	115,200 bps*

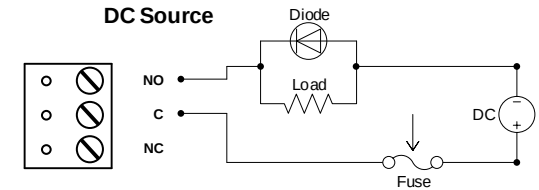
[†]Access It! Universal.NET default value.

*Not evaluated by UL

Figure 1: Output Wiring Options

CABLING: As required for the load

Door lock mechanisms can generate feedback to the relay circuit that can cause damage and premature failure of the relay. For this reason, a diode must be used to protect the relay. Wire should be of sufficient gauge to avoid voltage loss.

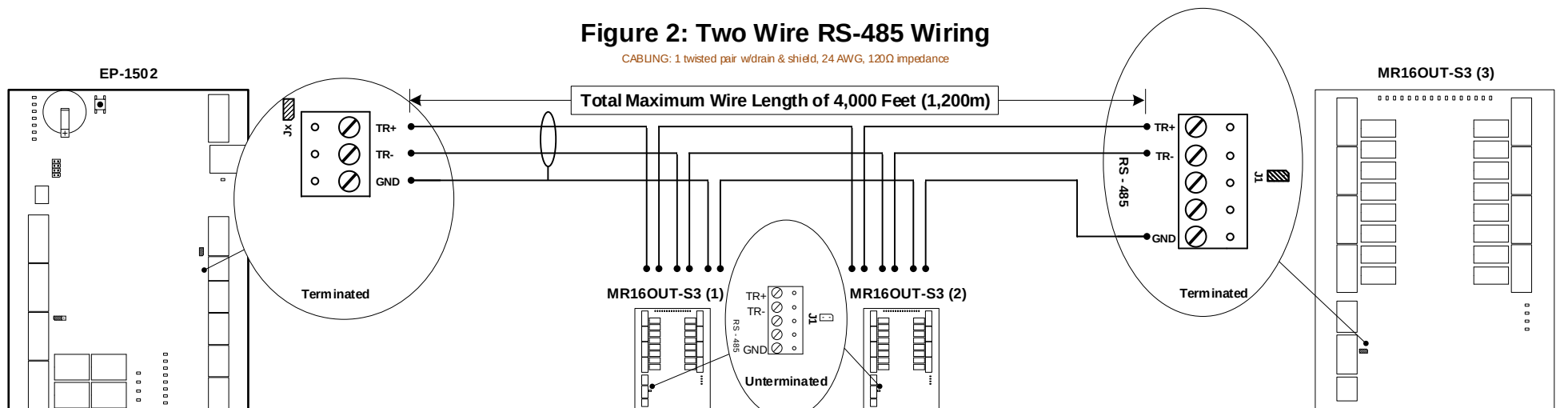


Diode Selection – Inductive Load

Diode Current Rating > 1x Strike Current
Diode Break Down Voltage: 4x Strike Voltage
12Vdc or 24Vdc Strike, Diode 1N4002 (100V / 1A) Typical

Figure 2: Two Wire RS-485 Wiring

CABLING: 1 twisted pair w/drain & shield, 24 AWG, 120Ω impedance



The SCP is at the beginning of the bus,
so Jx **IS** terminated.
(see SCP quick reference for specific jumper identification)
Only Stand-Alone system was evaluated by UL

MR16OUT-S3s (1) and (2) are in the
middle of the bus, so J1 is **NOT** terminated.

The MR16OUT-S3 (3) is at the end
of the bus, so J3 **IS** terminated.

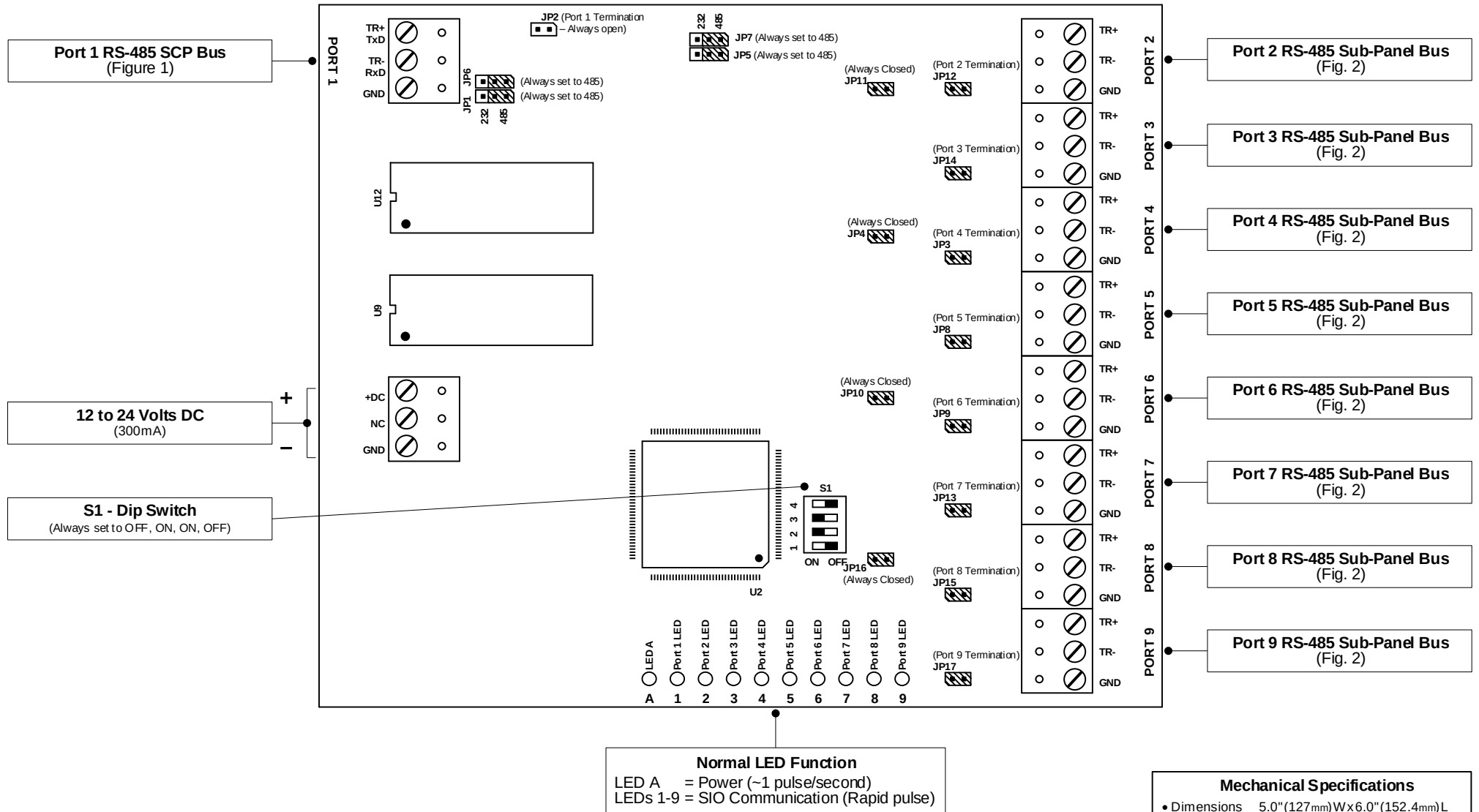
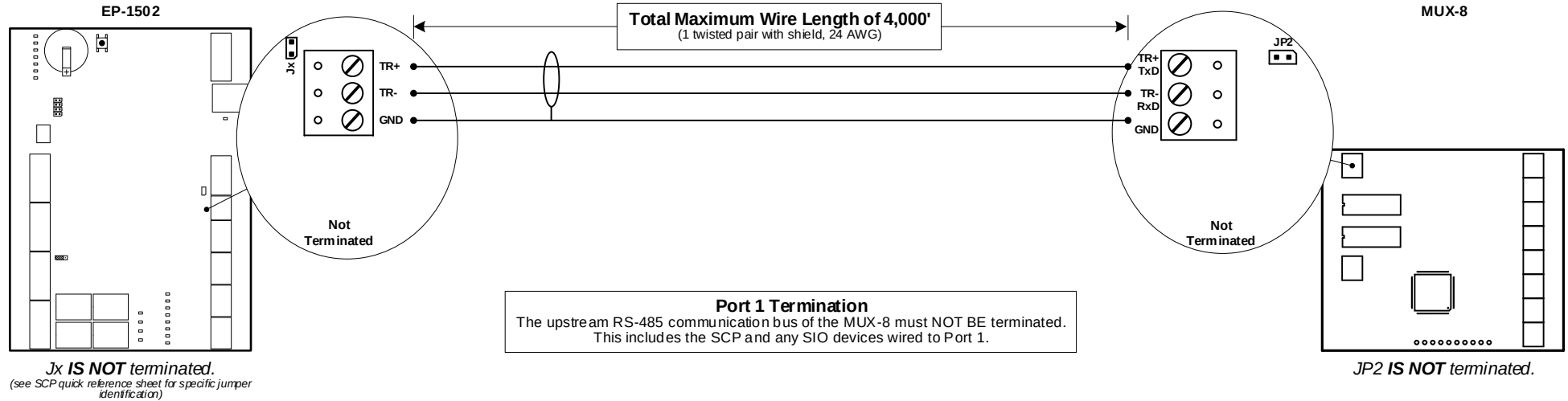


Figure 1: Port 1 RS-485 SCP Bus Wiring**Figure 2: Port x RS-485 Sub-Panel Bus Wiring**