SA Series LED Count Display ᶜ(UL)ᵤₛ
Power and Communications Wiring and Configuration
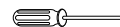
Last Revised 14 Aug 2018

Voltage
This sign operates within an input range of 120VAC to 277VAC.

With the low volt option the sign operates within an input range of 12VDC to 24VDC. (see Fig. 2 for wiring)

What You Need:
Flat Head Screw Driver

⚠ Always turn off the power prior to installation.

⚠ To avoid damage do not overtighten connections

⚠ Be sure any metal debris cleared out of the cabinet.

1. Power Supply
The standard power supply for the 7-Segment LED Display is rated for 120-277VAC *(see Fig. 1 for wiring)*, which is to be delivered via the stranded hot and neutral wires on the supply. In signs containing multiple displays, their power is daisy-chained together at the factory.

2. *Optional Low Voltage (12-24VDC) Input* (see Fig. 2 for wiring)
If this option has been ordered, wire leads are available at the indicated 12-24VDC power input section. Red is positive, black is negative. Integrated diode protection prevents damage in the event of accidental polarity reversal.
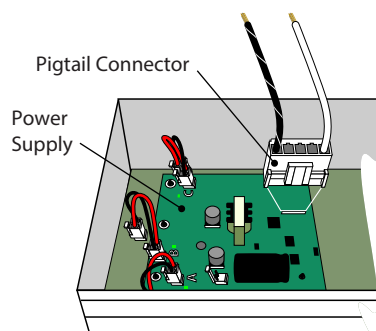
Wiring Power Connections

1. Locate the power supply. It is the circuit board with a large white pigtail connector.

For 120-277VAC supplies the Neutral wire is White and the Line wire is Black with White Stripe. *(see Fig. 1)*

Low Volt 12-24VDC supplies have a Black Negative and a Red Positive Lead. *(see Fig. 2)*

2. To make your electrical connections easier, gently unplug the supplied wired pigtail connector from the power supply.

3. With your incoming power already running through the mounted back you can easily make all connections to the pigtail using wire connectors.

4. Plug the pigtail connector back into the power supply to finish off the electrical part of your installation. The connector is "keyed" and can only be installed in one orientation

5. See the back page to make the Communications connections and to configure your sign.

⚠ **Note:** Make appropriate wiring connections per local code.

Note: Any holes drilled into sign cabinet MUST be sealed. Failure to do so may cause a short and void warranty.

Note: This sign is intended to be installed in accordance with the requirements of Article 600 of the National Electric Code and/or other applicable local codes. This includes proper grounding and bonding of the sign.

Fig. 1: Wiring a 120-277VAC Power Supply

Pigtail Connector
Power Supply

Input range of 120 to 277VAC
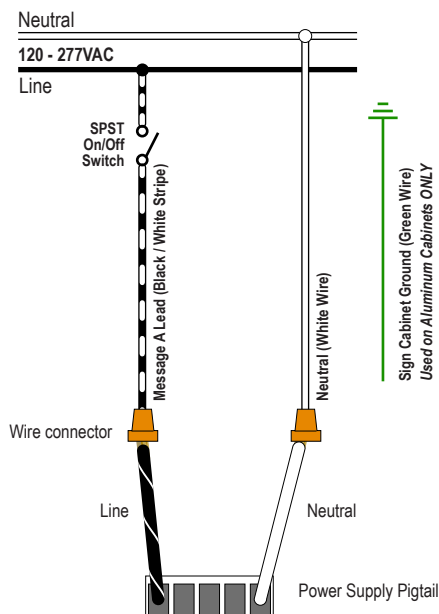
Fig. 2: Wiring a 12-24VDC Power Supply ONLY

Pigtail Connector
Power Supply
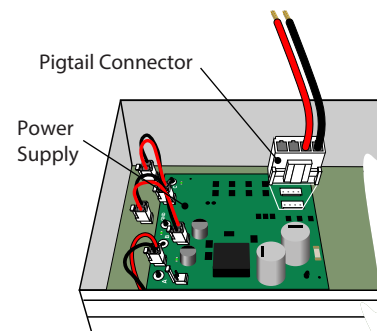
Input range of 12-24VDC ONLY!

Communications Wiring

Communications are to be provided to the sign via RS-485 2-wire (plus GND connection). Note that there are two RS-485 connections and either one may be used for this connection. They are electrically connected on the circuit board. Using the GND connection is necessary to ensure data integrity. Observe proper daisy-chain protocols for wiring multiple devices to an RS-485 network. In signs with multiple displays, the RS-485 communications have been daisy-chained together at the factory. All serial data is to be configured with parity set to none, 8 data bits, and 1 stop bit, at 9600bps.

Alternatively, RS-232 may be used following the wiring below.

See Fig. 3 for RS-485 2-Wire Communications Wiring

See Fig. 4 for RS-232 Communications Wiring

See Fig. 5 for RS-232 DB9 Communications Wiring
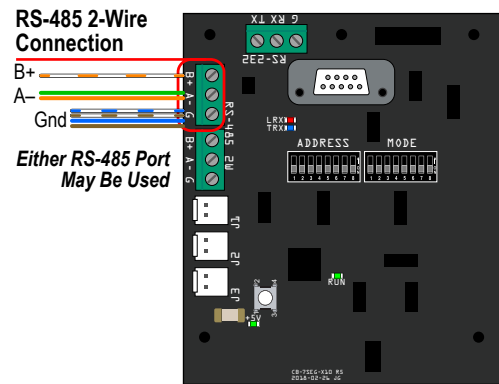
Fig. 3: RS-485 2-Wire Communications Wiring

RS-485 2-Wire Connection

B+
A–
Gnd

Either RS-485 Port May Be Used

Fig. 4: RS-232 Alternative Communications Wiring

RS-232 Connection

TX   RX   GND
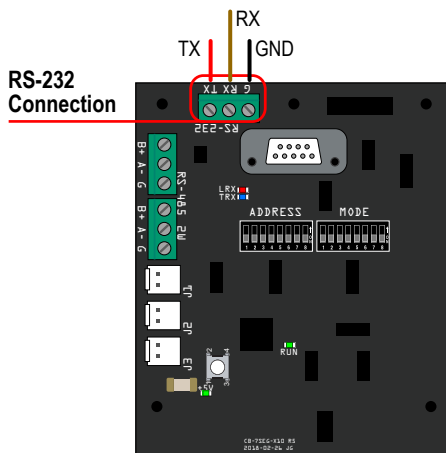
Fig. 5: RS-232 DB9 Alternative Communications Wiring

RS-232 DB9 Connection

RX   GND   TX

RS-232 DB9 Connection

DB9 Connector (**male**)   DB9 Connector (**female**)

GND

TX   RX   RX   TX

Display (female)	Computer (male)
Pin 5 - GND	Pin 5 - GND
Pin 3 - RX	Pin 3 - RX
Pin 2 - TX	Pin 2 - TX
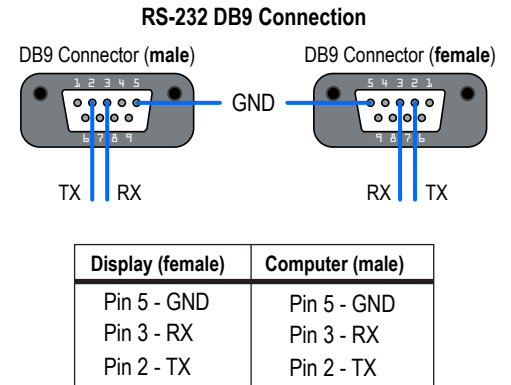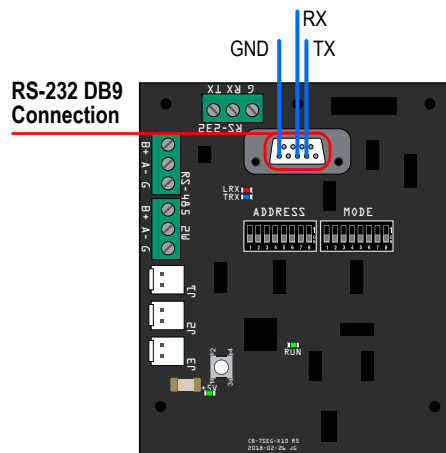
Sign Addressing

A unique address must be assigned to each circuit board to allow it to properly receive the correct data. The configuration is set by DIP switches located on the back of each display board.

Addressing DIP Switch Configuration

Used to assign an identifier to a display. If the signs on the network are to be instructed to send a response to each command, every sign must have a unique address. If this is not the case, multiple signs may use the same address if they are to display the same information.

To activate the Value associated with each switch, set the switch to ON. The Values are additive: All activated values will be added together to yield the address of the display. *(see Fig. 6 for Switch Values)*

Example 1 *(see Fig. 7)*
Switches 1, 5 and 7 set to ON = Address 81 (1 + 16 + 64 = 81)

Example 2 *(see Fig. 8)*
Switches 2, 6, 7 and 8 set to ON = Address 226 (2 + 32 + 64 + 128 = 226)

Fig. 6: Switch Values

Switch	Value
1	1
2	2
3	4
4	8
5	16
6	32
7	64
8	128

Fig. 7: Address 81

Fig. 8: Address 226

Mode DIP Switch Configuration
These switches are preset at the factory, and should not be changed.

Used to set the protocol and operating mode of the display. The configuration options are shown on a label on the display board or within the sign enclosure.

Switch 4   ON Position the word **FULL** displays as an overlaid **FULL** message. *(see Fig. 9)*
OFF Position the word **FULL** displays in 7-Segment digits. *(see Fig. 10)*

Switch 5   For **TEST MODE** only. **MUST** remain OFF for normal operations.

Switch 6   ON Position the word **CLSd** displays in green.
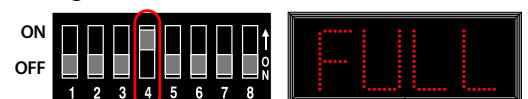OFF Position the word **CLSd** displays in red. *(If capable)*

Fig. 9: Overlaid FULL lit

ON
OFF

Fig. 10: 7-Segment FULL lit

ON
OFF