

# Scanning Devices

## Smart Remote Displays - Installation Instructions

These instructions apply to the following models:

Lighted Displays	
SRD-.4L	.4" LED. 1/8 DIN Panel Mount Display
SRD-1L	1" LED ¼ DIN Panel or Desktop Mounting
SRD-2L	2" LED Wall or Desk Mount
SRD-2L-SS	2" LED with Stainless Steel Case, Wall or Desk Mount
SRD-4L	4" LED Wall or Desk Mount
SRD-4L-SS	4" LED with Stainless Steel Case, Wall or Desk Mount

### Description

The Smart Remote Display (SRD) is an intelligent remote display device for use with weighing indicators and other numerical data sources which transmit a continuous RS-232 or 20 mA current-loop signal with asynchronous ASCII data format.

The SRD features a "Learn" function with automatic serial data communications line characteristic detection, storage and recall for ease of installation and setup. The "Learn" feature allows the SRD to capture the communications parameters and message formats used by the data source. These parameters and formats are stored in the SRD's memory and recalled on each power-up.

The "Learn" function is protected under US Patent Number 6,049,888.

### Installation

Install the SRD by first securely mounting the enclosure, then connecting line power, and then connecting the serial signal cable from the data source. *Note: polarity of the serial data cable is not important unless the data source is operating as 20 mA passive.* See [trouble-shooting](#) for this case.

### **SRD-0.4L**

- The 1/8 DIN plastic enclosure is panel-mounted using the included hardware. Panel cutout is 45mm (H) by 92 mm (W).
- Attach a 120 VAC power supply to the larger stationary two-screw terminal block on the rear of the enclosure.
- Attach two-conductor serial data cable to the small green two-screw terminal on the back of the enclosure.

### **SRD-1L**

- The 1/2 DIN desktop/panel mount enclosure can be used on a desktop by attaching a self-adhesive rubber foot (included) to each corner of the bottom of the enclosure. The enclosure can also be panel mounted using hardware attached to each side. Panel cut-out is 92 mm (H) by 186 mm (W).
- A grounded six foot 120 VAC power cord is attached to the back of the display. Plug the cord into a three-wire grounded outlet.
- Attach two-conductor serial data cable to the two-position screw terminal block on the back of the enclosure.

### **SRD -2L, -4L**

- Attach the SRD securely to a wall, post, table top, or other surface using appropriate screws or bolts installed through the six 1/4" diameter holes in the mounting bracket (screws are not provided).
- A grounded six foot 120 VAC power cord is attached to the back of the display. Plug the cord into a three-wire grounded outlet. The power cord is attached to the display at a 3-screw barrier strip mounted on the inside back wall of the enclosure. The cord may be removed and replaced with an alternate power cord.
- Feed the two-conductor serial data cable through the strain relief in the enclosure lower wall and securely connect to the green plug-in connector on the SRD's printed circuit board. If the serial data cable does not fit snugly inside the cable strain relief in the enclosure wall, wrap the cable with electrician's tape to assure that no dust or water will enter the enclosure through the strain relief.

### **Setup**

The data source must be set for **Continuous** data transmission, either RS-232 or 20 mA current loop, active or passive. Any line speed from 300 to 19,200 baud is acceptable for RS-232 signals; 20 mA current loop signals must transmit at 2400 baud or less.

After connecting power and the serial communications line to the SRD, apply power. The SRD should power up with "HELLO".

With a continuous serial signal being transmitted from the data source, press the LEARN button to initiate the "Learn" sequence. The LEARN Button is a momentary contact push button located on the front panel of the SRD-0.4L and SRD-1L and on the internal circuit board of the other SRD's. The SRD goes through a pre-programmed sequence to analyze received data to determine the serial data communications line characteristics.

The progress of the "Learn" sequence can be observed by the messages displayed during the learning process.

- Determination of RS-232 or 20 mA signal type and polarity. The display sequences through "L1", "L1-", "L2", "L2-" until a signal is detected. "L1" is RS-232 positive polarity; "L1-" is RS-232 negative polarity; "L2" is 20 mA active (data source provides the current); "L2-" is 20 mA passive (SRD provides the current).  
*Error Condition* - If the "L1", "L1-", "L2", "L2-" sequence continues to be displayed, the data source is not transmitting or wiring is incorrect. Turn off power, check wiring, determine whether the data source is transmitting continuously, and restart.  
*20 mA Passive Polarity* - Some data sources do not provide bi-directional current switching. If you suspect that the data source is 20 mA passive, try reversing the two-conductor serial data cable at either the SRD or the data source.
- Determine the line speed. When the speed is determined, it is displayed.  
*Error Condition* - If the SRD fails to display a speed and remains blank for more than 50 characters, then traffic on the line is likely outside its speed range. Turn off power, check data source transmission speed and restart.
- Determination of transmission characteristics. The SRD analyzes incoming data to learn parity, data bits and stop bits. Approximately 50 characters are required for this step. At the end of the sequence, SRD shows the following six-character display:
  - first character "P"
  - Parity as the second character ("E" for even, "O" for odd, "-" for none)
  - Blank
  - Number of data bits as the fourth character
  - Blank
  - Number of stop bits as the sixth character

Note that the displayed characteristics may differ from the data source characteristics as there are several characteristic combinations which provide equivalent results for numeric data.

*Error Condition* - If the SRD displays "HELLO" and stops, push the learn button again. If the SRD again displays "HELLO" and stops, check that the transmitted data is in standard serial ASCII format.

- Determinations of transmission data format. The SRD examines data for control characters such as Line Feed and Carriage Return to determine the display operating mode. At the end of the sequence, the SRD returns to "HELLO" as the memory is updated with the Learn results. When memory is updated, the "Learn" sequence is complete and the transmitted data is displayed.  
*Error Condition* - If the SRD displays "HELLO" and stops, contact Scanning Devices with a description of your data source message format.  
*Most common format* - The most common message format transmits 6 numeric digits with (optional) embedded decimal point followed by .

## Service

If the SRD appears to be defective, contact Scanning Devices with a description of the problem.

### Model Reference Chart:

#### SRD-0.4L



#### SRD-1L



#### SRD-2L & SRD-4L

