Model: SST1 Load Cell Tester

Load Cell Central
28175 Rt 220
Milan, PA 18831

Web: www.800loadcel.com
Email: sales@800loadcel.com

Toll Free: 1-800-562-3235
Ph: 1-570-637-7048
Fax: 1-570-637-7054

Table of Contents

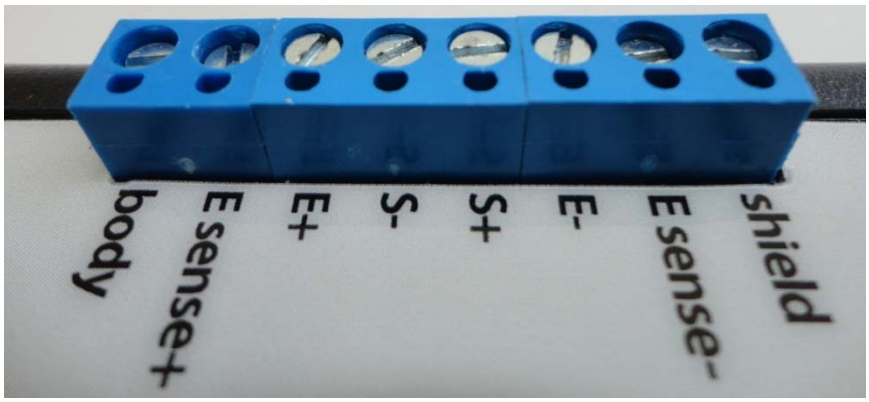
Quick Start

Power

The battery compartment is located at the lower rear of the unit as pictured. Two AA batteries are used to power the device. Batteries of the same charge, type, and brand should be used. The On/Off switch is located below the battery compartment.

Load Cell Connection

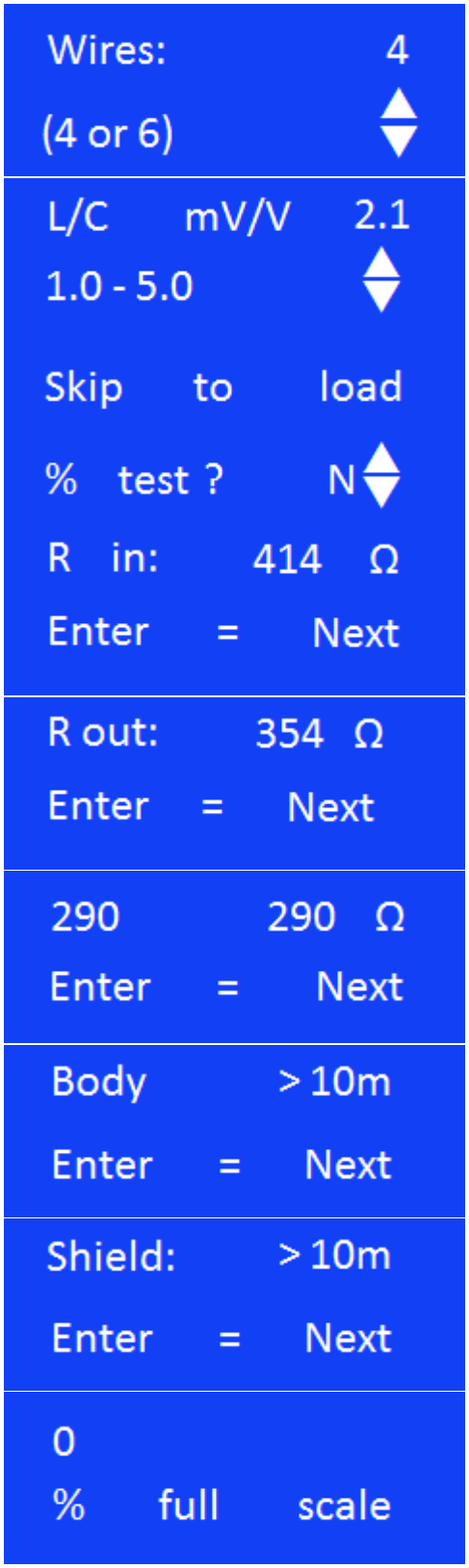
The load cell is connected using the terminal block located at the top of the unit.



Shield	The shield wire of the load cell should be wired here. It is generally an un-insulated wire.
Negative Sense	Sense leads are used to account for voltage drop on cables of over 50 feet though they can be used on shorter cables. If they are available they should be used.
Negative Excitation	The Excitation leads of the load cell are used to power the load cell.
Positive Signal	The Signal leads of the load cell are used to measure the mV output of the load cell.
Negative Signal	The Signal leads of the load cell are used to measure the mV output of the load cell.
Positive Excitation	The Excitation leads of the load cell are used to power the load cell.
Positive Sense	Sense leads are used to account for voltage drop on cables of over 50 feet though they can be used on shorter cables. If they are available they should be connected.
Body	The Body wire should be an external connection to bridge the unit to the load cell's Body (or housing).

Menu Navigation

The menus used on the SST1 can be navigated using the three buttons on the face of the unit. The Up and Down keys are used to increment and decrement values while the Enter key will advance menus.



Load Cell Wiring - This selection allows you to specify the number of wires used to connect the load cell to the SST1. Full bridge load cells only require 4-wire connections; however, some load cells have two additional leads to account for voltage drop. These are called Sense leads and should be attached if available.

Full Scale Output - This selection allows you to specify the Full Scale Output of your load cell in mV/V. This number is generally located on the load cell or listed on the manufacturer's certificate. This number is necessary for the Full Scale % Test to function properly.

Skip Bridge Tests - This option will allow you to skip all bridge readings and begin the Full Scale % Test.

Input Resistance – This measurement shows the **resistance between the *positive and negative Excitation leads***. Load cell resistances vary heavily depending on type, manufacturer, and application. This reading should be compared to published specifications for your load cell. Numbers in the thousands can indicate severe overloads.

Output Resistance - This measurement shows the **resistance between the *positive and negative Signal leads***. Load cell resistances vary heavily depending on type, manufacturer, and application. This reading should be compared to published specifications for your load cell. Numbers in the thousands can indicate severe overloads.

Load Cell Balance – This measurement shows two separate resistance readings. The first is the ***negative excitation and negative signal leads***. The second is the ***negative excitation and positive signal leads***. These numbers vary depending on manufacturer, but should typically be within 1Ω of the other.

Body Insulation Resistance – This measurement tests for poor insulation between the ***Body*** (or housing) and ***Bridge*** of the cell. Anything below 10MΩ is considered failing, and should be evaluated by a professional. Failures can be caused by electrical current such as lightning or welding. Moisture can also be factor in Insulation Resistance.

Shield Insulation Resistance - This measurement tests for poor insulation between the ***Shield*** and ***Bridge*** of the cell. Anything below 10MΩ is considered failing, and should be evaluated by a professional. Failures can be caused by electrical current such as lightning or welding. Moisture can also be factor in Insulation Resistance.

Full Scale % Test – This test will provide a real time output of the cell in % of Full Scale mV/V Output. This test is useful for checking the ***Zero Balance*** of the cell. Zero balance can only be tested when the cell is at zero load. With specific weights, linearity can also be tested with this function.

Examples

We can use these values to evaluate many aspects of load cells. We can conclude things like overloads, shock loads, water damage and metal fatigue. The first example is the Zero Balance test.

Zero Balance: The mV/V output of a cell while no load is present. In order for this test to be conclusive; the cell should be removed from the scale.

Overloading a load cell, whether it be by a shock load or a load of >150%, will stress the metal to the extent that it cannot fully return to its original shape. They behave in much the same way springs do. This stress is generally measured with the zero balance test. Most "off the shelf" load cells will have a zero balance of ±1% of FS. Values between 1 and 10% of full scale are generally attributed to a load cell's age, or slight overloads. These values can sometimes be corrected by re-calibrating a scale. However, if the load cell has a zero balance of +/-10% or greater, the cell will need to be replaced. ***Load cells that have been overloaded cannot be repaired.***

Input Resistance: The resistance value between the input (excitation) legs of a load cell.

Output Resistance: The resistance value between the output (signal) legs of a load cell.

Positive Balance: The resistance value between the negative excitation, and negative signal legs of a load cell.

Negative Balance: The resistance value between the positive excitation, and negative signal legs of a load cell.

Insulation Resistance: The resistance between the bridge, housing, and shield wires of the load cell. If the cell is being tested due to drifting weight values, moisture is probably present, and should be tested with a megohmmeter at 50V.

These tests can give us more insight on the type of load the load cell may have experienced. The next page shows a table including some examples of potential readings.

Examples (cont.)

	Normal Output Resistance	Output Resistance -Sig to +Sig	Input Resistance -Exc to +Exc	+Exc to –Sig	-Exc to -Sig
Load Cell A	350Ω	350Ω	410Ω	292Ω	292Ω
Load Cell B	350Ω	350Ω	410Ω	292Ω	295Ω
Load Cell C	350Ω	350Ω	410Ω	295Ω	295Ω
Load Cell D	350Ω	∞	410Ω	∞	∞
Load Cell E	700Ω	700Ω	760Ω	1080Ω	380Ω

Load Cell A appears to be a very healthy load cell. The output resistance is very close to the normal output resistance of the cell. The input resistance will normally be higher than the output resistance as temperature compensation resistors are included in the excitation leads. The positive and negative balances are equal. Load Cell B has been bent by an off-axis load. This is evident because the Load Cell Balances are not within 1Ω. This suggest that the cell was twisted. Load Cell C has been overloaded by a force of more than 150% of full scale. This is evident because the strain gages have a higher resistance than those in the other cells. This would be supported by the zero balance test. Load Cell D has a disconnected gage. From the readings, we can conclude that the –Signal lead is disconnected from the bridge inside the cell. Load Cell E has an open gage between the +Excitation and –Signal leads.

Specifications

Specification	*Value*	*Unit*
Accuracy	0.03	% of FS
Bridge Testing Voltage	5	Volts
Insulation Resistance Voltage	5	Volts
Power Supply	1 * 350	Ohms

Load Cell Central
28175 Rt 220
Milan, PA 18831

Web: www.800loadcel.com
Email: sales@800loadcel.com

Toll Free: 1-800-562-3235
Ph: 1-570-637-7048
Fax: 1-570-637-7054