

Weighing System Surge protector

User Manual

SP151



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SP151 Weighing System Surge Protector

The high performance surge protector device applies to 4- or 6-wire load cell weighing systems or other related applications.

1. General

SP151 Surge Protector is designed for accessing direct into the cabling of the weighing system, in order to prevent the load cells and other sensitive electronic components from damage by a near surge strike or power failure. Surge protector works at the local only, therefore, SP151 devices should be installed on both ends of circuitry loop.

A complete system protection requires additional surge protection device(s) to ensure that other items, such as AC power, external printers, mainframes, and telephone and so on.

2. Installation

The following recommendation is only as a reference. Take into account of local conditions, the installation should always be carried out by professionals.

2.1 Siting

SP151 should be set within 3m from the load cells or systems to be protected. For the maximum degree of protection, SP151 should be used at both ends concurrently of the interconnected cables. In general, install a protective device between the junction box and load cells set (Figure 1). Some systems specify load cell individual cable(s), protections are needed for every load cell (Figure 2). Within the weighbridge, the SP151 should be set close to the indication systems, the interconnecting cables must be separated by at least 50mm from other irrelevant cables.

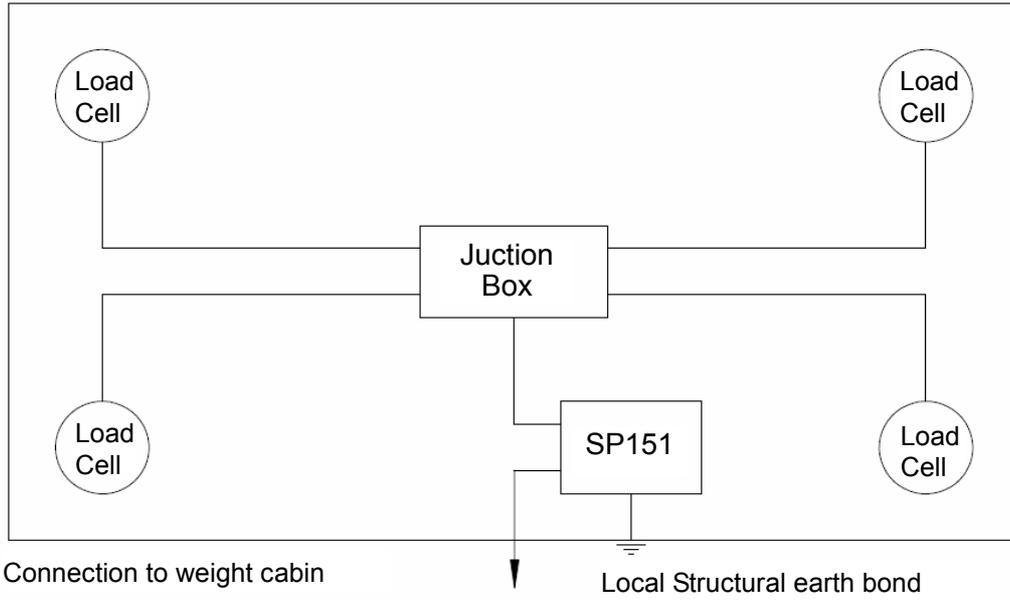


Figure 1

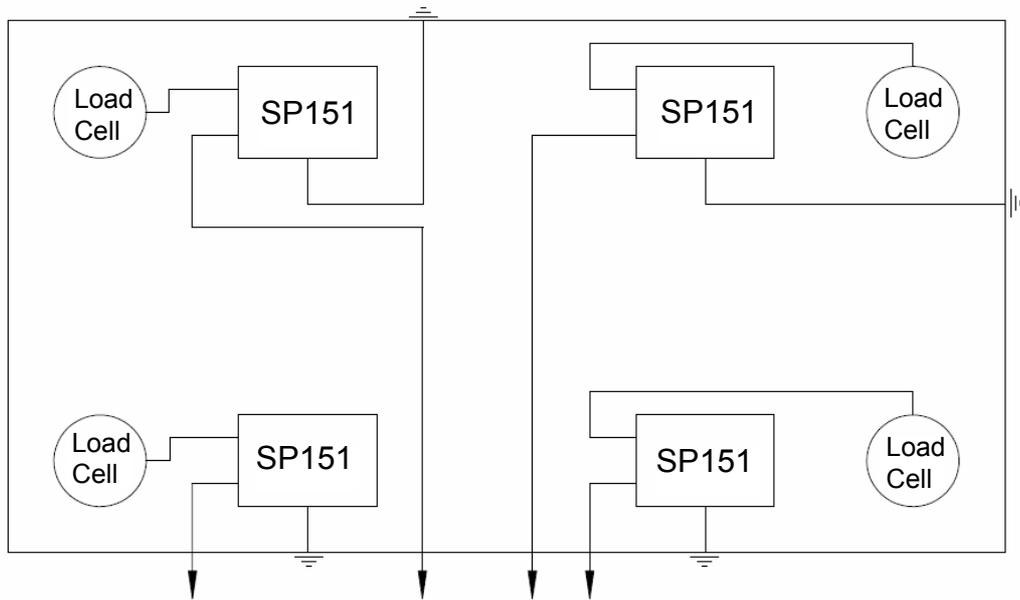
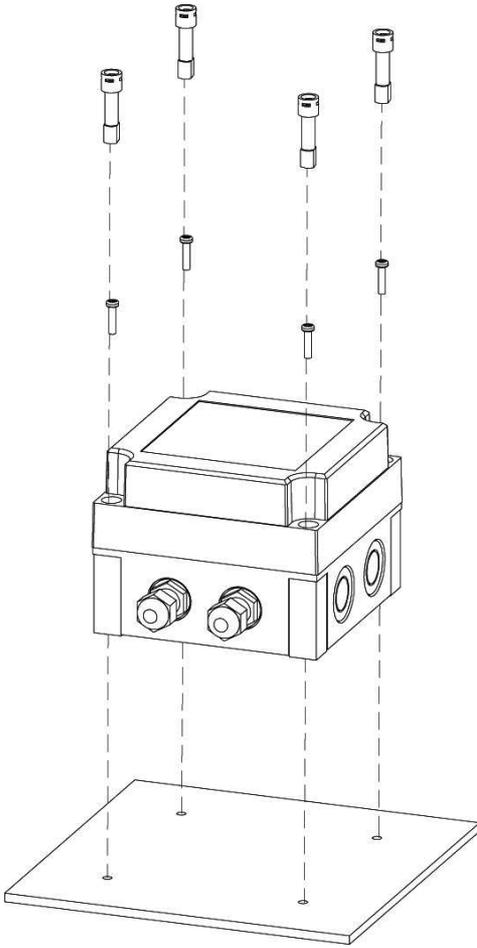


Figure 2



2.2 Securing

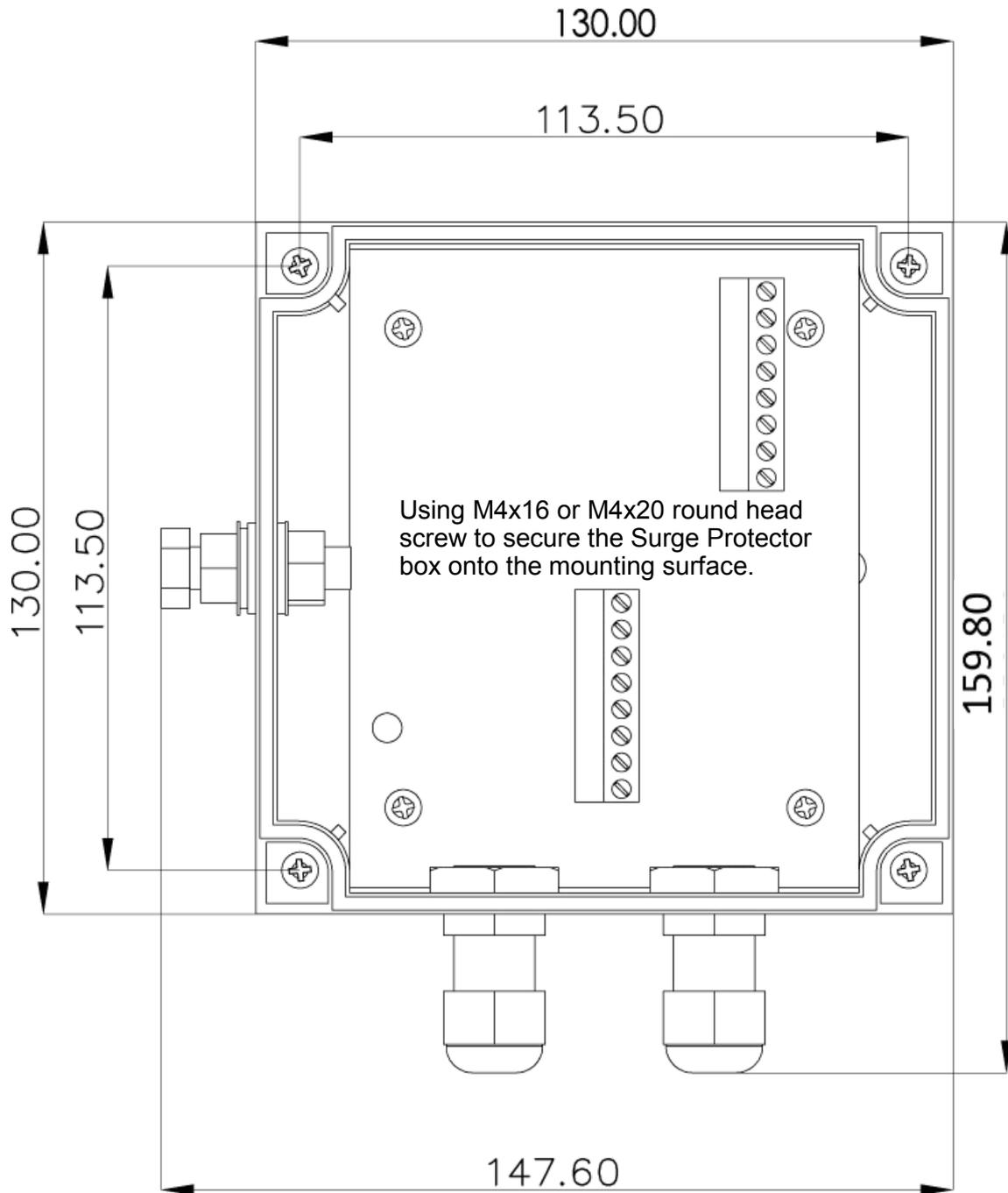


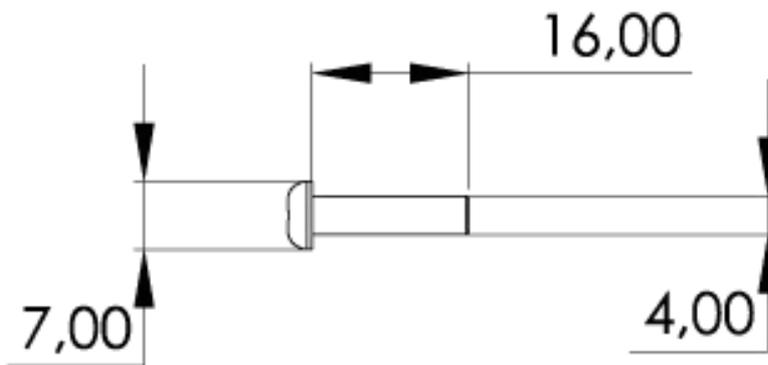
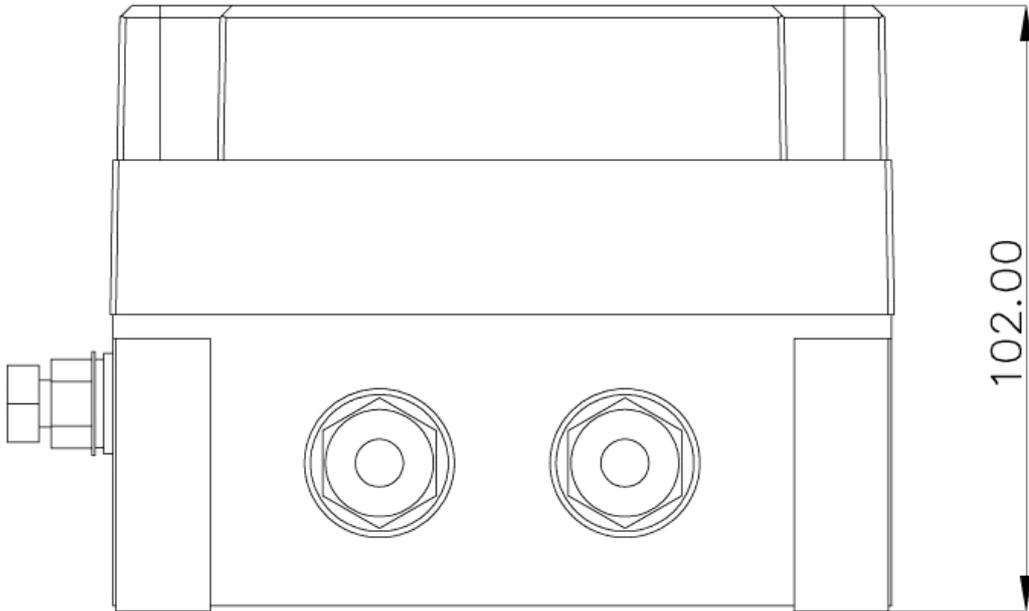
- ◀ SP151 should be mounted vertically, and the cable should be connected upside down to avoid water from seepage.



▼ SP151 sealing ring has 4 mounting holes with center to center spacing of 113.5 × 113.5 mm.

Using M4x16 or M4x20 round head screw to secure the Surge Protector box onto the mounting surface.





Lock attached to the screw size

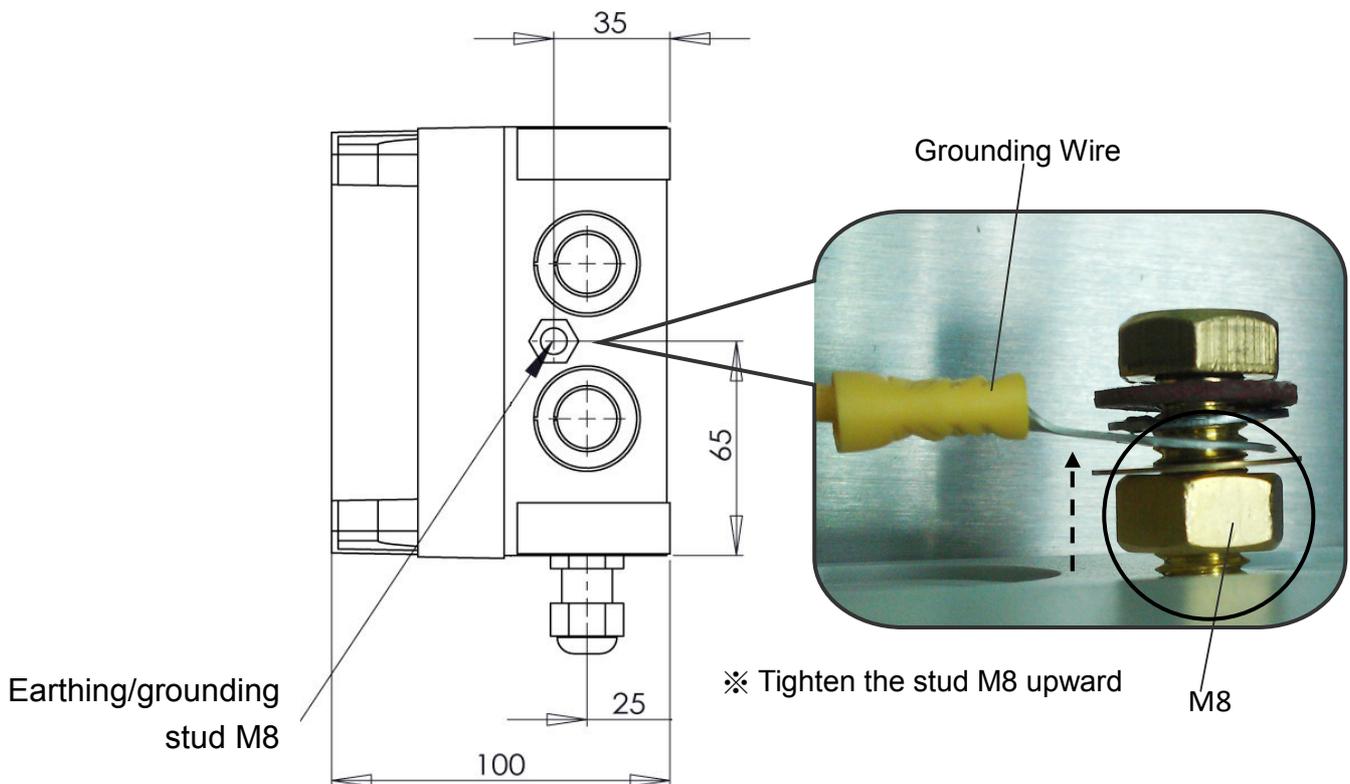
The screw diameter is 4mm, and 7mm for the head diameter (M4 screws minimum length is 16mm). The stainless steel screws are recommended to use for securing purpose. Cables within 200mm from SP151 should be supported and fixed to prevent the cable connector from unable to support the weight of the cable.

2.3 Grounding

Properly grounding can only elaborate the performance of a surge protector. To select the welding point by referring to the local voltage, all the welding points will share the common-mode voltage to the ground. The welding point is connected to the local ground network or ground rod system; hence, no extra ground network or ground rod system is needed to be installed.

Proper grounding is the local structure of the device (Figure 1 and Figure 2), no matter connected to the steel connection of metal or reinforced concrete weighbridge. From the grounding bolt M8 external connect to the ground wire of the grounding point (10mm²mm copper or equivalent metal wire or ribbon). The combination that less than 3m develops for optimum performance. Use proper amount of preservatives to protect the exposed metal.

In loadometer (weighbridge) or control room, SP151 surge protector should be located close to the weighing computer or dashboard display, and the ground wire should be connected to independent grounding rods of the AC power. Ground wires that more than 3m long, a ground between the SP151 with the instrument is needed (See Figure 4).



2.4 Connections

Two terminals are provided, labeled "Field cable" and "Instrument cable". Field cable is the independent, exposed cable between the weighbridge and weighing cabin. Instrument or load cell cable is a locally short connection, such as from SP151 to the junction box, independent load cell or weighing scale. Equipments connected to the terminal are subject to SP151 protection.

SP151 allows the 4-wire (SIG1, SIG2, EXC1, EXC2) or line 6 (SIG1, SIG2, EXC1, EXC2, SENSE1, SENSE2) as well as two isolated lines. The function of each terminal is clearly marked on the junction box.

The isolated lines connected to field cables and instrumentation cables are not connected with the ground wire of the SP151 without affecting the ground operation of the general weighing system.

If your vendor requires the isolated lines to be grounded, it should be connected to the junction box or load cell.

Cable through the cable seal sleeve, stripped and attached to the corresponding connections are clearly marked and the subsequent failure detection would be easier. Ensure that the seal sleeve casing is tight, and then lock the lid.

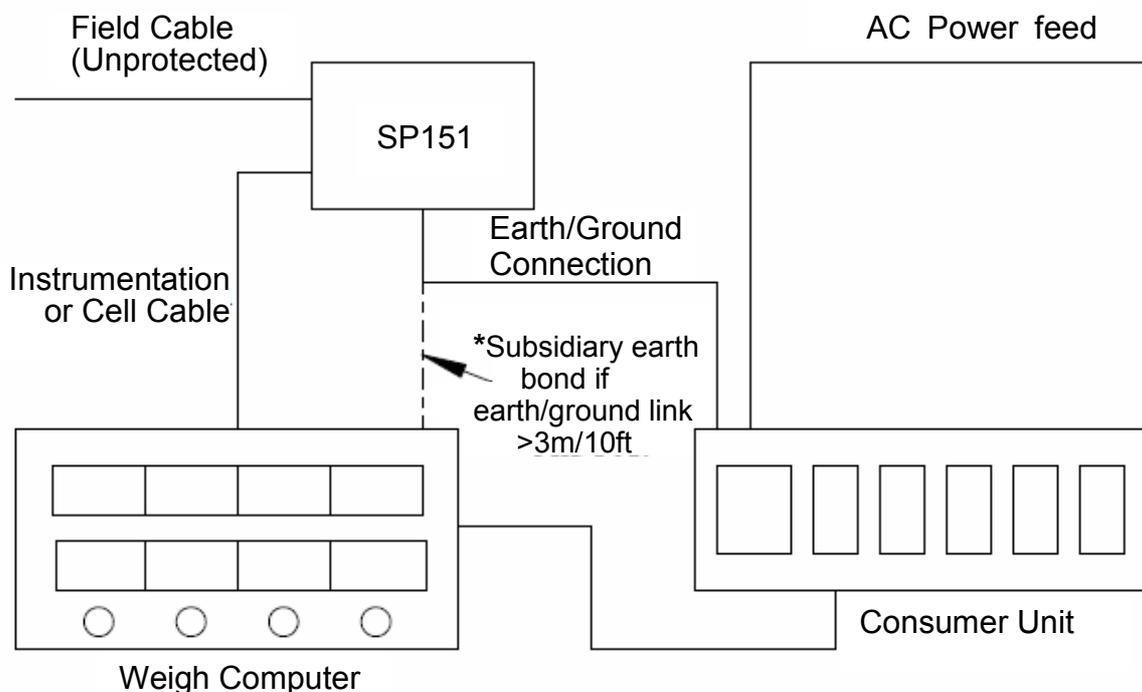


Figure 4



3. Maintenance

Note: For certified systems, you must confirm that the system can be re-calibrated. Before tearing off the seal for maintenance, a new calibration seal is required for replacing after the maintenance.

Processing the maintenance every the other year. (higher repair and maintenance frequency for particularly harsh environments)

- 3.1 Check SP151 to see if it is surrounded by intact and sealed correctly.
- 3.2 Remove the chassis cover and confirm that the sealing effect, if necessary, to replace the damaged seal strip.
- 3.3 Check all internal cables labeled.
- 3.4 Check the tightness of all connected cables, and repair any loose or damaged connections.
- 3.5 Check the internal and external grounding line, tighten it if loose.

4. Troubleshooting

When the electronic circuit system suffered from surge struck, it will operate automatically and self-recovery. The SP151 service lifespan could be around 20 years, depends on the lifespan of the protection components of the primary gas discharge tube.

Attention

Field cable that connected to two SP151 of the instrumentation, the isolated lines must be connected and with a drain of pipeline.

When the isolated lines suffered from the surge, the gas discharge tube will discharge to the earth to improve the overall protection.