

LC30

Protects load cells and electronic weighing equipment against surges and transients on system cabling

- **Protects load cells, weighbridges, process weighing and silos**
- **Certified for use in legal metrology applications**
- **Reliable, high surge absorption capacity**
- **Easy field installation in rugged weatherproof enclosure**
- **Can be used in intrinsically safe circuits without further certification**



The LC30 surge protection device protects load cell and weighing system installations from possible malfunctions or damage to individual strain-gauge bridges of associated electronic instrumentation etc. caused by severe overvoltages or impulse currents on signal cabling.

Weighbridges, silos and other product batching/weighing facilities are typically large metal structures, and are exposed to direct lightning strikes. Protecting the structure from lightning is not in itself sufficient to prevent the secondary damage to associated electronic systems. Individual load cells and strain-gauge bridge insulation may break down under the abrupt shift in local structural voltage as lightning currents are dissipated to local ground, thus allowing surge currents to flow through the connecting cable into the various indicators and power supplies situated some distance away. The connecting cabling can be armoured, shielded, underground and may still be susceptible to surges.

Load cells may be damaged by surges, as few transducer manufacturers make more than a token effort at incorporating protection components. Adequate protection is even more critical with digital load cells, where electronic components and amplifiers are installed right at the point of greatest exposure.

Surge protection devices protect the system at the point of installation, therefore a full system is likely to have at least one LC30 device installed at the weighbridge to protect the load cell(s), and another LC30 in the weighing control cabin to protect the electronics installed there.

Fully solid-state, the LC30 clamps incoming surges immediately without causing undue leakage losses under normal conditions. Once the surge has passed, the device automatically resets to the passive state, allowing normal operations to continue.

The advanced protection concept used in the LC30 also eliminates the expensive additional earthing systems specified by other suppliers, so field installation is very simple indeed.

The LC30 can be used in hazardous area applications with appropriate self generated system documentation as it is non-voltage producing, non energy storing 'simple apparatus'. Our application guide details the steps necessary to achieve an intrinsically safe installation. The LC30 is designed for use in Zone 2/Div2 and is also suitable for legal metrology applications.

Weighing Systems Protection

Specification

All figures typical at 77°F (25°C) unless otherwise stated

Maximum surge current

10kA

Leakage current

10µA at 32V dc

Limiting voltage

80V (after 6kV/3kA IEC 61000-4-5 combination wave test)

Nominal excitation voltage

20V ac or dc

Maximum excitation voltage

22V ac or 32V dc

Protection

Dust and watertight to IEC 60529:IP67, GRP enclosure

Ambient temperature limits

-4°F to +140°F (-20°C to +60°C) – working
-22°F to +158°F (-30°C to +70°C) – storage

Humidity

5 to 95% RH (non-condensing)

Connections

Input/output: 6-wire plus screen plus earth (ground)

Max. terminal conductor size

1.5mm² (15 AWG) Glands (IP68) provided for cable sizes 5 to 10mm dia. Main earth connection; M8 external stud

Mounting

Internal 0.28" (7mm) dia. through-holes

Weight

3.3 lb (1.5kg)

Dimensions

See figure 1

EMC Compliance

To generic Immunity Standards, EN50082, part 2 for industrial environments

Installation

The LC30 should be located close to the load cell or system being protected, preferably within 3 metres. For maximum protection, LC30's should be used at both ends of the interconnecting cable. Generally, one protector is installed between the field summation box and load cell groups. Some systems specify individual cables per load cell and therefore one protector at each load cell is required.

Once the location of surge protection has been established, it is essential to ensure correct earthing of the surge protection devices. No specific grounding rods are necessary around the weighbridge; the normal earthing of the structure is more than adequate. When protecting equipment the LC30 surge protection device should be bonded to the equipment earth with the minimum length of cable possible. Both 'earthed' and 'isolated' screen connections are provided, so that the normal practice of any particular load cell supplier (with respect to screens) can be maintained. LC30(s) should also be used at the weigh cabin for signal wiring and a mains protector should also be fitted to the mains supply.

To order specify -

LC30

(Weighing systems surge protection device)

Note: In accordance with our policy of continuous improvement, we reserve the right to change the product's specification without notice

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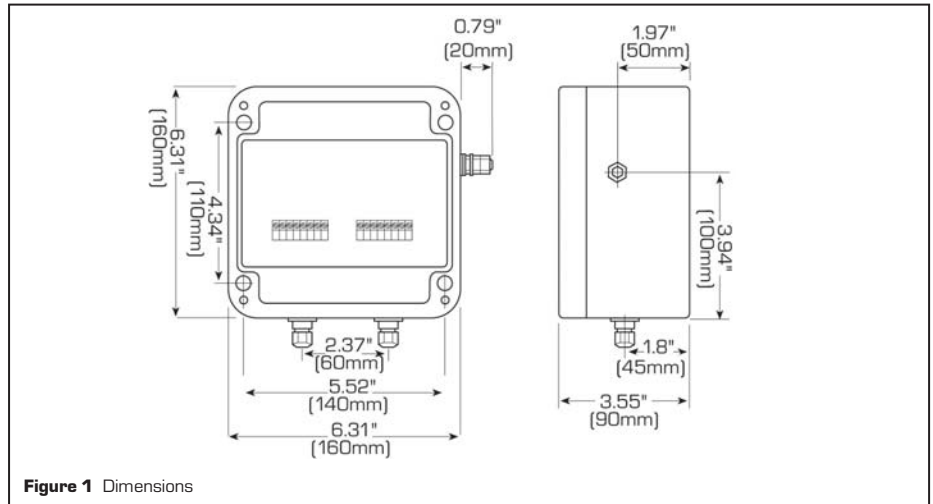


Figure 1 Dimensions

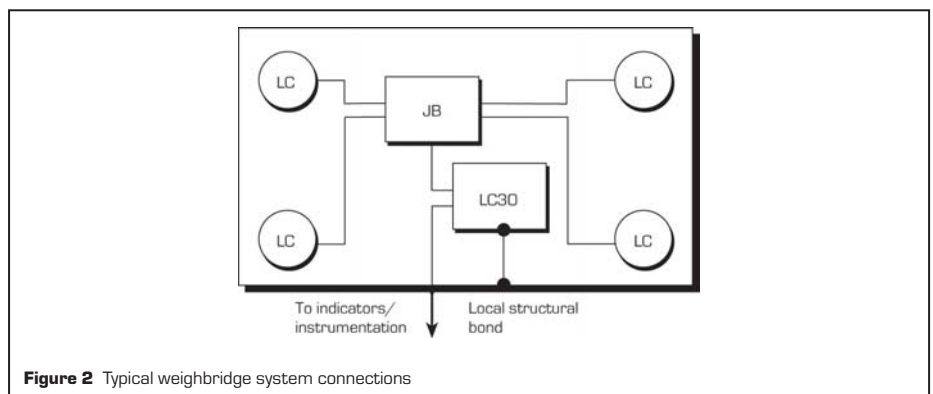


Figure 2 Typical weighbridge system connections

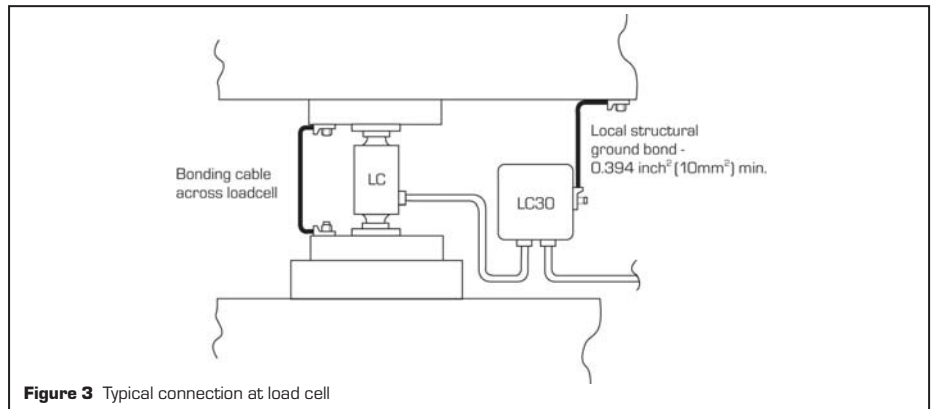


Figure 3 Typical connection at load cell

Approvals

Authority	Standard
NMI	Certified in accordance with EN45501, NMI certification number TC2720, based upon OIML R60

Test results demonstrating complete system accuracy in accordance with OIML R60 can be provided. The LC30 has been tested and certified in accordance with paragraph 8.1 of EN45501 (derived from OIML recommendation R76) by NMI (Nederlands Meetinstituut) for use on non-automated weighing systems, and can be used for legal metrology on systems using R60 approved loadcells. The UK National Weights and Measures Laboratory (NWML) will approve the use of the LC30 in UK "pattern" approved weighbridges meeting the required characteristics.

