

## LIGHTING PROTECTION & GROUNDING RECOMMENDATION

Lighting strikes produced during storms it is a risk factor that can damage the electronic equipment as load cells and weighing indicators, especially those that has components located outdoor as weighbridges and silos.

### 1. Effects of a lighting strike

These can affect weighing instruments mainly in two ways:

#### 1.1 Direct Impact

Direct Impact can destroy any the component of a scale due to the high energy locally concentrated.

#### 1.2 Indirect Impact

Indirect Impact can induce currents at some hundred meters around the site affecting the weighbridge circuits. These currents are produced by the induction of an electromagnetic pulse and by a differential of potential created in the different points of the earth.

### 2. Protection Systems

By using some principles of protection and specific protection devices these risks can be minimized:

#### 2.1 Protection against Direct Impact

Outdoor systems can be protected against direct impact of lighting strikes by the use of an adequate earthing mast for safely conduct the surge to the earth.

#### 2.2 Protections against Indirect Impact

Protection against Indirect Impact is performed by the use of several steps as:

**2.2.1. All metallic structures and devices must be connected to common grounding point for potential equalization (Figure 1):**

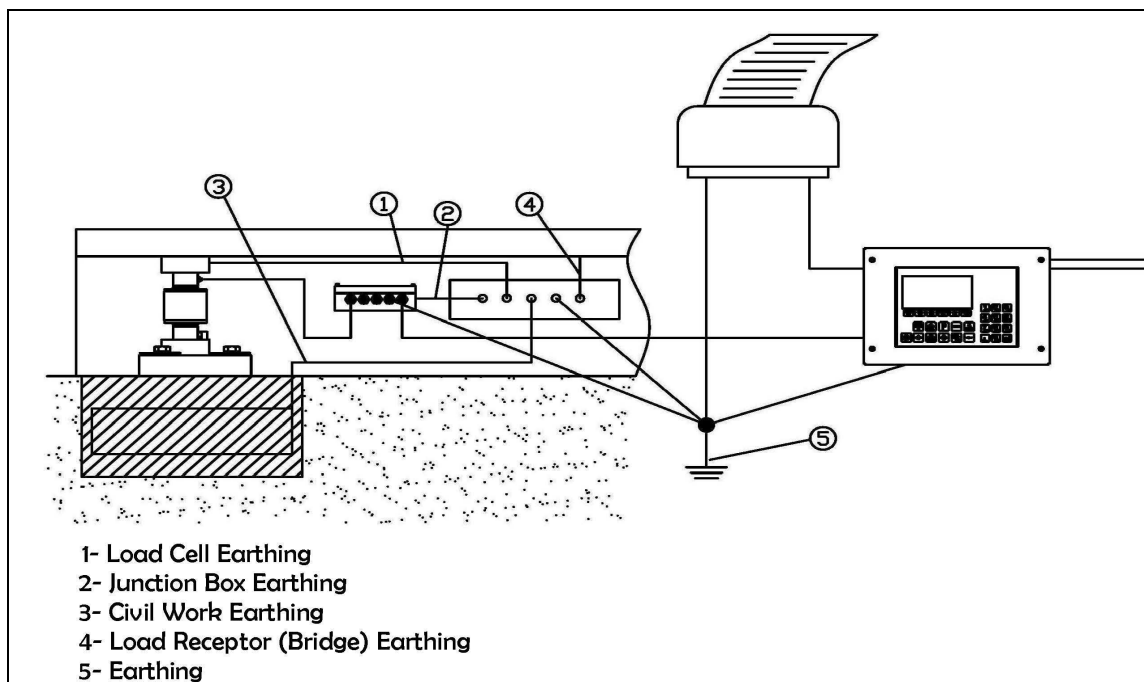


Figure 1

### 2.2.2. Shield Connections: All devices must have common shield connections (Figure 2).

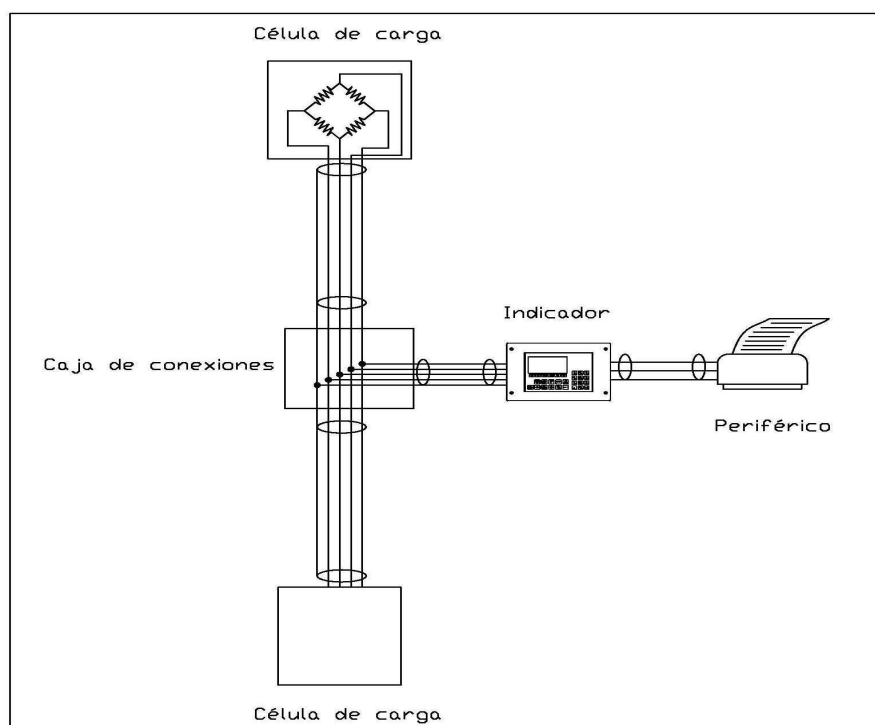
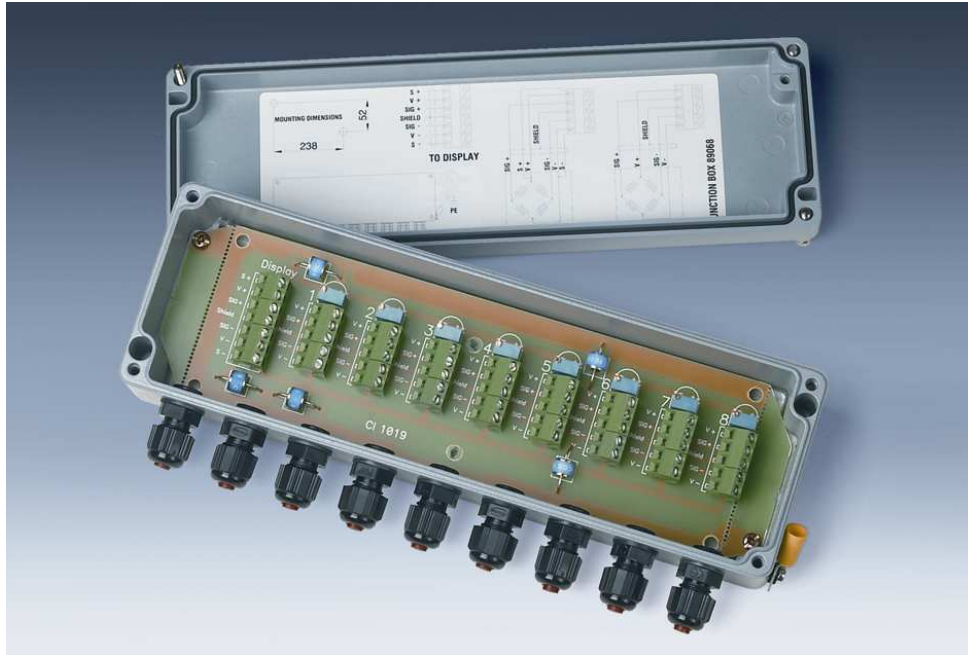


Figure 2

### 3.- Use of protection devices Surge Arresters and over voltage protection devices:

#### 3.1.- Junction Boxes with surge arresters for over voltage protection and earthing screw for connection.



**3.2.- Over voltage protection for 110-230 AC power supply** for each of the electrical apparatus connected to the scale: weighing indicator, printer, PC, etc.

**3.3.- Over voltage protection for all data transmission lines** like RS 232, RS 485, ETHERNET, PROFIBUS, etc. connected to the weighing system.

For safety reasons all legal regulations must be observed.