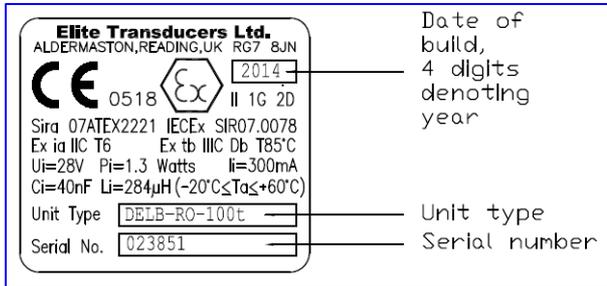


## USING SAFETY BARRIERS with ELITE LOAD CELLS

Our Ex certified load cells have been assessed against two different protection classes, intrinsic safety (ia) for use in all gas (zones 0, 1 & 2) hazard environments and protection by enclosure (tb) for use in dust hazard (zones 21 & 22) environments.



Our product label shown here, displays markings to indicate this. When these load cells are used as intrinsically safe load cells, that is, relying on ia protection concept then the energy supplied to these load cells **must** be limited. This energy limitation is achieved by the use of safety barriers which are special products we do not manufacture. Below is a brief explanation of the two types of safety barriers generally used in weighing applications with some key points about them,

- shunt barriers or Zener barriers which limit the energy supplied to the load cells with the use of passive components such as resistors, Zener diodes and fuses.
- galvanic or isolated barriers which are isolating type barriers using transformers, and amplifiers to isolate the circuits in hazardous and non-hazardous area and limiting the energy supplied to the circuit in the hazardous area. Because they use active electronics, they have to be powered.

Shunt barriers are generally lower cost, used more commonly than the galvanic barriers. There are two major suppliers of these barriers and both have good websites with useful application notes. These are MTL Instruments and Pfeffer & Fuchs.

Zener barriers have their own ATEX certificates based on that only 'Simple Apparatus' are connected at the hazardous side of the devices. There is a limit on the maximum capacitance and inductance, which can be connected to them as well as there is maximum current and voltage that can be applied. If a multiple load cell system is connected as it would be the case in a weighing system then the excitation voltage supplied to the load cells will be reduced accordingly.

Where possible the zener barriers should be mounted on a single metallic rail which should be earthed properly, this is called the 'IS earth'.

We do not supply safety barriers for use with our load cells but there is plenty information available on the use of these devices. Zener barriers or shunt barriers are commonly used in the weighing industry because they are lower cost, do not require power and easily understood technology.

Following pdf documents contain a lot of information on the use of the safety barriers and their application with load cells.

1. MTL (<http://www.mtl-inst.com/support/C379/>): AN9003 - A Users Guide to Intrinsic Safety and Technical data sheet MTL7700 Series.
2. Pepper&Fuchs ([http://www.pepperl-fuchs.co.uk/great\\_britain/en/index.htm](http://www.pepperl-fuchs.co.uk/great_britain/en/index.htm)): Engineer's Guide.

For details of our ATEX and IECEx certificates please visit our website. If you require further information on the use of our load cells in potentially explosive gas or dust environments please contact us.

