MTL K522
grounding techniques

Introduction

This technical note is to aid the wiring on site of MTL K522 Instruments, remote sensors and communication equipment using the RS232 interface.

Signal Grounding

The RS232 0V, Sensor Common and Supply 0V and are all connected together internally – See Figure 1. It is important that these terminals are not connected to external circuits at differing potentials. This includes connections to mains earths in different locations. The Output 4/20mA is an isolated output.

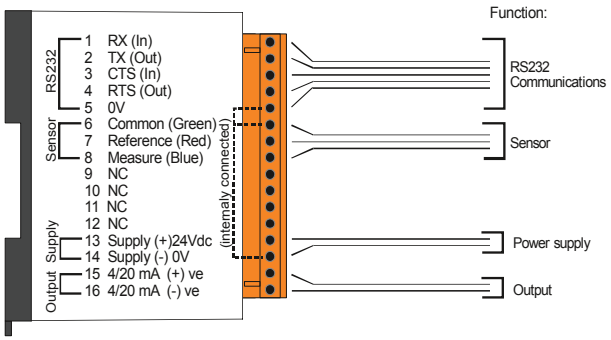

Figure 1 - Internal connections

When the RS232 port is connected to a PC, the GND terminal will be connected to the PC case, and hence to mains earth ground. In this case, the DC power supply for the instrument should be a Class II or double insulated type (ie not earthed).

Chassis Grounding & Earth Grounding

Depending on the installation these might be connected together or they might not. However for the discussion below, we have assumed they are connected together and have ignored the earth ground symbol.

If signal cables lengths are greater than 0.5m or close to sources of electrical noise, instrument performance may be improved by using screened cables. In this case the screens should be terminated at one (the same) end to a single bonding point (ie RS232 D type shield if this linked to earth). See Figure 2.

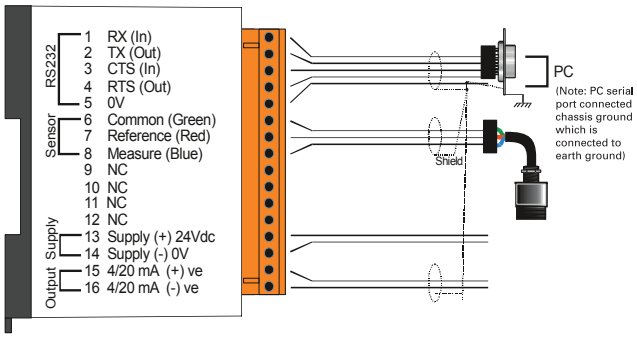

Figure 2 - Cable screening method

If the serial interface is not connected then it is advised to connect the (–) 0v side of the DC supply to the earth bonding point. See Figure 3

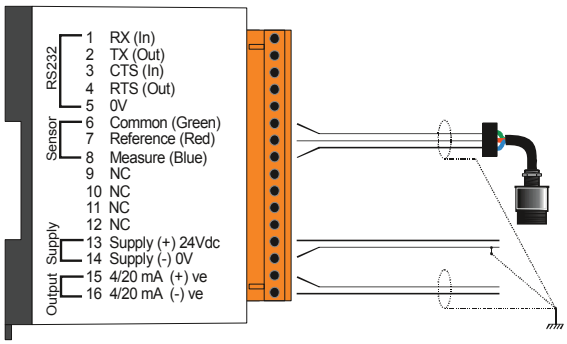

Figure 3 - Alternative cable screening method

In either of the cases above, the sensor is isolated from its metal enclosure and will therefore not cause any external connection to chassis ground or earth ground.

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