Technical note MTL gas analysers & systems

October 2016 TN010 520-1009 Rev 3

CROUSE-HINDS SERIES

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.



Eaton Electric Limited, Great Marlings, Butterfield, Luton Beds, LU2 8DL, UK. Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283 E-mail: mtlgas@eaton.com www.mtl-inst.com

© 2016 Eaton All Rights Reserved Publication No. TN010 520-1009 Rev 3 191016 October 2016 EUROPE (EMEA): +44 (0)1582 723633 mtlenguiry@eaton.com

THE AMERICAS: +1 800 835 7075 mtl-us-info@eaton.com

ASIA-PACIFIC: +65 6 645 9888 sales.mtlsing@eaton.com The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.



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.