

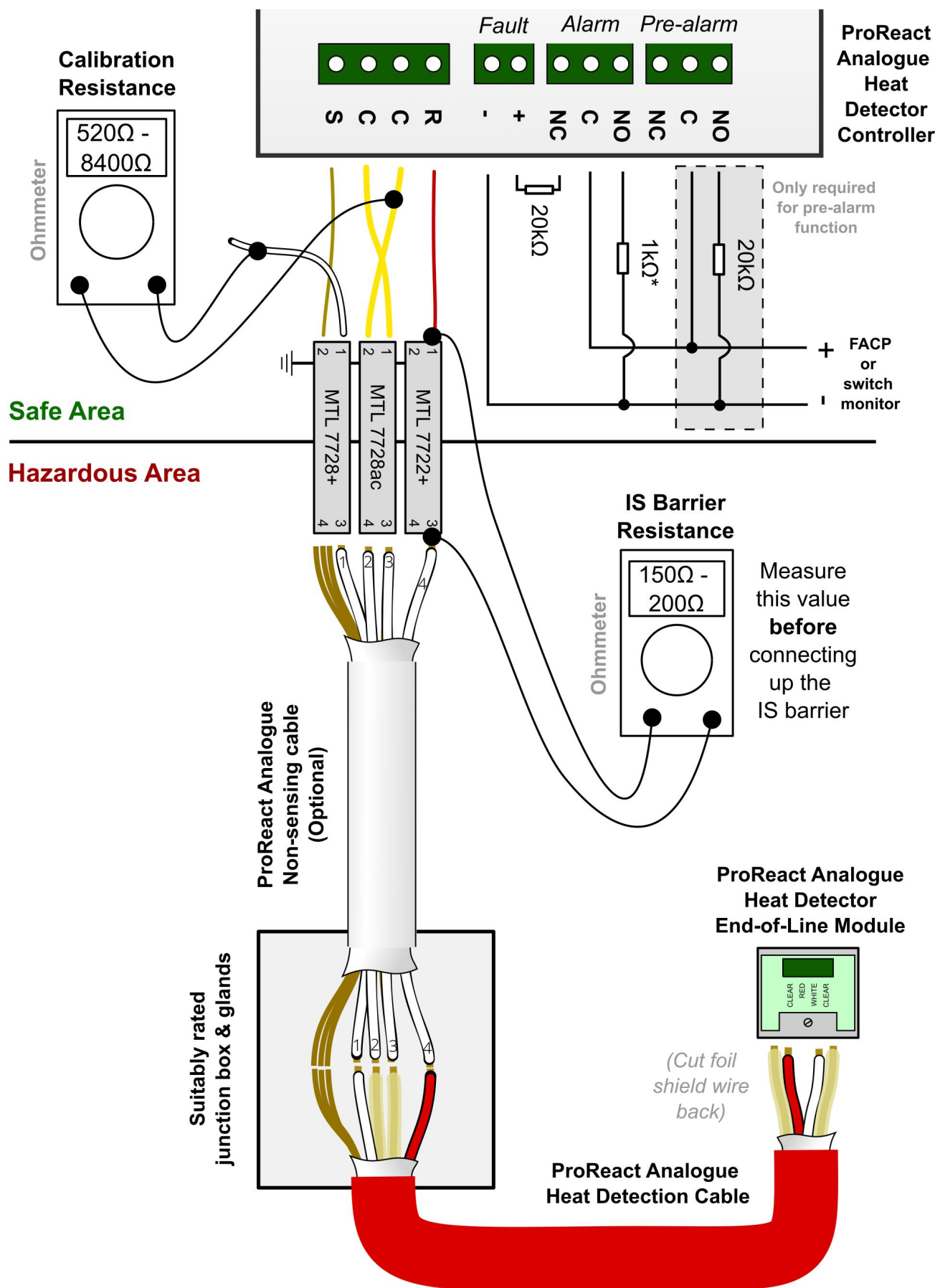
ProReact Analogue Linear Heat Detection Cable and Controller

Hazardous Area Installation Instructions

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Figure 1. Typical Installation Wiring Diagram



Installation Instructions

Analogue Linear Heat Detection may be installed in hazardous areas using intrinsically safe barriers. The controller must be installed in the safe area and the intrinsically safe (I.S.) barriers separate the safe area and the hazardous area as shown in figure 1.

Analogue Linear Heat Detection cable and the end-of-line module are declared as a "simple apparatus" in accordance with the definitions of BS EN 60079-11:2012 and BS EN 60079-14:2014 since they do not have their own ignition source and have "well-defined electrical parameters...which [are] compatible with the intrinsic safety of the circuit in which [they are] used". This is also in accordance with the ATEX Directive 2014/34/EU as discussed in the ATEX 2014/34/EU Guidelines 4th ed.

The correct intrinsically safe barriers must be chosen to meet the requirements detailed in the approval certificates for the specific barrier. This includes, but is not limited to, the Gas Group, Zones and Load Parameters.

For the Analogue Linear Heat Detection cable the important cable parameters are shown in Table 1.

The system can be installed in a manner similar to that shown in figure 1. ProReact Non-Sensing Cable is optional but may be used if the start of the sensor cable zone is some distance from the control unit and intrinsically safe barriers.

Do not use any other type of non-sensing/leader cable as this can affect the correct operation of the analogue linear heat detector.

Table 1. Analogue Cable Parameters

Analogue LHD Sensor Cable

	Capacitance	Inductance	L/R ratio	Resistance
White Core	<65pF/m	<12.5μH/m	<0.7μH/Ω	~17Ω/m
Red Core	<70pF/m	<6μH/m	<2.5μH/Ω	~3.3Ω/m
Clear Cores	<105pF/m	<3μH/m	<14μH/Ω	~0.11Ω/m

Analogue Leader (non-sensing) Cable

	Capacitance	Inductance	L/R ratio	Resistance
All Cores	<150pF/m	<2μH/m	<30μH/Ω	~0.035Ω/m

Table 2. I.S. Barrier Maximum Permissible Parameters

MTL7728+ / P&F Z 728

Combined Channels	Group IIC	Group IIB	Group IIA
Capacitance	0.083μF / 0.083μF	0.65μF	2.15μF
Inductance	4.2mH / 3.05mH	12.6mH	33.6mH
L/R ratio	54μH/Ω / 56μH/Ω	218μH/Ω	435μH/Ω

MTL7728ac / P&F Z 928

Combined Channels	Group IIC	Group IIB	Group IIA
Capacitance	0.083μF / 0.083μF	0.65μF	2.15μF
Inductance	4.2mH / 3.05mH	12.6mH	33.6mH
L/R ratio	54μH/Ω / 56μH/Ω	218μH/Ω	435μH/Ω

MTL7722+ / P&F Z 722

Combined Channels	Group IIC	Group IIB	Group IIA
Capacitance	0.165μF / 0.17μF	1.14μF	4.2μF
Inductance	1.65mH / 1.45mH	7.22mH	14mH
L/R ratio	44μH/Ω / 45μH/Ω	176μH/Ω	353μH/Ω

(MTL according to Certificate No. BAS01ATEX7217 Issue 8)

Table 3. Maximum Permissible Zone Lengths

In the case Gas Group IIC applications, the limiting factor on zone lengths is due to the red core inductance. In the case of Gas Group IIB and IIA applications the limiting factor on zone lengths is the maximum allowed sensor cable per controller.

Gas Group	only Analogue	with 100m non-sensing cable	with 250m non-sensing cable
	Sensor Cable		
IIC	275m (241m P&F)	241m (208 P&F)	191m (158m)
IIB	500m	500m	500m
IIA	500m	500m	500m

Commissioning Instructions

When using the analogue LHD system in hazardous areas and with I.S. barriers it is important to commission the controller correctly so as to remove the offset created by the I.S. barrier resistance.

Refer to the Analogue LHD installation instructions document to commission the controller, however, in the laptop/PC software before clicking "Update Settings", the "Hazardous Area" checkbox should be ticked. The resistance value of the I.S. barrier in line with the Red core of the sensor cable (see figure 1), should be entered in the box labelled "IS Barrier Resistance". Once this has been done, the "Update Settings" button can be clicked.

Likewise, if a self-programmable controller is being used, after entering the calibration resistance, select "Yes" for the "Hazardous Area" option. Then enter the IS barrier resistance and confirm this is correct. The remaining settings can be configured as per the Analogue LHD installation instructions.

See the images on the right for examples using the laptop/pc software and self-programmable versions.

Note: the hazardous area IS barrier resistance is not saved in the controller and therefore cannot be retrieved by the "Get Current Settings" button. Once the correct value has been entered it should be recorded for future reference.

