

ProReact Digital Interface Monitor Module (DiMM)

Hazardous Area Installation Instructions

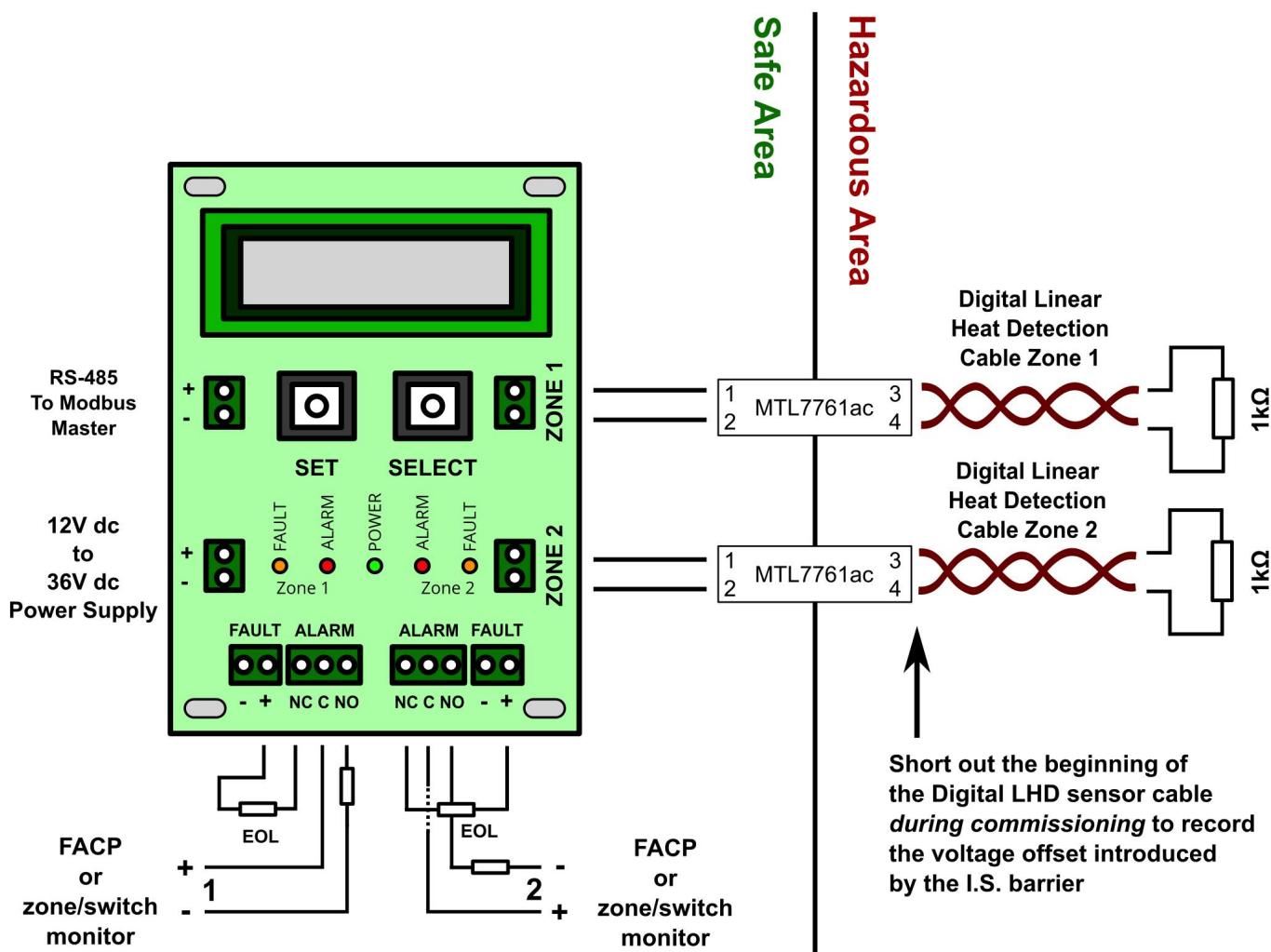


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Figure 1. Typical Installation Wiring Diagram



Installation Instructions

The Digital interface Monitor Module (DiMM) can be used with Digital Fixed Temperature Linear Heat Detection cable which is to be installed in hazardous areas, using intrinsically safe barriers. The DiMM unit should 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.

Digital Fixed Temperature Linear Heat Detection cable is declared as a "simple product" in accordance with the ATEX Directive 94/9/EC section 5.2.1, as the cable does not have its own ignition source as detailed in ATEX Directive 94/9/EC section 3.7.2. The end-of-line device supplied with DiMM unit is also a "simple product" in accordance with the ATEX Directive 94/9/EC section 5.2.1.

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 Digital Fixed Temperature 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. Interposing (otherwise known as leader cable or non-sensing cable) may be used between the intrinsically safe barriers and start of the sensor cable, however, the inductance, capacitance and L/R ratio must be calculated as it may affect the maximum permissible zone length according to table 3. Otherwise, if no interposing cable is used the maximum permissible zone lengths are detailed in table 3.

Please note, when using intrinsically safe barriers the maximum length of Digital Fixed Temperature Linear Heat Detection cable per zone is reduced to 2250m (7380ft).

To maintain accurate distance locating, the voltage offset introduced by the I.S. barrier needs to be recorded by the DiMM unit. Refer to the Commissioning Instructions on page 5.

Table 1. Digital Fixed Temperate LHD Cable Parameters

Digital Fixed Temperature LHD Sensor Cable				
Rating	Capacitance	Inductance	L/R ratio	Loop Resistance
68°C (155°F)	<120pF/m	<1.60μH/m	<17.7μH/Ω	~181Ω/km
78°C (172°F)	<95pF/m	<1.68μH/m	<18.7μH/Ω	~180Ω/km
88°C (190°F)	<85pF/m	<1.72μH/m	<19.3μH/Ω	~179Ω/km
105°C (221°F)	<73pF/m	<1.65μH/m	<18.2μH/Ω	~182Ω/km
185°C (365°F)	<90pF/m	<1.62μH/m	<17.9μH/Ω	~182Ω/km

Table 2. I.S. Barrier Maximum Permissible Parameters

MTL7761ac / P&F Z 961

Combined Channels	Group IIC	Group IIB	Group IIA
Capacitance	4.9μF / 4.9μF	40μF	500μF
Inductance	3.72mH / 4.69mH	15mH	31mH
L/R ratio	158μH/Ω / 182μH/Ω	632μH/Ω	1264μH/Ω

(MTL according to Certificate No. BAS01ATEX7217 Issue 8)

Table 3. Maximum Permissible Zone Lengths

In the case of Gas Group IIC applications, the limiting factor on zone lengths is due to the inductance of the Digital Fixed Temperature LHD Cable. In the case of Gas Group IIB and IIA applications, the limiting factor on zone lengths is the maximum allowed sensor cable per zone on the DiMM unit when using an I.S. barrier.

Gas Group	IIC	IIB	IIA
68°C (155°F)	2250m	2250m	2250m
78°C (172°F)	2214m / (2250m P&F)	2250m	2250m
88°C (190°F)	2162m / (2250m P&F)	2250m	2250m
105°C (221°F)	2250m	2250m	2250m
185°C (365°F)	2250m	2250m	2250m

Commissioning Instructions

The Digital interface Monitor Module (DiMM) should be commissioned in the normal manner (refer to the ProReact Digital interface Monitor Module Installation Instructions for more detail). However, to maintain accurate distance locating, the voltage offset introduced by the I.S. barriers needs to be recorded by the DiMM unit.

In order to carry out this procedure, during commissioning the DiMM unit will display "Zone 1 Ldr Cable" or "Zone 2 Ldr Cable". At this point it is important to select "Yes". The screen should then show "Ready to calibrate".

Before pressing select, the two cores at the beginning of the Digital LHD sensor cable should be securely shorted out. Then press the SET button.

The screen will show "Zone 1 Cal:" or "Zone 2 Cal:" and the voltage drop respectively. Check to make sure that the displayed value is approximately correct. This can be verified by disconnecting the cables into the corresponding zone on the DiMM unit and with the cables shorted at the beginning of the LHD sensor cable, measure the resistance at the DiMM unit. The calculated voltage drop should equal approximately half the measured resistance.

If the voltage drop has been calculated correctly, the short at the beginning of the Digital LHD sensor cable be removed and the commissioning of the DiMM unit completed.

Zone 1 Ldr cable
Yes

Ready To
Calibrate?

Zone 1 CAL:
108mv