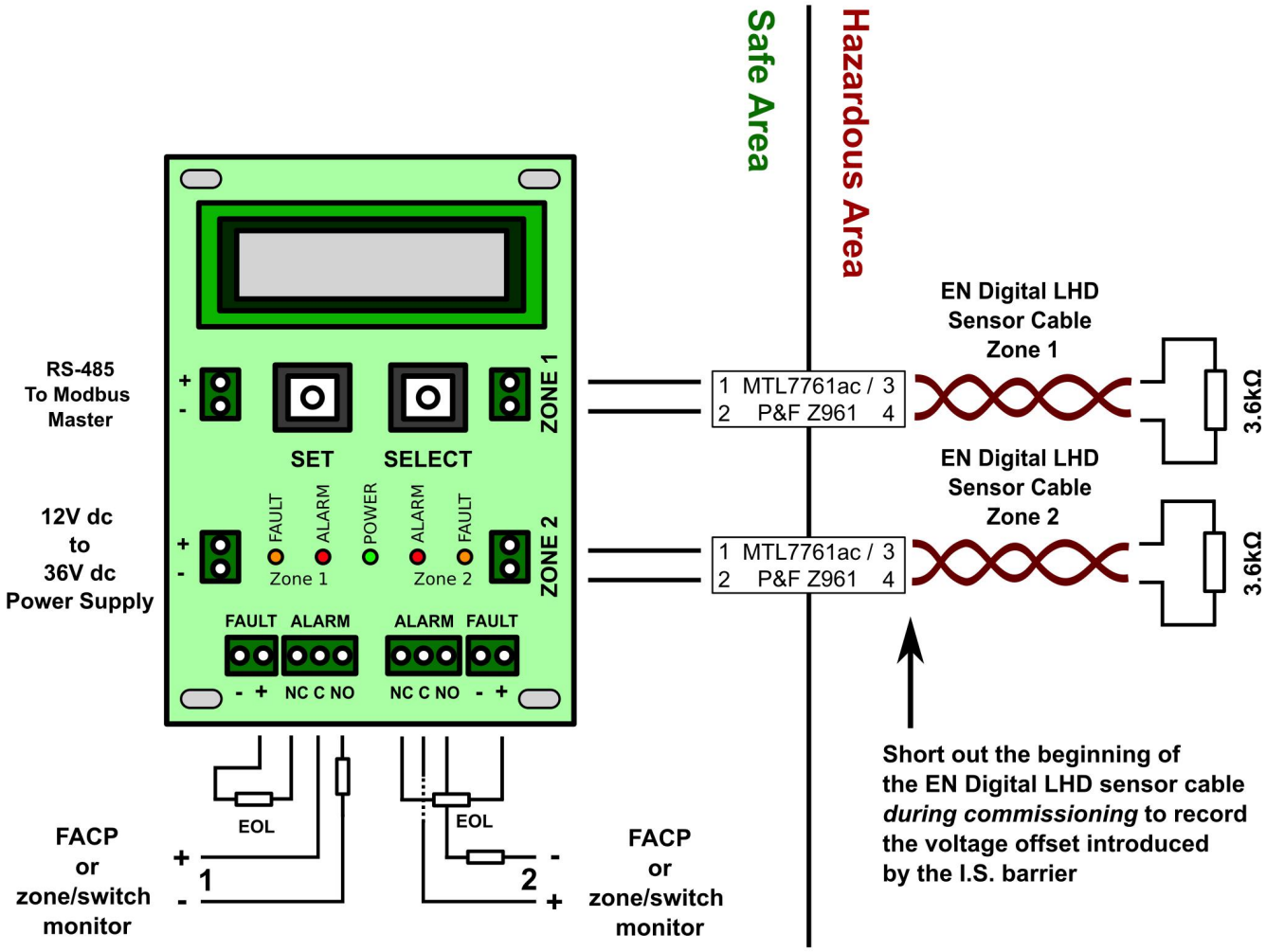
ProReact EN Digital
Digital Sensor Control Unit
(DSCU-EN)

Hazardous Area Installation Instructions

Thermocable
ProAcademy
Linear Detection Technology Made Simple

Contents:

Figure 1. Typical Installation Wiring Diagram



Installation Instructions

The ProReact EN Digital Sensor Control Unit (DSCU-EN) can be used with ProReact EN Digital Linear Heat Detection Sensor Cable which is to be installed in hazardous areas, using intrinsically safe barriers. The DSCU-EN 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.

ProReact EN Digital Linear Heat Detection Sensor Cable is declared as a "simple product" in accordance with the ATEX Directive 94/9/EC section 5.2.1, because 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 for use with DSCU-EN 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 certficates for the specific barrier. This includes, but is not limited, to the Gas Group, Zones and Load Parameters. For the ProReact EN Digital Linear Heat Detection Sensor 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 for the interposing cable 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.

To continue to function correctly and maintain accurate distance locating, the voltage offset introduced by the I.S. barrier needs to be recorded by the DSCU-EN. Refer to the Commissioning Instructions on page 5 for carrying out this procedure.

Table 1. ProReact EN Digital LHD Sensor Cable Parameters

ProReact EN Digital LHD Sensor Cable

Rating	Capacitance	Inductance	L/R ratio	Loop Resistance
78˚C (EN78)	<99pF/m	<2.7µH/m	<2.10µH/Ω	~2,630 Ω/km
88˚C (EN88)	<67pF/m	<2.7µH/m	<2.20µH/Ω	~2,500 Ω/km

Table 2. I.S. Barrier Maximum Permissible Parameters

MTL7761ac / P&F Z961

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

For all Gas Groups, the limiting factor on zone lengths is due to the maximum allowed sensor cable per zone on the DSCU-EN unit.

Cable Rating / Gas Group	IIC	IIB	IIA
78˚C (EN78)	1000m	1000m	1000m
88˚C (EN88)	1000m	1000m	1000m

Commissioning Instructions

The ProReact EN Digital Sensor Control Unit (DSCU-EN) should be commissioned in the normal manner (refer to the ProReact EN Digital Sensor Control Unit Installation Instructions for more detail). However, to maintain accruate distance locating, the voltage offset introduced by the Intrinsically Safe (I.S.) barriers needs to be calculated and recorded by the DSCU-EN.

In order to carry out this procedure, during commissioning the DSCU-EN 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, on the corresponding zone, the two cores at the *beginning* of the ProReact EN 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 from the corresponding zone terminals on the DSCU-EN and with the cables shorted at the beginning of the Sensor Cable, measure the loop resistance of the cables at the DSCU-EN end. The displayed voltage drop shown on the DSCU-EN should equal approximately the measured resistance divided by 8.

If the voltage drop has been calculated correctly, the short at the beginning of the ProReact EN Digital LHD sensor cable be removed and the remaining commissioning procedure of the DSCU-EN completed as normal.