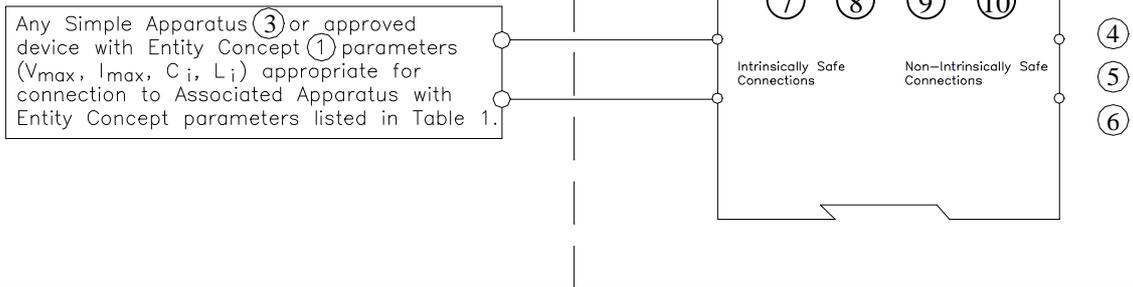


NONHAZARDOUS LOCATION  
or  
HAZARDOUS (CLASSIFIED) LOCATION  
CLASS I, DIVISION 1, GROUPS A,B,C,D  
CLASS II, DIVISION 1, GROUPS E,F,G  
CLASS III, DIVISION 1  
or  
CLASS I, ZONE 0 AND 1, IIC

NONHAZARDOUS LOCATION or  
CLASS I, DIVISION 2, GROUPS A,B,C,D or  
CLASS I, ZONE 2 GROUP IIC



**Notes:**

- The Entity Concept allows interconnection of intrinsically safe apparatus with associated apparatus not specifically examined in combination as a system when the approved values of  $V_{oc}$  (or  $U_o$ ),  $I_{sc}$  (or  $I_o$ ) and  $P_o$  for the associated apparatus are less than or equal to  $V_{max}$  ( $U_i$ ) and  $I_{max}$  ( $I_i$ ) for the intrinsically safe apparatus and the approved values of  $C_a$  ( $C_o$ ) and  $L_a$  ( $L_o$ ) for the associated apparatus are greater than  $C_i + C_{cable}$  and  $L_i + L_{cable}$ , respectively, for the intrinsically safe apparatus.

The parameters in Table 1 apply when one of the two conditions below is given:

- The total  $L_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $L_o$  value or
- The total  $C_i$  of the external circuit (excluding the cable) is  $< 1\%$  of the  $C_o$  value.

The parameters in Table 1 are reduced to 50% when both of the two conditions below are given:

- The total  $L_i$  of the external circuit (excluding the cable)  $> 1\%$  of the  $L_o$  and
- The total  $C_i$  of the external circuit (excluding the cable)  $> 1\%$  of the  $C_o$ .

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for C, D (IIB) and 600nF for A, B (IIC).

- Capacitance and inductance of the field wiring from the intrinsically safe equipment to the associated apparatus shall be calculated and must be included in the system calculations as shown in Note 1. Cable capacitance,  $C_{cable}$ , plus intrinsically safe equipment capacitance,  $C_i$  must be less than the marked capacitance,  $C_a$  (or  $C_o$ ), shown on any associated apparatus used. The same applies for inductance ( $L_{cable}$ ,  $L_i$  and  $L_a$  or  $L_o$ , respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used:  $C_{cable} = 60 \text{ pF/ft.}$ ,  $L_{cable} = 0.2 \text{ } \mu\text{H/ft.}$
- Simple Apparatus: An electrical component or combination of components of simple construction with well defined electrical parameters that does not generate more than 1.5 volts, 100 milliamps, and 25 milliwatts, or a

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passive component that does not dissipate more than 1.3 watts and is compatible with the intrinsic safety of the circuit in which it is used (USA). A switch non-inductive resistive device or thermocouple (Canada).

4. Wiring methods must be in accordance with the electrical code of the country in use.
5. Power, inputs and outputs must be in accordance with Class I, Division 2 wiring methods of National Electrical Code ANSI/NFPA 70, Canadian Electrical Code C22.1 or in accordance with the authority having jurisdiction.
6. Intrinsically safe circuits must be wired and separated in accordance with Article 504.20 or other local codes, as applicable.
7. Equipment must be connected to a power supply where the primary and secondary windings of the supply transformer must not be connected to each other.
8. The Barrier shall not be connected to any device which uses or generates internally any voltage in excess of 250V Rms or DC unless the device has been determined to adequately isolate the voltage from the barrier.
9. The barrier is rated "Nonincendive". If the barrier is intended to be mounted in a Division 2 location, it must be installed in an enclosure meeting the requirements of ANSI/ISA-12.12.01-2007, C22.2 NO. 213-M1987. The enclosure may be installed in a Class I, Division 2, Group A, B, C, or D hazardous location. If the barrier is intended to be mounted in a Zone 2 location, it must be installed in an enclosure meeting the requirements of UL 60079-15, CAN/CSA 60079-15. The enclosure may be installed in a Class I, Zone 2, Group IIC hazardous location. The enclosure must be an AEx certified or Ex certified for Canada with a minimum ingress protection of IP54, or in a controlled pollution degree 2 environment. A temperature rating of T4 applies to all nonincendive rated barriers.
10. In Class I, Division 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70) or Canadian Electrical Code (C22.1), as applicable.
11. In Class I, Zone 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Zone 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70) or Canadian Electrical Code (C22.1), as applicable. The equipment shall be installed in an enclosure with a minimum ingress protection rating of IP54 unless the apparatus is intended to be afforded an equivalent degree of protection by location

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			norm
Oldham			116-0379 sheet 2 of 3

11. Connection of barriers to ground is not required.
12. **WARNING:** Substitution of components may impair intrinsic safety.  
**AVERTISSEMENT:** La substitution de composants peut compromettre la sécurité intrinsèque.  
 For Zone 2 installations, ensure protection of supply terminals against transient voltages exceeding 140% of the rated supply voltage.

**Table 1 - Entity Parameters**

Model Number	Terminals	Voc (Uo) [V]	Isc (Io) [mA]	Po [mW]	Groups Ca (Co) [uF]			Groups La (Lo) [mH]			Groups Lo/Ro [uH/Ohm]		
					A,B (IIC)	C,E (IIB)	D,F,G (IIA)	A,B (IIC)	C,E (IIB)	D,F,G (IIA)	A,B (IIC)	C,E (IIB)	D,F,G (IIA)
KCD2-UT2-Ex1-* (*=1 or blank)	1, 2, 3 & 4	9	13.1	30	4.9	40	500	207	828	1657	1158	4635	9270

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	KCD2-UT2-EX1...		116-0379
			norm