

HAZARDOUS (CLASSIFIED) LOCATION

CLASS I, DIVISION 1, GROUPS A, B, C, D

CLASS II, DIVISION 1, GROUPS E, F, G

CLASS III, DIVISION 1

Any Simple Apparatus ② or approved device with Entity Concept parameters ① (V_{max} , I_{max} , C_i , L_i) appropriate for connection to Associated Apparatus with Entity Concept parameters listed in Table 1.

Any Simple Apparatus ② or approved device with Entity Concept parameters ① (V_{max} , I_{max} , C_i , L_i) appropriate for connection to Associated Apparatus with Entity Concept parameters listed in Table 1.

NON-HAZARDOUS LOCATION

or

CLASS I, DIVISION 2, GROUPS A, B, C, D

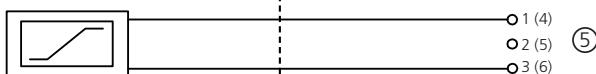
⑧

ifm electronic
Switch Isolators
See Table 1 ⑤

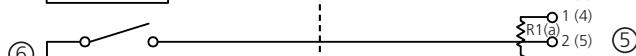
④

7○
8○
9○
10○
11○
12○

NAMUR OUTPUT PROXIMITY SENSOR



CONTACT CLOSURE WITHOUT LEAD BREAK OR SHORT CIRCUIT MONITORING



CONTACT CLOSURE WITH LEAD BREAK MONITORING



CONTACT CLOSURE WITH LEAD BREAK AND SHORT CIRCUIT MONITORING



NOTES:

- ① The Entity Concept allows interconnection of intrinsically safe and associated apparatus not specifically examined in combination as a system when the approved values of V_{oc} and I_{sc} for the associated apparatus are less than or equal to V_{max} and I_{max} for the intrinsically safe apparatus and the approved values of C_a and L_a for the associated apparatus are greater than $C_i + C_{cable}$, $L_i + L_{cable}$, respectively for the intrinsically safe apparatus.
- ② "Simple Apparatus" is defined as a device that will neither generate nor store more than 1.2 V, 0.1 A, 20 μ J or 25 mW.
- ③ Wiring methods must be in accordance with the National Electrical Code, ANSI / NFPA 70, Article 504 and ANSI / ISA-RP12.6.
- ④ Barriers shall not be connected to any device that uses or generates in excess of 250 V rms or DC unless it has been determined that the voltage is adequately isolated from the barrier.
- ⑤ Single channel models use either input terminals 1, 2 & 3 or 4, 5 & 6.
- ⑥ When the field devices are contact closures, resistors R1 and R2 (when applicable) must be connected as shown in the diagrams above for proper performance. R2 should be as close as possible to the contact closure. R2 must be $\geq 400 \Omega$ and $\leq 2 \text{ k}\Omega$, and R1 must be $10 \text{ k}\Omega \pm 5\%$. Note, resistor R1(a) is integrated in most N0 barriers and is activated by the S1b / S2b slide switches (slide switch S3 in others).
- ⑦ Any combination of up to 10 channels of the barriers listed in Table 1 may be connected in parallel and connected to a simple apparatus in a hazardous location. R2, if used, must be rated 0.25 W minimum if 2-3 channels are connected in parallel and 0.5 W minimum if 4-10 channels are connected in parallel. If 2-3 channels are connected in parallel the total cable inductance must be limited to 10 mH for Groups A and B, 37 mH for Groups C and E, and 80 mH for Groups D, F and G. If 4-10 channels are connected in parallel the total cable inductance must be limited to 1 mH for Groups A and B, 3.8 mH for Groups C and E, and 7 mH for Groups D, F and G.
- ⑧ The barriers must be installed in an enclosure meeting the requirements of ANSI / ISA S82.

Table 1: Entity Parameters ⑦ ⑧

Model Numbers	Terminals	V_{oc} (V)	I_{sc} (mA)	Groups	C_a (μ F)	L_a (mH)
N0030A	⑤			A, B	1.273	84.8
N0032A	1-3, 2-3	12.9	19.8	C, E	3.820	254.4
N0532A	4-6, 5-6			D, F, G	10.18	678.4
N0531A						
N0534A						

07/03

Sachnr. 701791/00

Product Part No.

Title

**Installation Drawing for
FM Approved Transformer
Isolated Barriers and Sensors**

ifm electronic gmbh

Friedrichstr. 1 • D 45128 Essen



Revisions					THIS DRAWING CONTAINS PROPRIETARY DATA. NO DISCLOSURE, REPRODUCTION OR USE OF ANY PART MAY BE MADE EXCEPT BY WRITTEN PERMISSION.
0	9-26-02	C. A.			

In.	Date	Cons.	Resp.	Appr.
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Draw.
No.

2002.1.0402

Sh. 1 of 1

HAZARDOUS (CLASSIFIED) LOCATION

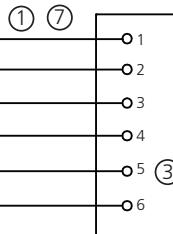
CLASS I, ZONE 0 OR 1, GROUPS IIC, IIB, IIA or
CLASS I, DIVISION 1, GROUPS A, B, C, D
CLASS II, DIVISION 1, GROUPS E, F, G
CLASS III, DIVISION 1

Switch, Non-inductive resistive device,
or any CSA Certified Entity device.

Switch, Non-inductive resistive device,
or any CSA Certified Entity device.

NON-HAZARDOUS LOCATION

CLASS I, ZONE 2, GROUPS IIC, IIB, IIA or
CLASS I, DIVISION 2, GROUPS A, B, C, D



ifm electronic
Switch Isolators
See Tables 1 / 2

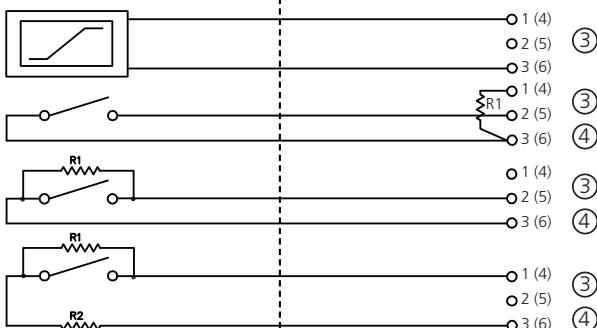
70
80
90
100
110
120
②
⑥
⑧

NAMUR OUTPUT PROXIMITY SENSOR

CONTACT CLOSURE WITHOUT
LEAD BREAK OR SHORT CIRCUIT
MONITORING

CONTACT CLOSURE WITH
LEAD BREAK MONITORING

CONTACT CLOSURE WITH
LEAD BREAK AND SHORT
CIRCUIT MONITORING



NOTES:

- ① The intrinsically safe wiring must be installed in accordance with the Canadian Electrical Code CSA C22.1, Part 1, Appendix F.
- ② Barriers listed in Table 1 shall not be connected to any device that uses or generates in excess of 250 V rms or DC unless it has been determined that the voltage is adequately isolated from the barrier. Barriers listed in Table 2 shall not be connected to any device that uses or generates in excess of 60 V rms or DC unless the voltage is limited by an adequate means.
- ③ Single channel models use input terminals 4, 5 and 6 only.
- ④ When the field devices are contact closures, resistors R1 and R2 must be connected as shown in the diagrams above for proper performance. R2 should be as close as possible to the contact closure. R2 must be $\geq 400 \Omega$ and $\leq 2 \text{ k}\Omega$, and R1 must be $10 \text{ k}\Omega \pm 5\%$.
- ⑤ Any combination of up to 10 channels of the barriers listed in Table 1 or Table 2 may be connected in parallel and connected to a switch in a hazardous location. R2, if used, must be rated 0.25 W minimum if 2-3 channels are connected in parallel and 0.5 W minimum if 4-10 channels are connected in parallel.
- ⑥ WARNING: Substitution of components may impair intrinsic safety and / or suitability for use in Class I, Division 2, Groups A, B, C, D or Class I, Zone 2, Groups IIC, IIB, IIA.

ADVERTISSEMENT: La substitution de composants peut compromettre la sécurité intrinsèque.

- ⑦ The Entity Concept allows interconnection of intrinsically safe and associated apparatus not specifically examined in combination as a system when the approved values of V_{oc} and I_{sc} for the associated apparatus are less than or equal to V_{max} and I_{max} for the intrinsically safe apparatus and the approved values of C_a and L_a for the associated apparatus are greater than $C_i + C_{cable}$, $L_i + L_{cable}$, respectively for the intrinsically safe apparatus.
- ⑧ Connection to ground is not required.
- ⑨ The following models with part number greater than 100000 are approved for mounting in Class I, Zone 2, Groups IIC, IIB, IIA or Class I, Division 2, Groups A, B, C, D hazardous (classified) location: N05..A.

Table 1: Barriers Certified to CSA Standard C22.2 No. 157 ($U_m = 250 \text{ V}$)

Model Numbers	Terminals ③	SYSTEM		ENTITY									
		V_{max} (V)	Res. (Ω)	V_{oc} (V)	I_{sc} (mA)	C_a (μF) GRPS	L_a (mH) GRPS	A, B	C, E	D,F,G	A, B	C, E	D,F,G
N0030A	1-3												
N0032A	2-3 4-6 5-6	12.6	650	12.9	19.8	1.273	3.820	10.18	84.88	298.7	744.4		

Table 2: Barriers Certified to CSA Standard E79-11 ($U_m = 60 \text{ V}$)

Model Numbers	Terminals ③	Load Parameters						
		U_o (V_{oc})	I_o (I_{sc})	C_o (μF) GRPS	L_o (mH) GRPS	IIC (A, B)	IIB (C, E)	IIA (D,F,G)
N0532A	1-3							
N0531A	2-3							
N0534A	4-6 5-6	10.5	13.0	2.66	7.9	21.3	192	671
								1000

No changes without prior permission

CSA



ifm electronic gmbh
Friedrichstr. 1 • D 45128 Essen

Title
**Installation Drawing for
CSA Certified Switch Isolators**

0	9-26-02	C. A.	.	ifm electronic gmbh	Repl.No.	Draw. No.	2002.1.0403	Sh. 1 of 1
In.	Date	Cons.	Resp.	Appr.				