



871TM Intrinsically Safe  
Cable Style  
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871TM Intrinsically Safe  
Micro Quick-Disconnect Style  
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### Description

These special 871TM models are approved as Intrinsically Safe for use in hazardous areas. These special models are designed for use in Division 1, 2; Class I, II, III; Groups A, B, C, D, E, F, G areas when used in conjunction with an appropriate I.S. approved zener diode barrier. Recommended barriers are available from Rockwell Automation/Allen-Bradley. These approved units can also be used in Division 2 locations without a barrier.

### Features

- 2-wire operation
- 2 conductor or 4 pin connection
- 10–31.5V DC
- Normally open output
- Short circuit, overload, false pulse, transient noise, and reverse polarity protection
- FM and CSA entity approved

### Specifications

<b>Outputs</b>	Normally Open
<b>Max. Load Current</b>	25mA
<b>Min. Load Current</b>	2mA
<b>Leakage Current</b>	<1.0mA
<b>Operating Voltage</b>	10–31.5V DC
<b>Voltage Drop</b>	<8V DC
<b>Repeatability</b>	10% typical
<b>Hysteresis</b>	10% typical
<b>Reverse Polarity Protection</b>	Incorporated
<b>False Pulse Protection</b>	Incorporated
<b>Transient Noise Protection</b>	Incorporated
<b>Short Circuit Protection</b>	Incorporated
<b>Overload Protection</b>	Incorporated
<b>Enclosure</b>	NEMA 1, 2, 3, 3R, 4, 4X, 6, 6P, 12, 13, IP67 (IEC 529), 1200psi (8270kPa) washdown, Stainless steel face and barrel
<b>Approvals</b>	FM and CSA approved for - Class I, II, III; Divisions 1, 2; Groups A, B, C, D, E, F, G when used in conjunction with an approved intrinsic safety barrier - Class I, II, III; Division 2; Groups A, B, C, D, E, F, G without intrinsic safety barrier (See control drawing 75001-437 for approval details and wiring diagrams)
<b>Connections</b>	Cable: 2m (6.5ft) length A2 - 2 conductor #22AWG PVC C2 - 2 conductor #22AWG ToughLink H2 - 2 conductor #18AWG ToughLink Quick Disconnect: 4-pin micro style
<b>LED</b>	Red: Output Energized
<b>Operating Temperature</b>	-25°C to 40°C (-13°F to 158°F)
<b>Shock</b>	30g, 11ms
<b>Vibration</b>	55Hz, 1mm amplitude, 3 planes

### Correction Factors

Target Material	Correction Factor
Steel	1.0
Stainless Steel	0.9-1.0
Brass	0.3-0.5
Aluminum	0.1-0.4
Aluminum ≤0.020 Thick	0.9-1.1
Copper	0.4-0.6

### Entity Parameters

Sensor			Barrier	
$V_{max}$	31.5V	≥	$V_t$	
$I_{max}$	130mA	≥	$I_t$	
$P_{max}$	1.25W	≥	$P_t$	
$C_i$	0μF	≤	$C_a$	
$L_i$	0mH	≤	$L_a$	



**WARNING:** These parameters must be adhered to. If not, injury may be caused to person or property.

# 871TM Intrinsically Safe, 2-Wire DC

Stainless Steel Face and Barrel

## Product Selection

Barrel Dia.	Nominal Sensing Distance mm (inches)	Shielded	Output Configuration	Switching Frequency (Hz)	Catalog Numbers		
					PVC Cable	ToughLink™ Cable	Micro QD Style
12mm	2 (0.08)	Y	N.O.	75	871TM-DR2NE12-A2	871TM-DR2NE12-C2	871TM-DR2NE12-D4
	4 (0.16)	N			871TM-DR4NE12-A2	871TM-DR4NE12-C2	871TM-DR4NE12-D4
18mm	5 (0.20)	Y		60	871TM-DR5NE18-A2	871TM-DR5NE18-H2	871TM-DR5NE18-D4
	8 (0.31)	N			871TM-DR8NE18-A2	871TM-DR8NE18-H2	871TM-DR8NE18-D4
30mm	10 (0.39)	Y		40	871TM-DR10NE30-A2	871TM-DR10NE30-H2	871TM-DR10NE30-D4
	15 (0.59)	N			871TM-DR15NE30-A2	871TM-DR15NE30-H2	871TM-DR15NE30-D4
Recommended Standard QD Cordset (-2 = 2m (6.5ft))							889D-F4AC-2 ①

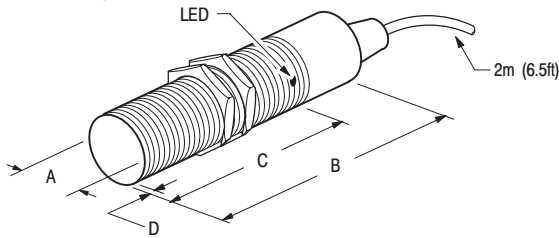
① Intrinsically Safe wiring labels 897H-L1 or 897H-L2 must be applied every 7.6m (25ft).

## QD Cordsets and Accessories

Description	Page Number
Other Cordsets Available	7-8, 7-68
Terminal Chambers	7-20
Zener Diode Barriers	7-114
Intrinsically Safe Wiring Labels	7-116

## Dimensions—mm (inches)

### Cable Style



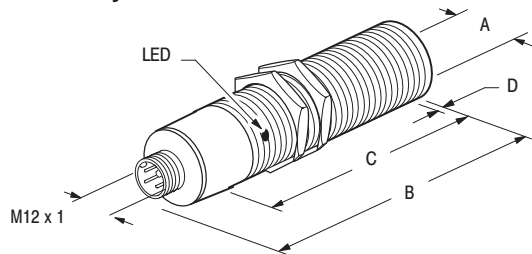
## Wiring Diagrams

See pages 2-34 and 2-35.

Thread Size	Shielded	mm (inches)			
		A	B	C	D
M12 x 1	Y	12.0 (0.47)	72.1 (2.84)	38.4 (1.51)	2.5 (0.10)
	N			31.5 (1.24)	9.4 (0.37)
M18 x 1	Y	18.0 (0.71)	74.7 (2.94)	60.0 (2.36)	2.5 (0.10)
	N			48.2 (1.90)	14.4 (0.56)
M30 x 1.5	Y	30.0 (1.18)	77.2 (3.04)	61.3 (2.41)	2.5 (0.10)
	N			41.6 (1.64)	17.9 (0.70)

**Dimensions—mm (inches)**

Micro QD Style



**Wiring Diagrams**

See pages 2–34 and 2–35.

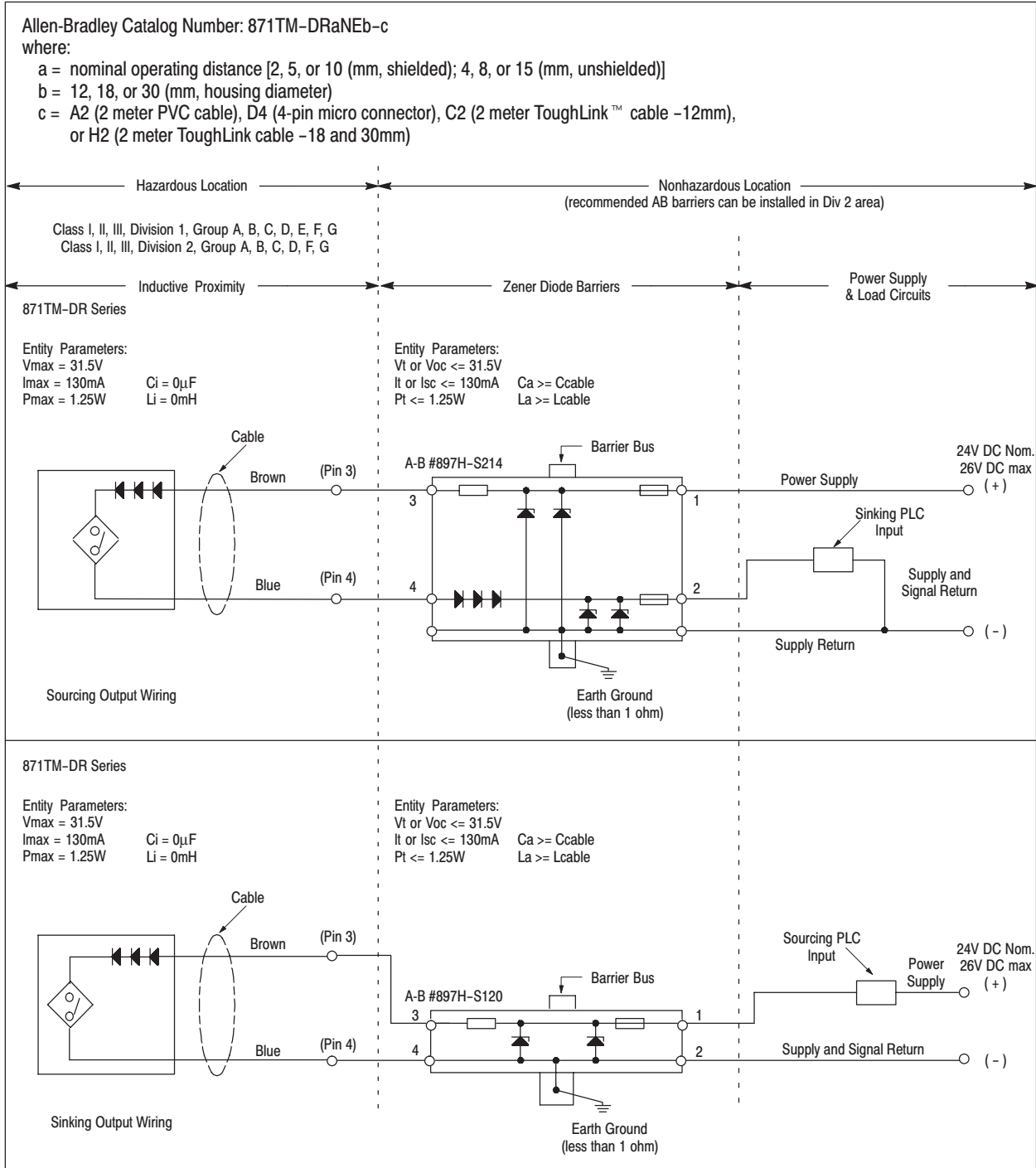
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# 871TM Intrinsically Safe, 2-Wire DC

Stainless Steel Face and Barrel

## Inductive Proximity Sensors

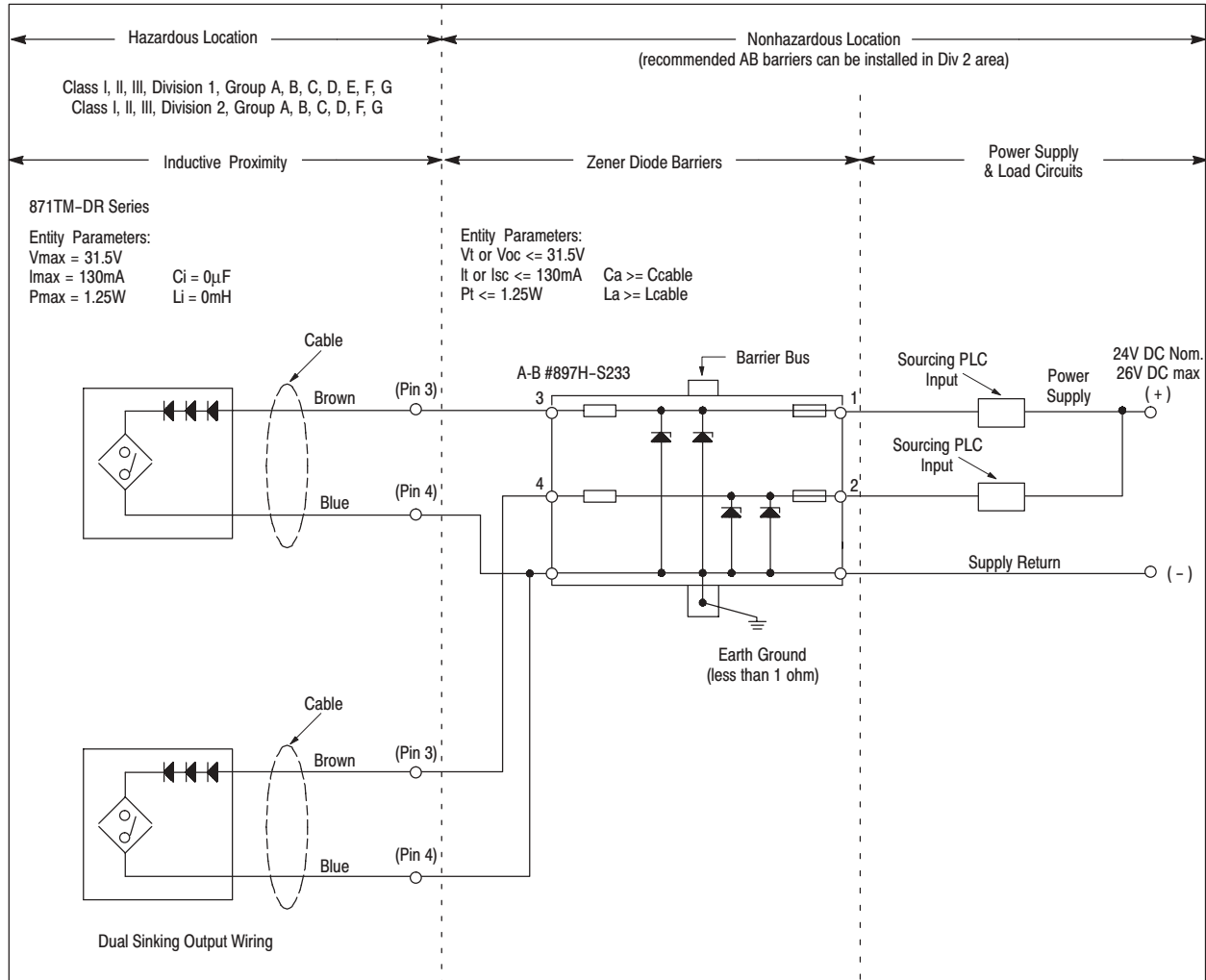
### Division 1 Installation Wiring Diagrams



**WARNING:** These parameters must be adhered to. If not, injury may be caused to person or property.

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**Inductive Proximity Sensors**  
**Division 1 Installation Wiring Diagrams (continued)**



**Factory Mutual Installation Notes:**

- 1 Installation must be in accordance with the National Electrical Code® (NFPA 70, Article 504), ANSI/ISA-RP12.6, and the manufacturer's instructions.
- 2 If the electrical parameters of the cable used are unknown, the following values may be used: Capacitance - 60pF/ft.; Inductance - 0.20μH/ft.
- 3 The wiring between each Inductive Proximity Sensor and its corresponding channel of the dual-channel barrier is a separate intrinsically safe circuit. Each of the two separate intrinsically safe circuits shall be in separate cables or shall be separated from each other as specified in NEC 504-30. The supply return conductors may be connected at the barrier's grounding terminal.
- 4 The Barrier bus must be insulated from other grounded metal. Use DIN Rail Mounting Kit, Allen-Bradley #64-136.
- 5 The maximum nonhazardous location voltage must not exceed 250V AC or DC.
- 6 Barriers are not required for Division 2 (31.5V DC max.). Division 2 applications must be installed in accordance with the NEC.
- 7 **WARNING:** Substitution of components may impair Intrinsic Safety.
- 8 No revision to drawing without prior FMRC approval.

**Canadian Standards Association Installation Notes:**

- 1 Installation must be in accordance with the Canadian Electrical Code (Part I), ANSI/ISA-RP12.6, and the manufacturer's instructions.
- 2 If the electrical parameters of the cable used are unknown, the following values may be used: Capacitance - 60pF/ft.; Inductance - 0.20μH/ft.
- 3 The wiring between each Inductive Proximity Sensor and its corresponding channel of the dual-channel barrier is a separate intrinsically safe circuit. Each of the two separate intrinsically safe circuits shall be in separate cables or shall be separated from each other as specified in CEC. The supply return conductors may be connected at the barrier's grounding terminal.
- 4 The Barrier bus must be insulated from other grounded metal. Use DIN Rail Mounting Kit, Allen-Bradley #64-136.
- 5 The maximum nonhazardous location voltage must not exceed 250V AC or DC.
- 6 Barriers are not required for Division 2 (31.5V DC max.). Division 2 applications must be installed in accordance with the CEC.
- 7 In Division 2 applications without barriers observe the following warnings:  
**WARNING: EXPLOSION HAZARD.** Do not disconnect equipment unless power has been switched off or the area is known to be nonhazardous.  
**WARNING:** Substitution of components may impair Intrinsic Safety.
- 8 No revision to drawing without prior CSA approval.



**WARNING:** These parameters must be adhered to. If not, injury may be caused to person or property.

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