Contents

The Accessories in this section may be used across multiple product lines. Accessories specific to a product line can be found at the end of the respective section.

Barriers and Isolators

Intrinsically Safe Zener Diode Barriers

Intrinsically Safe Galvanic Isolators

Description

For applications involving sensor use in hazardous locations, Rockwell Automation offers a line of Intrinsic Safety Zener Diode Barriers and Galvanic Isolators. Both are economical solutions for instrumentation and control systems in hazardous locations as defined by NEC article 500 and CEC Part I, Section 18.

Zener diode barriers are *passive* protective interface assemblies that limit the amount of energy (voltage and current) that enters a hazardous area in the event of a fault (i.e., overvoltage, shorted field wiring). The energy is limited to an amount that would not be sufficient to ignite the potentially explosive atmosphere. Designed in a slim 1/2 inch wide housing, each barrier contains zener diodes that limit the voltage while a resistor prevents excessive current from being transferred to the hazardous area. In the barriers offered by Rockwell Automation, a replaceable fuse is used to protect the barrier from miswiring and transients.

The principle of a keyed fuse assembly has been employed. In case of a fault due to overvoltage, polarity misconnection or transients, only the protective keyed fuse assembly needs to be replaced.

The replacement of the fuse assembly can be done by the user at the job site. The barriers do not have to be returned to the manufacturer for replacement.

Intrinsically Safe or Galvanic Isolators are *active* protective interface assemblies that limit the amount of energy allowed to enter a hazardous area under fault conditions. Sometimes called Transformer Isolated Barriers, they separate intrinsically safe wiring from non-intrinsically safe wiring through the use of the same isolation coils found in power transformers. Galvanic isolators, unlike zener diode barriers, do not require grounding—therefore they may reduce ground loop problems as well as installation and maintenance costs. The slim 3/4 inch wide housing on DC models also conserves valuable mounting space. DIP switches provide convenient programming of output and diagnostic functions while multiple LEDs provide visual indication of module and circuit status.

Rockwell Automation zener diode barriers and galvanic isolators are DIN Rail mountable and designed primarily for use with intrinsically safe proximity sensors and photoelectrics. All Rockwell Automation barriers and isolators are UL Listed, FM Certified, CSA and CE Marked for all applicable directives.

Intrinsically Safe Zener Diode Barriers

Features

- Replaceable fuse
- Low internal resistance
- Short-circuit protected
- Reverse polarity protection
- Slim 1/2 inch wide housing
- UL Listed, FM, CSA and PTB Certified, and CE Marked for all applicable Directives

Specifications

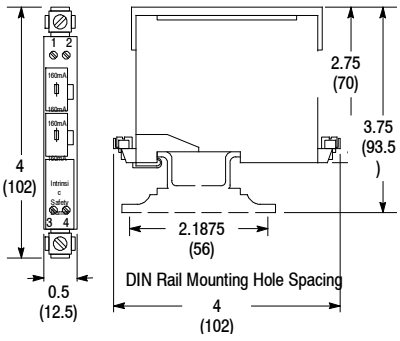
Environmental	
Certifications	UL, FM, CSA PTB, and CE Marked for all applicable directives
Operating Temperature [C (F)]	+20…+60° (-4…+140°)
Vibration	55 Hz (1.5 mm amplitude)
Shock	20 g
Relative Humidity	0…95% (noncondensation)
Electrical	
Leakage Current	≤1 µA
Protection Type	Reverse polarity (protected by replaceable fuse), over-voltage (protected by replaceable fuse), and short-circuit (incorporated)
Replaceable Fuse Rating	160 A
Operating Frequency	≤100 kHz @ Isc > 50 mA; ≤50 kHz @ Isc ≤0.50 mA
Short Circuit Protection	Incorporated
Mechanical	
Material	Polyamide
Mounting Location	Nonhazardous or Class 1, Division 2 or Zone 2/Zone 22 locations
I.S. Connections for	Class I, II, III; Div 1 and 2; Groups A-G and Zones 0, 1, 2, 20, 21, 22; Group IIC and IIB
Enclosure Rating	IP40 (IEC529)

Compatible Sensors

Photoelectrics

Sensor Style	Sensing Mode	Connection Type	Cat. No. Sensor	Cat. No. Barriers Used†
9000 Through Beam Photoelectric	Emitter	2 m Cable	42GRL-9540	897H-S120
		4-Pin Micro	42GRL-9540-QD	
		4-Pin Mini	42GRL-9540-QD1	
	Receiver	2 m Cable	42GRR-9500	897H-S214 or 897H-S150
		4-Pin Micro	42GRR-9500-QD	
		4-Pin Mini	42GRR-9500-QD1	
5000 Photoelectric	Retroreflective	Screw Terminals	42DRU-5500	897H-S120 or 897H-S140 or 897H-S150
	Polarized Retroreflective		42DRU-5700	
	Standard Diffuse		42DRP-5500	
	Fiber Optic		42DRA-5500	

Approximate Dimensions [mm (in.)]



Proximities

Sensor Style	Barrel Diameter	Shielding	Cat. No. Sensor	Cat. No. Barriers Used†
Stainless Steel Face and Barrel Proximity Sensor	12 mm	Shielded	871TM-DR2ENE12-⊗	897H-S214 or 897H-S120
		Unshielded	871TM-DR4ENE12-⊗	
	18 mm	Shielded	871TM-DR2ENE18-⊗	
		Unshielded	871TM-DR4ENE18-⊗	
	30 mm	Shielded	871TM-DR2ENE30-⊗	
		Unshielded	871TM-DR4ENE30-⊗	

⊗ Replace symbol with desired termination. A2 for 2 meter PVC cable and D4 for 4-pin micro QD.

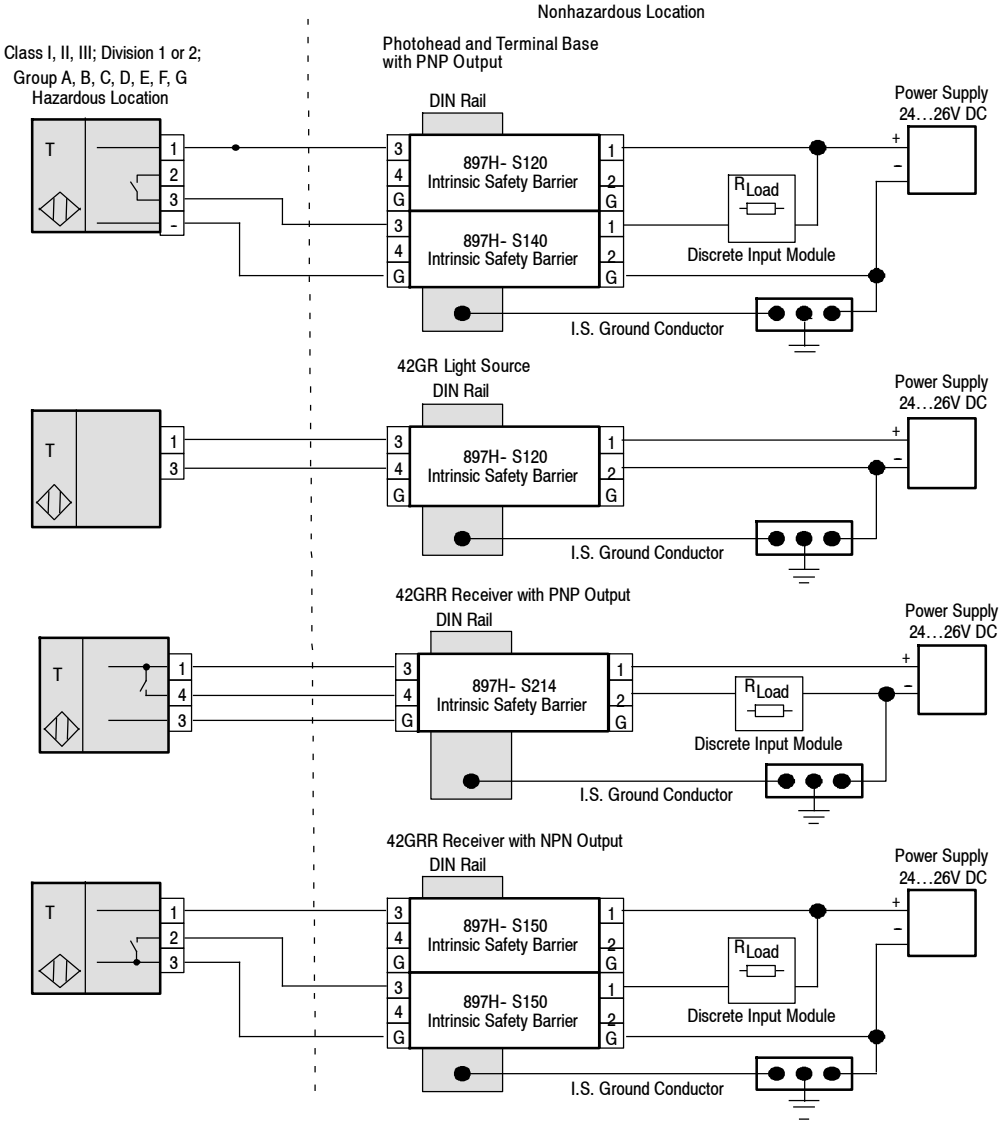
Intrinsically Safe Zener Diode Barriers

Product Selection

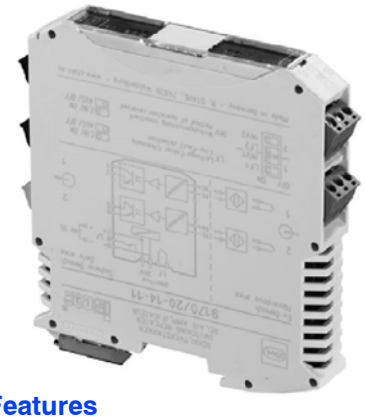
Rated Voltage	Internal Resistance	Classification	FM Entity Parameters					ATEX Certified Stahl Part No.	Cat. No.
			Supply Voltage, Max.	Current, Max.	Power, Max.	Permissible External Capacity	Permissible External Inductance, Max.		
24V DC	286…319 ohms	A, B, E	28V	100 mA	700 Mw	0.083 µF	1.6 mH	9001/01-280-100-101	**897H-S120**
		D, F, G				0.65 µF	11 mH		
	0 ohms	A, B, E				0.083 µF	1.6 mH	9001/03-280-000-101	**897H-S140**
		D, F, G				0.65 µF	230 mH		
	599…666 ohms	A, B, E				0.083 µF	1.6 mH	9001/01-280-050-101	**897H-S150**
		D, F, G				0.65 µF	230 mH		
	269…290 ohms	A, B,E				0.083 µF	1.6 mH	9002/13-280-110-001	**897H-S214**
		D, F, G				0.65 µF	230 mH		
	321…356 ohms	A, B				0.083 µF	1.6 mH	9002/11-280-186-001	**897H-S233**
		D, F, G				0.65 µF	230 mH		
Replacement Fuse Assembly									**897H-F160**

Note: Safety Parameters stated above are per input.

Typical Wiring Diagram



Intrinsically Safe Galvanic Isolators



Features

- DIN Rail mounting with power bus option
- Removable field connection terminals
- Single- and two-input versions
- Variety of output types
- Certified to worldwide standards
- SIL 2 and 3 rated
- Intrinsically safe connections for Class I, II, III, Div 1; Groups A–G; Zones 1, 2, 21, and 22; [Ex ia], IIC/IIB

Specifications

Environmental	
Certifications	FM, CSA, UL, PTB and CE Marked for all applicable directives
Operating Temperature [C (F)]	-20…+65° (-4…+149°)
Relative Humidity	<95% RH
Enclosure Type Rating	IP30
Electrical	
Number of Inputs	2
Switching Current @ Voltage, Max.	8V @ 8.2 mA (to EN 60947-5-6 NAMUR)
Input Current	On > 2.1 mA; Off < 1.2 mA
Input Resistance	1000 Ω
Switching Frequency (Hz)	< 15 Hz
Switch Delay	On to Off: 15 ms; Off to On: 15 ms
Status Indicators	Green = Power; Yellow = Output Closed; Red = Wire Break/Short
Mechanical	
Material	Polyamide 6GF
Mounting	35 mm DIN Rail
Conductor Size, Max.	0.2…2.5 mm^2 (24-14 AWG)
Weight [g (lbs)]	160 (0.35)

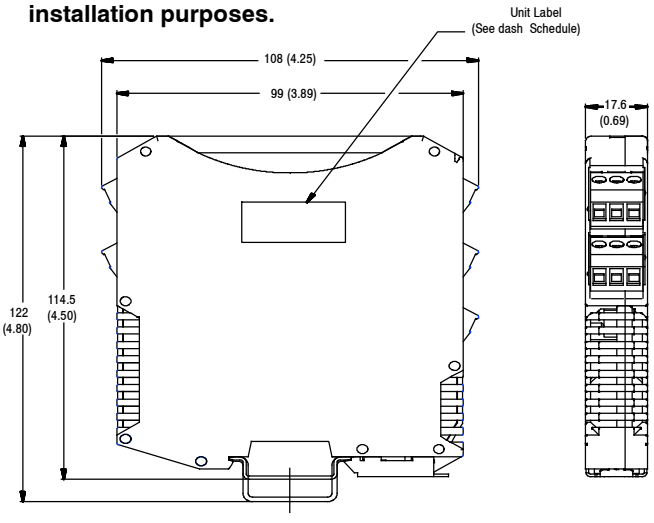
Compatible Sensors

NAMUR Style

Sensor Style	Sensing Mode	Connection Type	Cat. No.
Nickel-Plated Brass Barrel, Plastic Face Proximity Sensor	8 mm	Shielded	871C-DH1M8-❶
		Unshielded	871C-DH2M8-❶
	12 mm	Shielded	871C-DH1M12-❶
		Unshielded	871C-DH2M12-❶
	18mm	Shielded	871C-DH1M18-❶
		Unshielded	871C-DH2M18-❶
	30 mm	Shielded	871C-DH1M30-❶
		Unshielded	871C-DH2M30-❶

Approximate Dimensions [mm (in.)]

Dimensions are not intended to be used for installation purposes.



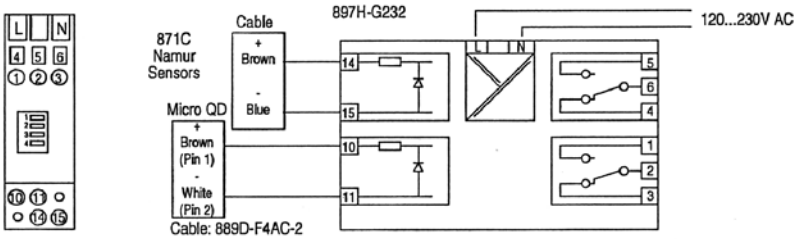
❶ Replace symbol with desired termination. A2 for 2 meter PVC cable and D4 for 4-pin micro QD.

Intrinsically Safe Galvanic Isolators

Product Selection

Power Supply	Input Type	Output Type/ Output Rating/ Response Time	Classification	FM Entity Parameter					ATEX Certified Stahl Cat. No.	Cat. No.
				Voltage, Max.	Current, Max.	Power, Max.	Max. Permiss. External Capacity	Max. Permiss. External Inductance		
120…230 V AC	(2) NAMUR Sensors or Dry-Contacts	SPDT Relay/250V AC @ 4 A/ 10 ms	A, B, E	10.6V	24 mA	64 mW	2.32 µF	63 mH	9170/20-12-21s	897H-G232
			D, F, G				16.2 µF	230 mH		
24V DC			A, B, E				2.32 µF	63 mH	9170/20-12-11s	897H-G231
			D, F, G				16.2 µF	230 mH		
24V DC		Transistor, Open Collector/ 35V DC @ 50 mA/ 30 µs	A, B, E				2.32 µF	63 mH	9170/20-14-11s	897H-G211
			D, F, G				16.2 µF	230 mH		

Typical Wiring Diagrams

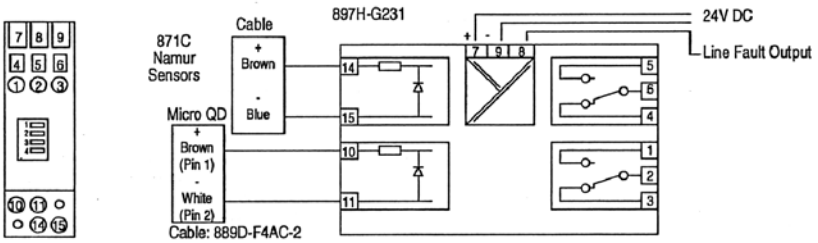


Dip Switch Settings

1 2 3 4 / 1 1 1 1 N.O.

1 2 3 4 / 1 0 3 0 N.C.

Switch 1, 2 Channel 1 (2 Config N.O./N.C.)
Switch 3, 4 Channel 2 (4 Config N.O./N.C.)
Turn Switch 1 & 3 "On" to configure short ckt/open wire detection. Use a 22K Ohm in parallel for open wire detection, or a 2.7K Ohm in series for short ckt detection.

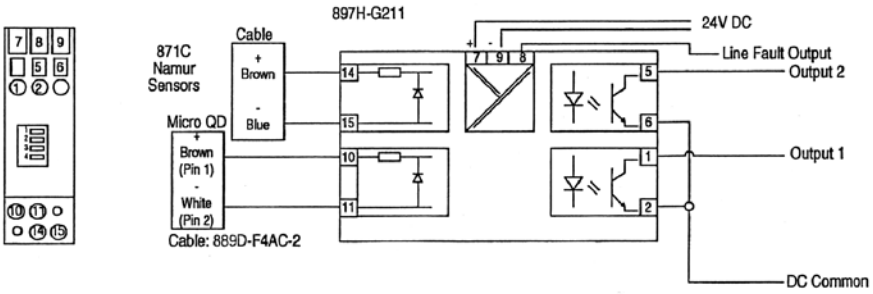


Dip Switch Settings

1 2 3 4 / 1 1 1 1 N.O.

1 2 3 4 / 1 0 3 0 N.C.

Switch 1, 2 Channel 1 (2 Config N.O./N.C.)
Switch 3, 4 Channel 2 (4 Config N.O./N.C.)
Turn Switch 1 & 3 "On" to configure short ckt/open wire detection. Use a 22K Ohm in parallel for open wire detection, or a 2.7K Ohm in series for short ckt detection.



Dip Switch Settings

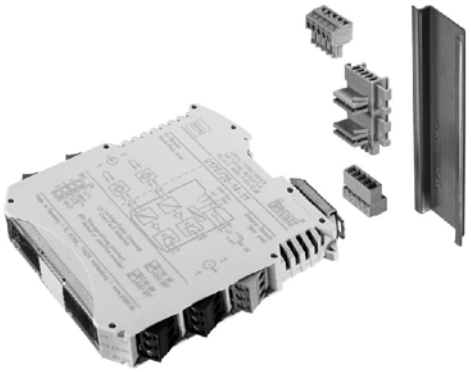
1 2 3 4 / 1 1 1 1 N.O.

1 2 3 4 / 1 0 3 0 N.C.

Switch 1, 2 Channel 1 (2 Config N.O./N.C.)
Switch 3, 4 Channel 2 (4 Config N.O./N.C.)
Turn Switch 1 & 3 "On" to configure short ckt/open wire detection. Use a 22K Ohm in parallel for open wire detection, or a 2.7K Ohm in series for short ckt detection.

It is recommended that wiring for intrinsically safe systems be identified as such through the use of light blue jacketing and/or through appropriate labels. Such labels are required by NEC Article 504 and ANSI/ISA RP-12.6 to be placed at no more than 25 foot intervals. When installing intrinsically safe equipment the user should refer to all relevant national standards and/or those standards set forth by the "authority having jurisdiction" at the installation site.

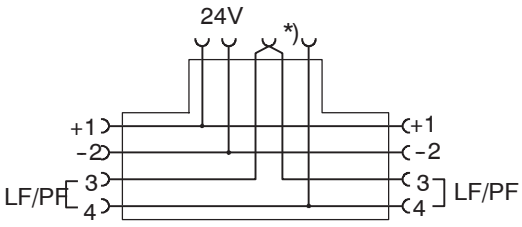
Galvanic Isolators



Description

Rockwell Automation Galvanic Isolators can be daisy chained together via power bus connectors. The snap-on connectors save time and simplify wiring for power distribution and error identification on a series of modules. Each end on a string of bussed isolators is terminated with a screw terminal connector. The line fault and power supply failure line are bridged on these connectors to close the current.

Wiring Diagram



Approximate Dimensions [mm (in.)]

Accessory Connectors

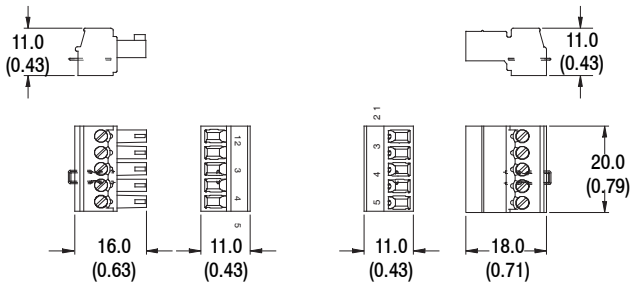


Figure 1

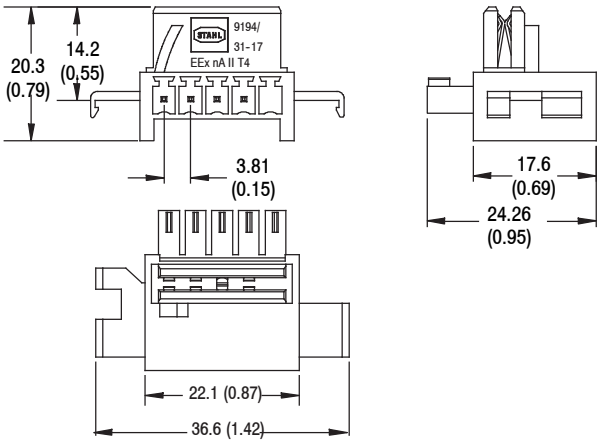


Figure 2

Dimensions are not intended to be used for installation purposes.

Product Selection

Description	Approximate Dimensions [mm (in.)]	Cat. No.
Power Bus Screw Terminal Connector	See Figure 1	897H-GDRC
Power Bus T-Connector	See Figure 2	897H-GDRCT

Intrinsically Safe Wiring Labels/DIN Mounting Rail

Description

It is recommended that wiring for intrinsically safe systems be identified as such through the use of light blue jacketing and/or through appropriate labels. Such labels are required by NEC Article 504 and ANSI/ISA RP-12.6 to be placed at no more than 25 foot intervals. When installing intrinsically safe equipment the user should refer to all relevant national standards and/or those standards set forth by the "authority having jurisdiction" at the installation site.

Intrinsically Safe Wiring Labels

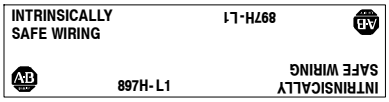


Figure 1

Figure 2

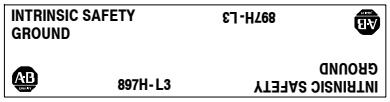
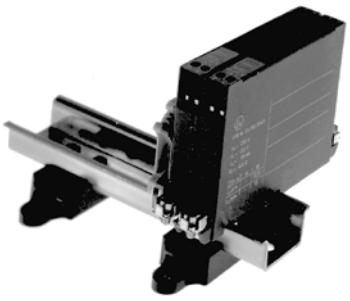


Figure 3

Quantity	Description	Figure	Cat. No.
25	Intrinsically Safe Wiring	1	**897H-L1-25**
100	Intrinsically Safe Wiring		**897H-L1-100**
25	Intrinsically Safe Wiring	2	**897H-L2-25**
100	Intrinsically Safe Wiring		**897H-L2-100**
25	Intrinsic Safety Ground	3	**897H-L3-25**

Description

DIN Rail provides convenient and simple mounting of barriers, isolators, and other control equipment. DIN Rail is available from Rockwell Automation/ Allen-Bradley in one meter sections (Cat. No. **64-134**) or as part of a mounting kit (Cat. No. **64-136**). By isolating the DIN Rail from the mounting surface, the mounting kit allows 897H-series shunt diode barriers to be grounded directly to the rail.



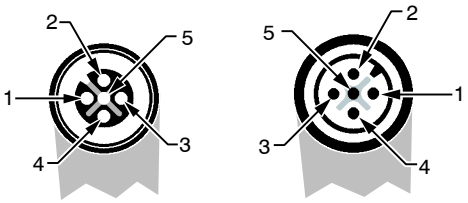
#64-136 TS35 DIN Mounting Rail Kit
(Barriers not included)

#64-134 TS35 DIN Mounting Rail

Mounting Accessories

Description	Cat. No.
1 m (3.3 ft) prepunched zinc-plated and chromated steel mounting rail per EN50022/DIN46277 (TS35)	**64-134**
DIN Rail mounting kit includes 12 inch DIN Rail, two insulated standoffs, and two grounding terminals	**64-136**

Pinout and Color Code

	Face View Pinout	
	4-Pin	
		
	Female	Male
Color Code	1–Brown 2–White 3–Blue 4–Black 5–NA	

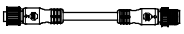
Description

As defined in the National Electric Code (NEC), intrinsically safe wiring must be identified by color coding with light blue jacketed cable or by labeling at regular 25 foot or less intervals. When installing intrinsically safe equipment, the user should refer to all relevant national standards and/or those standards set forth by the "authority having jurisdiction" at the installation site. Rockwell Automation cordsets and patchcords with blue PVC jacketing provide a cost effective solution for easy identification of intrinsically safe wiring. Unlike tags, that may fall off or become unreadable, this rugged cable maintains its visibility, even in harsh environments. No labor time is required for labeling the cable while it is being installed or during maintenance.

Product Selection

Cordsets 

Pin Count	Color Code	Jacket Color	Wire Gauge	Cat. No.			
				Straight Female	Right Angle Female	Straight Male	Right Angle Male
4-Pin	A	Blue	22 AWG	889D-F4LC-❶	889D-R4LC-❶	889D-M4LC-❶	889D-E4LC-❶

Patchcords 

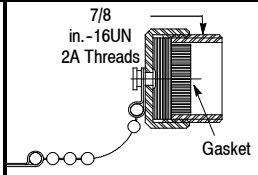
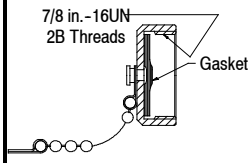
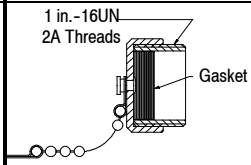
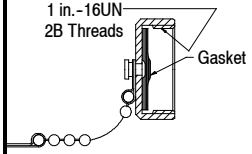
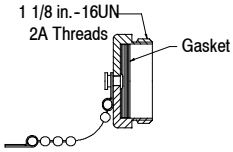
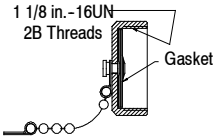
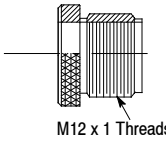
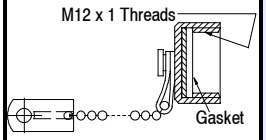
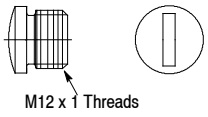
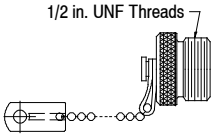
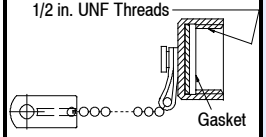
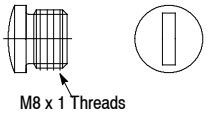
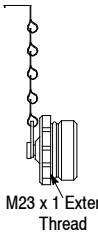
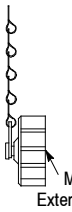
Pin Count	Color Code	Jacket Color	Wire Gauge	Cat. No.			
				Straight Female Straight Male	Straight Female Right Angle Male	Right Angle Female Straight Male	Right Angle Female Right Angle Male
4-Pin	A	Blue	22 AWG	**889D-F4LCDM-❷**	889D-F4LCDE-❷	889D-R4LCDM-❷	889D-R4LCDE-❷

❶ Replace symbol with 2 (2 m), 5 (5 m) or 10 (10 m) for standard cable lengths.
❷ Replace symbol with 0M3 (1 ft), 1 (1 m), 2 (2 m), 5 (5 m) or 10 (10 m) for standard cable lengths.

Note: See DC Micro Style Cordsets and Patchcords for complete specifications (page 8-1).

Sealing Caps

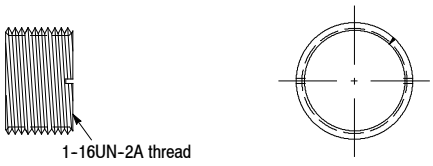
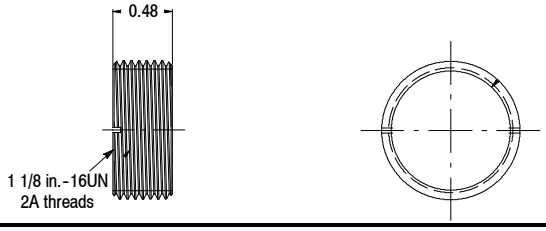
Product Selection

Connector Style	Material	Thread Config.	Approximate Dimensions [mm (in.)]	Cat. No.	Thread Config.	Approximate Dimensions [mm (in.)]	Cat. No.
Mini	Aluminum	External		**1485A-C1**	Internal		**889A-NCAP**
Mini-Plus (7 and 8 pin)	Aluminum	External		889A-NM2CAP	Internal		889A-N2CAP
Mini-Plus (9, 10, and 12 pin)	Aluminum	External		889A-NM3CAP	Internal		889A-N3CAP
DC Micro	Aluminum	External		1485A-C3	Internal		889A-DCAP
	Plastic	External		**1485A-M12**	—	—	—
AC Micro	Aluminum	External		**889A-RMCAP**	Internal		889A-RCAP
Pico	Plastic	External		**889A-PMCAP**	—	—	—
M23	Nickel-plated Brass	External		889A-MMCAP	Internal		889A-MCAP

Visit our website: *www.ab.com/catalogs*.
Preferred availability cat. nos. are printed in **bold**.

Coupling Adaptors/Mounting Accessories/Power Supplies

Coupling Adaptors

Connector Style	Material	Approximate Dimensions [mm (in)]	Cat. No.
Mini	Aluminum		**889A-NADPT**
Mini-Plus (7 and 8 pin)			**889A-N2ADPT**
Mini-Plus (9, 10, and 12 pin)			889A-N3ADPT

Mounting Accessories

Description	Cat. No.
Mounting nuts for 1/2-14 NPT threaded receptacles are available in bags of 10 pieces	**889A-U1NUT-10**
Flat, sealing washers for 1/2-14 NPT threaded receptacles are available in bags of 10 pieces	**889A-U1FSL-10**

Bulletin 1606 Power Supplies

Product Selection

	Output Power	Output Voltage	Output Current	Special Feature(s)	Stocked Item	Parallel Operation (Selectable)	Meets EN 61000-3-2 (PFC)	Cat. No.
1606-XLP Compact								
Compact Single Phase	30 W	DC 10…12V	3 A	NEC Class 2	X	—	N/A	1606-XLP30B
		DC 24…28V	1.3 A	NEC Class 2	X	—	N/A	1606-XLP30E
	50 W	DC 12…15V	4.2 A	Output Voltage Adjustable NEC Class 2	X	—	N/A	1606-XLP50B
		DC 24…28V	2.1 A	NEC Class 2	X	—	N/A	1606-XLP50E
	72 W	DC 24…28V	3 A	NEC Class 2	X	—	N/A	1606-XLP72E
1606-XL Standard Single Phase								
Standard Single Phase	60 W	DC 24V	2.5 A	NEC Class 2	X	—	N/A	1606-XL60D
	120 W		5 A	—	X	—	Yes	1606-XL120D
	240 W	DC 24…28V	10 A	FM Class 1 Div. 2 T3A	X	—	Yes	1606-XL240EP

Other power supplies are located at *www.ab.com/catalogs*—select *Industrial Control - English - Power Supplies*.

Notes