

## 872C WorldProx 3 and 4-wire DC - Standard and Extended Sensing

### Specifications

Attribute	8 mm	12 mm	18 mm	30 mm
Load current	≤ 100 mA	≤ 200 mA		
Leakage current	≤ 5 µA	≤ 20 µA		
Operating voltage	5...30V DC	10...30V DC		
Voltage drop	≤ 1.5V	< 1V		
Switching frequency	≤ 2500 Hz	≤ 2650 Hz <sup>(1)</sup>	≤ 1950 Hz <sup>(1)</sup>	≤ 1150 Hz <sup>(1)</sup>
No-load supply current	≤ 10 mA	<15 mA		
Repeatability	≤ 5%			
Hysteresis	≤ 10% typical	5% typical		
Protection type	False pulse on power, transient noise, reverse polarity, short circuit, and overload			
Certifications	cULus Listed, CE Marked for all applicable directives, and UKCA Marked for all applicable regulations			
Enclosure type rating	IP67	IP67, IP68 – 24 hr at 1 m (3.3 ft)		
Housing material	Nickel-plated brass barrel nuts with integral locking feature, plastic face (LCP)	White bronze-plated brass barrel nuts with integral locking feature, plastic face (PBT)		
Connections	<ul style="list-style-type: none"> <li>Cable (PVC/PUR): 2 m (6.5 ft), 5 m (16.4 ft), 10 m (32.8 ft) length, 3.5 mm (0.138 in.) diameter (PVC); 3.3 mm diameter (PUR); 3 x 0.14 mm<sup>2</sup> PVC or PP</li> <li>Cable (Pigtail): 0.2 m (0.7 ft), 0.5 m (1.6 ft), 1 m (3.3 ft) length</li> <li>Connector: 3-pin M12 or 3-pin M8</li> </ul>		<ul style="list-style-type: none"> <li>Cable (PVC/PUR): 2 m (6.5 ft), 5 m (16.4 ft), 10 m (32.8 ft) length, 4.3 mm (0.17 in.) diameter; 3 x 0.34 mm<sup>2</sup> (0.01 in.<sup>2</sup>) or 4 x 0.34 mm<sup>2</sup> PVC or PUR</li> <li>Cable (Pigtail): 0.2 m (0.7 ft), 0.5 m (1.6 ft), 1 m (3.3 ft) length, integral connector (M12) 3 or 4-pin micro QD</li> <li>Quick disconnect: 3 or 4-pin micro QD (M12) or [3-pin Pico QD (M8) for 12 mm only]</li> </ul>	
Status indicator	Amber: Output energized			
Operating temperature	-25...+70 °C (-13...+158 °F)		-40...+85 °C (-40...+185 °F)	
Shock	30 g (1.06 oz), 11 ms half-sine			
Vibration	55 Hz, 1 mm amplitude, 3 planes			



DC Micro Quick Disconnect Style  
8 mm, 12 mm, 18 mm, and 30 mm



DC Pico Quick Disconnect Style  
6.5 mm, 8 mm, and 12 mm



DC Cable Style  
6.5 mm, 8 mm, 12 mm, 18 mm, and 30 mm



Pigtail Cable with Integral Micro QD Connector  
8 mm, 12 mm, 18 mm, and 30 mm

### Nominal Sensing Distance

Size	Description	Dimensions [mm (in.)]	
		Standard Sensing Range	Extended Sensing Range
6.5 mm	Shielded	2 (0.08)	—
	Unshielded	3 (0.12)	—
8 mm	Shielded	2 (0.08)	3 (0.12)
	Unshielded	3 (0.12)	4 (0.16)
12 mm	Shielded	—	4 (0.16)
	Unshielded	4 (0.16)	8 (0.31)
18 mm	Shielded	5 (0.2)	8 (0.31)
	Unshielded	8 (0.31)	12 (0.47)
30 mm	Shielded	10 (0.39)	15 (0.59)
	Unshielded	15 (0.59)	25 (0.98)

### Correction Factors

Target Material	6.5 mm	8 mm	12 mm	18 mm	30 mm
Steel	1.0	1.0	1.0	1.0	1.0
Stainless steel	0.7...0.8	0.7...0.8	0.79...0.85	0.73...0.75	0.7...0.74
Brass	0.45...0.55	0.45...0.55	0.49...0.55	0.44...0.55	0.46...0.53
Aluminum	0.3...0.4	0.45...0.55	0.4...0.47	0.35...0.49	0.4...0.5
Copper	0.2...0.3	0.35...0.45	0.35...0.43	0.29...0.46	0.37...0.43

(1) Select models have switching frequency less than previously specified. See [Product Selection - Standard Range on page 80](#) and [Product Selection - Extended Range on page 81](#) for specific switching frequency of each model.

## Product Selection - Standard Range

Table 9 - Standard Barrel

Barrel Diameter [mm (in.)]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.			
						Cable Style	Micro QD Style	Pico QD Style	Pigtail Style
8 (0.31)	2 (0.08)	Yes	N.O.	PNP	2500	872C-D2NP8-E2 <sup>(1)</sup>	872C-D2NP8-D4	872C-D2NP8-P3	872C-D2NP8-FD05
				NPN		872C-D2NN8-E2 <sup>(1)</sup>	872C-D2NN8-D4	872C-D2NN8-P3	—
			N.C.	PNP		872C-D2CP8-E2 <sup>(1)</sup>	872C-D2CP8-D4	872C-D2CP8-P3	—
	3 (0.12)	No	N.O.	PNP		872C-D3NP8-E2	872C-D3NP8-D4	872C-D3NP8-P3	—
				NPN		—	872C-D3NN8-D4	872C-D3NN8-P3	—
			N.C.	PNP		—	872C-D3CP8-D4	872C-D3CP8-P3	—
12 (0.47)	4 (0.16)	No	N.O.	PNP	2650	872C-D4NP12-E2	872C-D4NP12-D4	—	—
				NPN		—	872C-D4NN12-D4	—	—
			N.C.	PNP		—	872C-D4CP12-D4	—	—
18 (0.71)	5 (0.2)	Yes	N.O.	PNP	1950	872C-D5NP18-E2	872C-D5NP18-D4	—	—
	8 (0.31)	No		NPN		872C-D5NN18-E2	—	—	—
30 (1.18)	10 (0.39)	Yes	N.O.	PNP	1650	872C-D8NP18-E2	872C-D8NP18-D4	—	—
	15 (0.59)	No		PNP		1100	—	872C-D10NP30-D4	—
					1150	—	872C-D15NP30-D4	—	—

(1) The 2 at the end of the catalog number indicates a 2 m (6.6 ft) cable. Change to a 5 for a 5 m (16.4 ft) cable.

Table 10 - Short Barrel

Barrel Diameter [mm (in.)]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.		
						Cable Style	Micro QD Style	Pico QD Style
8 (0.31)	2 (0.08)	Yes	N.O.	PNP	2500	872C-DH2NP8-E2	872C-DH2NP8-D4	872C-DH2NP8-P3
12 (0.47)	4 (0.16)	No	N.O.	PNP	2650	—	872C-DH4NP12-D4	—
				NPN		—	872C-DH4NN12-D4	—
18 (0.71)	5 (0.2)	Yes	N.O.	PNP	1950	—	872C-DH5NP18-D4	—
	8 (0.31)	No		PNP	1650	—	872C-DH8NP18-D4	—
30 (1.18)	15 (0.59)	No	N.O.	PNP	1150	—	872C-DH15NP30-D4	—

## Product Selection - Extended Range

Table 11 - Standard Barrel

Barrel Diameter [mm (in.)]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Configuration		Switching Frequency [Hz]	Cat. No.					
						Cable Style (1) (2)	Micro QD Style	Pico QD Style	Pigtail Style (3)		
8 (0.31)	3 (0.12)	Yes	N.O.	PNP	2500	872C-M3NP8-E2	872C-M3NP8-D4	872C-M3NP8-P3	872C-M3NP8-FD02		
				NPN		872C-M3NN8-E2	872C-M3NN8-D4	872C-M3NN8-P3	—		
			N.C.	PNP		—	872C-M3CP8-D4	872C-M3CP8-P3	—		
				NPN		872C-M3CN8-E2	872C-M3CN8-D4	872C-M3CN8-P3	—		
	4 (0.16)	No	N.O.	PNP		872C-N4NP8-E2	872C-N4NP8-D4	872C-N4NP8-P3	872C-N4NP8-FD02		
				NPN		872C-N4NN8-E2	872C-N4NN8-D4	872C-N4NN8-P3	—		
			N.C.	PNP		872C-N4CP8-E2	872C-N4CP8-D4	872C-N4CP8-P3	—		
				NPN		872C-N4CN8-E2	872C-N4CN8-D4	872C-N4CN8-P3	—		
12 (0.47)	4 (0.16)	Yes	N.O.	PNP	2550	872C-M4NP12-E2	872C-M4NP12-D4	872C-M4NP12-P3	—		
				NPN		—	—	872C-M4NN12-P3	—		
			N.C.	PNP		—	—	872C-M4CP12-P3	—		
				NPN		—	—	872C-M4CN12-P3	—		
			N.O./N.C.	PNP		872C-M4BP12-E2	872C-M4BP12-D4	—	872C-M4BP12-FD02		
				NPN		872C-M4BN12-E2	872C-M4BN12-D4	—	872C-M4BN12-FD02		
	8 (0.31)	No	N.O.	PNP		1650	872C-N8NP12-E2	872C-N8NP12-D4	872C-N8NP12-P3	—	
				NPN			872C-N8NN12-E2	—	872C-N8NN12-P3	—	
			N.C.	PNP			—	—	872C-N8CP12-P3	—	
				NPN			—	—	872C-N8CN12-P3	—	
			N.O./N.C.	PNP			872C-N8BP12-E2	872C-N8BP12-D4	—	872C-N8BP12-FD05	
				NPN			872C-N8BN12-E2	872C-N8BN12-D4	—	872C-N8BN12-FD10	
18 (0.71)	8 (0.31)	Yes	N.O.	PNP	1350		872C-M8NP18-E2	872C-M8NP18-D4	—	872C-M8NP18-FD02	
				NPN			—	—	—	872C-M8NN18-FD02	
			N.O./N.C.	PNP			872C-M8BP18-E2	872C-M8BP18-D4	—	872C-M8BP18-FD02	
				NPN			872C-M8BN18-E2	872C-M8BN18-D4	—	872C-M8BN18-FD02	
	12 (0.47)	No	N.O.	PNP			1300	872C-N12NP18-E2	872C-N12NP18-D4	—	872C-N12NP18-FD02
				NPN				872C-N12NN18-E2	—	—	—
			N.O./N.C.	PNP		872C-N12BP18-E2		872C-N12BP18-D4	—	872C-N12BP18-FD02	
				NPN		872C-N12BN18-E2		872C-N12BN18-D4	—	872C-N12BN18-FD02	
30 (1.18)	15 (0.59)	Yes	N.O.	PNP	550	872C-M15NP30-E2		872C-M15NP30-D4	—	872C-M15NP30-FD02	
				NPN		872C-M15BP30-E2		872C-M15BP30-D4	—	872C-M15BP30-FD02	
			N.O./N.C.	PNP		872C-M15BN30-E2		872C-M15BN30-D4	—	872C-M15BN30-FD02	
				NPN		—		—	—	—	
	25 (0.98)	No	N.O.	PNP		400	872C-N25NP30-E2	872C-N25NP30-D4	—	—	
				NPN			872C-N25BP30-E2	872C-N25BP30-D4	—	—	
			N.O./N.C.	PNP			872C-N25BN30-E2	872C-N25BN30-D4	—	872C-N25BN30-FD02	
				NPN			—	—	—	—	

- (1) The 2 at the end of the catalog number indicates a 2 m (6.6 ft) cable. Change to a 5 for a 5 m (16.4 ft) cable or 10 for a 10 m (32.8 ft) cable. Example: Cat. No. 872C-M15BP30-E2 becomes Cat. No. 872C-M15BP30-E5.
- (2) The E in the catalog number indicates a PVC cable. Change to a J for a PUR cable. Example: Cat. No. 872C-MH3NP8-E2 becomes 872C-MH3NP8-J2.
- (3) The 02 at the end of the catalog number indicates a 0.2 m (0.066 ft) cable. Change to a 05 for a 0.5 m (1.64 ft) cable or 10 for a 1 m (3.28 ft) cable. Example: Cat. No. 872C-M15BN30-FD02 becomes Cat. No. 872C-M15BN30-FD10.

Table 12 - Short Barrel

Barrel Diameter [mm (in.)]	Nominal Sensing Distance [mm (in.)]	Shielded	Output Config.		Switching Frequency [Hz]	Cat. No.					
						Cable Style <sup>(1)</sup> (2)	Micro QD Style	Pico QD Style	Pigtail Style <sup>(3)</sup>		
8 (0.31)	3 (0.12)	Yes	N.O.	PNP	2500	872C-MH3NP8-E2	872C-MH3NP8-D4	872C-MH3NP8-P3	872C-MH3NP8-FD02		
				NPN		872C-MH3NN8-E2	872C-MH3NN8-D4	872C-MH3NN8-P3	872C-MH3NN8-FD05		
			N.C.	PNP		872C-MH3CP8-E2	872C-MH3CP8-D4	872C-MH3CP8-P3	—		
				NPN		872C-MH3CN8-E2	—	—	—		
	4 (0.16)	No	N.O.	PNP		872C-NH4NP8-E2	872C-NH4NP8-D4	872C-NH4NP8-P3	—		
				NPN		872C-NH4NN8-E2	872C-NH4NN8-D4	872C-NH4NN8-P3	—		
			N.C.	PNP		872C-NH4CP8-E2	872C-NH4CP8-D4	—	—		
				NPN		872C-NH4CN8-E2	—	—	—		
12 (0.47)	4 (0.16)	Yes	N.O.	PNP	2550	872C-MH4NP12-E2	872C-MH4NP12-D4	872C-MH4NP12-P3	—		
				NPN		—	—	872C-MH4NN12-P3	—		
			N.C.	PNP		—	—	872C-MH4CP12-P3	—		
				NPN		872C-MH4CN12-E2	—	872C-MH4CN12-P3	—		
			N.O./N.C.	PNP		872C-MH4BP12-E2	872C-MH4BP12-D4	—	872C-MH4BP12-FD02		
				NPN		872C-MH4BN12-E2	872C-MH4BN12-D4	—	—		
	8 (0.31)	No	N.O.	PNP		1650	872C-NH8NP12-E2	872C-NH8NP12-D4	872C-NH8NP12-P3	872C-NH8NP12-FD02	
				NPN			—	—	872C-NH8NN12-P3	—	
			N.C.	PNP			—	—	872C-NH8CP12-P3	—	
				NPN			—	—	872C-NH8CN12-P3	—	
			N.O./N.C.	PNP			872C-NH8BP12-E2	872C-NH8BP12-D4	—	872C-NH8BP12-FD02	
				NPN			872C-NH8BN12-E2	872C-NH8BN12-D4	—	—	
18 (0.71)	8 (0.31)	Yes	N.O.	PNP	1350		872C-MH8NP18-E2	872C-MH8NP18-D4	—	872C-MH8NP18-FD02	
				NPN			872C-MH8NN18-E2	—	—	—	
			N.O./N.C.	PNP			872C-MH8BP18-E2	872C-MH8BP18-D4	—	872C-MH8BP18-FD02	
				NPN			872C-MH8BN18-E2	872C-MH8BN18-D4	—	872C-MH8BN18-FD02	
	12 (0.47)	No	N.O.	PNP			1300	872C-NH12NP18-E2	872C-NH12NP18-D4	872C-NH12NP18-P3	872C-NH12NP18-FD02
				NPN				—	872C-NH12CN18-D4	—	—
			N.C.	PNP		872C-NH12BP18-E2		—	—	872C-NH12BP18-FD02	
				NPN		872C-NH12BN18-E2		872C-NH12BN18-D4	—	—	
			N.O./N.C.	PNP		—		—	—	—	
				NPN		—		—	—	—	
30 (1.18)	15 (0.59)	Yes	N.O.	PNP	550	872C-MH15NP30-E2		872C-MH15NP30-D4	—	—	
				NPN		—		872C-MH15NN30-D4	—	—	
			N.C.	PNP		—		872C-MH15CP30-D4	—	—	
				NPN		872C-MH15BP30-E2		872C-MH15BP30-D4	—	—	
			N.O./N.C.	PNP		872C-MH15BN30-E2	872C-MH15BN30-D4	—	—		
	25 (0.98)	No	N.O.	PNP		400	872C-NH25NP30-E2	872C-NH25NP30-D4	—	872C-NH25NP30-FD02	
				NPN			872C-NH25BP30-E2	872C-NH25BP30-D4	—	—	
			N.O./N.C.	PNP			—	—	—	—	
				NPN			872C-NH25BN30-E2	872C-NH25BN30-D4	—	—	

(1) The 2 at the end of the catalog number indicates a 2 m (6.6 ft) cable. Change to a 5 for a 5 m (16.4 ft) cable or 10 for a 10 m (32.8 ft) cable.  
 (2) The E in the catalog number indicates a PVC cable, for a PUR cable change to a J. Example: Cat. No. 872C-MH3NP8-E2 becomes 872C-MH3NP8-J2.  
 (3) The 02 at the end of the catalog number indicates a 0.2 m (0.066 ft) cable. Change to a 05 for a 0.5 m (1.64 ft) cable or 10 for a 1 m (3.28 ft) cable.  
 Example: Cat. No. 872C-M15BN30-FD02 becomes Cat. No. 872C-M15BN30-FD10.

## Wiring

Figure 61 - 8 mm, 12 mm, 18 mm, and 30 mm Pinouts

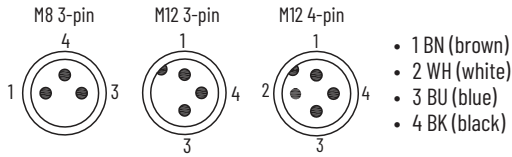


Figure 62 - 8 mm, 12 mm, 18 mm, and 30 mm 3-wire DC Wiring

NPN N.O.	Cable	M12 Micro Connector	M8 Pico Connector
NPN N.O.			
NPN N.C.			
PNP N.O.			
PNP N.C.			

Figure 63 - 12 mm, 18 mm, and 30 mm 4-wire DC Complementary Wiring

NPN/PNP	Cable	M12 Micro Connector	M8 Pico Connector
NPN N.O. + N.C. Complementary			
PNP N.O. + N.C. Complementary			