



Bulletin 800Z
Zero-Force™
Touch Buttons

- IEC and NEMA Style
- General Purpose Line
- Heavy Industrial Line
- Types 4/4X/13 and 4/13 IP66
- Internationally Rated Ergonomic Touch Buttons

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Specifications

Mechanical Ratings							
Description		General Purpose Line (800Z-G)			Heavy Industrial Line (800Z-H)		
Vibration		10...55 Hz; 1.50 mm (0.06 in.)					
Mechanical Shock		100 G (Mechanical Durability)					
Degree of Protection		Type 4/4X/13 IP66 1200 psi Washdown			Type 4/13 IP66		
Mechanical Design Life (Typical)		50,000,000 cycles minimum					
Operating Force		Zero (slight pressure may be required if thick gloves are used)					
Environmental							
Temperature Range (Operating)		23...122°F (–5...50°C)					
Temperature Range (Storage)		–40...185°F (–40...85°C)					
Humidity		95% RH from 25...50°C full operation					
Materials							
Upper and Lower Housing		Valox 357					
Guard		Valox 325					
Gasket		BUNA-N			1/16" Cork-BUNA-N		
Agency Approvals							
Approvals		cULus, CE					
Standards Conformity		UL508, UL50, EN55011, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11, EN60947-5-1					
Electrical Ratings for Relay Output Devices							
Input Voltage	800Z-GL...	Low Voltage					
	800Z-HL...	10...50V DC and 20...40V AC at 50/60 Hz					
Input Voltage	800Z-GF...	Full Voltage					
	800Z-HF...	90...264V AC at 50/60 Hz					
Electrical Design Life		Relay Output: 150,000 Cycles Min. Inductive			Relay Output: 150,000 Cycles Min. Inductive		
Terminal Block Specifications		N/A			IP2X rated Terminal Block Max. wire size #12...22 AWG (0.5...4 mm ²) Tightening Torque: 0.74 ft-lb (1 Nm)		
Current Draw		35 mA at 12V DC 60 mA at 24V DC 40 mA rms at 120V AC 80 mA rms at 240V AC			45 mA at 12V DC 70 mA at 24V DC 50 mA rms at 120V AC 90 mA rms at 240V AC		
Output Relay Ratings							
	Type	Utilization Category	I _{th}	Volts	24V	120V	240V
General Purpose Line	30.5 mm	B300, AC-15	5	Amps	5	3	1.5
	22.5 mm	C300, AC-15	2.5	Amps	2.5	1.5	0.75
	All	Resistive, AC-13	2 A maximum at 24V DC				
Heavy Industrial Line		B300, AC-15	5	Amps	5	3	1.5
		Resistive, DC-13	2 A maximum at 24V DC				
Electrical Ratings for Transistor Output Devices							
Input Voltage		800Z-GN... 800Z-GP...	10...30V DC			N/A	
Max. Output Load		150 mA max. per circuit			NA		
Max. Off-State Leakage Current		200 µA			N/A		
On-State Saturation Voltage		1V			N/A		

Cable Specifications

Electrical Ratings			
Style		General Purpose 22.5 mm Line	General Purpose 30.5 mm Line
Cabled Devices	Cabled Options	5 wire (single common), or 6 wire (isolated common) 105°C, 300V multiconductor cable	5 wire (single common), or 6 wire (isolated common) 105°C, 300V multiconductor cable
	Wire Termination	Window stripped — individual wires	Window stripped — individual wires
5-Pin QD Cables	Cable Lengths	2 m, 5 m, 10 m	6 ft, 12 ft, 20 ft
	Wire Size	0.5 mm ² (22 AWG)	18 AWG (0.75 mm ²)
	Wire Termination	Blunt Cut	

General Purpose Line — Momentary Touch Buttons



Cat. No. 800Z-GL2Q5



Cat. No. 800Z-GF3Q5B

Mounting Hole Size	Input Voltage Range and Output Type	Electrical Connection	No Guard	Black Guard
			Cat. No.	Cat. No.
22.5 mm Mounting Hole	Sinking/Sourcing Output 10...30V DC	4-Pin QD (Sinking) ②	800Z-GN2Q4	800Z-GN2Q4B
		4-Pin QD (Sourcing) ②	800Z-GP2Q4	800Z-GP2Q4B
		1.8 m Cabled (Sinking) ②	800Z-GN2064	800Z-GN2064B
		1.8 m Cabled (Sourcing) ②	800Z-GP2064	800Z-GP2064B
	10...50V DC and 20...40V AC Input Relay Output	5-Pin QD	800Z-GL2Q5	800Z-GL2Q5B
		1.8 m Cabled ①	800Z-GL2065	800Z-GL2065B
		3.6 m Cabled ①	800Z-GL2125	800Z-GL2125B
		7.2 m Cabled ①	800Z-GL2245	800Z-GL2245B
	90...264V AC Input Relay Output	5-Pin QD	800Z-GF2Q5	800Z-GF2Q5B
		1.8 m Cabled ①	800Z-GF2065	800Z-GF2065B
		3.6 m Cabled ①	800Z-GF2125	800Z-GF2125B
		7.2 m Cabled ①	800Z-GF2245	800Z-GF2245B
30.5 mm Mounting Hole	Sinking/Sourcing Output 10...30V DC	4-Pin QD (Sinking) ②	800Z-GN3Q4	800Z-GN3Q4B
		4-Pin QD (Sourcing) ②	800Z-GP3Q4	800Z-GP3Q4B
		6 ft Cabled (Sinking) ②	800Z-GN3064	800Z-GN3064B
		6 ft Cabled (Sourcing) ②	800Z-GP3064	800Z-GP3064B
	10...50V DC and 20...40V AC Input Relay Output	5-Pin QD	800Z-GL3Q5	800Z-GL3Q5B
		6 ft Cabled ①	800Z-GL3065	800Z-GL3065B
		12 ft Cabled ①	800Z-GL3125	800Z-GL3125B
		24 ft Cabled ①	800Z-GL3245	800Z-GL3245B
	90...264V AC Input Relay Output	5-Pin QD	800Z-GF3Q5	800Z-GF3Q5B
		6 ft Cabled ①	800Z-GF3065	800Z-GF3065B
		12 ft Cabled ①	800Z-GF3125	800Z-GF3125B
		24 ft Cabled ①	800Z-GF3245	800Z-GF3245B

① This device has a single common wire. If isolated commons are desired, replace the 5 in the cat. no. with a 6. See wiring diagrams on page 10-340 for details.

② Consult your local Allen-Bradley Sales Office for availability.

General Purpose Line — Momentary Touch Buttons

800Z – G **L** **3** **065** **B**
a b c d

a

Input Voltage and Output Type	
Code	Description
Relay Output	
L	Input: 10...50V DC and 20...40V AC Output: Relay
F	Input: 90...264V AC Output: Relay
Transistor Output	
N	10...30V DC NPN (Sinking) Output ❶
P	10...30V DC PNP (Sourcing) Output ❶

b

Mounting Hole Size	
Code	Description
2	22.5 mm
3	30.5 mm

c

Electrical Connection	
Code	Description
Sinking/Sourcing Output ❷	
Q4	4-Pin QD
064	6 ft (1.8 m) Cabled
124	12 ft (3.6 m) Cabled
244	24 ft (7.2 m) Cabled
Relay Output ❸	
Q5	5-Pin QD
065	6 ft (1.8 m) Cabled
125	12 ft (3.6 m) Cabled
245	24 ft (7.2 m) Cabled
Relay Output — Isolated Commons ❹	
066	6 ft (1.8 m) Cabled
126	12 ft (3.6 m) Cabled
246	24 ft (7.2 m) Cabled

d

Guard Option	
Code	Description
Blank	No Guard
B	Black Guard
G	Green Guard
R	Red Guard
Y	Yellow Guard

- ❶ Consult your local Allen-Bradley Sales Office for availability.
❷ These devices are transistor outputs. See page 10-340 for details.
❸ These devices have a 1 N.O. and 1 N.C. mechanically-linked relay output with one common wire. See wiring diagrams on page 10-340 for details.
❹ These devices have a 1 N.O. and 1 N.C. mechanically-linked relay output with isolated commons. See wiring diagrams on page 10-340 for details.

Bulletin 800Z
Zero-Force™ Touch Buttons
Type 4/4X/13, IP66

Heavy Industrial Line — Momentary Touch Buttons



Cat. No. 800Z-HF1



Cat. No. 800Z-HF1M

Mounting Style	Input Voltage Range and Output Type	Electrical Connection	No Guard	Yellow Guard
			Cat. No.	Cat. No.
Flush Mount	10...50V DC and 20...40V AC Input Relay Output	Terminal Block	800Z-HL1	800Z-HL1M
	90...264V AC Input Relay Output	Terminal Block	800Z-HF1	800Z-HF1M

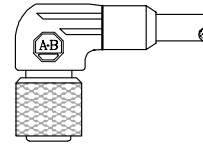
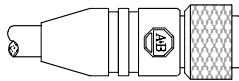
800Z – H L 1 M
 a b c

Voltage	
Code	Description
L	Input: 10...50V DC and 20...40V AC Output: Relay
F	Input: 90...264V AC Output: Relay

Mounting Type/Connection ❶	
Code	Description
1	Flush Mounting/Terminal Block

Guard Option	
Code	Description
Blank	No Guard
M	Yellow Metal Guard

Quick Disconnect Cables



22 mm Mounting Hole				
Straight QD Cable (Micro)			Right Angle QD Cable (Micro)	
Length	4-Pin QD	5-Pin QD	4-Pin QD	5-Pin QD
2 m	889D-F4AC-2	889D-F5AC-2	889D-R4AC-2	—
5 m	889D-F4AC-5	889D-F5AC-5	889D-R4AC-5	—
10 m	889D-F4AC-10	889D-F5AC-10	889D-R4AC-10	—

30 mm Mounting Hole				
Straight QD Cable (Mini)			Right Angle QD Cable (Mini)	
Length	4-Pin QD	5-Pin QD	4-Pin QD	5-Pin QD
6 ft	889N-F4AE-6F	889N-F5AE-6F	889N-R4AE-6F	889N-R5AE-6F
12 ft	889N-F4AE-12F	889N-F5AE-12F	889N-R4AE-12F	889N-R5AE-12F
20 ft	889N-F4AE-20F	889N-F5AE-20F	889N-R4AE-20F	889N-R5AE-20F

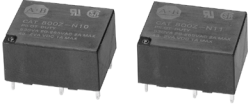
Accessories for the General Purpose Line

General Accessories

Guards	Description	Color	Cat. No.
 Guards	These guards prevent accidental activation of the touch button surface and protect it from damage. To be used for both the 22.5 mm and 30.5 mm mounting.	Yellow	800Z-G3AG1
		Black	800Z-G3AG2
		Green	800Z-G3AG3
		Red	800Z-G3AG4
Mounting Rings	Description	Type	Cat. No.
 Plastic Mounting Kit Cat. No. 800Z-G2AH1	Mounting Ring Nut for 22.5 mm Holes Used on 22.5 mm devices.	Plastic	800Z-G2AH1
 Plastic Mounting Kit Cat. No. 800Z-G3AH1 Metal Mounting Kit Cat. No. 800Z-G3AH2	Mounting Ring Nut for 30.5 mm Holes Used on 30.5 mm devices.	Plastic	800Z-G3AH1
		Metal	800Z-G3AH2
Swivel/Tilt Mounting Assembly	Description	Size	Cat. No.
 Swivel Assembly Cat. No. 60-2439	30.5 mm Swivel/Tilt Mounting Assembly This bracket allows you to orient the touch button in any position. It can be mounted on any vertical or horizontal surface. Compatible with 30.5 mm mounting only.	2.25" (57 mm) Extension	60-2681
		1.15" (29 mm) Extension	60-2439
Adapter	Description	Type	Cat. No.
	30.5 mm to 22.5 mm Hole Size Adapter This adapter allows a 22.5 mm push button operator to be installed in a panel with existing 30.5 mm mounting holes.	Shiny Metal	800E-AHA1
		Black Metal	800E-AHA2

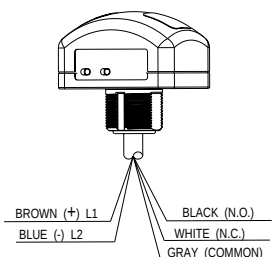
Accessories for the Heavy Industrial Line

General Accessories

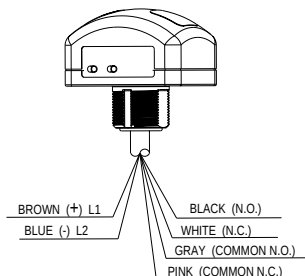
Replaceable Output Relay	Description	Input Voltage	Cat. No.
 Replaceable Output Relay Cat. No. 800Z-N10, 800Z-N11	These replaceable output relays are used if the current output relay fails. For use with 800Z-HL devices.	Low Voltage 10...50V DC and 20...40V AC	800Z-N10
	These replaceable output relays are used if the current output relay fails. For use with 800Z-HF devices.	Full Voltage 90...264V AC	800Z-N11
Guard	Description	Color	Cat. No.
 Guard Cat. No. 800Z-HAG1	This guard prevents accidental activation of the touch surface and protects it from damage. Longer mounting screws are included. Note: Guards are required in most two hand safety applications (see applicable standards).	Yellow	800Z-HAG1
Bases	Description	Style	Cat. No.
 Single Hub Base Cat. No. 800P-B1 Double Hub Base Cat. No. 800P-B2	The heavy industrial line products mount directly on these bases. The conduit hub(s) come with a 3/4" opening.	Single Hub	800P-B1
		Double Hub	800P-B2
Legend Plates	Description	Marking	Cat. No.
 Legend Plates	These legend plates can be mounted onto the yellow guard. Each legend plate includes two mounting screws.	Blank (Gray)	800P-X107
		Blank (Red)	800P-X129
		START	800P-X130
		STOP	800P-X131
		INCH	800P-X132
		RUN	800P-X133
		RUN INCH	800P-X134
		TOP-STOP	800P-X135
Mounting Screws	Description	Cat. No.	
 Cat. No. 800Z-HAH1	These replacement screws are the proper length to mount the heavy industrial touch button with metal guard to a 800P-B1 or 800P-B2 base, or a custom mounting surface. Note: Must be ordered in multiples of 4.	800Z-HAH1	
Adapter	Description	Cat. No.	
	This adapter is used if mounting touch button onto a 4-1/2" x 2-3/8" (114.3 x 60.3 mm) enclosure pattern.	800P-N150	

Wiring Diagrams — Touch Button Terminations**General Purpose Line****Electrical Connections:**10...50V DC and 20...40V AC Input Voltage (Relay Output)**90...264V AC Input Voltage (Relay Output)****Note:** Utilizes one mechanically-linked output relay (1 N.O. + 1 N.C.).

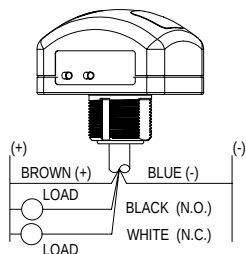
**5 Conductor Cabled
(Relay Output)**
For 800Z-GL___5 Models
For 800Z-GF___5 Models



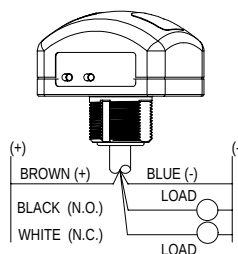
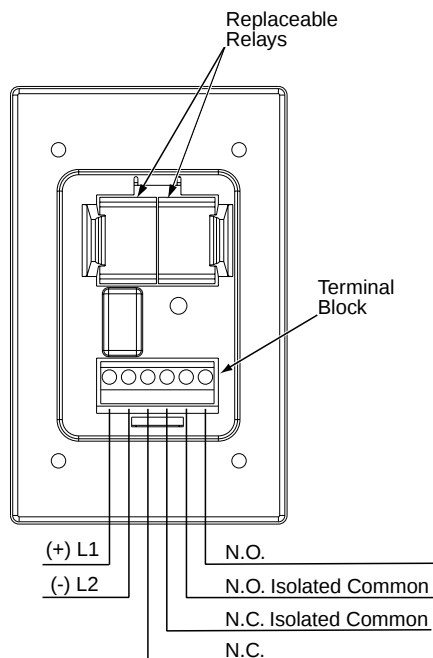
**6 Conductor Cabled
(Isolated Common Relay Output)**
For 800Z-GL___6 Models
For 800Z-GF___6 Models

**Electrical Connections:**10...30V DC Input Voltage (Transistor Output)**150 mA Max. per Circuit Output**

**4 Conductor Cabled
Sinking (NPN)**

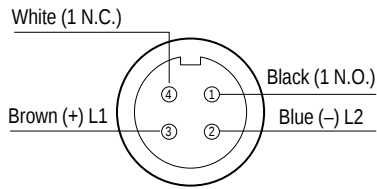


**4 Conductor Cabled
Sourcing (PNP)**

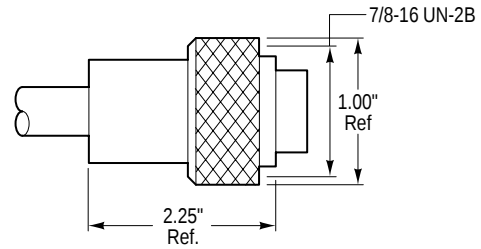
**Heavy Industrial Line****Note:** Utilizes two replaceable mechanically-linked output relays (each has a 1 N.O. + 1 N.C. circuit) internally connected in series.

Wiring Diagrams — Quick Disconnect Cables

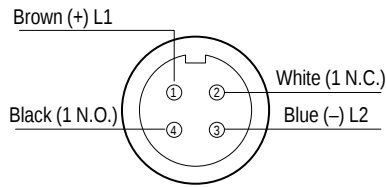
4-Pin Mini Quick Disconnect Version (for 30.5 mm Devices)



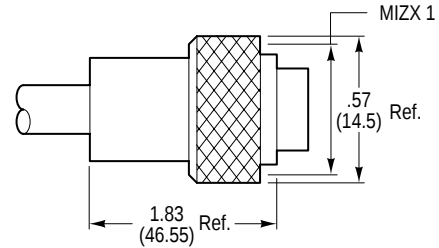
Picture of Molded Cordset



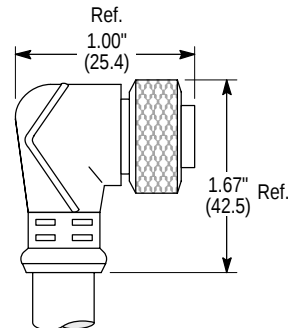
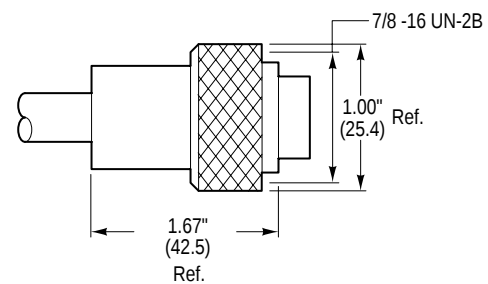
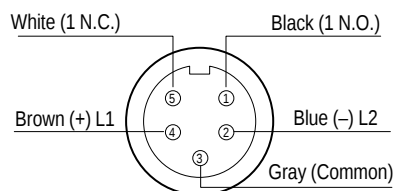
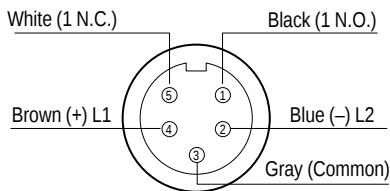
4-Pin Micro Quick Disconnect Version (for 22.5 mm Devices)



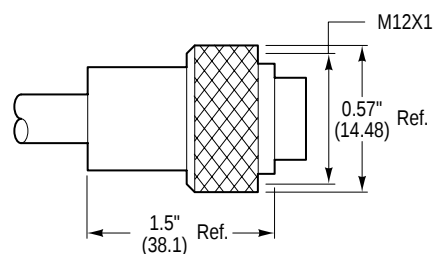
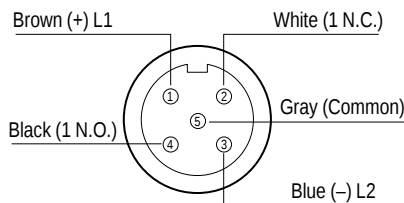
Picture of Molded Cordset



5-Pin Mini Quick Disconnect Version (for 30.5 mm Mounting)



5-Pin Micro Quick Disconnect Version (for 22.5 mm Devices)



Wiring Diagrams — Two-Hand Control Connections

General Purpose Line

If you use an 800Z 5-conductor connection (i.e., 800Z-G____ 5 or 800Z-G__ Q5) you need to use the following Allen-Bradley/ Guardmaster® safety relay(s):

- 440R-D23021 (3 monitored circuits/1 auxiliary circuit) (24V AC/DC input)
- 440R-D23022 (3 monitored circuits/1 auxiliary circuit) (120V AC input)
- 440R-D23023 (3 monitored circuits/1 auxiliary circuit) (230V AC input)

See Figure 2 below for Switch 1 (S1) and Switch 2 (S2) connections.

If you use an 800Z 6-conductor connection (i.e., 800Z-G____ 6) you need to use the following Allen-Bradley safety relay(s):

- 700-ZBR520AZ1 (5 monitored circuits/2 auxiliary circuits) (24V DC/120V AC input)
- 440R-ZBR520AZ1 (5 monitored circuits/2 auxiliary circuits) (24V DC/120V AC input)
- 700-ZBR100AZ1 (1 monitored circuit) (24V DC/120V AC input)

See Figure 1 below for Switch 1 (S1) and Switch 2 (S2) connections.

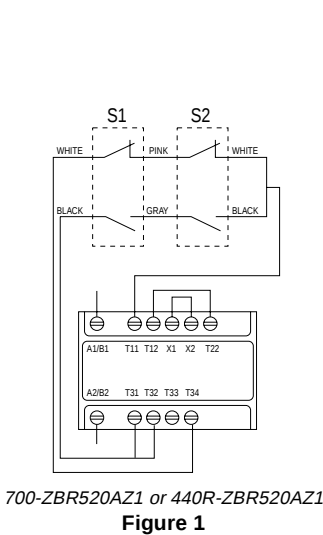


Figure 1

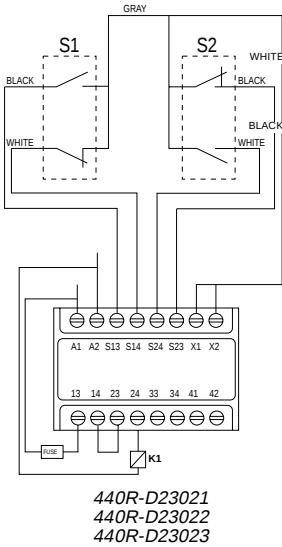


Figure 2

Wire Color Codes for Bulletin 800Z General Purpose Line Touch Buttons		
BROWN		L1 (+)
BLUE		L2 (-)
WHITE		N.C.
BLACK		N.O.
GRAY		N.O. common
PINK		N.C. common

Heavy Industrial Line

If you use an 800Z 6-terminal connection (i.e., 800Z-HL1_ or an 800Z-HF1_) you need to use the following Allen-Bradley safety relay(s):

- 700-ZBR520AZ1 (5 monitored circuits/2 auxiliary circuits) (24V DC/120V AC input)
- 440R-ZBR520AZ1 (5 monitored circuits/2 auxiliary circuits) (24V DC/120V AC input)
- 700-ZBR100AZ1 (1 monitored circuit) (24V DC/120V AC input)

See Figure 3 below for Switch 1 (S1) and Switch 2 (S2) connections.

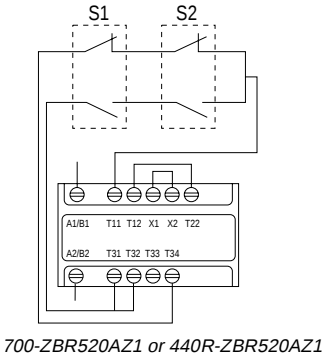


Figure 3

Product Operation

1. When the power LED is lit, the touch button is ready for operation.
2. To send an output, simply place palm or fingers onto ergonomically contoured surface, covering both raised sensor pads (see Figure 1).
3. Safety/redundancy has been incorporated by requiring both sensors to be touched within 0.2 seconds of each other, otherwise the device will not send an output.
4. The SPST (SPST - N.O. + SPST N.C.) electromechanical relay stays activated as long as both pads remain touched.

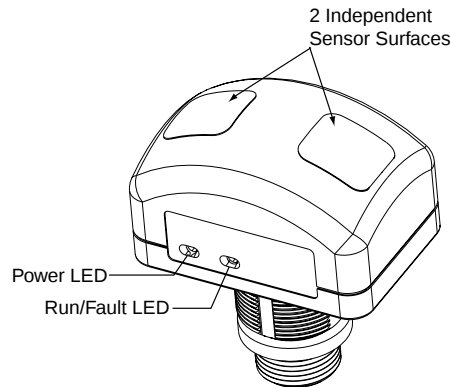


Figure 1

Diagnostics

Code 2:

If the device is being touched during power up, the fault LED will flash a code, and the microprocessor will disable the output. The device will resume operation 10 seconds after it is no longer being touched.

Code 3:

If an object, such as a wet rag, touches the device during operation, and remains in contact with the device after the operator removes their hand, the fault LED will flash a code, and the device will be disabled until the object is removed.

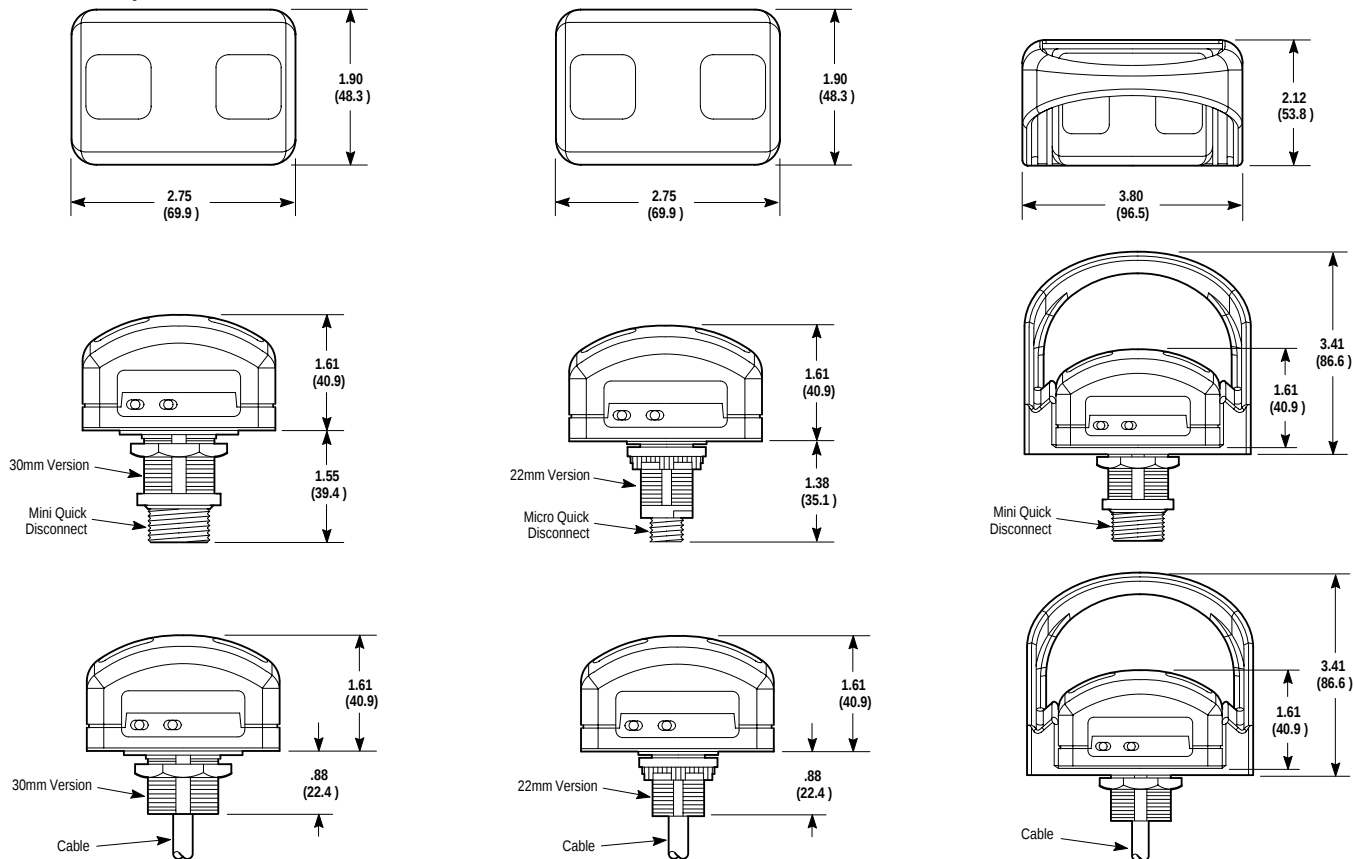
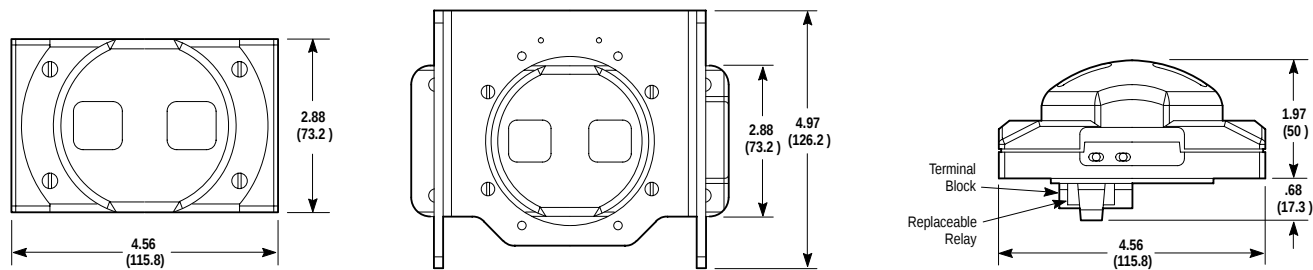
Code 4:

Even if conductive films deposit on the sensor surface over time, a false output will **not** be triggered. The fault LED will flash a code, and the device will be disabled until the sensor surface is cleaned.

Code Type	Description	Fault LED Flash Sequence
Code 2	Power Interruption Safety	● ● ● ● ●
Code 3	Tie Down Protection	● ● ● ● ● ● ● ●
Code 4	Margin Detection	● ● ● ● ● ● ● ● ● ●

Approximate Dimensions

Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

General Purpose Line**Heavy Industrial Line****Cutout and Mounting Screw Locations for a Flush Mounted Cover**