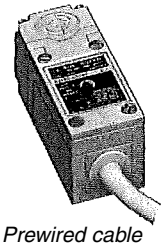
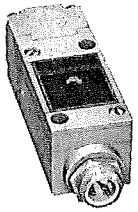
Installation Instructions
Bulletin 802PR — Type LA and Type XA — Series C

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.

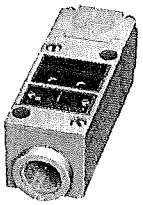


Prewired cable



Prewired receptacle

Conduit coupler



Threaded conduit opening

HAZARDOUS LOCATION SWITCHES — Switches for hazardous locations meet Division 2; Class I Groups A, B, C, & D; Class II, Groups F & G; and, Class III requirements. For additional information refer to Publication GI-2.8 — A Summary of National Electrical Code Requirements for Hazardous Locations.

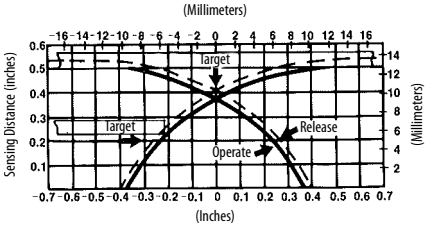


***Figure 1**: Typical sensing characteristics*

Effects of Target Size and Materials on Sensing Distance

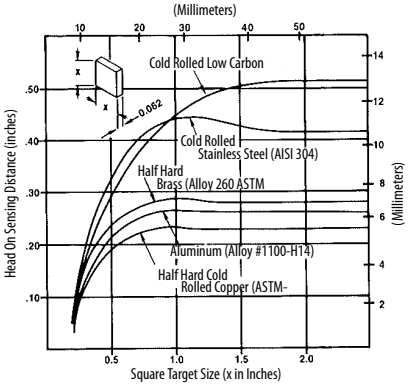
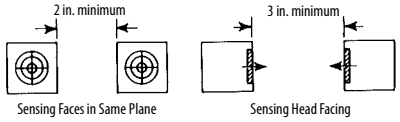


***Figure 2**: Typical sensing distance vs. target size for various metals*

SPACING BETWEEN SWITCHES — When installing switches side-by-side or face-to-face, the minimum spacings in Figure 3 should be maintained.



EFFECTS OF NEARBY METAL SURFACES ON SENSING DISTANCES — The sensing distance will increase if the proximity switch is installed so that metal is adjacent to the sensing head surfaces as illustrated in Figure 4.

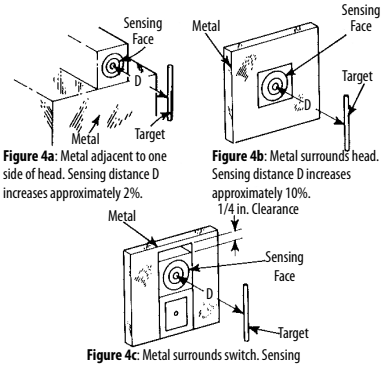


Figure 4a: Metal adjacent to one side of head. Sensing distance D increases approximately 2%.

Figure 4b: Metal surrounds head. Sensing distance D increases approximately 10%.

Figure 4c: Metal surrounds switch. Sensing distance D increases approximately 8%.

***Figure 4**: Effects on nearby metal surfaces on sensing distances.*

WARNING If a hazardous condition can result from unintended energization of this device, access to the sensing area should be guarded.

WIRING — Connect the proximity switch and load as shown in Figure 5 using AWG #18 through #14 wire (1.0/1.5 mm^2). The LED of the switch will be ON when the load is energized.

CONNECTION DIAGRAM

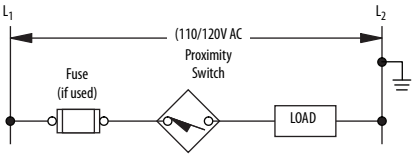


***Figure 5**: Typical wiring diagram*

NOTE: To guard against the load remaining energized when the switch is in an open condition, the minimum load release current **must** be greater than the maximum leakage current of the proximity switch.

GROUNDING — The Bulletin 802PR does not require a ground connection. The load side of the110/120V AC source can be grounded as indicated in the connection diagram.

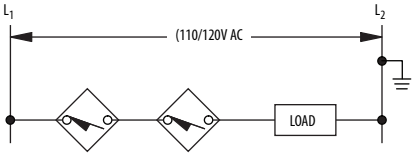
SHORT CIRCUIT PROTECTION — A fuse is recommended in the circuit to provide short circuit protection for the switch. Use a fast acting Type KAW10 or KAX10 fuse.

SERIES CONNECTED SWITCHES —

Normally Open Fixed Output — Do not connect two or more of the switches in series. Erratic operation may result.

Programmable Normally Open/Normally Closed Output — Two switches can be connected in series with a load. For proper operation, the operating load voltage must be less than or equal to the minimum supply voltage less the sum of the on-state voltage drops across the series connected proximity switches. The load will be energized when the OUTPUT LEDs of both proximity switches are ON.

CONNECTION DIAGRAM



SPECIFICATIONS

Description	Output Mode	
	Fixed Normally Open	Programmable Normally Open/Normally Closed
Operating voltage range	102…132V, 50/60 Hz	60…132V, 50/60 Hz
Load current	Max. continuous: 1 A to +40°C linearly derated to 0.5 A at +75°C Max. inrush: 10 A, 1 second max. Min.: 0.025 A	
Max. leakage current (load off)	0.0065 A	0.0035 A
Max. voltage drop (load on)	7.5V	
Operating temperature range	-25…+75°C (-13…+167°F)	
Max. operate time	25 ms	25 ms
Max. release time	35 ms	25 ms
Delay on power-up target present	20 ms, typical (no output occurs with target absent)	
Sensing distance	Steel: 0.525 in. +10% -5%. Refer to Figure 1 Nonferrous metals: 0.25 in. typical	
Hysteresis (operate — release differential)	0.075 in. max.	
Sensing distance drift with temperature	±5% 0…+75°C (32…167°F) ±10% -25…+75°C (-13…167°F)	±5% +15…+50°C (59…122°F) ±10% -25…+75°C (-13…167°F)
Max. sensing distance drift with voltage	±0.5% 102…132V	±1% 90…132V ±3% 60…132V
Repeat accuracy (10 successive operations)	0.001 in. max. deviation at constant temperature and supply voltage	
Operating speed (operations per minute)	1000	1200
	Based on max. operate and release time	

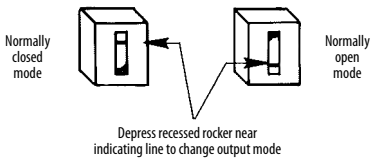
ATTENTION Do NOT connect two or more Bulletin 802PR switches in parallel. Erratic operation may result.

PROGRAMMABLE OUTPUT SELECTION — The programmable N.O./N.C. proximity switch is factory preset in either the normally open or normally closed output mode.

To change the switch output mode use the following instructions.

1. Remove the lower legend plate on the front of the switch.
2. A line on the recessed rocker indicates the output mode of the switch.
3. To change the output, depress the recessed rocker of the switch with a pointed tool.

   Note: Do not use a tool whose point could break and jam the switch.
4. Replace the lower legend plate.



To return the output mode to its original setting, simply reverse the above procedure. The OUTPUT LED will be ON when the switch output is conducting.

HARD WIRED CONTACTS — When hard wired contacts are connected in parallel with the Bulletin 802PR, a surge suppressor MUST BE connected in parallel with the load. Surge suppression is not required when hard wired contacts are connected in series with the load. For recommended surge suppressors for various devices, refer to publication 802PR-2.1 product data.

NOTE: Hard wired contacts that are operating in series or parallel with the Bulletin 802PR Type LA or Type XA will cause a delay of approximately 200 ms. This power-up delay will reduce the maximum number of operations per minute and may result in a momentary de-energization of the load.

CONDUIT COUPLED SWITCHES — Threaded conduit opening bases are suitable for use with flexible conduit. Conduit coupler bases are suitable for use with both flexible conduit and rigid conduit. Both bases connect to 1/2 in.-14 NPT threaded conduit. Switches with a "S6" suffix in their catalog number are suitable for connection to ISO 20-1.5 threaded conduit.

PREWIRED CABLE SWITCHES — These switches include a prewired cable for connection directly into a junction box. The cable is a two conductor, oil resistant thermoplastic (STO).

PREWIRED RECEPTACLE SWITCHES — These switches include a prewired receptacle suitable for use with the connector-cable assemblies listed in the table below. Figure 6 indicates which two pins of the receptacle are wired internally to terminals 1 and 2. The third pin is not used.

Connector Cable (supplied by user)			
	Connector Cable Part Numbers		
Manufacturer	3-ft cable	6-ft cable	12-ft cable
Standard Color Code (green, black, white)			
Brad Harrison	40901	40902	40903
Joy	X8984-3	8984-4	8984-5
CAM-LOK	E2057-624	E2057-625	E2057-626
Automotive Color Code (green, red, red)			
Brad Harrison	40958	40959	40960
Joy	X8984-13	X8984-14	X8984-15
CAM-LOK	E2057-824	E2057-825	E2057-826

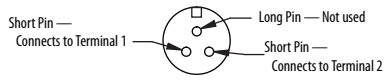


***Figure 6**: End view of prewired receptacle*

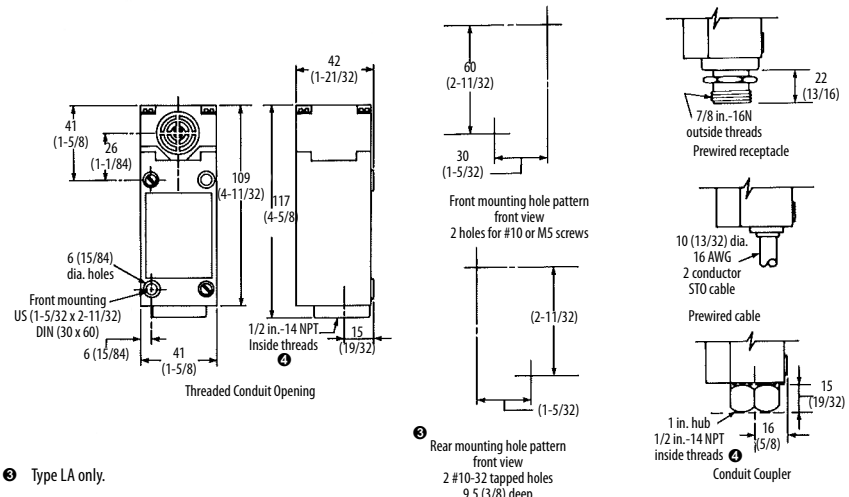
TROUBLESHOOTING GUIDE — The following guide provides basic troubleshooting information for installation and use of the proximity switch. If a problem occurs, attempt to determine the POSSIBLE CAUSE as listed. Apply the suggested SOLUTION.

NOTE: The switch may continue to operate even if the LED (will not light) is damaged.

Symptom	Output LED ❶ N.O.	Output LED ❶ N.C.	Possible Cause	Solution
Load will not energize	OFF	OFF	A. Power supply off.	A. Apply power.
	OFF	ON	B. Incorrect voltage applied	B. Apply correct voltage.
	OFF	OFF	C. Broken wires or loose connections.	C. Repair wiring or tighten loose connections.
	OFF	ON	D. Improper wiring.	D. Recheck connection diagrams. Rewire accordingly.
	OFF	N/A ❷	E. Target too small or out of sensing range.	E. Increase target size of move target or switch within sensing range.
	N/A ❷	OFF	F. Target or metal object within sensing range.	F. Remove target or metal object. Refer to EFFECTS OF NEARBY METAL SURFACES.
	OFF	OFF	G. Two or more proximity switches placed too close together.	G. Move sensing faces of switches apart. Refer to SPACING BETWEEN SWITCHES.
	ON	ON	H. Load device faulty or incorrect.	H. Replace load or size load correctly.
Load will not de-energize	ON	N/A ❷	A. Target or metal object within sensing range.	A. Remove target or metal object. Refer to EFFECTS OF NEARBY METAL SURFACES.
	N/A ❷	ON	B. Target too small or out of sensing range.	B. Increase target size of move target or switch within sensing range.
	ON	ON	C. Two or more proximity switches placed too close together.	C. Move sensing faces of switches apart. Refer to SPACING BETWEEN SWITCHES.
	ON	OFF	D. Improper wiring.	D. Recheck connection diagrams. Rewire accordingly.
	OFF	OFF	E. Load device faulty or incorrect.	E. Replace load or size load correctly.
Load energizes and de-energizes intermittently	ON & OFF intermittently		A. Broken wires or loose connections.	A. Repair wiring or tighten loose connections.
			B. Target fluctuates in and out of sensing range and hysteresis zone.	B. Stabilize target within the sensing range. Refer to SPECIFICATIONS — Hysteresis.
			C. Two or more proximity switches placed too close together.	C. Move sensing faces of switches apart. Refer to SPACING BETWEEN SWITCHES.

❶ Programmable N.O./N.C. switches have two LEDs. The POWER LED will be ON when power is applied.
❷ N/A — Not Applicable.

MOUNTING DIMENSIONS — Dimensions shown in mm (inches).



❸ Type LA only.
❹ Also available with ISO 20-1.5 threads.

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