

Specialty Push Button Specifications

Catalog Numbers 800K, 800L, 800P, 800T, and 800Z

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Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.



Palm-Operated Push Buttons

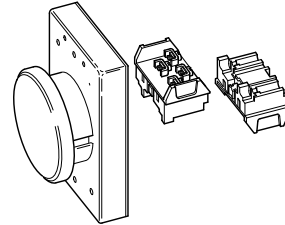


Palm-Operated Flush Mount Button
Cat. No. 800P-F2CA



Palm-Operated Surface Mount with Guard
Cat. No. 800P-S2CG1A

800P – S 1 C G 1 A
 a b c d e f



a

Operator Type	
Code	Description
F	Flush mount
S	Surface mount

b

Button Operation	
Code	Description
1	Standard drive
2	Articulated

c

Button Color	
Code	Description
C	Chrome
R	Red (painted)
Y	Yellow (painted)

d

Guard Option	
Code	Description
Blank	No guard
G	Side guard — yellow
H	Die cast — grey

e

Enclosure Openings	
Code	Description
Blank	No base★
1	Single hub
2	Double hub

f

Contact Black	
Standard	
Code	Description
A	1 N.O. - 1 N.C.
B	2 N.O. - 2 N.C.
PentUFF (Low Voltage)	
Code	Description
AV	1 N.O. - 1 N.C.
BV	2 N.O. - 2 N.C.

★ Only used for flush mounted operators.

Specifications★

Electrical Ratings		
Dielectric Strength	2200V for one minute	
Electrical Design Life Cycles	1 000 000 at maximum rated load 200 000 at maximum rated load (Logic Reed)	
Mechanical Ratings		
Vibration	10...2000 Hz 1.52 mm displacement (peak-to-peak) 10 G max.	
Shock	Mechanical shock at 1/2 cycle sine wave for 11 ms	
Contact Fragility	25 G 9 G 6 G	800T-XA1, -XA2, -XD1, -XD4, -XD2R, contact blocks 800T-XA, -XA4, -XD2, -XD3, -XAR, -XAV contact blocks 800T-XD1R No damage at 100 G all contact blocks
Degree of Protection	Type 1, 12, 4/13; watertight/oiltight 529 IP65	
Mechanical Design Life Cycles	Push Buttons	1 000 000 minimum
Contact Operation	Shallow Contact Block Logic Reed	Slow, double make and break Snap action
Typical Operating Forces	Articulated	800T-XD1 and 800T-XD4 contact blocks 3.7 lb maximum at center of button, 2.7 lb at perimeter
	Standard Drive	3.7 lb
Environmental		
Temperature Range	Operating Storage	+32...+131 °F (0...+55 °C) -40...+185 °F (-40...+85 °C)

Note: Operating temperatures at 0 °C (32 °F) are based on the absence of freezing moisture and liquids.

★ **Performance Data** — Performance data given in this publication is provided only as a guide for the user in determining suitability and do not constitute a performance warranty of any kind. Such data may represent the results of accelerated testing at elevated stress levels, and the user is responsible for correlating the data to actual application requirements. ALL WARRANTIES AS TO ACTUAL PERFORMANCE, WHETHER EXPRESS OR IMPLIED, ARE EXPRESSLY DISCLAIMED.

Standard Contact Ratings

(IEC 947-5-1) (NEMA ICS 2-125) Maximum continuous current I_{th} 10 A. Bulletin 800P units have control circuit ratings with 800T-XA1, -XD1, -XD4, -XA2, -XA, -XA4, -XD2, and -XD3 contact blocks as follows:

Maximum Operational Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make ↔	Break ↔
AC 600	AC-15	A600	120...600 72...120 24...72	7200VA 60 A 60 A	720VA 720VA 10 A
DC 600	DC-13	Q600	28...600 24...28	69VA 2.5 A	

PenTUFF™ (Low Voltage) Contact Ratings

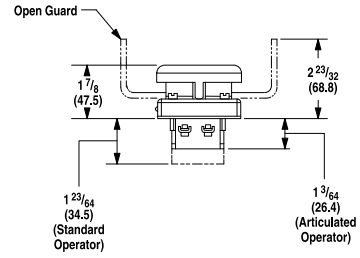
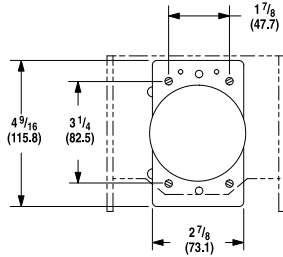
Minimum DC: 5V, 1 mA. Maximum thermal continuous current I_{th} 2.5 A AC/1.0 A DC. Bulletin 800P units with Cat. No. 800T-XAV contacts have ratings as follows:

Maximum Operational Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make ↔	Break ↔
AC 300	AC-15	C300	120...300 0...120	1800VA 15 A	180VA 1.5 A
DC 150	DC-13	R150	24...150 0...24	28VA 1.0 A	

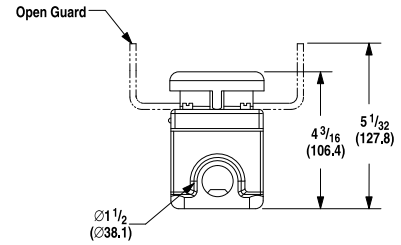
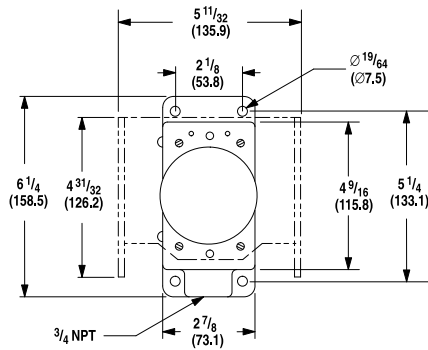
Approximate Dimensions

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

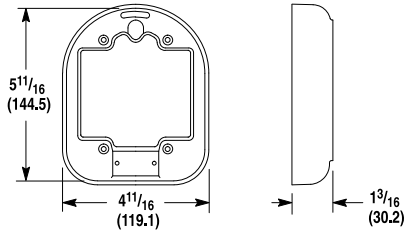
Flush Mounting



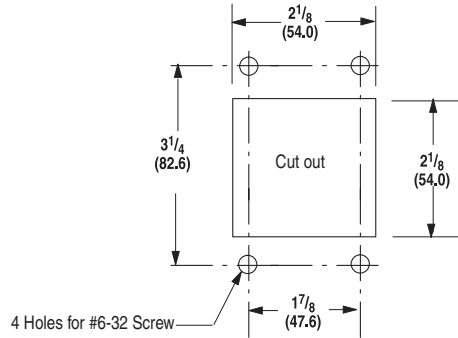
Surface Mounting



Die Cast Guard (800P-NBG or 800P-NBGY)



Cutout and mounting screw locations for a flush mounted cover



General Purpose Line — Momentary Touch Buttons



General Purpose
Cat. No. 800Z-GF2Q5



General Purpose
Cat. No. 800Z-GL3Q5 with Guard (Cat. No. 800Z-G3AG2)

800Z - G L 3 065
 a b c

a

Input Voltage and Output Type §	
Code	Description
Relay Output	
L	Input: 10...40V DC and 20...30V AC Output: relay
F	Input: 100...240V AC Output: relay
Transistor Output	
P	10...30V DC PNP (sourcing) output

b

Mounting Hole Size ♣	
Code	Description
2	22.5 mm
3	30.5 mm

c

Electrical Connection	
Code	Description
Sourcing Output ★	
Q4	4-pin QD
064	6 ft (1.8 m) cabled
244	24 ft (7.2 m) cabled
Relay Output ‡	
Q5	5-pin QD
065	6 ft (1.8 m) cabled
245	24 ft (7.2 m) cabled

★ These devices are transistor outputs.

‡ These devices have separate N.O. and N.C. output relays with a shared common.

§ Safety relays should be used in conjunction with two relay output type Zero-Force Touch Buttons™ in 2-hand control applications. Order separately, safety relay 440R-D23171 for 24V, 440R-D23169 for 120V, 440R-D23168 for 240V.

♣ 22.5 mm touch buttons use micro connector, 30.5 mm touch buttons use mini connector.

Heavy Industrial Line — Momentary Touch Buttons



Heavy Industrial
Cat. No. 800Z-HF1



Heavy Industrial
Cat. No. 800Z-HL1 with Guard (Cat. No. 800Z-HAG1)

800Z - H **L** **1**
a *b*

a

Voltage ‡	
Code	Description
L	Input: 10...40V DC and 20...30V AC Output: relay
F	Input: 100...240V AC Output: relay

b

Mounting Type *	
Code	Description
1	Flush mounting

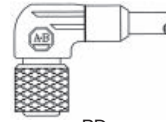
* Heavy industrial devices have an 8-position terminal block connection. Consult your local Rockwell Automation sales office or Allen-Bradley distributor for details.

‡ Safety relays should be used in conjunction with two relay output type Zero-Force Touch Buttons in 2-hand control applications. Order separately, safety relay 440R-D23171 for 24V, 440R-D23169 for 120V, 440R-D23168 for 240V.

Quick Disconnect Cables



PD



PD

889 **D** - **F** **4A** **C-2**
a *b* *c* *d*

a

Mounting Hole Size	
Code	Description
D	22.5 mm (micro)
N	30.5 mm (mini)

b

QD Type	
Code	Description
F	Straight QD cable
R	Right angle QD cable

d

Cable Length/Type	
Code	Description
C-2	2 m (micro)
C-5	5 m (micro)
C-10	10 m (micro)
E-6F	6 ft. (mini)
E-12F	12 ft. (mini)
E-20F	20 ft. (mini)

c

Pin Style	
Code	Description
4A	4 pin
5A	5 pin §

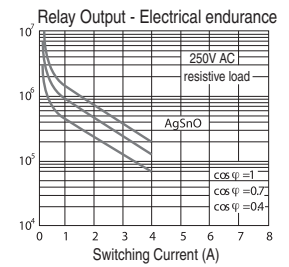
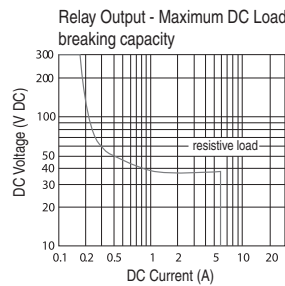
§ No right angle QD cable (micro) for 5-pin (Cat. No. 889D-R5A_).

Specifications

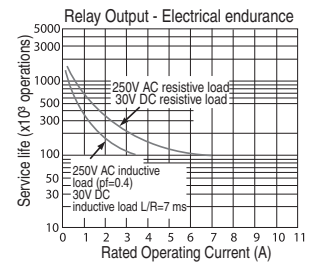
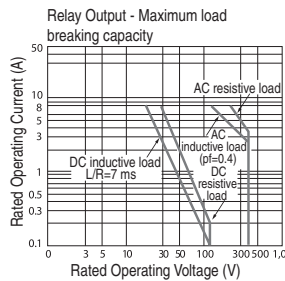
Mechanical Ratings

Description	General Purpose Line (800Z-G)	Heavy Industrial Line (800Z-H)
Mechanical Ratings		
Vibration Endurance	Tested @ 10 G, 1.52 mm displacement	
Mechanical Shock	Tested @ 100 G (mechanical durability)	
Degree of Protection	Type 4/4X/13 IP66 1200 psi Washdown	Type 4/13 IP66
Operating Force	Zero	
Electrical Ratings		
Input Voltage (Relay type)	Low Voltage: 10...40V DC, 20...30V AC Full Voltage (800Z-GF): 100...240V AC (+10%, -15%)	
Input Voltage (Solid-State type)	Low Voltage (800Z-GN/GP): 10...30V DC	
Electrical Design Life (Relay type)	Relay output 200 000 Operations @ 2 A inductive 4 A resistive	Relay output 150 000 Operations @ 5 A inductive 2.5 A resistive
Degree of Protection	IP2X	
Wire Range	#22...12 AWG (0.5...4 mm ²)	
Tightening Torque	9 lb•in (1 N•m)	
On-delay/Off-delay	Off 60 ms max. On 76 ms max.	
Current Draw (Solid-State type)	100 mA at 24V DC = 2.23 W (no external load)	
Environmental		
Temperature Range (Operating)	-25...+55 °C (-13...+131 °F)	
Temperature Range (Storage)	-40...+85 °C (-40...+185 °F)	
Humidity	95% RH from 25...50 °C (77...122 °F) (full operation)	
Materials		
Housing/Guard	Valox 357	
Gasket	BUNA-N	1/16 in. Cork-BUNA-N
Connector	Insulator material (micro connector) = nylon Insulator material (mini connector) = PVC	
Standards and Certifications		
Certifications	cULus, CE, C-TICK, CSA	
Standards Conformity	UL 508, CSA 22.2 No. 14, EN/IEC 60947-5-1, EN50081-2, EN61000-6-2, EN60954-1, EN60204-1	

Load Life Curves for General Purpose Product Line



Load Life Curves for Heavy Industrial Line



Applications Detail

LED Blink Rate	Diagnostic	Description
** ** *	Power Up	Device touched during power up. Device will resume 10 seconds after removal of hand.
*** ** *	Noise Detection	Device detected an unacceptable level of noise (>20 V/m). Device will resume once noise subsides.
**** ** *	Margin Detection	A conductive film is building up on the sensing surface. Device will resume once cleared.

Wiring Diagrams — Touch Button Terminations

General Purpose Line

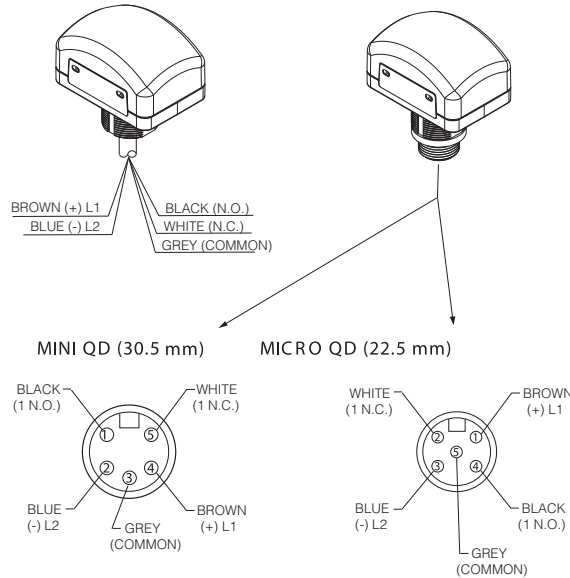
Electrical Connections: 10...40V DC and 20...30V AC Input Voltage (Relay Output); 100...240V AC Input Voltage (Relay Output)

Note: Separate N.O. and N.C. output relays with shared common.

5-Conductor Cabled (Relay Output)

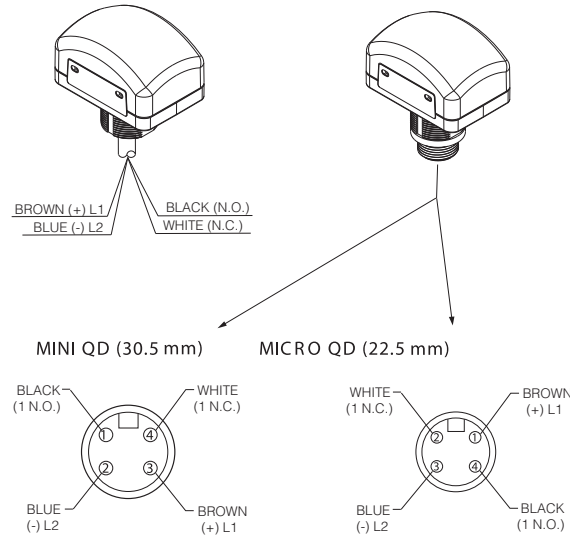
For 800Z-GL_ _ _

For 800Z-GF_ _ _

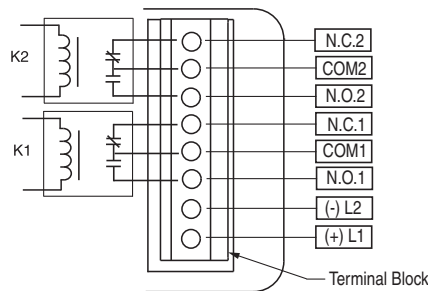


Electrical Connections: 10...30V DC Input Voltage (Transistor Output); 150 mA Max. per Circuit Output

4-Conductor Cabled



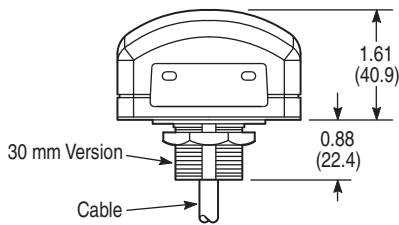
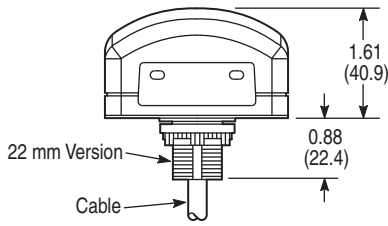
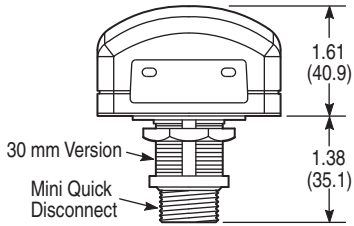
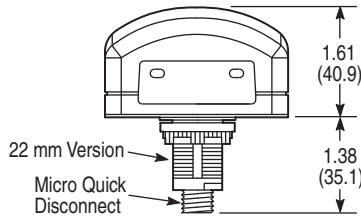
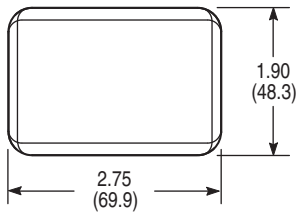
Heavy Industrial Line



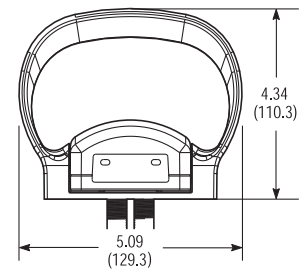
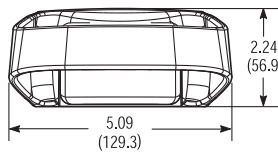
Approximate Dimensions

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

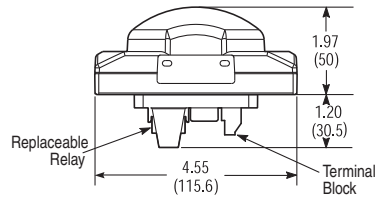
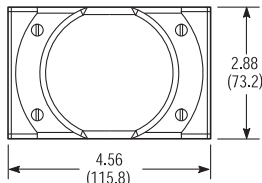
General Purpose



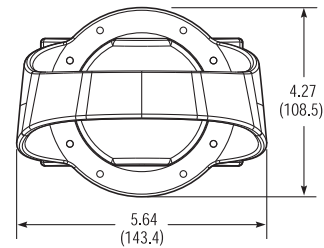
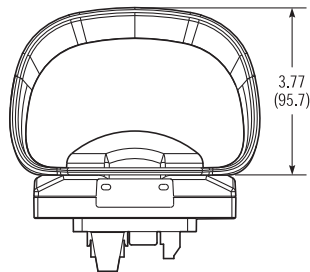
General Purpose With Guard



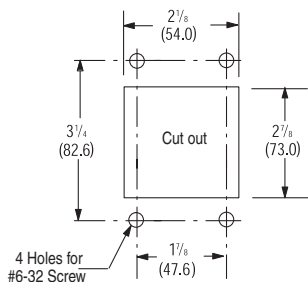
Heavy Industrial



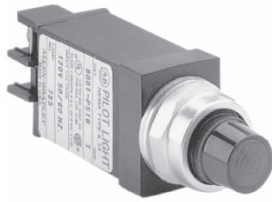
Heavy Industrial With Guard



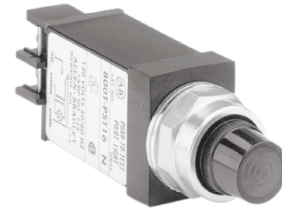
Cutout and Mounting Screw Locations for a Flush Mounted Cover



18 mm Small Pilot Light Type 4/13, Class I, Division 2

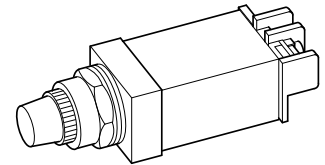


18 mm Pilot Light
Cat. No. 800T-PS16R



18 mm Push-to-Test Pilot Light
Cat. No. 800T-PST16R

800T – PS D 16 R
 a b c d e



a

Power Module Type	
Code	Description
PS	Transformer (or dual input)
QS	Full voltage
RS	Neon ★

b

Lamp Test Options	
Code	Description
Blank	No test option
D	Dual input diode
DT	Dual input transformer relay ♦
T	Push-to-test ♦

c

Illumination Options	
Transformer/Full Voltage/Dual Input	
Code	Description
Blank	Incandescent
H	LED§
Neon	
Blank	No options

d

Voltage	
Transformer	
Code	Description
16	120V AC 50/60 Hz
26	240V AC 50/60 Hz
Full Voltage Incandescent	
12	12V AC/DC
24	24V AC/DC
Full Voltage LED	
10	120V AC
13	130V AC/DC
24	24V AC/DC
Neon	
10	120V AC/DC
20	240V AC/DC
Dual Input	
16	120V AC 50/60 Hz
24	24V AC/DC△

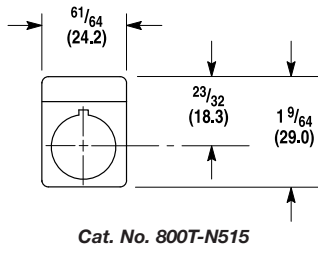
e

Lens Color	
Plastic	
Code	Description
Blank	No lens
A	Amber
B	Blue
C	Clear
G	Green
R	Red
W	White

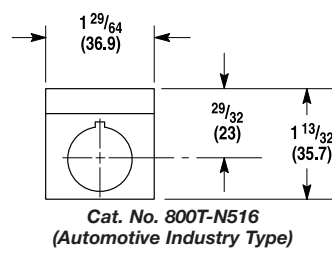
★ Neon is only available in amber or clear.
 § LEDs available in red, green, amber, blue, and white. LED color matches lens color, except clear lens supplied with white LED and white lens supplied with amber LED. All LEDs except 120V have an internal shunt resistor for use with solid-state outputs.
 △ Dual input diode only.
 ♦ Class 1, Division 2 rating not available. Push-to-test rated for Type 13 only.

Legend Plate Dimensions (Bul. 800T 18 mm Pilot Lights Only)

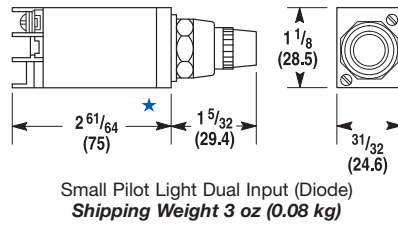
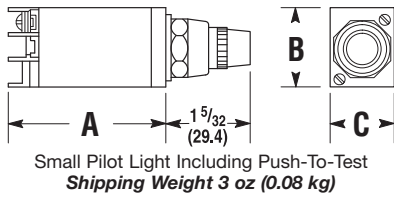
**Legend Plate for Small Pilot Light
Type A Legend**



**Legend Plate for Small Pilot Light
Type B Legend**



18 mm Small Pilot Lights



★ Transfer dual input pilot light dimension is 2-31/32 in. (75.4 mm).

Device	A	B	C
800T-PS, -PSD, -PST, -QS, -QST, and -RST	2-1/4 (57.2)	1-1/16 (27)	27/32 (21.4)
800T-PSDT	2-61/64 (75)	1-15/64 (31.4)	31/32 (24.6)

Bulletin 800K Piezo Operators



Cat. No. Explanation

800K – 30 FM G 24 X 10 E100J
a *b* *c* *d* *e* *f* *g*

a

Operator Size	
Code	Description
22	22.5 mm
30	30.5 mm

b

Operator Type	
Code	Description
FM	Flush, momentary

c

Color	
Code	Color
N	Non-illuminated
G	Green (illuminated)
R	Red (illuminated)
W	White (illuminated)

d

Voltage	
Code	Description
24	24V DC

e

Termination Style	
Code	Description
X	Screw termination

f

Contact Block	
Code	Color
10	1 N.O. ★
01	1 N.C. §

★ N.O. contact only available with color codes **N**, **G**, and **W**.
 § N.C. contact only available with color code **R**.

g

Laser Engraving – Font Size	
Code	Description
Blank	No engraving
E100G	Custom text – font size 12 pt
E100H	Custom text – font size 16 pt
E100J	Custom text – font size 20 pt
U100	Custom symbol

Standards Compliance — CE Marked

UL508	Industrial Control Equipment
CSA C22.2 No. 14-05	Industrial Control Equipment
EN IEC 60947-1	Low-voltage switchgear and controlgear —Part 1: General rules
EN IEC 60947-5-1	Low-voltage switchgear and controlgear —Part 5-1: Control/circuit devices and switching elements —Electromechanical control circuit devices
IEC 60529	Degrees of protection provided by enclosures (IP Code)
DIN 40050-9	Road vehicles; degrees of protection (IP Code); protection against foreign objects, water and impact; electrical equipment

Certifications

Certifications	UL, CSA, CE
Terminal Identification	EN/IEC 60947-1
RoHS	✓

Specifications

Mechanical Ratings		
Vibration (assembled to panel)	Mechanical vibration (per 40001-843, Cat I) <ul style="list-style-type: none"> • Axis definitions – 3 mutually perpendicular axes • Frequency – 10...2000 Hz • Duration - 2 hours each axis • Peak acceleration: 10G with no damage 	Tested at 10...2000 Hz, 1.52 mm displacement (peak-to-peak) max./10 G max. 6 hr, no damage
Shock	Mechanical Shock (per 40001-843, Cat I) <ul style="list-style-type: none"> • Wave shape - 1/2 cycle sine wave • Duration - 11 ms • Frequency - 3 times in each axis • Shock pulse peak acceleration: 100G with no damage 	Tested at 1/2 cycle sine wave for 11 ms; no damage at 100 G
Degree of protection	UL Type 4/4X/13; IP68, IP69K	
Life expectancy	50,000,000 cycles	Momentary push buttons
Operating forces (typical)	5...9 N (1...2 lb)	
Mounting torque	3.4 N•m (30 lb•in)	
Environmental		
Temperature range (operating)	UL: -25...+50 °C (-13...+122 °F) ★ -25...+70 °C (-13...+158 °F) ★	
Temperature range (short-term storage)	-40...+85 °C (-40...+185 °F)	
Humidity	50...95% RH from 25...60 °C (77...140 °F)	
Pollution degree	3	
Chemical resistance (ECOLAB)	Passed 15 day immersion with 10 ECOLAB supplied chemicals	
★ Operating temperatures below 0 °C (32 °F) are based on the absence of freezing moisture and liquids. UL listed to 50 °C maximum ambient		
Electrical Ratings		
Switch ratings	UL 508, General Use EN / IEC 60947-5-1: AC-12 SG, DC-12 SU 24V DC 100 mA (NC), 200mA (NO pulse)	
Insulation voltage (U _i)	60V	
Wire capacity	#26...14 AWG (0.2...1.5 mm ²)	
Dielectric strength (minimum)	1000V for one minute	
External short circuit protection	Fast-acting fuse	
Electrical shock protection	Finger-safe terminals conforming to IP2X	
Terminal tightening torque	0.45 N•m (4 lb•in)	
Illumination		
Lamp ratings	Nominal Voltage	Current Draw
LED	24V DC	19 mA 3 mA leakage current resistance
LED dominant wavelength	Green Red White	525 nm 628 nm —
LED luminous intensity	Green Red White	110 mcd (min), 300 mcd (typical) 70 mcd (min), 200 mcd (typical) 110 mcd (min), 300 mcd (typical)

Material Listing

Component	Material Used
Panel gasket	Nitrile
Lens (illuminated operator)	Polyamide
Bushing, button cap	Stainless Steel
Mounting ring	Brass with nickel plating
Terminal housing	Polyamide
Terminal	Brass with tin plating
Wire pressure plate	Stainless steel
Screw	Stainless steel
Anti-rotation washer	Stainless steel

Bulletin 800L — 12, 18, 22, and 30 mm Indicators

800L – $\frac{30}{a}$ $\frac{L}{b}$ $\frac{24}{c}$ $\frac{R}{d}$



a

Indicator Size	
Code	Description
12	12 mm
18	18 mm★
22	22.5 mm
30	30.5 mm

c

Voltage	
Code	Description
24	24V AC/DC△
10	120V AC
20	240V AC§

b

Illumination Type	
Code	Description
C	Incandescent
L	LED‡♣
S	Xenon strobe‡

d

Lens Color	
Code	Description
R	Red
G	Green
A	Amber
B	Blue
C	Clear

- ★ 18 mm indicators are only available with LED or incandescent illumination. For 18 mm devices with 120V incandescent lamps, it is recommended that the lens is changed with lamp replacement.
- ‡ LED and xenon strobe lamps are integral to indicators and are not field replaceable. Entire indicator must be replaced upon lamp failure.
- § Incandescent illumination not available in 240V option. For 240V strobe, order voltage code **10** (Table c) as strobe is rated for both 120V/240V AC.
- ♣ LED color will match lens color specified. White LED supplied for clear lens.
- △ 12 mm devices are only available with LED illumination (24V DC or 120V AC).

Specifications★

Mechanical Ratings		
Vibration	10...2000 Hz 1.52 mm displacement (peak-to-peak) max./10 G max	
Shock	1/2 cycle sine wave for 11 ms ≥ 25 G	
Degree of protection	12 mm: Type 1 18, 22, and 30 mm: Type 1/4/4X/12/13; watertight/oiltight IEC 529 IP66	
Environment		
Temperature range	Operating	-40...+131 °F (-40...+55 °C)
	Storage	-40...+185 °F (-40...+85 °C)
Humidity	50% at 104 °F (40 °C)	
Lamp Ratings		
Lamp life	Incandescent	5 000 Hrs.
	LED	100 000 Hrs.
	Strobe	1 000 000 Flashes
Flash frequency	Strobe	1...2 Hz

Standards Compliance

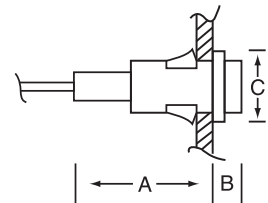
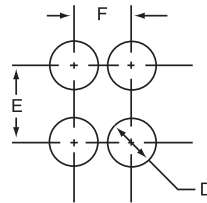
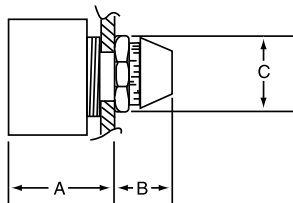
UL 508

Certifications

cULus Listed (File No. E14840, Guide No. NKCR, NKCR7)
EN60947-5-1
CSA C22.2, No. 14
CE Marked

★ Performance Data — see note on page 2..

Approximate Dimensions



Indicator	A	B	C	D	E	F
	Inches (mm)					
12 mm	1-3/32 (27.8)	5/16 (7.9)	5/8 (15.8)	1/2 (12.7)	3/4 (19.0)	11/16 (17.5)
18 mm	1-21/64 (33.7)	57/64 (22.6)	1-1/32 (26.2)	3/4 (18.6)	2-9/32 (58.0)	1-1/8 (28.6)
22 mm	1-21/64 (33.7)♣	57/64 (22.6)	1-7/32 (31.0)	15/16 (22.6)	2-9/32 (58.0)	1-8/32 (32.5)
30 mm	1-9/16 (39.7)♣	1-9/64 (29.0)	1-19/32 (40.5)	1-13/64 (30.6)	2-9/32 (58.0)	1-29/32 (48.5)

♣ For devices with strobe illumination, Dimension A for 22 mm is 2-7/8 in. (73 mm) and for 30 mm devices it is 3-1/8 in. (79 mm).

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Rockwell Otomasyon Ticaret A.Ş., Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846