Allen-Bradley

Specialty Push Button Specifications

Bulletin 800K, 800L, 800P, 800T, 800Z

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Summary of Changes

This publication contains new and updated information as indicated in the following table.

Topic	Page
Added blue and yellow options to Table c of catalog number explanation.	15
Added specifications for blue and yellow to Illumination table.	16

Additional Resources

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

Resource	Description
Allen-Bradley Product Directory (Specialty Operators) http://ab.rockwellautomation.com/Push-Buttons/Specialty-Push-Buttons	Provides the latest product information for specialty push buttons.
Bulletin 800K Piezoelectric Push Buttons Product Profile, publication 800K-PP001	Provides product information on the Bulletin 800K line of push buttons.
Bulletin 800Z Series B Zero-force Touch Button Brochure, publication 800Z-BR002	Provides product information on the Bulletin 800Z line of push buttons.
Product Certifications website, http://www.rockwellautomation.com/global/certification/overview.page	Provides declarations of conformity, certificates, and other certification details.

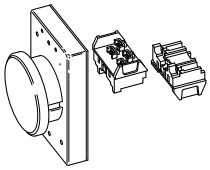
You can view or download publications at http://www.rockwellautomation.com/global/literature-library/overview.page. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Bulletin 800P 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 (gray)

e	
Enclosure Openings	
Code	**Description**
Blank	No base ❶
1	Single hub
2	Double hub

f	
Contact Block	
Standard	
Code	**Description**
A	1 N.O. - 1 N.C.
B	2 N.O. - 2 N.C.
PenTUFF™ (Low Voltage)	
AV	1 N.O. - 1 N.C.
BV	2 N.O. - 2 N.C.

❶ Only used for flush mounted operators.

Specifications ❷

Electrical Ratings

Attribute	Description
Dielectric Strength	2200V for 1 minute
Electrical Design Lifecycles	1,000,000 at maximum rated load 200,000 at maximum rated load (Logic Reed)

Mechanical Ratings

Attribute		Description
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 ❸	25 G	800T-XA1, -XA2, -XD1, -XD4, -XD2R, contact blocks
	9 G	800T-XA, -XA4, -XD2, -XD3, -XAR, -XAV contact blocks
	6 G	800T-XD1R
Degree of Protection		Type 1, 12, 4/13; watertight/oiltight 529 IP65
Mechanical Design Lifecycles	Push Buttons	1,000,000 minimum
Contact Operation	Shallow Contact Block	Slow, double make and break
	Logic Reed	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

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

❸ No damage at 100 G all contact blocks.

Environmental

Attribute		Description
Temperature Range	Operating	32…131 °F (0…55 °C)
	Storage	-40…+185 °F (-40…+85 °C)

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 catalog number 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 60	DC-13	Q600	28…600 24…28	69VA 2.5 A	

PenTUFF™ (Low Voltage) Contact Ratings

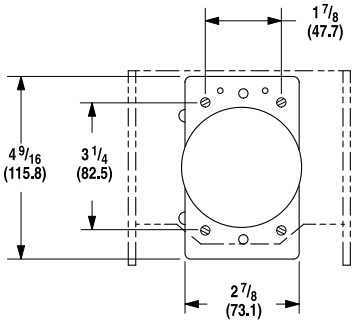
Minimum DC: 5V, 1 mA. Maximum thermal continuous current I_{th} 2.5 A AC/1.0 A DC. Bulletin 800P units with catalog number 800T-XAV contacts have ratings as follows:

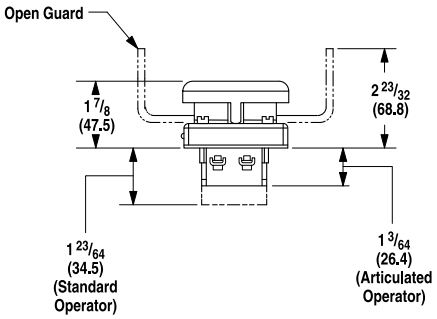
Maximum Operational Volts U_e	Utilization Category		Rated Operational Currents		
	IEC	NEMA	Volts U_e	Make	Break
AC 300	AC-15	C300	120…300 0…120	1800VA 15 A	180VA 1.5 A
DC 150	DC-13	R150	24…150 0…24	28VA 1.0 A	

Approximate Dimensions

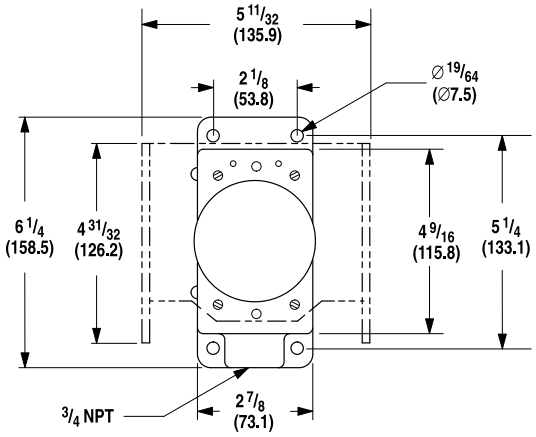
Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

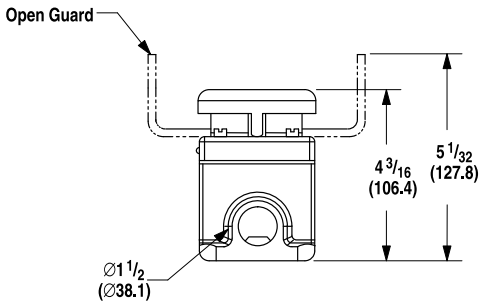
Flush Mounting



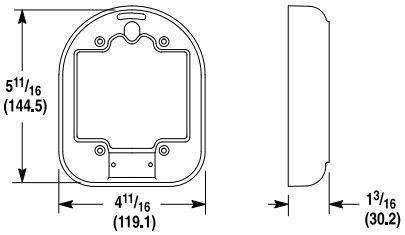


Surface Mounting

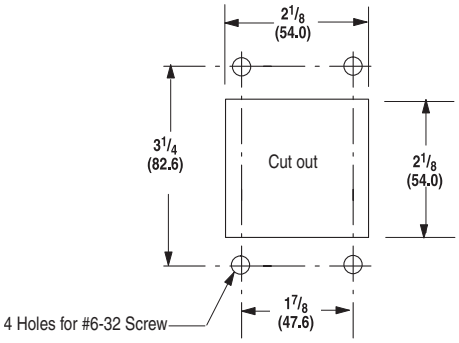




Die-cast Guard (Catalog Number 800P-NBG or 800P-NBGY)



Cutout and Mounting Screw Locations for a Flush-mounted Cover



Bulletin 800Z Zero-Force Touch Buttons™

General Purpose — 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 ❶	
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 ❷	
Code	**Description**
2	22.5 mm
3	30.5 mm

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

❶ Safety relays must be used 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.
❷ 22.5 mm touch buttons use micro connector, 30.5 mm touch buttons use mini connector.
❸ These devices are transistor outputs.
❹ These devices have separate N.O. and N.C. output relays with a shared common.

Heavy Industrial — 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

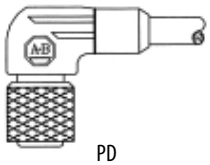
a	
Voltage ❶	
Code	**Description**
L	Input: 10…40V DC and 20…30V AC Output: relay
F	Input: 100…240V AC Output: relay

b	
Mounting Type ❷	
Code	**Description**
1	Flush mounting

❶ Safety relays must be used 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.
❷ Heavy industrial devices have an 8-position terminal block connection. Consult your local Rockwell Automation sales office or Allen-Bradley distributor for details.

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

c	
Pin Style	
Code	**Description**
4A	4-pin
5A	5-pin ❶

d	
Cable Length/Type	
Code	**Description**
Micro	
C-2	6.6 ft (2 m)
C-5	16.4 ft (5 m)
C-10	32.8 ft (10 m)
Mini	
E-6F	6 ft (1.8 m)
E-12F	12 ft (3.7 m)
E-20F	20 ft (6.1 m)

❶ No right angle QD cable (micro) for 5-pin (catalog number 889D-R5A_).

Specifications

Electrical Ratings

Attribute	General Purpose (800Z-G)	Heavy Industrial (800Z-H)
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)	

Mechanical Ratings

Attribute	General Purpose (800Z-G)	Heavy Industrial (800Z-H)
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	

Environmental

Attribute		General Purpose (800Z-G)	Heavy Industrial (800Z-H)
Temperature Range	Operating	-25...+55 °C (-13…+131 °F)	
	Storage	-40...+85 °C (-40…+185 °F)	
Humidity		95% RH from 25...50 °C (77…122 °F) (full operation)	

Materials

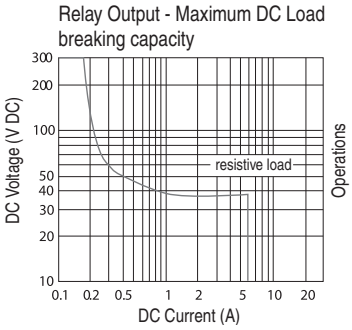
Attribute	General Purpose (800Z-G)	Heavy Industrial (800Z-H)
Housing/Guard	Valox 357	
Gasket	BUNA-N	1/16 in. Cork-BUNA-N
Connector	Insulator material (micro connector) = nylon Insulator material (mini connector) = PVC	

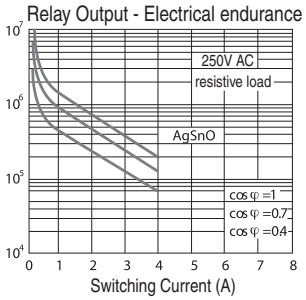
Standards and Certifications

Attribute	General Purpose (800Z-G)	Heavy Industrial (800Z-H)
Standards Compliance	UL 508, CSA 22.2 No. 14, EN/IEC 60947-5-1, EN50081-2, EN61000-6-2, EN60954-1, EN60204-1	
Certifications	cULus, CE, C-Tick, CSA	

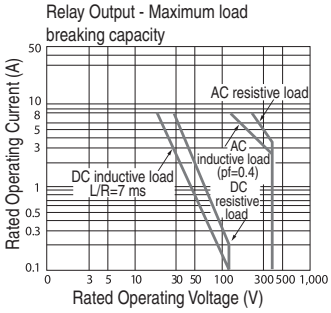
Load Life Curves

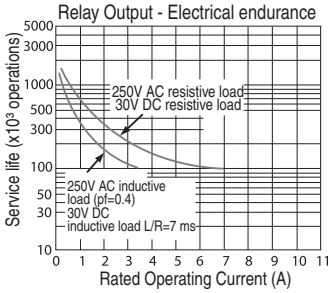
General Purpose





Heavy Industrial





Applications Detail

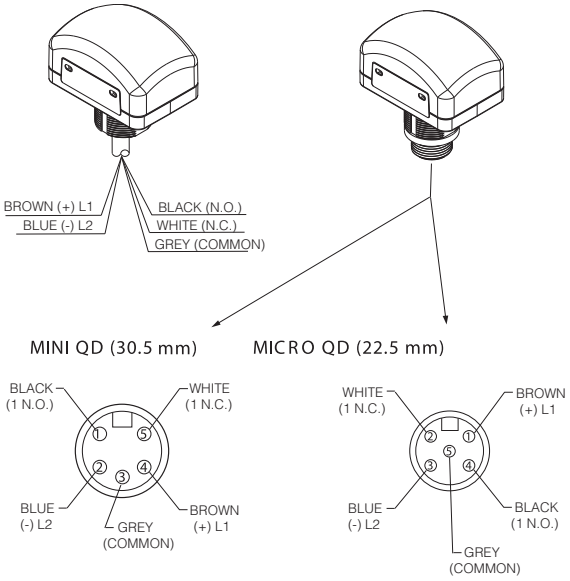
Status Indicator Blink Rate	Diagnostic	Description
** ** **	Power-up	Device was touched during power-up. Device resumes 10 seconds after removal of hand.
*** *** ***	Noise Detection	Device detected an unacceptable level of noise (>20V/m). Device resumes once noise subsides.
**** **** ****	Margin Detection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

Wiring Diagrams — Touch Button Terminations

General Purpose

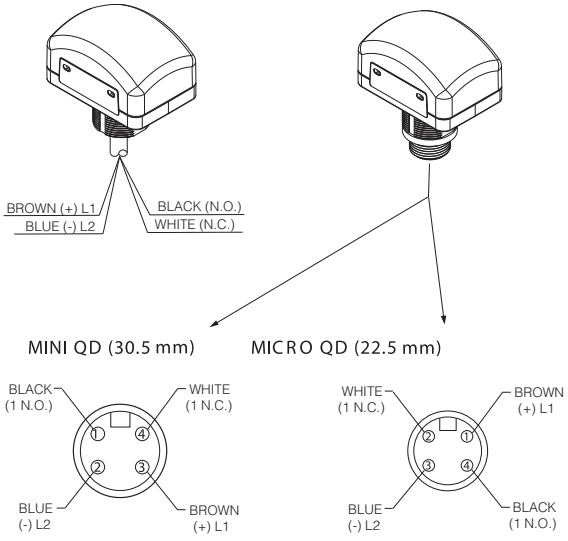
Electrical Connections:
10...40V DC and 20...30V AC input voltage (relay output); 100...240V AC input voltage (relay output)

5-Conductor Cabled (Relay Output) — For 800Z-GL_ and 800Z-GF_

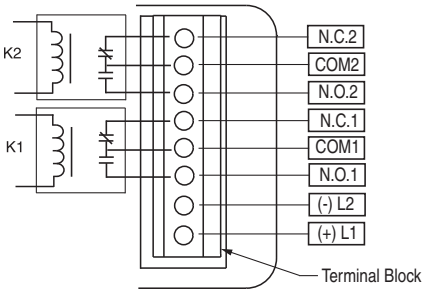


Electrical Connections:
10...30V DC input voltage (transistor output); 150 mA maximum per circuit output

4-Conductor Cabled



Heavy Industrial

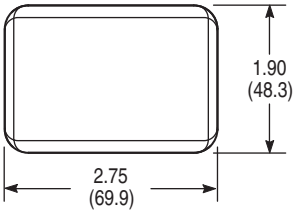


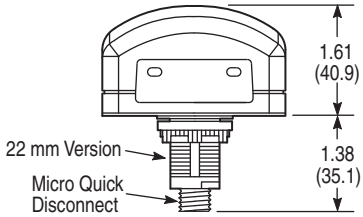
Approximate Dimensions

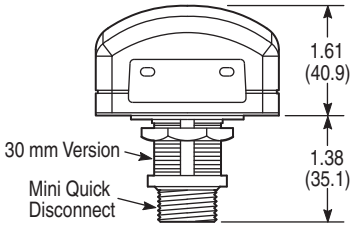
Dimensions in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

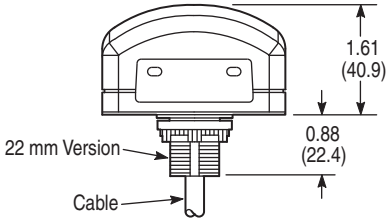
General Purpose

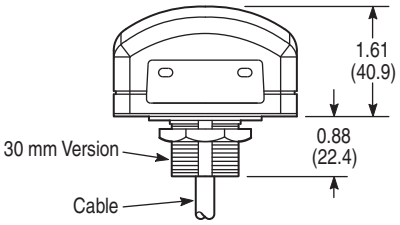
Without Guard



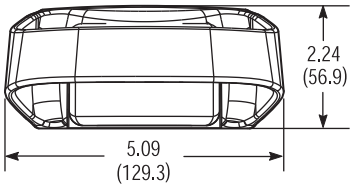


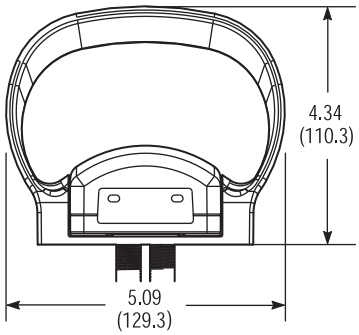






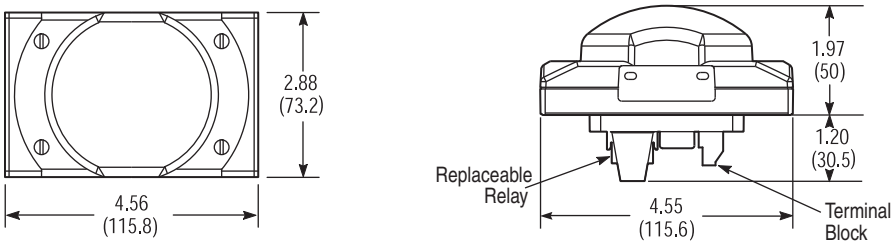
With Guard



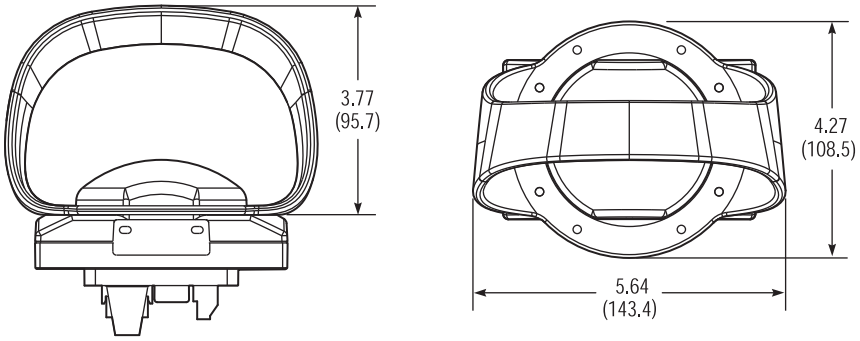


Heavy Industrial

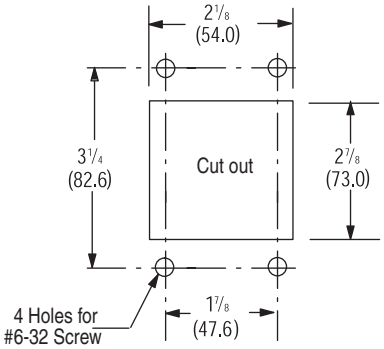
Without Guard



With Guard



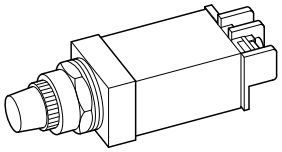
Cutout and Mounting Screw Locations for a Flush Mounted Cover



Bulletin 800T 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 ❶

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

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

d	
Voltage	
Code	**Description**
Transformer	
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 ❹

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

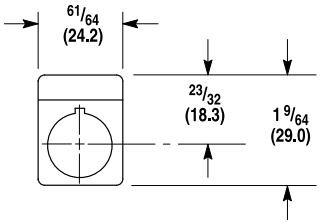
❶ Neon is only available in amber or clear.
❷ Class 1, Division 2 rating not available. Push-to-test is rated for Type 13 only.
❸ LEDs available in red, green, amber, blue, and white. LED color matches lens color, except clear lens supplied with white LED and white lens supplied with amber LED. All LEDs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

Approximate Dimensions

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

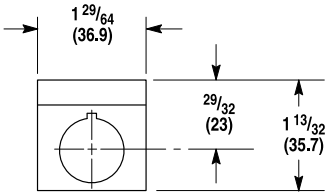
Legend Plate Dimensions (Bulletin 800T 18 mm Pilot Lights Only)

Legend Plate for Small Pilot Light — Type A Legend



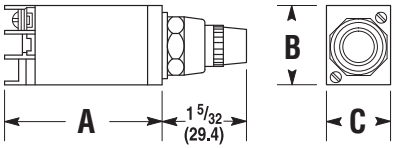
Cat. No. 800T-N515

Legend Plate for Small Pilot Light — Type B Legend

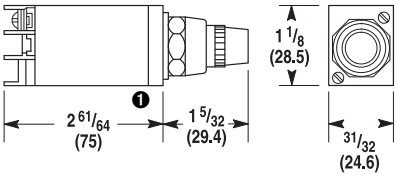


Cat. No. 800T-N516
(Automotive Industry Type)

18 mm Small Pilot Lights



Small Pilot Light Including Push-to-test
Shipping Weight 3 oz (0.08 kg)



Small Pilot Light Dual Input (Diode)
Shipping Weight 3 oz (0.08 kg)

❶ 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

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	**Description**
N	Non-illuminated
G	Green (illuminated)
R	Red (illuminated)
W	White (illuminated)
B	Blue (illuminated)
Y	Yellow (illuminated)

d	
Voltage	
Code	**Description**
24	24V DC

e	
Termination Style	
Code	**Description**
X	Screw termination

f	
Contact Block	
Code	**Description**
10	1 N.O. ❶
01	1 N.C. ❷

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

❶ N.O. contact only available with color codes **N**, **G**, **W**, **B**, and **Y** (Table c).
❷ N.C. contact only available with color code **R** (Table c).

Specifications

Electrical Ratings

Attribute	Description
Switch Ratings	UL 508, General Use EN / IEC 60947-5-1: AC-12 SG, DC-12 SU 24V DC 100 mA (N.C.), 200 mA (N.O. pulse)
Insulation Voltage (U_i)	60V
Wire Capacity	#26…14 AWG (0.2…1.5 mm^2)
Dielectric Strength, Min	1000V for 1 minute
External Short Circuit Protection	Fast-acting fuse
Electrical Shock Protection	Fingersafe terminals conform to IP2X
Terminal Tightening Torque	0.45 N•m (4 lb•in)

Mechanical Ratings

Attribute	Description	
Vibration (Assembled to Panel)	Mechanical vibration (per 40001-843, Cat I) • 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) • 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

Attribute		Description
Temperature Range	Operating	UL: -25…+50 °C (-13…+122 °F) ❶ -25…+70 °C (-13…+158 °F) ❶
	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

❶ Operating temperatures below 0 °C (32 °F) are based on the absence of freezing moisture and liquids. UL Listed to 122 °F (50 °C) maximum ambient.

Illumination

Attribute	Description	
Lamp Ratings	Nominal Voltage	Current Draw
LED	24V DC	19 mA 3 mA leakage current resistance
LED Dominant Wavelength	Green Red White Blue Yellow	525 nm 628 nm — 465 nm —
LED Luminous Intensity	Green Red White Blue Yellow	110 mcd (min), 300 mcd (typical) 70 mcd (min), 200 mcd (typical) 110 mcd (min), 300 mcd (typical) 90 mcd (min), 150 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

Component	Material Used
Terminal	Brass with tin plating
Wire Pressure Plate	Stainless steel
Screw	Stainless steel
Anti-rotation Washer	Stainless steel

Standard 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, and CE
Terminal Identification	EN/IEC 60947-1
RoHS	✓

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

800L – 30 L 24 R
a b c d

a	
Indicator Size	
Code	**Description**
12	12 mm
18	18 mm ❶
22	22.5 mm
30	30.5 mm

b	
Illumination Type	
Code	**Description**
C	Incandescent
L	LED ❷ ❸
S	Xenon strobe ❷

c	
Voltage	
Code	**Description**
24	24V AC/DC ❹
10	120V AC
20	240V AC ❺

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

❶ 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.
❷ LED and xenon strobe lamps are integral to indicators and are not field replaceable. Entire indicator must be replaced upon lamp failure.
❸ LED color matches lens color specified. White LED supplied for clear lens.
❹ 12 mm devices are only available with LED illumination (24V DC or 120V AC).
❺ 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.

Specifications ❻

Mechanical Ratings

Attribute	Description
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

Environmental

Attribute		Description
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

Attribute		Description
Lamp Life	Incandescent	5000 hr
	LED	100,000 hr
	Strobe	1,000,000 flashes
Flash Frequency	Strobe	1…2 Hz

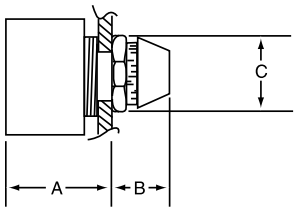
❻ **Performance Data** — Performance data that is given in this publication is provided only as a guide for you to determine suitability and does not constitute a performance warranty of any kind. Such data represents the results of accelerated testing at elevated stress levels, and you are responsible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

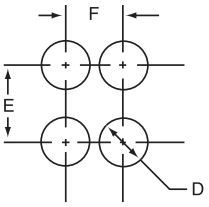
Standards and Certifications

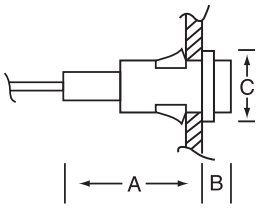
Standards Compliance	UL 508
Certifications	CE Marked, cULus Listed (File No. E14840, Guide No. NKCR, NKCR7), EN60947-5-1, CSA C22.2, No. 14

Approximate Dimensions

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







Indicator	A	B	C	D	E	F
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) ❶	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) ❶	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)

❶ 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).

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Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	www.rockwellautomation.com/global/support/direct-dial.page
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