Original Instructions

30 mm Push Button Specifications

Bulletin Numbers 800T, 800H

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Allen-Bradley

by ROCKWELL AUTOMATION



Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Торіс	Pages
Added footnotes for noncompliance with EN ISO 13850.	49, 56, 57, 59, 60

IMPORTANT Performance data that is given in this publication is provided only as a guide for you to determine 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 you are responsible for correlating the data to actual application requirements. ALL WARRANTIES AS TO ACTUAL PERFORMANCE, WHETHER EXPRESS OR IMPLIED, ARE EXPRESSLY DISCLAIMED.

Table 1 - Electrical Ratings

Attribute	Bulletin 800T and 800H
Contact ratings	See the contact ratings tables on <u>page 4</u> .
Dielectric strength	2200V for 1 minute, 1300V for 1 minute (Logic Reed)

Table 2 - Mechanical Ratings

Attribute			Bulletin 800T and 800H		
Vibration			102000 Hz, 0.06 in. (1.52 mm) displacement (peak-to-peak) max/10 G max (except Logic Reed)		
Shock			1/2 cycle sine-wave for 11 ms \geq 25 g (contact fragility) and no damage at 100 g		
Degree of protection			Type 1/4/12/13 (800T); Type 1/4/4X/12/13 (800H); EN/IEC 60529 IP66/65		
		Momentary, non-illuminated, flush, and extended head	10,000,000		
	Push buttons	Momentary, illuminated	250,000		
Mechanical design		Push-pull/twist-to-release	250,000 ⁽¹⁾		
lifecycles, min	Selector	Non-illuminated	1,000,000		
	switches	Illuminated, key-operated	200,000		
	Potentiomete	rs	25,000		
	All other devic	ces	200,000		
Contact block operation Shallow, mini, and low-voltage Logic reed and sealed switch		Shallow, mini, and low-voltage	Slow, double make and break		
		Logic reed and sealed switch	Single break magnetic		
Wire gauge/termina	Wire gauge/terminal screw torque		#1814 AWG (#1810 MaxDuty) / 68 lb•in		
Operators without contact blo		hout contact blocks	 Flush, extended button, standard mushroom, jumbo plastic mushroom: 2 lb max Jumbo and extended aluminum mushroom head: 3.95 lb max Maintained selector switch: 3.6 in•lb max 		
	Spring-return selector switches		3.6 in•lb to stop, 0.2 in•lb to return		
	Illuminated push buttons and push-to-test pilot lights		5 lb max		
	2-position pu	sh-pull	8.0 lb max push or pull		
Typical operating	3-position pu	sh-pull	8 lb max push to in position or pull to center position (15 lb max pull to out position)		
forces	Twist-to-relea	ase or push-pull	9 lb max push or pull 30 in•oz max twist, 6 in•oz min return		
	Potentiomete	r	Rotational torque 312 in•oz; stopping torque 12 in•lb (min)		
		Standard	11b		
	Contact	Logic Reed and stackable sealed switch	1 lb max		
	blocks	Sealed switch	3 lb max at 0.205 in. (5.2 mm) plunger travel		
		MaxDuty and PenTUFF™	1.4 lb max		
		Self-Monitoring	1.6 lb		

(1) Illuminated trigger action E-stops are rated for 150,000 minimum mechanical operations when using Cat. No. 800TC-XD4S self-monitoring contact blocks (SMCBs).

Table 3 - Environmental Ratings

Attribute		Bulletin 800T and 800H
Temperature Range	Operating ⁽¹⁾	-13+104 °F (-25+40 °C)
		-40+185 °F (-40+85 °C)
Humidity	•	5095% RH from 77140 °F (2560 °C) per Procedure IV of MIL-STD-810C, Method 507.1 cycling test

 Operating temperatures below freezing are based on the absence of moisture and liquids. Consult your local Rockwell Automation sales office or Allen-Bradley distributor for use in lower temperature applications.

Table 4 - Materials Used in Bulletin 800H Type 4X Operators

Material	Where Used
Thermoplastic Polyester (Fiberglass Reinforced)	Bushings, mounting rings, and sockets
Transparent Amorphous Nylon	Pilot light lens cap and illuminated button caps
Mineral-filled Nylon	Trim washer
Thermoplastic Polyester	Non-illuminated button caps
Glass-filled Crystalline Nylon	Thrust washer
Nitrile (Synthetic Rubber)	Gaskets and internal seals

Standards Compliance and Certifications

Standards Compliance	UL 508, CCC
Certifications	 UL Listed (File No. E14840, E10314 Guide No. NKCR, NOIV, NISD) CSA Certified (File No. LR1234, LR11924) CSA C22.2, No. 14 CE Marked (EN/IEC 60947-5-1, EN/IEC 60947-5-5, EN ISO 13850)

Contact Ratings

Use the following tables to verify that the ratings meet the needs of your applications.

Standard Contacts

- Minimum: 24V, 24 mA
- Maximum thermal continuous current *I*_{th} 10 A AC/2.5 A DC.

Bulletin 800T units with 800T-XA contacts have the following ratings:

Max Operational	Utilization Category		Rated Operating Currents		
Volts U _e	IEC	NEMA	Volts U _e	Make	Break
AC 600	AC-15	A600	120600 72120 2472	7200VA 60 A 60 A	720VA 720VA 10 A
DC 600	DC-13	Q600	28600 2428 ⁽¹⁾		VA 5 A

(1) For applications below 17V/5 mA, PenTUFF or Logic Reed contacts are recommended.

Electrical design lifecycles: 1,000,000 (at max rated load)

Explosion-protected Contacts

- Maximum thermal continuous current *I*_{th} = 10 A
- Minimum low-energy switching load: 17V DC, 5 mA
- Electrical design lifecycles: 1,000,000 (24V DC, 25 mA)
- Vibration: 5 g, 0.7 mm peak-to-peak displacement, sine sweep 10...2000 Hz / IEC 60068-2-6
- Shock: 15 g (800H-TFRX_ trigger action E-stops), 50 g (all other devices) / IEC 60068-2-27

Bulletin 800T units with 800TC-XAF contacts have the following ratings:

Max Operational	Utilization Category		Rated Operating Currents		
Volts U _e	IEC	NEMA	Volts U _e	Make	Break
AC 600	AC-15	A600	120600 72120 2472	7200VA 60 A 60 A	720VA 720VA 10 A
DC 600	600 DC-13	24300 024	138 5.0		
		Q600	28600 2428	69 2.5	

Sealed Switch Contacts

- Minimum: 5V, 1 mA
- Maximum continuous current I_{th} 5 A.

Bulletin 800T units with sealed switch contact blocks have the following ratings:

Max Operational	Utilization	Category	Rated Operating Currents		
Volts U _e	IEC	NEMA	Volts U _e	Make	Break
AC 600	AC-15	B600	120600 0120	3600VA 30 A	360VA 3 A
DC 300	DC-13	P300	24300 024	138 5.0	

Stackable Sealed Switch Contacts

Series A

- Minimum: 5V, 10 mA (digital); 24V, 1 mA (analog)
- Maximum continuous current I_{th} 2.5 A.

Bulletin 800T units with stackable sealed switch contact blocks have the following ratings:

Max Operational	Utilization Category		Rated Operating Currents		
Volts V _e	IEC	NEMA	Volts U _e	Make	Break
AC 300	AC-15	C300	120300 0120	1800VA 15 A	180VA 1.5 A
DC 150	DC-13	Q150	24150 024	69VA 2.5 A	

Series B

- Minimum: 5V, 10 mA (digital); 24V, 1 mA (analog)
- Maximum continuous current I_{th} 5.0 A.
- Electrical design lifecycles: 1,000,000 min.
- Vibration: 5 g, 0.5 mm peak-to-peak displacement, sine sweep 10...2000 Hz / IEC 60068-2-6
- Shock: 20 g / IEC 60068-2-27

Max	Utilization		Rated	Operati	Volt-Amp			
Operational	Cate	Category		OV	24	OV	Rat	ting
Volts U _e	IEC	NEMA	Make	Break	Make	Break	Make	Break
AC 300	AC-15	B300	30	3	15	1.5	3600	360
DC 150	DC-13	0150		24	150V		6	9
DC 130	DC-13	Ų100		0	24V		2.	5 A

Logic Reed Contacts

- Minimum DC: 5V, 1 mA
- Maximum DC: 30V, 0.06 A, AC: 150V, 0.15 A
- Only used with resistive loads.
- Electrical design lifecycles: 200,000 (at max rated load)

PenTUFF (Low Voltage) Contacts

- Minimum DC: 5V, 1 mA
- Maximum thermal continuous current *I*_{th} 2.5 A AC/1.0 A DC.

Bulletin 800T units with 800T-XAV contacts have the following ratings:

Max Operational	Utilization	Category	Rated Operating Currents			
Volts V _e	IEC	NEMA	Volts U _e	Make	Break	
AC 300	AC-15	C300	120300 0120	1800VA 15 A	180VA 1.5 A	
DC 150	DC-13	R150	24150 024	28 1.0		

Snap Action Contacts

Bulletin 800T units with snap action contact blocks have the following ratings:

Max Operational	Contact Rating	Rated Operating Currents			
Volts U _e	Designation	Volts U _e	Make	Break	
AC 300	A300	120300 2472	7200VA 60 A	720VA 10 A	
DC 250	_	230250 115125	0.2 0.4		

MaxDuty Contact Ratings

- Maximum thermal continuous current *I*_{th} 24 A.
- Pilot Duty 120V AC, 12 A; 24V DC, 10 A
- Motor Ratings 120V AC, 1.5 Hp; 240V AC, 3 Hp; 24V DC, 10 A FLA/60 A LRA

Time Delay Contacts

IMPORTANT	This device is not rated for DC applications.
-----------	---

Bulletin 800T units with time delay contact blocks have the following ratings:

Max Operational	Contact Rating	Rated Operating Currents			
Volts U _e	Designation	Volts V _e	Make	Break	
AC 120	B150	120	3600VA	360VA	

Adjustment range: 0.5...15 s \pm 25% I_{th} = 5 A

Our 30 mm assembled stations are available in die-cast aluminum, stainless steel, glass, and thermoplastic polyester resin construction. These stations come completely assembled for easy installation or they can be custom-built to fit your needs (see page 37).



Die Cast Aluminum Cat. No. 800T-2TAR



Booted Operator - Stainless Steel Cat. No. 800H-1HA4T



Booted Operator - Glass Polyester Cat. No. 800H-1HA4R

							Type 4/13	Туре 4	/4X/13
Operator	Contact Sy	Contact Symbol		Button Type	Button Color	Legend Marking	Die Cast Aluminum	Booted Operator – Stainless Steel	Booted Operator – Glass Polyester
							Cat. No.	Cat. No. ⁽¹⁾	Cat. No. ⁽¹⁾
		1110	Momentary	Extended	Red	STOP	800T-1TA	800H-1HA4T	800H-1HA4R
One push button		1 N.O 1 N.C.	Momentary	Flush	Green	START	800T-1TB	800H-1HB4T	800H-1HB4R
button		111.0.	Momentary	Flush	Black	No legend	800T-1TX	800H-1HX4T	800H-1HX4R
Two push		1 N.O 1 N.C.	Momentary	Flush Extended	Green Red	START STOP	800T-2TA	800H-2HA4T	800H-2HA4R
buttons	buttons	each button	Momentary	Flush Flush	Black Black	No legend	800T-2TX	800H-2HX4T	800H-2HX4R
One pilot light, two	\otimes	1 N.O 1 N.C.	Momentary	120V AC Flush Extended	Red Green Red	No legend START STOP	800T-2TAR	800H-2HAR4T	800H-2HAR4R
push buttons		each button	Momentary	120V AC Flush Flush	Red Black Black	No legend	800T-2TXR	800H-2HXR4T	800H-2HXR4R
3-position	0.0	1 N.O	Maintained	Knob lever	Black with white insert	HAND-OFF-AUTO	800T-R3TA	-	-
switch	selector switch ${}$	1 N.C.	Maintained	Knob lever	Black with white insert	No legend	800T-R3TX	-	-
One push button	~~	1 N.C.L.B.	Maintained	Push-pull/ Twist	Red	EMERG STOP	800T-1TYM ⁽²⁾	-	-
Two push		1 N.O	Maintained	Flush Extended	Green Red	START STOP	800T-2TAM	800H-2HAM4T	800H-2HAM4R
buttons	·+	1 N.C.	Maintained	Flush Flush	Black Black	No legend	800T-2TXM	800H-2HXM4T	800H-2HXM4R

 Boot material is chlorosulfonated polyethylene. Add suffix L to the cat. no. for station with bootless operators. Example: Cat. N
 Supplied with yellow legend plate to comply with IEC 60947-5-5 and NFPA79 E-stop standards that require yellow background. Boot material is chlorosulfonated polyethylene. Add suffix L to the cat. no. for station with bootless operators. Example: Cat. No. 800H-1HB4T becomes Cat. No. 800H-1HB4TL.

Our E-stops devices are tamper-resistant featuring front-of-panel mounting and nonremovable operator heads. They are also compliant with global E-stop standards, including EN ISO 13850 and EN 60947-5-5. All push buttons are red, 2-position with twist-to-release trigger action. They are available in non-illuminated and illuminated versions.

TFX

С

Т

d

2-position - Non-illuminated





Т



6

D2

е



а				
Protection Rating				
Code	Code Description			
T	Metal, Type 4/13			
Η	Plastic, Type 4/4X/13			

Ь					
Fingersafe Guards					
Code	Code Description				
Blank	No guards				
С	Guard on terminals				

b

	C					
	Head Type					
800T Code	llocerintion					
TFX	Standard (45 mm) mushroom head	TFRX				
TFXJ	Jumbo (60 mm) mushroom head	TFRXJ				
TFXJE	Jumbo (60 mm) mushroom head with "E-stop" ⁽¹⁾	TFRXJE				
TFXK	45 mm mushroom head key release	-				
TFXL	63 mm anodized aluminum head	_				
TFXLE	63 mm anodized aluminum head with "E-stop" $^{(1)}$	-				

(1) "E-stop" on the mushroom head does not comply with EN ISO 13850.

	d				
Release Function					
Code	Description				
Blank	Key release ^{(1) (2)}				
T	Twist release				

e						
Contact Blocks						
	Operator Position					
Code			Description			
	Out	In				
Blank			No contacts on operator			
		Sta	ndard			
D2	Х	0	1 N.C.			
А	0 X	X 0	1 N.O 1 N.C.			
Α4	X X	0 0	2 N.C.			
	Per	TUFF™ (Low Voltage)			
D2V	Х	0	1 N.C.			
AV	0 X	X 0	1 N.O 1 N.C.			
)	(= Close	d/O = Open			

e (conťd)						
	Contact Blocks					
	Operator Position					
Code			Description			
	Out	In				
Cl	ass I, Div	v 2 — Ex	plosion-protected			
AF	0 X	X 0	1 N.O 1 N.C.			
BF	0 X 0 X	X 0 0 X	2 N.O 2 N.C.			

X = Closed/0 = Open

LIOSEA/U = upen

Configurable only with FXK head type.
 Provided with two D018 keys.

2-position — Illuminated

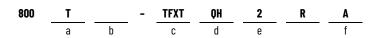
• Light-emitting diode (LED) illumination is provided as standard



Cat. No. 800T-TFXJETSOOR







а			
Protection Rating			
Code	Description		
T	Metal, Type 4/13		
Н	Plastic, Type 4/4X/13		

b			
Fingersafe Guards			
Code	Description		
Blank	No guards		
С	Guard on terminals		

C				
Head Type				
800T Code	Description	800H Code		
TFXT	Standard (45 mm) mushroom head	TFRXT		
TFXJT	Jumbo (60 mm) mushroom head	TFRXJT		
TFXJET	Jumbo (60 mm) mushroom head with "E-stop" ⁽¹⁾	TFRXJET		

(1) "E-stop" on the mushroom head does not comply with EN ISO 13850.

d			
Illumination Option			
Code	Description		
PH	Transformer with LED lamp		
QH	Full voltage with LED lamp		
S	Operator only		

e					
Voltage					
Code Description					
Transformer					
16	120V AC, 50/60 Hz				
26	240V AC, 50/60 Hz				
46	480V AC, 50/60 Hz				
56	600V AC, 50/60 Hz				
	Full Voltage				
2	12130V AC/DC				
Operator Only					
00	No power module				

f					
Target					
Contact					
N.O.	0	Х			
N.C./ N.C.L.B./ S.M.C.B.	Х	0			
Contact Blocks					
Code	Description				
Blank	No contacts				
Standard					
D2	1 N.C.				
D4S	1 S.M.C.B.				
А	1 N.O 1 N.C.				
G1	2 N.O 2 N.C.				
P	enTUFF (Low Vo	oltage)			
D2V	1 N.C.				
AV	1 N.O 1 N.C.				
G1V	2 N.O 2 N.C.				
Class I, Div 2 — Explosion-protected					
AF	1 N.O. ·	·1N.C.			
G1F	2 N.O 2 N.C.				
X = Closed/0 = Open					

Momentary Contact Devices — Non-illuminated



Flush Head Unit Cat. No. 800T-A1A



Extended Head Unit Cat. No. 800T-B6A

800 Т а b



Booted Unit Cat. No. 800H-R2A

е

A

1 d

A C



Bootless Flush Head Unit Cat. No. 800H-AR1A



а				
Protection Rating				
Code	Description			
T	Metal, Type 4/13			
Н	Plastic, Type 4/4X/13			

b **Fingersafe Guards** Code Description Blank No guards С Guard on terminals

C					
Operator Type					
800T Code	lloccrintion				
Α	Flush head	AR			
В	Extended head	BR			
D	Mushroom head	DR			
DX	Mushroom head (no color cap)	DRX			
-	Bootless guarded head	GR			
-	Booted head	R ⁽²⁾			

d				
Color Cap				
Code	Description			
Blank	Used only when Operator Type DX/DRX is ordered			
1	Green			
2	Black			
3	Orange ⁽¹⁾			
4	Gray ⁽¹⁾			
5	White ⁽¹⁾			
6	Red			
7	Blue			
9	Yellow			

Not available for booted operators.
 Underlying operators are extended head. Boot material is chlorosulfonated polyethylene.

e		f			f (cont'd)		f (cont'd)		Time Delay Contacts
Special Mushroom Head		Contact Blocks		Co	Contact Blocks		Contact Blocks		
Code	Description	Code	Description	Code	Description	C	Code Description		Series C field installable
J	Jumbo mushroom head (plastic)	Blank No contacts			PenTUFF™ (Low Voltage)		Class I, Div. 2 - Explosion-protected		kits can only be used with Series T or later operators. Adjustable
	neau (plastic)		Standard	D1V 1 N.O.			AF	1 N.O 1 N.C.	range of 0.515 s + 25%. Maximum continuous
I (1)	Jumbo mushroom	D1	1 N.O.	D2V	1 N.C.		BF	2 N.O 2 N.C.	current $I_{\rm th}$ 5 A.
L'''	head (metal)	D2	1 N.C.	D3V	1 N.O.E.M.		Clas	s I, Div. 2 - Logic Reed	
	Note: Special mushroom		1 N.O.E.M.	D4V	1 N.C.L.B.		D1R	1 N.O.	
	tions only apply to om head operator	D4	1 N.C.L.B.	AV	1 N.O 1 N.C.	1	D2R	1 N.C.	Snap Action Contacts
	de D/DR (Table c).	D5	1 N.O. (Mini)	BV	2 N.O 2 N.C.		A2R	2 N.O. ⁽²⁾	Snap-action contacts
		D6	1 N.C. (Mini)	1	Time Delay		A4R	2 N.C.	feature a quick make, quick break snap-action
		A1	1 N.C.L.B 1 N.O.		1 N.O.		AR	1 N.O 1 N.C.	mechanism that is only
		A2	2 N.O. ⁽²⁾	Т	T Depress close,		BR	2 N.O 2 N.C.	available on factory- assembled units.
		Α4	2 N.C.		delayed opening		Class I, Div. 2 - Stackable		Maximum continuous
		A7	1 N.C.L.B 1 N.C.		1 N.C.			Sealed Switch	current I _{th} 10 A.
		Α	1 N.O 1 N.C.	S	Depress open,		D1Y	1 N.O.	
		В	2 N.O 2 N.C.		delayed closure		D2Y	1 N.C.	1
				Sn	ap Action ⁽³⁾		AY	1 N.O 1 N.C.	
			•	Sn	ap Action ⁽³⁾		AY	1 N.O 1 N.C.]

Jumbo mushroom head (metal) is only available in colors green, black, red, and yellow.
 A2 and A2R contact blocks cannot be stacked upon, but can stack on other contact blocks.
 Snap action contact blocks only available with flush and extended head operators in the colors green, black, or red.

1 N.O. - 1 N.C.

2 N.O. - 2 N.C.

М

Ν

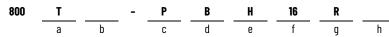
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2 N.O. - 2 N.C

Momentary Contact Devices – Illuminated







а				
Protection Rating				
Code Description				
T	Metal, Type 4/13			
Н	Plastic, Type 4/4X/13			

b		
Fingersafe Guards		
Code	Description	
Blank	No guards	
С	Guard on terminals	

C			
	Power Module Type		
800T Code	Description	800H Code	
Р	Transformer (or dual input)	PR	
Q	Full voltage	QR	
S	Operator only ⁽²⁾	-	

d		
Head Type		
Code	Description	
Α	Extended head with guard	
В	Extended head without guard	
М	Mushroom ⁽¹⁾	
MJ	Jumbo mushroom ⁽¹⁾	

Mushroom and jumbo mushroom head not available in yellow.
 Operator only supplied without power module, lamp, lens cap, or contact blocks.

e			
Illumination Options			
Code	Description		
Blank	Incandescent		
Н	LED		
Dual Input			
D	Diode type ⁽¹⁾		
T	Transformer — relay type ⁽²⁾		
TH	Transformer — relay type LED ⁽²⁾		

f			
Voltage			
Code	Description		
Transformer			
16	120V AC, 50/60 Hz		
26	240V AC, 50/60 Hz		
46	480V AC, 50/60 Hz		
56	600V AC, 50/60 Hz		
Full Voltage — Incandescent			
12	12V AC/DC		
24	24V AC/DC		
48	48V AC/DC		
10	120V AC/DC		
20	240V AC/DC		
Fu	Full Voltage — LED		
2	12130V AC/DC		
Dual Input			
16	120V AC		
24	24V AC/DC ⁽³⁾		
Operator Only			
00	No power module		

g		
Lens Color		
Code	Description	
Blank	No lens with standard contacts 1 N.O 1 N.C.	
Х	No lens if any contacts other than standard 1 N.O 1 N.C is ordered.	
А	Amber	
В	Blue	
С	Clear	
G	Green	
R	Red	
W	White	
Y	Yellow	

h			
	Contact Blocks		
Code	Description		
Х	No contacts		
Standard			
Blank	1 N.O 1 N.C.		
D1	1 N.O.		
PenTUFF (Low Voltage)			
AV	1 N.O 1 N.C.		
Class	Class I, Div. 2 - Explosion-protected		
AF	1 N.O 1 N.C.		
Class I, Div. 2 - Logic Reed			
AR	1 N.O 1 N.C.		
Class I, Div. 2 - Stackable Sealed Switch			
AY	1 N.O 1 N.C.		

Diode type dual input provides circuit isolation via opposing diodes. Not recommended for use with solid-state outputs.
 Dual input (transformer relay type) is not configurable with Class I Div. 2 contact blocks.
 Dual-input diode only.