

Step switches, TM, 10 A, flush mounting, 2 contact unit(s), Contacts: 4, 60 °, maintained, Without 0 (Off) position, 1-4, Design number 8231



Powering Business Worldwide™

Part no. **TM-2-8231/E**
044029

General specifications		
Product name		Eaton Moeller® series TM Step switch
Part no.		TM-2-8231/E
EAN		4015080440291
Product Length/Depth		74 millimetre
Product height		30 millimetre
Product width		30 millimetre
Product weight		0.04 kilogram
Certifications		CSA-C22.2 No. 94 UL Category Control No.: NLRV UL 508 VDE 0660 UL report applies to both US and Canada Certified by UL for use in Canada CSA-C22.2 No. 14-05 UL IEC/EN 60947-5-1 UL File No.: E36332 IEC/EN 60947 IEC/EN 60947-3 CE CSA
Product Tradename		TM
Product Type		Step switch
Product Sub Type		None
Features & Functions		
Fitted with:		Black thumb grip and front plate
Inscription		1-4
Number of poles		Single-pole
General information		
Degree of protection		IP65
Degree of protection (front side)		IP65 NEMA 12
Lifespan, mechanical		1,000,000 Operations
Mounting method		Flush mounting
Mounting position		As required
Number of contact units		2
Operating frequency		1200 Operations/h
Overvoltage category		III
Pollution degree		3
Product category		Control switches
Rated impulse withstand voltage (Uimp)		4000 V AC
Suitable for		Front mounting
Switching angle		60 °
Type		Step switch
Climatic environmental conditions		
Ambient operating temperature - min		-25 °C
Ambient operating temperature - max		50 °C
Climatic proofing		Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
Terminal capacities		
Terminal capacity (flexible with ferrule)		2 x 1.0 mm ² , ferrules to DIN 46228 1 x 1.0 mm ² , ferrules to DIN 46228
Terminal capacity (flexible)		1 x 1.5 mm ²

		2 x 1.5 mm ²
Terminal capacity (solid/flexible with ferrule AWG)		14
Terminal capacity (solid/stranded)		1 x 1.5 mm ² 2 x 1,5 mm ²
Screw size		M2.5, Terminal screw
Tightening torque		0.4 Nm, Screw terminals 3.5 lb-in, Screw terminals
Electrical rating		
Rated operating voltage (Ue) at AC - max		500 V
Rated operational current (Ie) at AC-21, 440 V		10 A
Rated operational power at AC-23A, 400 V, 50 Hz		3 kW
Rated uninterrupted current (Iu)		10 A
Uninterrupted current		Rated uninterrupted current Iu is specified for max. cross-section.
Short-circuit rating		
Short-circuit protection rating		10 A gG/gL, Fuse, Contacts
Switching capacity		
Switching capacity (main contacts, general use)		10 A, Rated uninterrupted current max. (UL/CSA)
Switching capacity (auxiliary contacts, general use)		10A, IU, (UL/CSA)
Switching capacity (auxiliary contacts, pilot duty)		A300 (UL/CSA)
Motor rating		
Assigned motor power at 115/120 V, 60 Hz, 1-phase		0.33 HP
Assigned motor power at 115/120 V, 60 Hz, 3-phase		0.75 HP
Assigned motor power at 230/240 V, 60 Hz, 1-phase		0.75 HP
Assigned motor power at 230/240 V, 60 Hz, 3-phase		1 HP
Assigned motor power at 277 V, 60 Hz, 1-phase		0.75 HP
Contacts		
Control circuit reliability		1 failure per 100,000 switching operations statistically determined, at 24 V DC, 10 mA)
Number of contacts		4
Actuator		
Actuator function		Without 0 (Off) position Maintained
Actuator type		Toggle
Number of steps		4 (60°)
Number of switch positions		4
Design verification		
Equipment heat dissipation, current-dependent Pvid		0 W
Heat dissipation capacity P _{diss}		0 W
Heat dissipation per pole, current-dependent Pvid		0.15 W
Rated operational current for specified heat dissipation (I _n)		10 A
Static heat dissipation, non-current-dependent P _{vs}		0 W
10.2.2 Corrosion resistance		Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures		Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat		Meets the product standard's requirements.
10.2.3.3 Resist. of insul. mat. to abnormal heat/fire by internal elect. effects		Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation		UV resistance only in connection with protective shield.
10.2.5 Lifting		Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact		Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions		Meets the product standard's requirements.
10.3 Degree of protection of assemblies		Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances		Meets the product standard's requirements.
10.5 Protection against electric shock		Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components		Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections		Is the panel builder's responsibility.
10.8 Connections for external conductors		Is the panel builder's responsibility.
10.9.2 Power-frequency electric strength		Is the panel builder's responsibility.

10.9.3 Impulse withstand voltage		Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material		Is the panel builder's responsibility.
10.10 Temperature rise		The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating		Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility		Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function		The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

Technical data ETIM 9.0

Low-voltage industrial components (EG000017) / Control switch (EC002611)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Control switch (ecl@ss13-27-37-14-14 [ACN998016])

Type of switch		Level switch
Number of poles		1
Max. rated operation voltage Ue AC	V	500
Rated permanent current Iu	A	10
Number of switch positions		4
With zero (off) position		No
With retraction in 0-position		No
Device construction		Built-in device
Width in number of modular spacings		0
Suitable for floor mounting		No
Suitable for front mounting		Yes
Suitable for distribution board installation		No
Suitable for intermediate mounting		No
Complete device in housing		No
Type of control element		Toggle
Front shield size		30x30 mm
Degree of protection (IP), front side		IP65
Degree of protection (NEMA), front side		12