Step switches, T0, 20 A, centre mounting, 2 contact unit(s), Contacts: 3, 45 °, maintained, Without 0 (Off) position, 1-3, Design number 8230



Part no. T0-2-8230/EZ

091058

EL Number

1456152

(N	or	W	ay
----	----	---	----

	General specifications	
A 0150809105089 Product langin/Unique 45 millimetre Product voidh	Product name	Eaton Moeller® series TO Step switch
Product Length/Depth Semilimente Semil	Part no.	T0-2-8230/EZ
Product height Product width Product width Product width Carlifications Carlifica	EAN	4015080910589
Product twith Product twith Product twith Product twenth Certifications Certi	Product Length/Depth	106 millimetre
Product weight Carifications Carif	Product height	48 millimetre
Certifications IECEN 1000/48 CECN 2004/7 CECN 2004	Product width	48 millimetre
IECEN 18895 CE C	Product weight	0.124 kilogram
Product Type Product Sub Type Catalog Notes Catalog Notes Fitted visits Fitted visits Rated Short-time Withstand Current (Icw) for a time of 1 second Fitted visits Rated Short-time Withstand Current (Icw) for a time of 1 second Fitted visits Rated Short-time Withstand Current (Icw) for a time of 1 second Fitted visits Rated Short-time Withstand Current (Icw) for a time of 1 second Fitted visits Rated Short-time Withstand Current (Icw) for a time of 1 second Fitted visits Rated Short-time Withstand Current (Icw) for a time of 1 second Fitted visits Rated Short-time Withstand Current (Icw) for a time of 1 second Rated Short-time Wit		IEC/EN 60947 CE CSA VDE 0660 UL Category Control No.: NLRV UL CSA-C22.2 No. 94 CSA Class No.: 3211-05 CSA File No.: 012528 UL File No.: E36332 IEC/EN 60947-3 CSA-C22.2 No. 60947-4-1-14
Product Sub Type Catalog Notes	Product Tradename	ТО
Catalog Notes Rated Short-time Withstand Current (Icw) for a time of 1 second Setures & Functions Black thumb grip and front plate Fitted with: Isolated Intermediated Inscription Isolated Intermediated Number of poles NEMA 12 Begree of protection NEMA 12 IP65 NEMA 12 IP65 NEMA 12 Lifespan, mechanical 400,000 Operations Mounting method A required Mounting position A required Number of contact units 2 Operating frequency 1 200 Operations/h Overvoltage category III Poduct category III Product category III Sated impulse withstand voltage (Uimp) 60000 V AC Sated impulse withstand voltage (Uimp) 60000 V AC Safety parameter (EN ISO 13849-1) B 104 values as per EN ISO 13849-1, table C.1 Shock resistance 1 5 g, Mechanical, According to IEC/EN 60088-2-27, Half-sinusoidal shock 20 ms Suitable for	Product Type	Step switch
Fitted with: Inscription Number of poles Seneral information Degree of protection (front side) Degree of pro	Product Sub Type	None
Fitted with: Inscription Number of poles Seneral information Degree of protection Degree of protection (front side) Lifespan, mechanical Mounting method Mounting position Number of contact units Operating frequency Overvoltage category Product category Rated impulse withstand voltage (Uimp) Safe isolation Safe isolation Safe isolation Safe yarameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type Step switch Step step step step step step step step s	Catalog Notes	Rated Short-time Withstand Current (Icw) for a time of 1 second
Inscription Number of poles Seneral information Degree of protection Degree of protection (front side) Degr	Features & Functions	
Number of poles Segree of protection Degree of protection Degree of protection (front side) NEMA 12 Ple65 NEMA 12 Degree of protection (front side) As required As required As required As required As required 1000 Operations/h III Pollution degree Product category Rated impulse withstand voltage (Uimp) Safe isolation Safe isolation Safe isolation Safe isolation Safe y parameter (EN ISO 13849-1) Shock resistance Degree of protection Switching angle Type Step switch Type Step switch Type Step switch Type Step switch Type T	Fitted with:	Black thumb grip and front plate
Degree of protection (front side) Degree of protection (fr	Inscription	1-3
Degree of protection Degree of protection (front side) Degree of protection (front s	Number of poles	Single-pole
PPS NEMA 1	General information	
Lifespan, mechanical 400,000 Operations Mounting method Center 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) 6000 V AC Safe isolation 440 V AC, Between the contacts, According to EN 61140 Safety parameter (EN ISO 13849-1) B10d values as per EN ISO 13849-1, table C.1 Shock resistance 15 g, Mechanical, According to IEC/EN 60088-2-27, Half-sinusoidal shock 20 ms Suitable for Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting Switching angle 45 ° Type Step switch	Degree of protection	IP65
Mounting method Mounting position As required As required Number of contact units Operating frequency Overvoltage category III Pollution degree Product category Rated impulse withstand voltage (Uimp) Safet isolation Safety parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type Step switch	Degree of protection (front side)	
Mounting position Number of contact units Operating frequency Operating frequency Overvoltage category III Pollution degree 3 Product category Rated impulse withstand voltage (Uimp) Safet isolation Safety parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type Step switch Type As required As required 2 Base quired As required As require As	Lifespan, mechanical	400,000 Operations
Number of contact units Operating frequency 1200 Operations/h 1200 Operations/h III Pollution degree 3 Product category Rated impulse withstand voltage (Uimp) Safe isolation Safety parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Switching angle Type 1200 Operations/h 110 1200 Operations/h 111 1200 Operations/h 111 1200 Operations/h 110 1200 Operations/h 111 1200 Operations/h	Mounting method	Center mounting
Operating frequency Overvoltage category III Pollution degree 3 Product category Control switches Rated impulse withstand voltage (Uimp) Safe isolation Safety parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type Stimatic environmental conditions 1200 Operations/h III 2300 Operations/h III 2400 Operations/h III 2500 Operations/h III 2600 Operations/h III	Mounting position	As required
Overvoltage category Pollution degree 3 Product category Rated impulse withstand voltage (Uimp) Safe isolation Safe y parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type III Control switches Control switches 6000 V AC 440 V AC, Between the contacts, According to EN 61140 B 10d values as per EN ISO 13849-1, table C.1 Shock resistance Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting Switching angle 45 ° Step switch Step switch	Number of contact units	2
Pollution degree 3 Product category Control switches Rated impulse withstand voltage (Uimp) 6000 V AC Safe isolation 440 V AC, Between the contacts, According to EN 61140 Safety parameter (EN ISO 13849-1) B10d values as per EN ISO 13849-1, table C.1 Shock resistance 15 g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 ms Suitable for Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting Switching angle 45 ° Type Step switch	Operating frequency	1200 Operations/h
Product category Rated impulse withstand voltage (Uimp) Safe isolation Safety parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type Control switches Ado V AC Ado V AC, Between the contacts, According to EN 61140 Blod values as per EN ISO 13849-1, table C.1 Is g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 ms Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting 45 ° Step switch Climatic environmental conditions	Overvoltage category	III
Rated impulse withstand voltage (Uimp) Safe isolation Safety parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type Step switch Step switch Safety parametal conditions 6000 V AC 440 V AC, Between the contacts, According to EN 61140 B10d values as per EN ISO 13849-1, table C.1 B10d values as per EN ISO 13849-1, table C.1 Shock resistance B15 g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 ms Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting Step switch	Pollution degree	3
Safe isolation 440 V AC, Between the contacts, According to EN 61140 Safety parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type Step switch Safe isolation 440 V AC, Between the contacts, According to EN 61140 B10d values as per EN ISO 13849-1, table C.1 15 g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 ms Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting 45 ° Step switch Step switch	Product category	Control switches
Safety parameter (EN ISO 13849-1) Shock resistance Suitable for Switching angle Type Step switch Safety parameter (EN ISO 13849-1, table C.1 B10d values as per EN ISO 13849-1, table C.1 15 g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 ms Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting Step switch Step switch	Rated impulse withstand voltage (Uimp)	6000 V AC
Shock resistance Suitable for Suitable for Switching angle Type Step switch Step switch Shock resistance 15 g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 ms Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting 45 ° Step switch Step switch	Safe isolation	440 V AC, Between the contacts, According to EN 61140
Suitable for Branch circuits, suitable as motor disconnect, (UL/CSA) Front mounting Switching angle 45 ° Type Step switch Climatic environmental conditions	Safety parameter (EN ISO 13849-1)	B10d values as per EN ISO 13849-1, table C.1
Switching angle 45 ° Type Step switch Climatic environmental conditions Front mounting 45 ° Step switch	Shock resistance	15 g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 m
Type Step switch Climatic environmental conditions	Suitable for	
Climatic environmental conditions	Switching angle	45°
	Туре	Step switch
	Climatic environmental conditions Ambient operating temperature - min	-25 °C

Ambient operating temperature (enclosed) - min	-25 °C
Ambient operating temperature (enclosed) - max	40 °C
Climatic proofing	Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
rminal capacities	
Terminal capacity (flexible with ferrule)	1 x (0.75 - 2.5) mm ² , ferrules to DIN 46228 2 x (0.75 - 2.5) mm ² , ferrules to DIN 46228
Terminal capacity (solid/flexible with ferrule AWG)	18 - 14
Terminal capacity (solid/stranded)	1 x (1 - 2.5) mm ² 2 x (1 - 2.5) mm ²
Screw size	M3.5, Terminal screw
Tightening torque	8.8 lb-in, Screw terminals 1 Nm, Screw terminals
ectrical rating	
Rated breaking capacity at 220/230 V (cos phi to IEC 60947-3)	100 A
Rated breaking capacity at 400/415 V (cos phi to IEC 60947-3)	110 A
Rated breaking capacity at 500 V (cos phi to IEC 60947-3)	80 A
Rated breaking capacity at 660/690 V (cos phi to IEC 60947-3)	60 A
Rated operating voltage (Ue) at AC - max	690 V
Rated operational current (Ie) at AC-3, 220 V, 230 V, 240 V	11.5 A
Rated operational current (Ie) at AC-3, 380 V, 400 V, 415 V	11.5 A
Rated operational current (Ie) at AC-3, 500 V	9 A
Rated operational current (Ie) at AC-3, 660 V, 690 V	4.9 A
Rated operational current (Ie) at AC-21, 440 V	20 A
Rated operational current (Ie) at AC-23A, 230 V	13.3 A
Rated operational current (Ie) at AC-23A, 400 V, 415 V	13.3 A
Rated operational current (Ie) at AC-23A, 500 V	13.3 A
Rated operational current (Ie) at AC-23A, 690 V	7.6 A
Rated operational current (le) at DC-1, load-break switches I/r = 1 ms	10 A
Rated operational current (le) at DC-13, control switches L/R = 50 ms	10 A
Rated operational current (Ie) at DC-21, 240 V	1A
Rated operational current (Ie) at DC-23A, 24 V	10 A
Rated operational current (Ie) at DC-23A, 48 V	10 A
Rated operational current (Ie) at DC-23A, 60 V	10 A
Rated operational current (Ie) at DC-23A, 120 V	5 A
Rated operational current (Ie) at DC-23A, 240 V	5 A
Rated operational current (Ie) star-delta at AC-3, 230 V	20 A
Rated operational current (le) star-delta at AC-3, 400 V	20 A
Rated operational current (Ie) star-delta at AC-3, 500 V	15.6 A
Rated operational current (le) star-delta at AC-3, 690 V	8.5 A
Rated operational power at AC-3, 415 V, 50 Hz	5.5 kW
Rated operational power at AC-3, 500 V, 50 Hz	5.5 kW
Rated operational power at AC-3, 690 V, 50 Hz	4 kW
Rated operational power at AC-23A, 220/230 V, 50 Hz	3 kW
Rated operational power at AC-23A, 400 V, 50 Hz	5.5 kW
Rated operational power at AC-23A, 500 V, 50 Hz	7.5 kW
Rated operational power at AC-23A, 690 V, 50 Hz	5.5 kW
Rated operational power star-delta at 220/230 V, 50 Hz	5.5 kW
Rated operational power star-delta at 380/400 V, 50 Hz	7.5 kW
Rated operational power star-delta at 500 V, 50 Hz	7.5 kW
Rated operational power star-delta at 690 V, 50 Hz	5.5 kW
Rated uninterrupted current (Iu)	20 A
Uninterrupted current	Rated uninterrupted current lu is specified for max. cross-section.
hort-circuit rating	reaces animal appearance to appearance for max. 61000 decelors.

Rated short-time withstand current (Icw)	320 A, Contacts, 1 second		
Short-circuit current rating (basic rating)	50A, max. Fuse, SCCR (UL/CSA) 5 kA, SCCR (UL/CSA)		
Short-circuit current rating (high fault)	20 A, Class J, max. Fuse, SCCR (UL/CSA) 10 kA, SCCR (UL/CSA)		
Short-circuit protection rating	20 A gG/gL, Fuse, Contacts		
Switching capacity			
Load rating	1.6 x l# (with intermittent operation class 12, 40 % duty factor) $2 \times l\#$ (with intermittent operation class 12, 25 % duty factor) 1.3 x l# (with intermittent operation class 12, 60 % duty factor)		
Number of contacts in series at DC-21A, 240 V	1		
Number of contacts in series at DC-23A, 24 V	1		
Number of contacts in series at DC-23A, 48 V	2		
Number of contacts in series at DC-23A, 60 V	3		
Number of contacts in series at DC-23A, 120 V	3		
Number of contacts in series at DC-23A, 240 V	5		
Switching capacity (main contacts, general use)	16 A, Rated uninterrupted current max. (UL/CSA)		
Switching capacity (auxiliary contacts, general use)	10A, IU, (UL/CSA)		
Switching capacity (auxiliary contacts, pilot duty)	A600 (UL/CSA) P300 (UL/CSA)		
Rated making capacity up to 690 V (cos phi to IEC/EN 60947-3)	130 A		
Voltage per contact pair in series	60 V		
Motor rating			
Assigned motor power at 115/120 V, 60 Hz, 1-phase	0.5 HP		
Assigned motor power at 200/208 V, 60 Hz, 1-phase	1 HP		
Assigned motor power at 200/208 V, 60 Hz, 3-phase	3 HP		
Assigned motor power at 230/240 V, 60 Hz, 1-phase	1.5 HP		
Assigned motor power at 230/240 V, 60 Hz, 3-phase	3 HP		
Assigned motor power at 460/480 V, 60 Hz, 3-phase	7.5 HP		
Assigned motor power at 575/600 V, 60 Hz, 3-phase	7.5 HP		
Contacts			
Control circuit reliability	1 failure per 100,000 switching operations statistically determined, at 24 V DC, 10 mA)		
Number of contacts	3		
Actuator			
Actuator function	Maintained Without 0 (Off) position		
Actuator type	Toggle		
Number of steps	3 (45°)		
Number of switch positions	3		
Design verification			
Equipment heat dissipation, current-dependent Pvid	0 W		
Heat dissipation capacity Pdiss	0 W		
Heat dissipation per pole, current-dependent Pvid	0.6 W		
Rated operational current for specified heat dissipation (In)	20 A		
Static heat dissipation, non-current-dependent Pvs	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. Meets the product standard's requirements.		
10.4 Clearances and creepage distances			
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	690
Rated permanent current lu	Α	20
Number of switch positions		3
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		48x48 mm
Degree of protection (IP), front side		IP65
Degree of protection (NEMA), front side		12