

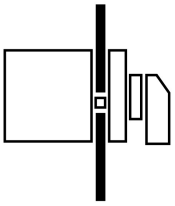
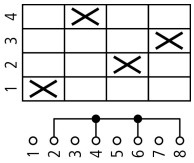
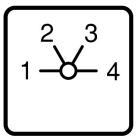


Step switches, Contacts: 4, 10 A, front plate: 1-4, 60 °, 4 steps, 60°, maintained, flush mounting

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

Similar to illustration

Delivery programme

Product range			Control switches
Part group reference			TM
Basic function			Step switches
			with black thumb grip and front plate
Contacts			4
Number of steps			4 steps, 60°
Degree of Protection			Front IP65
Design			flush mounting
			
Contact sequence			
Switching angle		°	60
Switching performance			maintained Without 0 (Off) position
Front plate no.			 F 077
front plate			1-4
Motor rating AC-23A, 50 - 60 Hz			
400 V	P	kW	3
Rated uninterrupted current	I_u	A	10
Number of contact units		contact unit(s)	2

Technical data

General

Standards			IEC/EN 60947, VDE 0660, CSA, UL Control switch as per IEC/EN 60947-5-1 Auxiliary switch as per IEC/EN 60947-5-1
Climatic proofing			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature			
Open		°C	-25 - +50
Overvoltage category/pollution degree			III/3
Rated impulse withstand voltage	U_{imp}	V AC	4000
Mounting position			As required

Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof

Contacts

Electrical characteristics			
Rated operational voltage	U_e	V AC	500
Rated uninterrupted current	I_u	A	10
Note on rated uninterrupted current I_u			Rated uninterrupted current Iu is specified for max. cross-section.
Short-circuit rating			
Fuse		A gG/gL	10

Switching capacity

Safe isolation to EN 61140			
Current heat loss per contact at I_e		W	0.15
Current heat loss per auxiliary circuit at I_e (AC-15/230 V)		CO	0.15
Lifespan, mechanical	Operations	x 10^6	> 1
Maximum operating frequency	Operations/h		1200
Control circuit reliability at 24 V DC, 10 mA	Fault probability	H_F	< 10^{-5}, < 1 fault in 100000 operations

Terminal capacities

Solid or stranded		mm^2	1 x 1,5 2 x 1,5
Flexible		mm^2	1 x 1.5 2 x 1.5
Terminal screw			M2.5
Max. tightening torque		Nm	0.35

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	10
Heat dissipation per pole, current-dependent	P_{vid}	W	0.15
Equipment heat dissipation, current-dependent	P_{vid}	W	0
Static heat dissipation, non-current-dependent	P_{vs}	W	0
Heat dissipation capacity	P_{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	50
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
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 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation			Please enquire
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 Insulation properties			
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 6.0

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

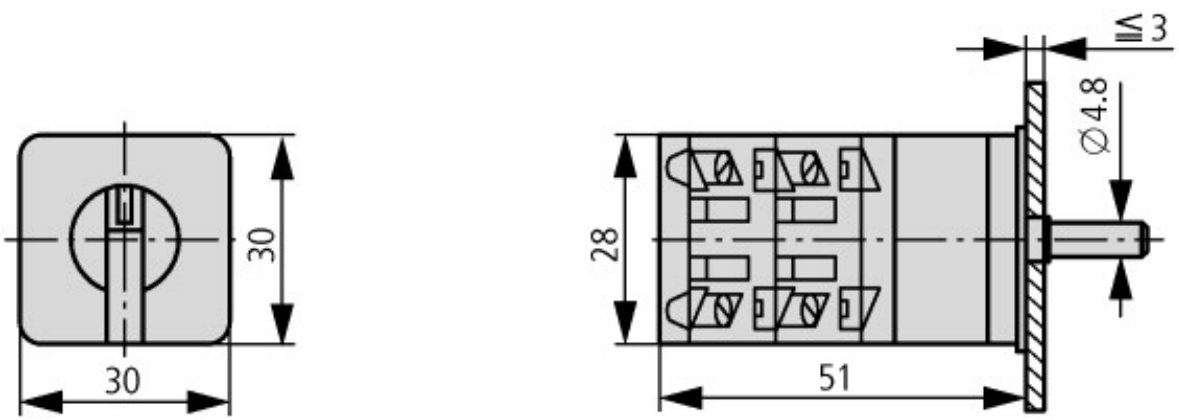
Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Control switch (ecl@ss8.1-27-37-14-14 [ACN998008])

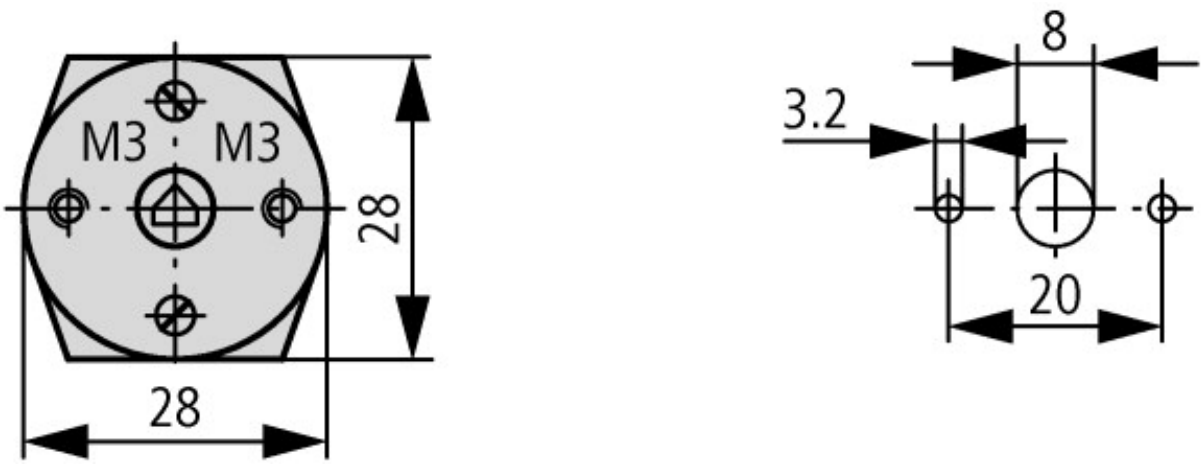
Type of switch			Level switch
Number of poles			1
Max. rated operation voltage Ue AC		V	500
Rated permanent current Iu		A	10
Number of switch positions			4
With 0 (off) position			No
With retraction in 0-position			No
Device construction			Built-in device
Width in number of modular spacings			0
Suitable for ground mounting			No
Suitable for front mounting 4-hole			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

Approvals

Product Standards			UL 508; CSA-C22.2 No. 14-05; CSA-C22.2 No. 94; IEC/EN 60947-3; CE marking
UL File No.			E36332
UL Category Control No.			NLRV
CSA File No.			UL report applies to both US and Canada
CSA Class No.			–
North America Certification			UL listed, certified by UL for use in Canada
Degree of Protection			IEC: IP65; UL/CSA Type: –

Dimensions





Door drilling dimensions

Additional product information (links)

IL03801026Z step switch	
IL03801026Z step switch	ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801026Z2014_10.pdf
Form for ordering non-standard front plates	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=4.87
Display flip catalog page.	http://ecat.moeller.net/flip-cat/?edition=K115A&startpage=169
Technical overview cam switch, switch-disconnector	http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&startpage=4.2
System overview cam switch T	http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&startpage=4.4
System overview switch-disconnector P	http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&startpage=4.6
Key to part numbers Cam switch	http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&startpage=4.8
Key to part numbers Switch-disconnector	http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&startpage=4.8
Switches for ATEX	http://www.coopercrouse-hinds.eu/en/products/25-ex-safety-and-main-current-switches.html

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