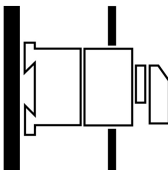
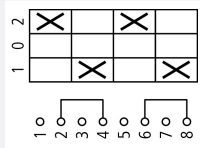
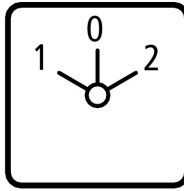


**Changeoverswitches, Contacts: 4, 10 A, front plate: 1-0-2, 60 °, maintained, service distribution board mounting**

**Part no. TM-2-8211/IVS**  
**Article no. 225341**

## Delivery program

Product range			Control switches
Part group reference			TM
Basic function			Changeoverswitches with black thumb grip and front plate
Contacts			4
Degree of Protection			Front IP30
Design			service distribution board mounting
			
Contact sequence			
Switching angle		°	60
Switching performance			maintained With 0 (Off) position
Front plate no.			 <b>F 071</b>
front plate			1-0-2
<b>Motor rating AC-23A, 50 - 60 Hz</b>			
400 V	P	kW	3
Rated uninterrupted current	$I_u$	A	10
Number of contact units		contact unit(s)	2

## Technical data

<b>General</b>			
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			
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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 $I_u$ 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	$\times 10^6$	> 1
Maximum operating frequency	Operations/h		1200
AC			
AC-23A			
Motor rating AC-23A, 50 - 60 Hz	P	kW	
400 V 415 V	P	kW	3
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 <sup>2</sup>	1 x 1,5 2 x 1,5
Flexible		mm <sup>2</sup>	1 x 1.5 2 x 1.5
Terminal screw			M2.5
Max. tightening torque		Nm	0.35

### Rating data for approved types

Contacts			
Rated operational voltage	$U_e$	V AC	300
Rated uninterrupted current max.			
Main conducting paths			
General use	$I_U$	A	10
Auxiliary contacts			
General Use	$I_U$	A	10
Pilot Duty			A 300
Switching capacity			
Maximum motor rating			
Single-phase			
120 V AC		HP	0.33
240 V AC		HP	0.75
277 V AC		HP	0.75
Three-phase			
120 V AC		HP	0.75
240 V AC		HP	1
Terminal capacity			
Solid or flexible conductor with ferrule		AWG	16 - 14
Flexible		AWG	16
Terminal screw			M2.5
Tightening torque		lb-in	5

### 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			Meets the product standard's requirements.
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.

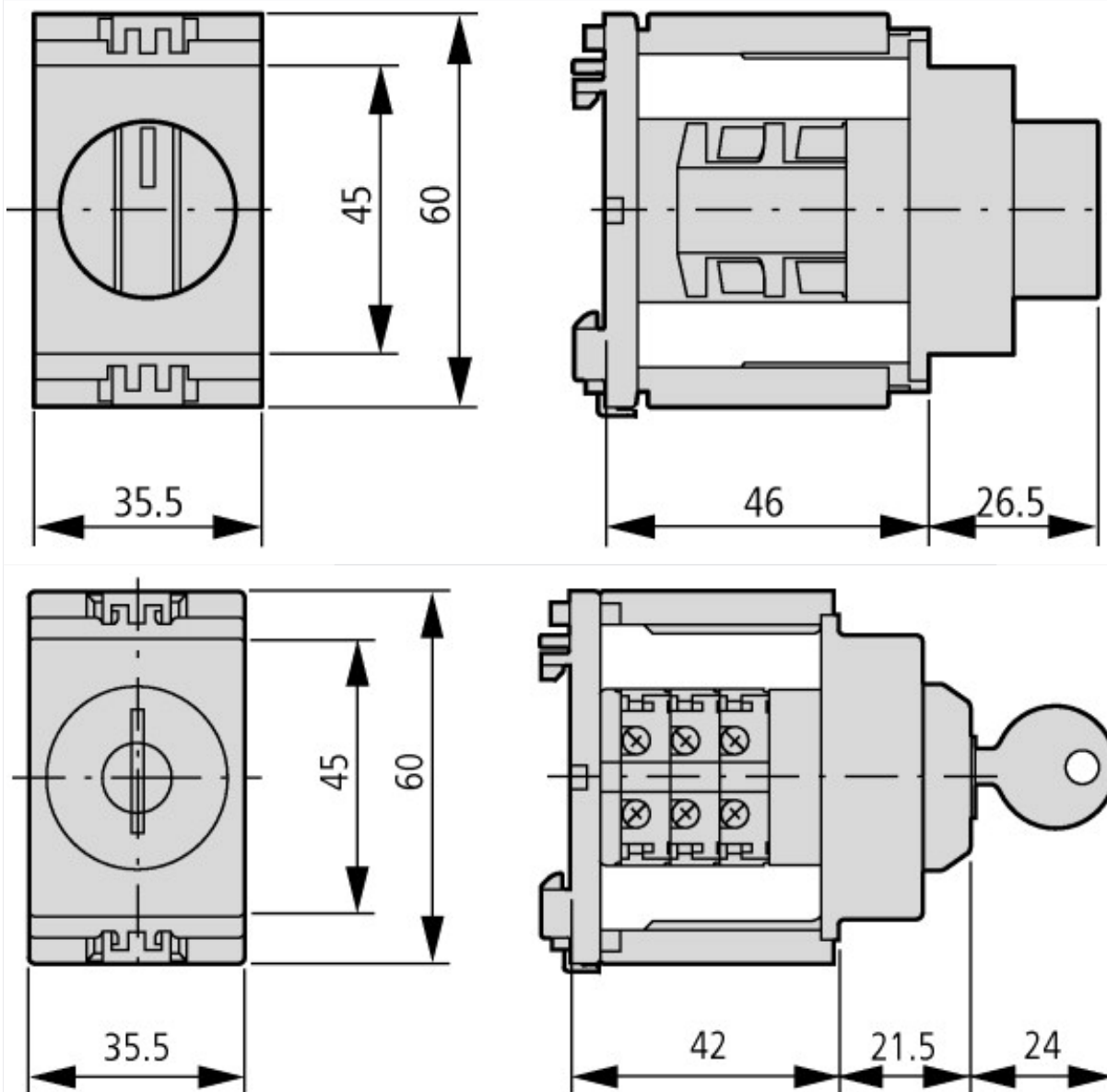
## Technical data ETIM 6.0

Low-voltage industrial components (EG000017) / Off-load switch (EC001105)			
Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Changeover switch (ecl@ss8.1-27-37-14-05 [AKF062010])			
Model			Reverser
Number of poles			2
With 0 (off) position			Yes
With retraction in 0-position			No
Rated permanent current I <sub>u</sub>	A		10
Rated operation current I <sub>e</sub> at AC-3, 400 V	A		0
Rated operation power at AC-3, 400 V	kW		2.2
Degree of protection (IP), front side			IP30
Number of auxiliary contacts as normally closed contact			0
Number of auxiliary contacts as normally open contact			0
Number of auxiliary contacts as change-over contact			0
Suitable for ground mounting			Yes
Suitable for front mounting 4-hole			No
Suitable for distribution board installation			Yes
Suitable for intermediate mounting			No
Complete device in housing			No
Type of control element			Toggle
Type of electrical connection of main circuit			Screw connection

## 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

## Dimensions



Key operation lock mechanism

## Additional product information (links)

### IL03801025Z On-Off switches, changeover switches, control switches

IL03801025Z On-Off switches, changeover switches, control switches	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801025Z2014_12.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801025Z2014_12.pdf</a>
Form for ordering non-standard front plates	<a href="http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=4.87">http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=4.87</a>
Display flip catalog page.	<a href="http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=135">http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=135</a>
Technical overview cam switch, switch-disconnector	<a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.2">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.2</a>
System overview cam switch T	<a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.4">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.4</a>
System overview switch-disconnector P	<a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.6">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.6</a>
Key to part numbers Cam switch	<a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.8">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.8</a>
Key to part numbers Switch-disconnector	<a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.8">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.8</a>
Switches for ATEX	<a href="http://www.coopercrouse-hinds.eu/en/products/25-ex-safety-and-main-current-switches.html">http://www.coopercrouse-hinds.eu/en/products/25-ex-safety-and-main-current-switches.html</a>