



**Changeoverswitches, TM, 10 A, centre mounting, 1 contact unit(s),  
Contacts: 2, 60 °, maintained, With 0 (Off) position, 1-0-2, design no. 8210**

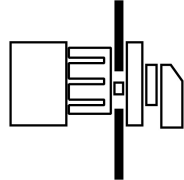
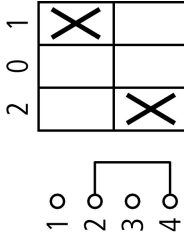
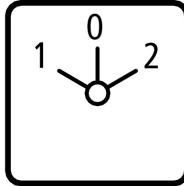


**Part no. TM-1-8210/EZ  
Catalog No. 015137**

**EL-Nummer 0001456160  
(Norway)**

Similar to illustration

**Delivery program**

Product range			Control switches
Part group reference			TM
Basic function			Changeoverswitches with black thumb grip and front plate
Contacts			2
Degree of Protection			Front IP65
Design			centre mounting
			
Contact sequence			
Switching angle		°	60
Switching performance			maintained With 0 (Off) position
Design number			8210
Front plate no.			 <p><b>F 071</b></p>
front plate			1-0-2
<b>Motor rating AC-23A, 50 - 60 Hz</b>			
400 V	P	kW	3
Rated uninterrupted current	I <sub>u</sub>	A	10
Note on rated uninterrupted current I <sub>u</sub>			Rated uninterrupted current I <sub>u</sub> is specified for max. cross-section.
Number of contact units		contact unit(s)	1

**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

### 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 $I_u$ 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-21A			
Rated operational current switch			
400 V 415 V	$I_e$	A	10
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 failure in 100,000 switching operations

### Terminal capacities

Solid or stranded		mm <sup>2</sup>	1 x 1,5 2 x 1,5
Flexible with ferrules to DIN 46228		mm <sup>2</sup>	1 x 1.0 2 x 1.0
Flexible		mm <sup>2</sup>	1 x 1.5 2 x 1.5
Terminal screw			M2.5
Tightening torque for terminal screw		Nm	0.4

### Rating data for approved types

Contacts			
Rated operational voltage	$U_e$	V AC	300
Rated uninterrupted current max.			
Main conducting paths			
General use		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	14
Terminal screw			M2.5

Tightening torque		lb-in	3.5
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## 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			
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 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 7.0

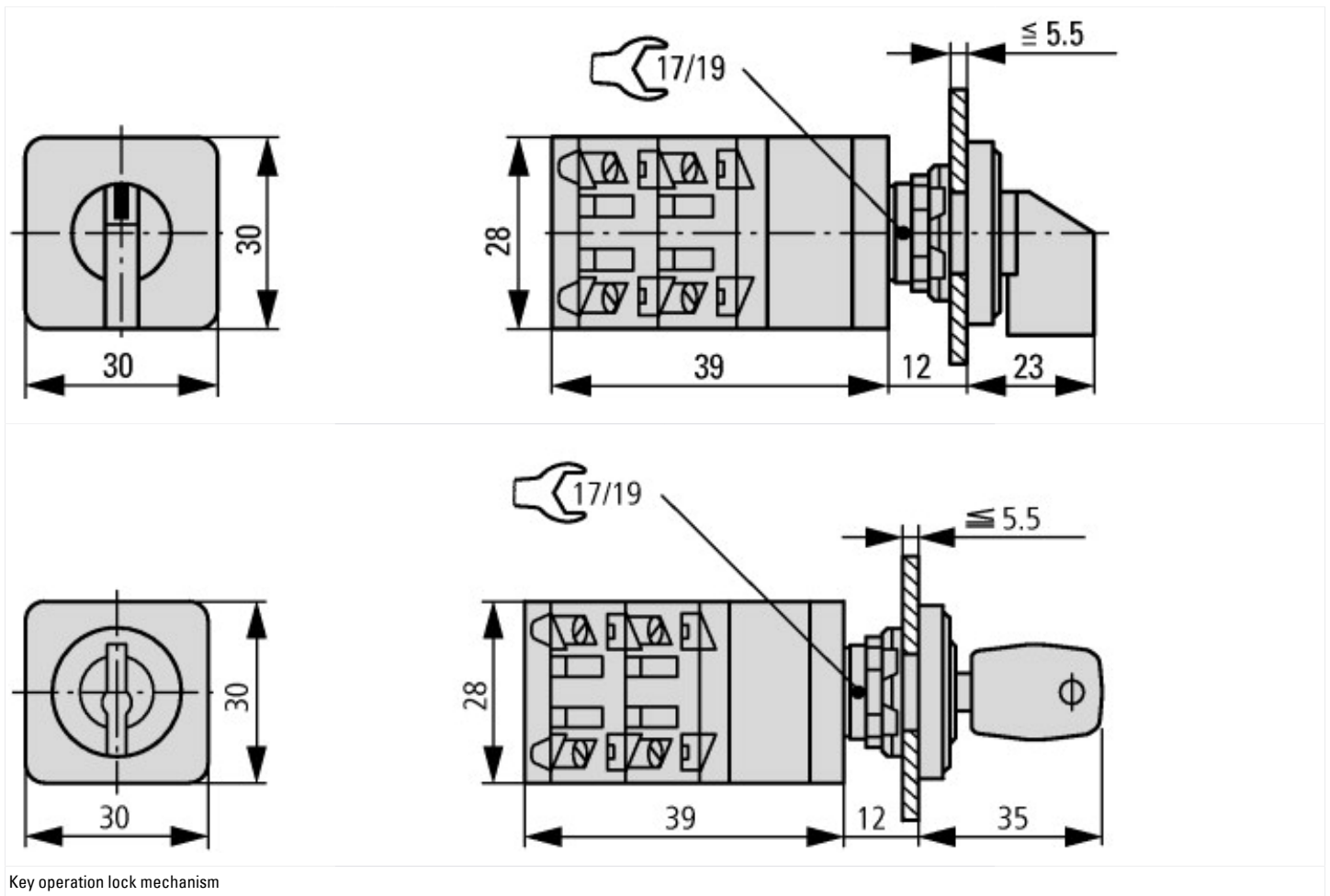
Low-voltage industrial components (EG000017) / Off-load switch (EC001105)			
Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Changeover switch (ec!@ss10.0.1-27-37-14-05 [AKF062013])			
Model			Reverser
Number of poles			1
With 0 (off) position			Yes
With retraction in 0-position			No
Rated permanent current $I_u$		A	10
Rated operation current $I_e$ at AC-3, 400 V		A	0
Rated operation power at AC-3, 400 V		kW	1.1
Degree of protection (IP), front side			IP65
Degree of protection (NEMA), front side			Other
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

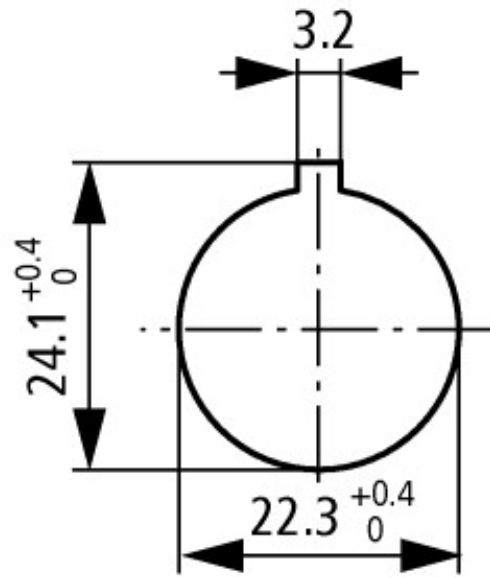
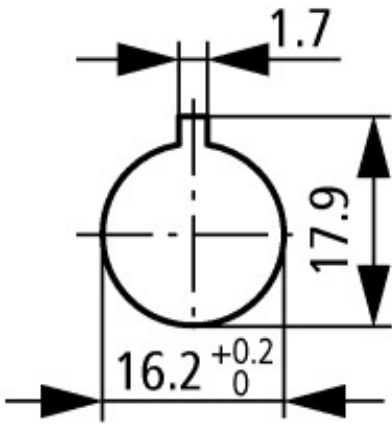
Suitable for ground mounting		No
Suitable for front mounting 4-hole		Yes
Suitable for distribution board installation		No
Suitable for intermediate mounting		No
Complete device in housing		No
Material housing		Plastic
Type of control element		Toggle
Type of electrical connection of main circuit		Screw 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
CSA File No.		UL report applies to both US and Canada
North America Certification		UL listed, certified by UL for use in Canada
Degree of Protection		IEC: IP65; UL/CSA Type: –

## Dimensions





Door drilling dimensions

Drilling dimensions: either 16.2 mm = without reduction  $\triangle$  RMQ16 or 22.3 mm = with reduction  $\triangle$  RMQ Titan