



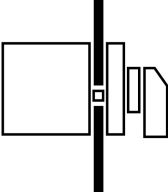
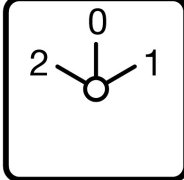
Changeoverswitches, T3, 32 A, flush mounting, 5 contact unit(s), Contacts: 9, 60 °, maintained, With 0 (Off) position, 2-0-1, SOND 29, Design number 89



Part no. T3-5-89/E  
 Catalog No. 004204

Similar to illustration

**Delivery program**

Product range		Control switches																																																																												
Part group reference		T3																																																																												
Basic function		Changeoverswitches with black thumb grip and front plate																																																																												
Notes		SOND 29																																																																												
Contacts		9																																																																												
Degree of Protection		Front IP65																																																																												
Design		flush mounting																																																																												
																																																																														
Contact sequence		<table border="1"> <tr> <td></td> <td>2</td> <td>0</td> <td>1</td> </tr> <tr> <td>11 o</td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>12 o</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2a o</td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>1a o</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1b o</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>2b o</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4a o</td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>3a o</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3b o</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>4b o</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6a o</td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>5a o</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5b o</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>6b o</td> <td></td> <td></td> <td></td> </tr> <tr> <td>8a o</td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>7a o</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7b o</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>8b o</td> <td></td> <td></td> <td></td> </tr> </table> <p>(SOND: 29)</p>		2	0	1	11 o		X		12 o				2a o			X	1a o				1b o	X			2b o				4a o			X	3a o				3b o	X			4b o				6a o			X	5a o				5b o	X			6b o				8a o			X	7a o				7b o	X			8b o			
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Switching angle	°	60																																																																												
Switching performance		maintained With 0 (Off) position																																																																												
Design number		89																																																																												
Front plate no.		 <b>FS 621</b>																																																																												
front plate		2-0-1																																																																												
<b>Motor rating AC-23A, 50 - 60 Hz</b>																																																																														
400 V	P	kW 15																																																																												
Rated uninterrupted current	I <sub>u</sub>	A 32																																																																												

Note on rated uninterrupted current $I_u$			Rated uninterrupted current $I_u$ is specified for max. cross-section.
Number of contact units		contact unit(s)	5

## Technical data

### General

Standards			IEC/EN 60947, VDE 0660, IEC/EN 60204, CSA, UL Switch-disconnector according to IEC/EN 60947-3
Climatic proofing			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature			
Open		°C	-25 - +50
Enclosed		°C	-25 - +40
Overvoltage category/pollution degree			III/3
Rated impulse withstand voltage	$U_{imp}$	V AC	6000
Mechanical shock resistance		g	15
Mounting position			As required

### Contacts

Electrical characteristics			
Rated operational voltage	$U_e$	V AC	690
Rated uninterrupted current	$I_u$	A	32
Note on rated uninterrupted current $I_u$			Rated uninterrupted current $I_u$ is specified for max. cross-section.
Load rating with intermittent operation, class 12			
AB 25 % DF		x $I_e$	2
AB 40 % DF		x $I_e$	1.6
AB 60 % DF		x $I_e$	1.3
Short-circuit rating			
Fuse		A gG/gL	35
Rated short-time withstand current (1 s current)	$I_{cw}$	$A_{rms}$	650
Note on rated short-time withstand current $I_{cw}$			Current for a time of 1 second
Rated conditional short-circuit current	$I_q$	kA	1

### Switching capacity

cos $\varphi$ rated making capacity as per IEC 60947-3		A	320
Rated breaking capacity cos $\varphi$ to IEC 60947-3		A	
230 V		A	260
400/415 V		A	260
500 V		A	240
690 V		A	170
Safe isolation to EN 61140			
between the contacts		V AC	440
Current heat loss per contact at $I_e$		W	1.1
Current heat loss per auxiliary circuit at $I_e$ (AC-15/230 V)		CO	1.1
Lifespan, mechanical	Operations	x $10^6$	> 0.5
Maximum operating frequency	Operations/h		1200
AC			
AC-3			
Rating, motor load switch	P	kW	
220 V 230 V	P	kW	5.5
230 V Star-delta	P	kW	7.5
400 V 415 V	P	kW	11
400 V Star-delta	P	kW	15
500 V	P	kW	15
500 V Star-delta	P	kW	18.5
690 V	P	kW	11
690 V Star-delta	P	kW	22
Rated operational current motor load switch			

230 V	I <sub>e</sub>	A	23.7
230 V star-delta	I <sub>e</sub>	A	32
400V 415 V	I <sub>e</sub>	A	23.7
400 V star-delta	I <sub>e</sub>	A	32
500 V	I <sub>e</sub>	A	23.7
500 V star-delta	I <sub>e</sub>	A	32
690 V	I <sub>e</sub>	A	14.7
690 V star-delta	I <sub>e</sub>	A	25.5
AC-21A			
Rated operational current switch			
440 V	I <sub>e</sub>	A	32
AC-23A			
Motor rating AC-23A, 50 - 60 Hz	P	kW	
230 V	P	kW	7.5
400 V 415 V	P	kW	15
500 V	P	kW	15
690 V	P	kW	15
Rated operational current motor load switch			
230 V	I <sub>e</sub>	A	32
400 V 415 V	I <sub>e</sub>	A	32
500 V	I <sub>e</sub>	A	26.4
690 V	I <sub>e</sub>	A	17
DC			
DC-1, Load-break switches L/R = 1 ms			
Rated operational current	I <sub>e</sub>	A	25
Voltage per contact pair in series		V	60
DC-21A	I <sub>e</sub>	A	
Rated operational current	I <sub>e</sub>	A	1
Contacts		Quantity	1
DC-23A, motor load switch L/R = 15 ms			
24 V			
Rated operational current	I <sub>e</sub>	A	25
Contacts		Quantity	1
48 V			
Rated operational current	I <sub>e</sub>	A	25
Contacts		Quantity	2
60 V			
Rated operational current	I <sub>e</sub>	A	25
Contacts		Quantity	3
120 V			
Rated operational current	I <sub>e</sub>	A	12
Contacts		Quantity	3
240 V			
Rated operational current	I <sub>e</sub>	A	5
Contacts		Quantity	5
DC-13, Control switches L/R = 50 ms			
Rated operational current	I <sub>e</sub>	A	20
Voltage per contact pair in series		V	24
Control circuit reliability at 24 V DC, 10 mA	Fault probability	H <sub>F</sub>	< 10 <sup>-5</sup> , < 1 failure in 100,000 switching operations
<b>Terminal capacities</b>			
Solid or stranded		mm <sup>2</sup>	1 x (1 - 6) 2 x (1 - 6)
Flexible with ferrules to DIN 46228		mm <sup>2</sup>	1 x (0.75 - 4) 2 x (0.75 - 4)

Terminal screw			M4
Tightening torque for terminal screw		Nm	1.6
<b>Technical safety parameters:</b>			
<b>Notes</b>			B10 <sub>q</sub> values as per EN ISO 13849-1, table C1
<b>Rating data for approved types</b>			
<b>Contacts</b>			
Rated operational voltage	U <sub>e</sub>	V AC	600
Rated uninterrupted current max.			
<b>Main conducting paths</b>			
General use		A	25
<b>Auxiliary contacts</b>			
General Use	I <sub>U</sub>	A	10
Pilot Duty			A 600
<b>Switching capacity</b>			
<b>Maximum motor rating</b>			
<b>Single-phase</b>			
120 V AC		HP	1.5
200 V AC		HP	3
240 V AC		HP	3
<b>Three-phase</b>			
200 V AC		HP	3
240 V AC		HP	3
480 V AC		HP	7.5
600 V AC		HP	10
<b>Short Circuit Current Rating</b>			
		SCCR	
Basic Rating		kA	5
max. Fuse		A	40
High fault rating		kA	10
max. Fuse		A	40, Class J
<b>Terminal capacity</b>			
Solid or flexible conductor with ferrule		AWG	14 - 10
Terminal screw			M4
Tightening torque		lb-in	17.7

## Design verification as per IEC/EN 61439

<b>Technical data for design verification</b>			
Rated operational current for specified heat dissipation	I <sub>n</sub>	A	32
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	1.1
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	0
Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	0
Heat dissipation capacity	P <sub>diss</sub>	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	50
<b>IEC/EN 61439 design verification</b>			
<b>10.2 Strength of materials and parts</b>			
<b>10.2.2 Corrosion resistance</b>			
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.

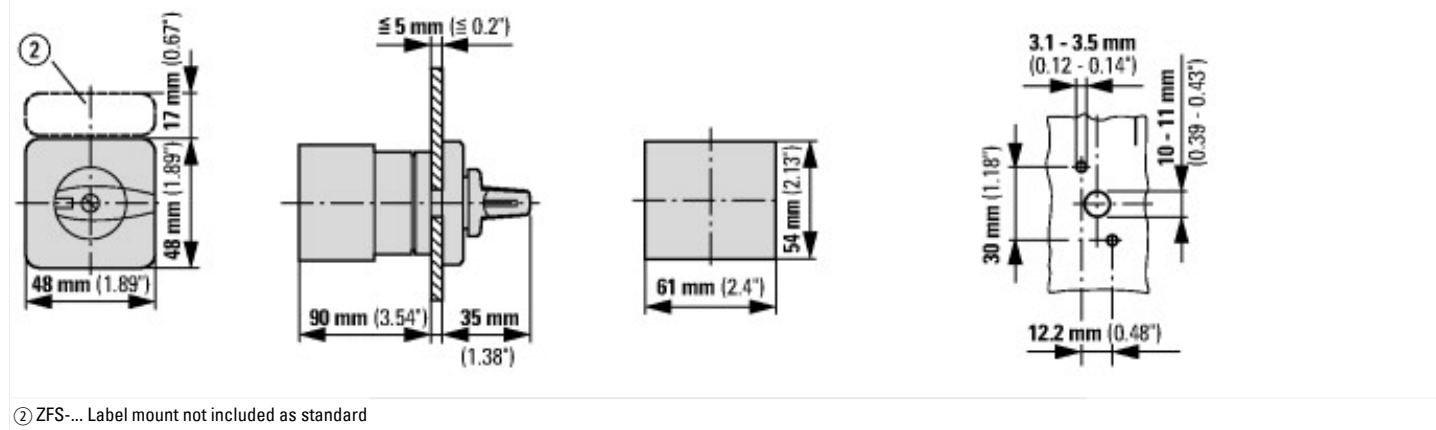
## Technical data ETIM 7.0

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 (ecl@ss10.0.1-27-37-14-05 [AKF062013])		
Model		Reverser
Number of poles		4
With 0 (off) position		Yes
With retraction in 0-position		No
Rated permanent current I <sub>u</sub>	A	32
Rated operation current I <sub>e</sub> at AC-3, 400 V	A	23.7
Rated operation power at AC-3, 400 V	kW	12
Degree of protection (IP), front side		IP65
Degree of protection (NEMA), front side		12
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 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CSA-C22.2 No. 94; IEC/EN 60947-3; CE marking
UL File No.		E36332
UL Category Control No.		NLRV
CSA File No.		12528
CSA Class No.		3211-05
North America Certification		UL listed, CSA certified
Suitable for		Branch circuits, suitable as motor disconnect
Degree of Protection		IEC: IP65; UL/CSA Type 1, 12

## Dimensions



## Additional product information (links)

### IL03801020Z (AWA1150-0586) Cam switches: flush mounting

IL03801020Z (AWA1150-0586) Cam switches: flush mounting	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801020Z2018_05.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801020Z2018_05.pdf</a>
Display flip catalog page.	<a href="http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=45">http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=45</a>
Standard interlock SOND27, 28, 29, 30	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MZ008001ZU.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MZ008001ZU.pdf</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>
Ordering form for SOND switches and SOND front plates(DE_EN)	<a href="ftp://ftp.moeller.net/DOCUMENTATION/PDF/MZ008005ZU_Orderform_Customized_Switch.pdf">ftp://ftp.moeller.net/DOCUMENTATION/PDF/MZ008005ZU_Orderform_Customized_Switch.pdf</a>
Ordering form for SOND switches and SOND front plates(DE_EN)	<a href="ftp://ftp.moeller.net/DOCUMENTATION/PDF/MZ008006ZU_Orderform_Customized_Switch.pdf">ftp://ftp.moeller.net/DOCUMENTATION/PDF/MZ008006ZU_Orderform_Customized_Switch.pdf</a>