DATASHEET - T0-1-170/E



Step switches, T0, 20 A, flush mounting, 1 contact unit(s), Contacts: 2, 45 °, maintained, With 0 (Off) position, 0-2, design no. 170



Powering Business Worldwide



Nachana (II)

Part no. T0-1-170/E Catalog No. 009348

Delivery program			
Product range			Control switches
Part group reference			ТО
Basic function			Step switches
			with black thumb grip and front plate
Contacts			2
Degree of Protection			Front IP65
Design			flush mounting
Contact sequence			100 12
Switching angle		0	45
Switching performance			maintained With 0 (Off) position
Design number			170
Front plate no.			$\frac{1}{0}$ FS 418
front plate			0-2
Motor rating AC-23A, 50 - 60 Hz			
400 V	Р	kW	5.5
Rated uninterrupted current	l _u	Α	20
Note on rated uninterrupted current !u			Rated uninterrupted current I_u is specified for max. cross-section.
Number of contact units		contact unit(s)	

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	

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	Iu	Α	20
Note on rated uninterrupted current !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 l _e	1.6
AB 60 % DF		x I _e	1.3
Short-circuit rating			
Fuse		A gG/gL	20
Rated short-time withstand current (1 s current)	I _{cw}	A _{rms}	320
Note on rated short-time withstand current lcw	'cw	rms	Current for a time of 1 second
Rated conditional short-circuit current		LΛ	
	Iq	kA	6
Switching capacity cos φ rated making capacity as per IEC 60947-3		Α	130
Rated breaking capacity cos φ to IEC 60947-3		A	
230 V		A	100
400/415 V		A	110
500 V		A	80
690 V		A	60
Safe isolation to EN 61140		^	
between the contacts		V AC	440
Current heat loss per contact at I _e		W	0.6
Current heat loss per auxiliary circuit at I _e (AC-15/230 V)			
	0	CO	0.6
Lifespan, mechanical	Operations	x 10 ⁶	> 0.4
Maximum operating frequency	Operations/h		1200
AC			
AC-3			
Rating, motor load switch	Р	kW	
220 V 230 V	Р	kW	3
230 V Star-delta	Р	kW	5.5
400 V 415 V	Р	kW	5.5
400 V Star-delta	Р	kW	7.5
500 V	Р	kW	5.5
500 V Star-delta	P	kW	7.5
690 V	P	kW	4
690 V Star-delta	P	kW	5.5
Rated operational current motor load switch			
230 V	l _e	Α	11.5
230 V star-delta	l _e	Α	20
400V 415 V	l _e	Α	11.5
400 V star-delta	I _e	Α	20
500 V	I _e	Α	9
500 V star-delta	I _e	Α	15.6
690 V	I _e	Α	4.9
690 V star-delta	I _e	Α	8.5
AC-23A	·		
Motor rating AC-23A, 50 - 60 Hz	Р	kW	
230 V	P	kW	3
400 V 415 V	P	kW	5.5

Part				
Part Special content neutro load soutch	500 V	P	kW	7.5
200	690 V	P	kW	5.5
400 V15 V	Rated operational current motor load switch			
S00 V	230 V	I _e	Α	13.3
100	400 V 415 V	l _e	Α	13.3
DC-L, Load-barraks workches L/N = 1 ms L/L A 10 Marked operational current L/L A 10 DC-L/L L/L A 10 DC-L/L L/L A 1 Barted operational current L/L A 1 DC-L/L Marked operational current L/L A 10 Barted operational current L/L A 10 Contacts Current L/L A 10 Based operational current L/L A 10 Contacts Current Current Current 10 Based operational current L/L A 10 Contacts Current Current 10 10 Based operational current L/L A 5 Contacts Current Current 10 10 Based operational current L/L A 5 Contacts Current Current 10 11 12	500 V	le	Α	13.3
	690 V	I _e	Α	7.6
DC-1, Load-break switchis LR = 1 ms	DC			
Rated operational current				
Voltage par contact pair in series		ام	Α	10
DC-21A		Ü	V	
Rated aperational current		l _o		
Contacts				1
DC-272A, mater land exelect LR = 15 ms 24 V		'e		
Antition Part Par			quantity	1
Rated operational current				
Contracts			۸	10
ABade operational current		le		
Rated operational current			Quantity	
Contacts				10
Rated operational current I		le		
Rated operational current			Quantity	2
Contacts				
120	Rated operational current	l _e	Α	10
Rated operational current	Contacts		Quantity	3
Contacts Rated operational current Contacts Contacts Contacts DC-13, Control switches L/R = 50 ms Rated operational current Voltage per contact pair in series Control circuit reliability at 24 V DC, 10 mA Paul probability Feath probability Terminal capacities Solid or stranded Fiewhibe with ferrules to DIN 46228 Fiewhibe with ferrules to DIN 46228 Fiewhole with ferrules to PIN 46228 Fiewhole view for terminal screw Terminal capacities Termina	120 V			
A Rated operational current Contacts Rated operational current Rated operational current Voltage per contact pair in series Control circuit reliability at 24 V DC, 10 mA Fault probability Fault pro	Rated operational current	I _e	Α	5
Rated operational current Contacts DC-13. Control switches L/R = 50 ms Rated operational current Voltage per contact pair in series Control circuit reliability at 24 V DC, 10 mA Paul probability Faul probabi	Contacts		Quantity	3
Contacts DC-13, Control switches L/R = 50 ms Rated operational current Voltage per contact pair in series Control circuit reliability at 24 V DC, 10 mA Pault Ferminal capacities Flexible with ferrules to DIN 46228 Flexible with ferrules for terminal screw Technical safety Notes Rated operational voltage	240 V			
BC-13, Control switches L/R = 50 ms Rated operational current Voltage per contact pair in series Control circuit reliability at 24 V DC, 10 mA Fault probability Ferminal Capacities Flexible with ferrules to DIN 46228 Flexible w	Rated operational current	I _e	Α	5
Rated operational current Voltage per contact pair in series Control circuit reliability at 24 V DC, 10 mA Fault probability Fault probabi	Contacts		Quantity	5
Voltage per contact pair in series Control circuit reliability at 24 V DC, 10 mA Fault probability Fault 2.5) 2 x (1 - 2.5) 2 x (0.75 - 2.5) A.5 Fault parameters Fault parame	DC-13, Control switches L/R = 50 ms			
Fount of circuit reliability at 24 V DC, 10 mA Feurinal capacities Flexible with ferrules to DIN 46228 Flexible with ferrules to DIN 46228 Flexible with ferrules to reminal screw Terminal screw Notes Rated parameters: Rated operational voltage Rated operational voltage Main conducting paths General use Auxiliary contacts General Use Pilot Duty Switching capacity Fault (1-2,5) 2 x (1-2,5) 3 1x (0.75 - 2.5) 2 x (0.75 - 2.5) 3 1x (0.75	Rated operational current	I _e	Α	10
Terminal capacities Solid or stranded	Voltage per contact pair in series		٧	32
Solid or stranded mm² 2 x (1 - 2,5) 2x (1 -	Control circuit reliability at 24 V DC, 10 mA		H _F	< 10 ⁻⁵ ,< 1 failure in 100,000 switching operations
	Terminal capacities			
Flexible with ferrules to DIN 46228 Flexible with ferrules to DIN 46228 Freminal screw Frem	Solid or stranded		mm ²	1 x (1 - 2,5) 2 x (1 - 2,5)
Terminal screw	Flexible with ferrules to DIN 46228		2	
Tightening torque for terminal screw Technical safety parameters: Notes Rating data for approved types Contacts Rated operational voltage Rated uninterrupted current max. Main conducting paths General use Auxiliary contacts General Use Pilot Duty Switching capacity Nm 1 Auxiliary capacity Nm 1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN ISO 13849-1, table C1 B10d values as per EN I	TOTAL STATE OF THE		mm-	
Notes 810d values as per EN ISO 13849-1, table C1 Rating data for approved types Contacts 9 V AC 600 Rated uninterrupted current max. Main conducting paths 9 A 16 Auxiliary contacts 9 Iu A 10 Pilot Duty A 10 Switching capacity 9 A 100 Rated uninterrupted current max.	Terminal screw			M3.5
Notes B10d values as per EN ISO 13849-1, table C1 Rating data for approved types Contacts Rated operational voltage Rated uninterrupted current max. Main conducting paths General use Auxiliary contacts General Use Pilot Duty Switching capacity B10d values as per EN ISO 13849-1, table C1 B00d A00 A00 A00 A00 A00 A00 A0	Tightening torque for terminal screw		Nm	1
Rating data for approved types Contacts Rated operational voltage Rated uninterrupted current max. Main conducting paths General use Auxiliary contacts General Use Pilot Duty Switching capacity Ue V AC 600 10 10 AC 600	Technical safety parameters:			
Contacts Rated operational voltage Rated uninterrupted current max. Main conducting paths General use Auxiliary contacts General Use Pilot Duty Switching capacity A 600 P 300 A 600 P 300	Notes			B10 _d values as per EN ISO 13849-1, table C1
Rated operational voltage Rated uninterrupted current max. Main conducting paths General use Auxiliary contacts General Use Pilot Duty Switching capacity AC 600 10 A 600 P 300 A 600 P 300				
Rated uninterrupted current max. Main conducting paths General use Auxiliary contacts General Use Pilot Duty Switching capacity A 600 P 300 A 600 P 300 A 600 P 300			V 4.0	000
Main conducting paths General use Auxiliary contacts General Use Pilot Duty Switching capacity A 16 10 A 10 A600 P 300 P 300		U _e	v AC	bUU .
General use Auxiliary contacts General Use Pilot Duty Switching capacity A 16 A 10 A 600 P 300 B Contact of the con				
Auxiliary contacts General Use Pilot Duty A 600 P 300 Switching capacity A 600 P 300				
General Use Pilot Duty A 10 A 600 P 300 Switching capacity			Α	16
Pilot Duty A 600 P 300 Switching capacity				
Switching capacity P 300		l _U	Α	10
	Pilot Duty			
Maximum motor rating	Switching capacity			
	Maximum motor rating			

HP	0.5
HP	1
HP	1.5
HP	3
HP	3
HP	7.5
HP	7.5
SCCR	
kA	5
А	50
kA	10
А	20, Class J
AWG	18 - 14
	M3.5
lb-in	8.8
	HP HP HP HP SCCR kA A kA A

Design verification as per IEC/EN 61439

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Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	20
Heat dissipation per pole, current-dependent	P _{vid}	W	0.6
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 switch gear must be observed. $\label{eq:constraint}$
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) / Control switch (EC002611)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Control switch (ecl@ss10.0.1-27-37-14-14 [ACN998011])

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 0 (off) position		Yes
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		48x48 mm
Degree of protection (IP), front side		IP65
Degree of protection (NEMA), front side		12

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

