



## T Cam Switches

### Technical Data

		T0-...	T3-...	T5B-...
<b>General</b>				
Standards		UL, CSA, IEC/EN 60 947, VDE 0660 IEC/EN 60 204 Switch-disconnectors to IEC/EN 60 947-3  Load-break switch to IEC/EN 60 947-3 		
Mechanical lifespan, max. operating frequency	Operations ops./h	> 10 <sup>6</sup> 3000	5 × 10 <sup>5</sup> 3000	5 × 10 <sup>5</sup> 3000
Climatic proofing		Damp heat, constant, to IEC 60 068-2-3 Damp heat, cyclical, to IEC 60 068-2-30		
Ambient temperature	open	min./max.	°C	-25/+50
	enclosed	min./max.	°C	-25/+40
Mounting position		as required		
Dimensions		→ page 07/076		→ page 07/081
Weight		→ page 14/020		
Mechanical shock resistance (shock duration 20 ms)	g	> 15	> 15 <sup>2)</sup>	> 15
<b>Main contact rating per IEC/EN 60 947</b>				
Rated operational voltage $U_e$	V AC	690 <sup>3)</sup>	690 <sup>3)</sup>	690
Rated impulse withstand voltage $U_{imp}$	V	6000	6000	6000
Overvoltage category / degree of pollution		III/3	III/3	III/3
Rated uninterrupted current $I_u$ open and enclosed with max. cable connected	A	20	32	63
Load-carrying capacity in intermittent operation, Class 12, AB 60/40/25	% DF	1,3/1,6/2 × $I_e$		
Short circuit rating max. fuse	A gL/gG	20	25	80
Rated short time withstand current (1-s current) $I_{cw}$	A <sub>eff</sub>	320	650	1300
Safe isolation between contacts to VDE 0106 part 101 and part 101 A1	V AC	440	440	440
Protection against direct contact		Finger and back-of-hand proof to VDE 0106 part 100		
<b>Universal device ratings</b>				
Switching angles		90°/60°/45°/30°		
Contact chambers	max.	11	11	10
Double break contacts	max.	22	22	20
Current heat loss per contact at $I_e$	W	0.6	1.1	4.5
<b>Main contact rating per UL/CSA</b>				
Rated operational voltage	V AC	600	600	600
Rated uninterrupted current (general use)	A	14	25	65
<b>Terminal capacity per IEC/EN 60 947</b>				
Solid or stranded <sup>1)</sup>	mm <sup>2</sup>	1 × (1 – 2.5)	1 × (1 – 6)	1 × (2.5 – 35)
	mm <sup>2</sup>	2 × (1 – 2.5)	2 × (1 – 6)	2 × (2.5 – 16)
Flexible with ferrule <sup>1)</sup> (ferrule to DIN 46 228)	mm <sup>2</sup>	1 × (0.75 – 1.5)	1 × (0.75 – 4)	1 × (1.5 – 25)
	mm <sup>2</sup>	2 × (0.75 – 1.5)	2 × (0.75 – 4)	2 × (1.5 – 10)
Terminal screw (metric)		M3,5	M4	M6
Max. tightening torque	Nm	1	1.6	4
<b>Terminal capacity per UL/CSA</b>				
Cu cable	AWG	18 ... 14	14 ... 10	12 ... 4
Tightening torque	Nm	1	2	4

**Notes:**

- <sup>1)</sup> T0(3)-...: maximum 2 sizes difference admissible between two conductors  
T5B-...: maximum 1 size difference admissible between two conductors
- <sup>2)</sup> T3-.../I... > 12 g
- <sup>3)</sup> Isolating characteristics to IEC/EN 60 947 for mounting form .../SVB up to 500 V AC.

## T Cam Switches

### Technical Data

				T0-...	T3-...	T5B-...
<b>Switching capacity per IEC/EN 60 947</b>						
<b>AC</b>						
	Rated making capacity	$\cos \varphi = 0,35$	A	130	320	800
	Rated breaking capacity	230 V AC, $\cos \varphi = 0,35$	A	100	260	520
	Motor load switches	400 V AC, $\cos \varphi = 0,35$	A	110	260	600
		500 V AC, $\cos \varphi = 0,35$	A	80	240	480
		690 V AC, $\cos \varphi = 0,35$	A	60	170	340
AC-21A	Load-break switches	Rated operational current $I_e$ 440 V	A	20	32	63
AC-3	Motor load switches, for operational switching, star-delta values Y $\Delta$ : Y $\Delta$ -switches without automatic spring-return	230 V	kW	1	1.8	5
		230 V, Y $\Delta$	kW	4	11	22
		400 V	kW	1.3	3.6	7.3
		400 V, Y $\Delta$	kW	5.5	18.5	37
		500 V	kW	5.5	15	22
		500 V, Y $\Delta$	kW	7.5	22	37
AC-23A	Motor load switches (main switches, maintenance switches)	230 V	kW	3.5	7.5	15
		400 V	kW	6.5	13	22
		500 V	kW	7.5	15	22
		690 V	kW	–	–	22
AC-15	Control switches	Rated operational current $I_e$ 230 / 400 / 500 V	A	6/4/2	10/6/4	16/6/4
<b>DC</b>						
DC-1	Load-break switches L/R = 1 ms	Rated operational current $I_e$	A	10	25	63
		Voltage per contact pair in series	V	60	60	60
DC-21A		240 V	A	1 (1)	1 (1)	–
DC-23A	Motor load switches L/R = 15 ms	24 V	A	10 (1)	25 (1)	50 (1)
		48 V	A	10 (2)	25 (2)	50 (2)
		60 V	A	10 (3)	25 (3)	50 (3)
		120 V	A	5 (3)	12 (3)	25 (3)
		240 V	A	5 (5)	5 (5)	20 (6)
DC-13	Control switches L/R = 50 ms	Rated operational current $I_e$	A	10	20	25
		Voltage per contact pair in series	V	32	32	24
		Control circuit reliability at 24 V DC, 10 mA	Fault probability	H <sub>F</sub>	< 10 <sup>-5</sup> , < 1 fault in 100000 operations	
<b>Short-circuit current rating per UL/CSA</b>						
Manual motor controller	with backup fuse	600 V AC	kA	5	5	5
			A	50	80	Class J
			Type	NZM(H)6(B) <sup>1)</sup>	NZM(H)6(B) <sup>1)</sup>	–
			circuit breaker current rating	A	50	125
Motor disconnect	with backup fuse	600 V AC	kA	10	10	–
			Class	20 A/J	40 A/J	–

Notes:

<sup>1)</sup> Consult section 09 of this catalog for more information on the type NZM(H)6(B) circuit breakers

## P Motor Disconnect Switches

### Technical Data

				P1-25	P1-32	P3-63	P3-100
<b>General</b>							
Standards				UL, CSA, IEC/EN 60 947, VDE 0660, IEC/EN 60 204 Switch-disconnector to IEC/EN 60 947-3			
Mechanical lifespan		operations		$3 \times 10^5$	$3 \times 10^5$	$10^5$	$10^5$
Max. switching frequency			ops./h	50	50	50	50
Climatic proofing				Damp heat, constant, to IEC 60 068-2-3 Damp heat, cyclical, to IEC 60 068-2-30			
Ambient temperature		open	min./max.	°C	-25/+50	-25/+50	-25/+50
		enclosed	min./max.	°C	-25/+40	-25/+40	-25/+40
Mounting position				as required			
Dimension				→ page 07/083			
Weight				→ page 14/020			
Mechanical shock resistance (half-sinusoidal shock 20 ms)			g	15	15	15	15
<b>Main contact ratings per IEC/EN 60 947</b>							
Rated operational voltage $U_e$			V AC	690	690	690	690
Rated impulse withstand voltage $U_{imp}$			V	6000	6000	6000	6000
Overvoltage category / degree of pollution				III/3	III/3	III/3	III/3
Rated uninterrupted current $I_u$ with max. cable connected			A	25	32	63	100
Load-carrying capacity in intermittent operation Class 12, AB 60/40/25 % DF			$\times I_e$	1.3/1.6/2	1.3/1.6/2	1.3/1.6/2	1.3/1.6/2
Short-circuit rating		max. fuse	A gL/gG	25	50	80	100
Rated short-time withstand current (1-s current) $I_{cw}$			$A_{eff}$	640	640	1260	2000
Isolating characteristics to IEC/EN 60 947			up to V AC	≤ 690	≤ 690	≤ 690	≤ 690
Safe isolation to VDE 0106 part 101 and part 101 A1 between the main contacts and the auxiliary contacts			V AC	440	440	440	440
<b>Universal device ratings</b>							
Protection against direct contact				Finger and back-of-hand proof to VDE 0106 part 100			
Switching angle				90°	90°	90°	90°
Main contacts (current paths)			max.	max. 3 (+N)	max. 3 (+N)	max. 3 (+N)	max. 3 (+N)
Current heat loss per contact at $I_e$			W	1.1	1.8	4.5	7.5
<b>Main contact rating per UL/CSA</b>							
Rated operational voltage			V AC	600	600	600	600
Rated uninterrupted current (general use)			A	20	30	60	100
<b>Terminal capacity per IEC/EN 60 947</b>							
Solid or stranded <sup>1)</sup>			mm <sup>2</sup>	1 × (1.5 – 6)	1 × (1.5 – 6)	1 × (2.5 – 35)	1 × (2.5 – 35)
			mm <sup>2</sup>	2 × (1.5 – 6)	2 × (1.5 – 6)	2 × (2.5 – 10)	2 × (2.5 – 10)
Flexible, with ferrule <sup>1)</sup> (ferrule to DIN 46 228)			mm <sup>2</sup>	1 × (1 – 4)	1 × (1 – 4)	1 × (1.5 – 25)	1 × (1.5 – 25)
			mm <sup>2</sup>	2 × (1 – 4)	2 × (1 – 4)	2 × (1.5 – 6)	2 × (1.5 – 6)
Terminal screw (metric)				M4	M4	M5	M5
Max. tightening torque			Nm	1.6	1.6	3	3
<b>Terminal capacity per UL/CSA</b>							
Cu cable			AWG	14 ... 8	14 ... 8	14 ... 3	14 ... 3
Tightening torque			Nm	1.6	1.6	3	3

**Notes:** Main switch characteristics to IEC/EN 60 204;  
positive opening of contacts, operator element positively located on shaft

<sup>1)</sup> P1-...: max. 2 cross-section size difference  
admissible when using two conductors  
P3-...: max. 1 cross-section size difference  
admissible when using two conductors

## P Motor Disconnect Switches

### Technical Data

				P1-25	P1-32	P3-63	P3-100
<b>Switching capacity</b>							
<b>AC</b>							
	Rated making capacity	$\cos \varphi = 0,35$	A	240	320	800	950
	Rated breaking capacity	230 V AC, $\cos \varphi = 0,35$	A	190	260	640	760
	Motor load switches	400 V AC, $\cos \varphi = 0,35$	A	150	300	600	740
		500 V AC, $\cos \varphi = 0,35$	A	170	290	590	880
		690 V AC, $\cos \varphi = 0,35$	A	150	250	340	520
AC-21A	Load break switches	Rated operational current 440 V	A	25	32	63	100
AC-3	Motor load switches for operational switching	230 V	kW	5,5	7,5	15	22
		400 V	kW	7,5	13	30	37
		500 V	kW	7,5	18,5	30	45
		690 V	kW	7,5	15	30	37
AC-23A	Motor load switches (main switches, maintenance switches)	230 V	kW	7	8,5	18,5	30
		400 V	kW	13	15	37	50
		500 V	kW	11	18,5	37	65
		690 V	kW	11	18,5	30	75
<b>DC</b>							
DC-1	Load-break switches L/R = 1 ms	Rated operational current $I_e$	A	25	32	63	100
		Voltage per contact pair in series	V	60	60	60	60
DC-23A	Motor load switches L/R = 15 ms	24 V	A	25 (1)	25 (1)	50 (1)	50 (1)
		48 V	A	25 (2)	25 (2)	50 (2)	50 (2)
		60 V	A	25 (3)	25 (3)	50 (3)	50 (3)
		120 V	A	12 (3)	12 (3)	25 (3)	25 (3)
	Figures in parentheses: number of contacts to be switches in series)						
<b>Short-circuit current ratings per UL/CSA</b>							
Manual motor controller	600 V AC		kA	5	5	10	10
		with backup fuse	A	110	110	150	150
		with circuit breaker	Type	NZM(H)6(B) <sup>1)</sup>			
	Circuit breaker current rating	A	125				
Motor disconnect	600 V AC		kA	10	10	10	10
		with backup fuse	Class	50 A/J	50 A/J	100 A	100 A
				N-P1...	N-P3...		
<b>Switched neutral</b>							
	Switching capacity			as P1-32		as P3-100	
				<b>HI11-P1/P3</b>			
<b>Auxiliary contacts</b>							
<b>IEC ratings</b>							
	Standards			Control circuit isolator to IEC/EN 60 947-5 →			
	Rated insulation voltage $U_i$	V AC		500			
	Rated uninterrupted current $I_u$ with max. cable connected	A		10			
	Rated operational current $I_e$ AC-15 at 230/380 – 415/500 V	A		6/4/3			
	Short-circuit rating without welding, max. fuse	A gL/gG		10			
	Terminal capacity	solid	mm <sup>2</sup>	0.75 – 2.5			
		stranded with ferrule	mm <sup>2</sup>	0.5 – 1.5			
	Max. tightening torque	Nm		0,6			
	Control circuit reliability at 24 V DC, 10 mA	Fault probability	$H_F$	< 10 <sup>-5</sup> , < 1 fault in 100000 operations			
<b>UL/CSA ratings</b>							
	Rated operational voltage	V AC		600			
	Rated continuous current (general use)	A		10			
	Pilot Duty	A		A 600, P 600			

Notes: 1) Consult section 09 of this catalog for more information on NZM(H)6(B) circuit breakers