

# Switch-Disconnectors

Susol

## TD series



Frame size	[AF]	
Conventional thermal current, I <sub>th</sub>	[A]	
No. of poles		
Rated operational voltage, U <sub>e</sub>	AC	[V]
	DC	[V]
Rated operational current, I <sub>e</sub>		
Rated impulse withstand voltage, U <sub>imp</sub>	[kV]	
Rated insulation voltage, U <sub>i</sub>	[V]	
Rated short-circuit making capacity, I <sub>cm</sub>	[kA peak]	
Rated short-time withstand current, I <sub>cw</sub>	1s	[A rms]
	3s	[A rms]
	20s	[A rms]
Isolation behavior		
Trip unit (release)	DSU	
Connection	fixed	front-connection
		rear-connection
	plug-in	front-connection
		rear-connection
Mechanical life	[operations]	
Electrical life @415 V AC	[operations]	
Basic dimensions, W×H×D (front connection)	3-pole	[mm]
	4-pole	[mm]
Weight (front connection)	3-pole	[kg]
	4-pole	[kg]
Reference standard		

TD160NA	TS100NA	TS160NA
160	100	160
160	100	160
2, 3, 4	2, 3, 4	2, 3, 4
690	690	690
500	500	500
160	100	160
8	8	8
750	750	750
3.1	2.8	3.6
2200	2000	2500
2200	2000	2500
960	690	960
●	●	●
●	●	●
●	●	●
●	●	●
●	●	●
25000	25000	25000
10000	10000	10000
90×140×86	105×160×86	105×160×86
120×140×86	140×160×86	140×160×86
1.5	2	2
1.8	2.6	2.6
IEC60947-3	IEC60947-3	IEC60947-3

The switch-disconnectors are different from the circuit-breakers in the absence of the conventional protection unit. They keep the overall dimensions, connection systems and accessories unchanged from the corresponding circuit-breakers. Installation standards require upstream protection. However, thanks to their high-set magnetic release, TD160 ... TS800 DSU are self protected.

# Switch-Disconnectors

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## TS series



TS250NA	TS400NA	TS630NA	TS800NA
250	400	630	800
250	400	630	800
2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4
690	690	690	690
500	500	500	500
250	400	630	800
8	8	8	8
750	750	750	750
4.9	7.1	8.5	12
3500	5000	6300	8000
3500	5000	6300	8000
1350	1930	2320	2560
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
●	●	●	●
25000	20000	20000	10000
10000	6000	6000	3000
105 × 160 × 86	140 × 260 × 110	140 × 260 × 110	210 × 320 × 135
140 × 160 × 86	186.5 × 260 × 110	186.5 × 260 × 110	280 × 320 × 135
2	5.4	5.4	15.1
2.6	7.2	7.2	19.6
IEC60947-3	IEC60947-3	IEC60947-3	IEC60947-3

Trip unit identification



# Susol MCCB for DC Application

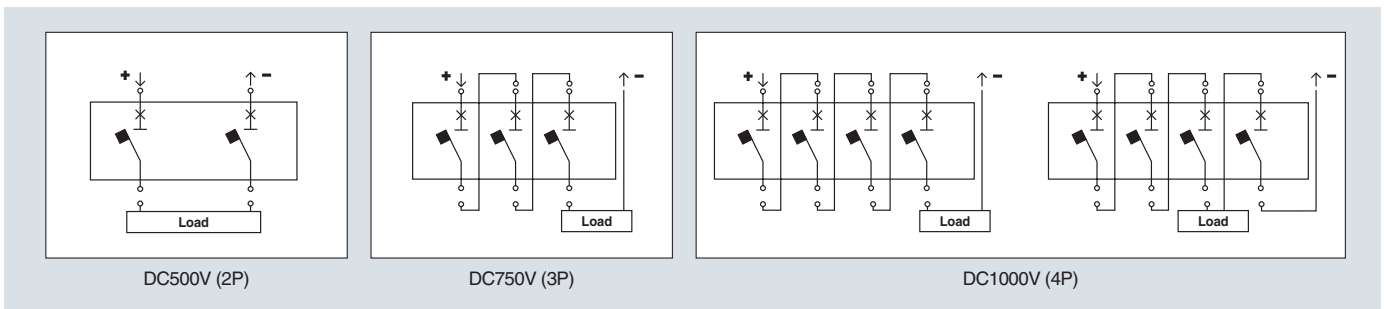
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- Susol MCCB is suitable for DC application such as Photovoltaic Circuit Breaker, UPS and datacenter
- DC short circuit test tested by VDE
- Higher nominal voltage range up to 1000 VDC
- Rated Current : 16A~800A
- No of Pole: 2/3/4Pole
- Available for AC/DC application



		TD100	TD160	TS100	TS160	TS250	TS400	TS630	TS800
Frame size (AF)		100	160	100	160	250	400	630	800
Rated current, In (A)		16, 20, 25, 32, 40, 50, 63, 80, 100	100, 125, 160	40, 50, 63, 80, 100	100, 125, 160	125, 160, 200, 250	300, 400	500, 630	700, 800
No. of Poles (Pole)		2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4
Rating (DC)	1000V	4P	4P	4P	4P	4P	4P	4P	4P
	750V	3P	3P	3P	3P	3P	3P	3P	3P
	500V	2P	2P	2P	2P	2P	2P	2P	2P
Rated service breaking (DC)	Type	N H L N H L	N H L N H L	N H L N H L	N H L N H L	N H L N H L	N H L N H L	N H L N H L	N H L N H L
	1000V (4P)	42 65 100 42 65 100	50 85 100 50 85 100	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50
	750V (3P)	42 65 100 42 65 100	50 85 100 50 85 100	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50
	500V (2P)	42 65 100 42 65 100	50 85 100 50 85 100	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50	85 100 50 85 100 50
Trip unit									
	FTU (fixed-thermal, fixed-magnetic)	●	●	●	●	●	●	●	●
	FMU (adjustable-thermal, fixed-magnetic)	●	●	●	●	●	●	●	●
	ATU (adjustable-thermal, adjustable-magnetic)	-	-	-	-	-	●	●	●

## Exemplary circuit diagrams



# 4 pole MCCB with electronic trip unit

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## Products application & Function

- N-R-S-T and R-S-T-N Type for consideration of application field
- Full line up with 100~800AF
- 4P4D for N phase protection type
- Max. breaking capacity 150kA@415V
- KEMA type test and CE certification



Designation		TS100, TS160, TS250			TS400, TS630			TS800		
Type		N / H / L			N / H / L			N / H / L		
Rated current		40, 80, 160, 250A			160, 250, 400, 630A			630, 800A		
Poles		4 (N-R-S-T, R-S-T-N)			4 (N-R-S-T, R-S-T-N)			4 (N-R-S-T, R-S-T-N)		
Insulation voltage, Ui		AC750V			AC750V			AC750V		
Impulse withstand voltage, Uimp		8kV			8kV			8kV		
Short-circuit breaking capacity, Icu		N	H	L	N	H	L	N	H	L
AC 50/60Hz	220/240V	100	120	200	100	120	200	100	120	200
	380/415V	50	85	150	50	85	150	50	85	150
	440/460V	50	70	130	50	70	130	50	70	130
	480/500V	42	65	85	42	65	85	42	65	85
	660/690V	10	15	20	10	15	20	10	15	20
Ics		100% Icu			100% Icu			100% Icu		
Utilization category		A			A			A		
Reverse connection (Line/Load)		Available			Available			Available		
Tripping device		Electronics			Electronics			Electronics		
		ETS			ETS & ETM			ETS & ETM		
Thermal	Io, Ir	ETS: Ir = 0.4~1.0 × In (13settings)			ETS: Ir = 0.4~1.0 × In (13settings)			ETS: Ir = 0.4~1.0 × In (13settings)		
					ETM: Io = 0.5~1.0 × In (6settings) Ir = 0.8~1.0 × Io (5settings)			ETM: Io = 0.5~1.0 × In (6settings) Ir = 0.8~1.0 × Io (5settings)		
	tr (6lr)	ETS: 6sec at 6lr (fixed)			ETS: 6sec at 6lr (fixed)			ETS: 6sec at 6lr (fixed)		
					ETM: 12sec at 6lr (5settings)			ETM: 12sec at 6lr (5settings)		
Instant.	Im	ETS: 1.5~10 × Ir (9settings)			ETS, ETM: 1.5~10 × Ir (9settings)			ETS, ETM: 1.5~10 × Ir (9settings)		
	It	12 × In			12 × In			12 × In		
Neutral protection	4P3d	No protection			No protection			No protection		
	4P3d+N/2	0.5 × Ir			0.5 × Ir			0.5 × Ir		
	4P4d	1.0 × Ir			1.0 × Ir			1.0 × Ir		
Cable	Min	10mm <sup>2</sup> or 8 AWG(40A)			70mm <sup>2</sup> (160A)			185mm <sup>2</sup> × 2 / 350 kcmil × 2(630A)		
	Max	120mm <sup>2</sup> or 250kcmil(250A)			185mm <sup>2</sup> × 2 / 350 kcmil × 2(630A)			240mm <sup>2</sup> × 2(800A)		
Tightening Torque		Hex.Socket bolt (M8): 6N.m			Hex.Socket bolt (M10): 10N.m			Hex. Socket bolt (M12): 14N.m		
MCCB (W × H × D)		140 × 160 × 86			186.5 × 260 × 110			280 × 320 × 135		

\* Breaking capacity at 660/690V is for your reference. (not certified)

# MCCBs for power distribution up to 1600A

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## Electrical characteristics



Type			
Ampere frame			
Pole			
Rated current, (A)	In	-5~40°C	
		50°C	
		65°C	
Rated insulation voltage, (V)	Ui		
Rated impulse withstand voltage, (kV)	Uimp		
Rated operational voltage, (V)	Ue	AC50/60Hz	
		DC	
Rated short-circuit breaking capacity			
IEC60947-2 AC50/60Hz (sym)	Rated ultimate short-circuit breaking capacity, (kA) (Icu)	220/240V	
		380/415V	
		440/460V	
		480/500V	
		660/690V	
		DC	
		250V 2P	
		500V 2P	
		750V 3P	
Rated service breaking capacity (Ics)	%Icu		
Rated short-circuit making capacity (kA) (Icw)	AC50/60Hz	1s	
		3s	
Overriding instantaneous protection		kA peak	
Isolation			
Category			
(Life cycle)	Mechanical life (operations)		
	Electrical life (operations)	440V	In/2
			In
	690V	In/2	
In			
Pollution degree			
Dimension (mm)		3-pole	
(H×W×D)		4-pole	
Weight (kg)		3-pole	
		4-pole	





TS1000			TS1250			TS1600		
TS1000			TS1250			TS1600		
1000			1250			1600		
3, 4			3, 4			3, 4		
800, 1000			1250			1600		
800, 1000			1250			1560		
800, 1000			1250 *			1420		
1000			1000			1000		
8			8			8		
690			690			690		
-			-			-		
N	H	L	N	H	N	H		
55	75	200	55	75	55	75		
50	70	150	50	70	50	70		
50	65	130	50	65	50	65		
40	50	100	40	50	40	50		
35	45	-	35	45	35	45		
-	-	-	-	-	-	-		
-	-	-	-	-	-	-		
-	-	-	-	-	-	-		
100%	75%	100%	100%	75%	100%	75%		
25		12		25		25		
-		-		-		-		
50		30		50		50		
○		○		○		○		
B		A		B		B		
10000		4000		10000		10000		
6000		4000		5000		5000		
5000		3000		4000		2000		
4000		3000		3000		2000		
2000		2000		2000		1000		
3		3		3		3		
			327×210×152.5					
			327×280×152.5					
			13					
			16.8					

Note) \*1250A at 65°C is supported only with vertical connection.

# MCCBs for power distribution up to 1600A

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## Overview

Classification	N type	A type	P type	S type
Externals				
Current protection	• L / S / I / G / Thermal	• L / S / I / G / Thermal • ZSI(Protective coordination)	• L / S / I / G / Thermal(Continuous) • ZSI(Protective coordination)	• P type
Other protection	-	• Earth leakage (Option)	• Earth leakage(Option) • Over/Under current • Over/Under frequency • Unbalance(Voltage/Current) • Reverse power	• P type
Measurement function	-	• Current (R / S / T / N)	• 3 Phase Voltage/Current RMS/Vector • Power(P, Q, S), PF(3-Phase) • Energy(Positive/Negative) • Frequency, Demand	• 3 Phase Voltage/Current RMS/Vector • Power(P, Q, S), PF(3-Phase) • Energy(Positive/Negative) • Frequency, Demand • Voltage/Current harmonics (1st~63th) • 3 Phase Waveforms • THD, TDD, K-Factor
Fine adjustment	-	-	• Fine adjustment for long/short time delay/instantaneous/ ground	• P type
Pre Trip Alarm	-	-	• Overload protection relays : DO (Alarm) (Ground fault is not available when using Pre trip alarm)	• P type
Digital Output	-	• 3DO (Fixed) • L, S/I, G Alarm	• 3DO (Programmable) • Trip, Alarm, General	• P type
IDMTL setting	-	-	• Compliance with IEC60255-3 SIT, VIT, EIT, DT	• P type
Communication	-	• Modbus/RS-485 • Profibus-DP	• Modbus / RS-485 • Profibus-DP	• Modbus / RS-485 • Profibus-DP
Power supply	• Self Power -Power source works over 25% of current of In (one pole)	• Self Power - Power source works over 25% of current of In (one pole) - External power source are required for comm. • AC/DC 100~250V • DC 24~60V	• AC/DC 100~250V • DC 24~60V	• AC/DC 100~250V • DC 24~60V
RTC timer	• Available	• Available	• Available	• Available
LED for trip info.	• Long time delay • Short time delay/Instantaneous • Ground fault	• N type	• N type	• N type
Fault recording	-	• 10 records (Fault/Current/Date and Time)	• 256 records (Fault/Current/Date and Time)	• 256 records • Last fault wave recording (3 Phase)
Event recording	-	-	• 256 records(Content, Status, Date)	• P type
Operating button	• Reset button -	• Reset, Menu Up/Down, Left/Right, Enter	• A type	• A type

Basic protection function(L / S / I / G) is still under normal operation without control power.