Switch-Disconnectors

Susol

			TD series		
					
			TD160NA	TS100NA	TS160NA
Frame size		[AF]	160	100	160
Conventional thermal current, Ith		[A]	160	100	160
No. of poles			2, 3, 4	2, 3, 4	2, 3, 4
Rated operational voltage, Ue	AC	[V]	690	690	690
	DC	[V]	500	500	500
Rated operational current, Ie			160	100	160
Rated impulse withstand voltage,Uimp		[kV]	8	8	8
Rated insulation voltage, Ui		[V]	750	750	750
Rated short-circuit making capacity, Icm		[kA peak]	3.1	2.8	3.6
Rated short-time withstand current, Icw	1s	[A rms]	2200	2000	2500
	3s	[A rms]	2200	2000	2500
	20s	[A rms]	960	690	960
Isolation behavior			●	●	●
Trip unit (release)					
●disconnector unit		DSU	●	●	●
Connection fixed	front-connection		●	●	●
	rear-connection		●	●	●
plug-in	front-connection		●	●	●
	rear-connection		●	●	●
Mechanical life		[operations]	25000	25000	25000
Electrical life @415 V AC		[operations]	10000	10000	10000
Basic dimensions, W×H×D (front connection)	3-pole	[mm]	90×140×86	105×160×86	105×160×86
	4-pole	[mm]	120×140×86	140×160×86	140×160×86
Weight (front connection)	3-pole	[kg]	1.5	2	2
	4-pole	[kg]	1.8	2.6	2.6
Reference standard			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.

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

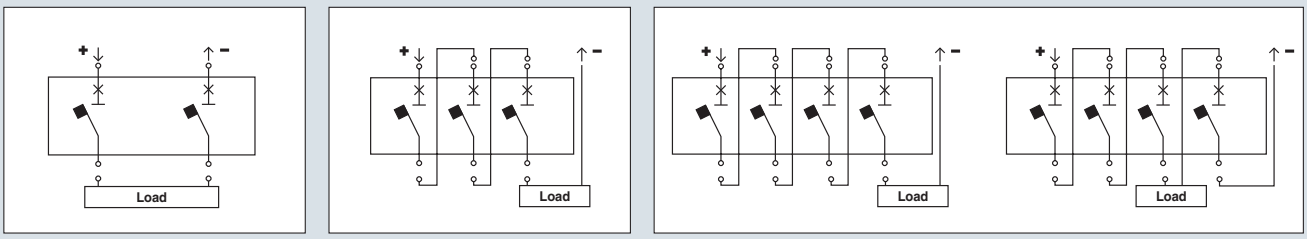
Susol MCCB for DC Application

Susol

- Susol MCCB is sutable 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
	1000V (4P)	42	65	100	42	65	100	50	85	100	50	85	100	50	85	100	50	85	100	50	85	100	50	85	100
	750V (3P)	42	65	100	42	65	100	50	85	100	50	85	100	50	85	100	50	85	100	50	85	100	50	85	100
	500V (2P)	42	65	100	42	65	100	50	85	100	50	85	100	50	85	100	50	85	100	50	85	100	50	85	100
Trip unit																									
FTU (fixed-thermal, fixed-magnetic)		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
FMU (adjustable-thermal, fixed-magnetic)		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
ATU (adjustable-thermal, adjustable-magnetic)		-	-	-	-	-	-	-	-	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Exemplary circuit diagrams



DC500V (2P) DC750V (3P) DC1000V (4P)

4 pole MCCB with electronic trip unit

Susol

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		ETS: Ir = 0.4~1.0 ×In (13settings)			ETS: Ir = 0.4~1.0 ×In (13settings)			ETS: Ir = 0.4~1.0 ×In (13settings)		
	Io, Ir				ETM: Io = 0.5~1.0 ×In (6settings)			ETM: Io = 0.5~1.0 ×In (6settings)		
					Ir = 0.8~1.0 ×Io (5settings)			Ir = 0.8~1.0 ×Io (5settings)		
	tr (6Ir)	ETS: 6sec at 6Ir (fixed)			ETS: 6sec at 6Ir (fixed)			ETS: 6sec at 6Ir (fixed)		
					ETM: 12sec at 6Ir (5settings)			ETM: 12sec at 6Ir (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	10mm² or 8 AWG(40A)			70mm²(160A)			185mm² ×2 / 350 kcmil ×2(630A)		
	Max	120mm² or 250kcmil(250A)			185mm² ×2 / 350 kcmil ×2(630A)			240mm² ×2(800A)		
Tighetning 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)

Electrical characteristics

				TS1000			TS1250		TS1600	
Type				TS1000			TS1250		TS1600	
Ampere frame				1000			1250		1600	
Pole				3, 4			3, 4		3, 4	
Rated current,(A)		In	-5~40°C	800, 1000			1250		1600	
			50°C	800, 1000			1250		1560	
			65°C	800, 1000			1250 *		1420	
Rated insulation voltage, (V)		Ui		1000			1000		1000	
Rated impulse withstand voltage, (kV)		Uimp		8			8		8	
Rated operational voltage, (V)		Ue	AC50/60Hz	690			690		690	
			DC	-			-		-	
Rated short-circuit breaking capacity				N	H	L	N	H	N	H
IEC60947-2	Rated ultimate short-circuit		220/240V	55	75	200	55	75	55	75
AC50/60Hz	breaking capacity, (kA) (Icu)		380/415V	50	70	150	50	70	50	70
(sym)			440/460V	50	65	130	50	65	50	65
			480/500V	40	50	100	40	50	40	50
			660/690V	35	45	-	35	45	35	45
		DC	250V 2P	-	-	-	-	-	-	-
			500V 2P	-	-	-	-	-	-	-
			750V 3P	-	-	-	-	-	-	-
	Rated service breaking capacity (Ics)	%Icu		100%	75%	100%	100%	75%	100%	75%
	Rated short-circuit making capacity (kA) (Icw)	AC50/60Hz	1s	25		12	25		25	
			3s	-			-		-	
Overriding instantaneous protection			kA peak	50		30	50		50	
Isolation				○			○		○	
Category				B		A	B		B	
	Mechanical life (operations)			10000		4000	10000		10000	
(Life cycle)	Electrical life	440V	In/2	6000		4000	5000		5000	
	(operations)		In	5000		3000	4000		2000	
		690V	In/2	4000		3000	3000		2000	
			In	2000		2000	2000		1000	
Pollution degree				3			3		3	
Dimension (mm)			3-pole	327×210×152.5						
(H×W×D)			4-pole	327×280×152.5						
Weight (kg)			3-pole	13						
			4-pole	16.8						

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

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