



LSIS Electric Products

MCB / MC&TOR / MMS / MCCB / ACB / FDB / SMDB / VCB

Miniature Circuit Breakers

Page 4

- 1, 2, 3 and 4 pole series up to 125AF
- B, C and D Characteristics

Residual Current Circuit Break

Page 6

- 2 and 4 pole series up to 100AF
- Sensitivity up to 300mA
- Overcurrent protection type available

Surge Protective Device

Page 8



Contactors & Overload Relays

Page 12

Metasol series

- 3 and 4 pole series up to 800AF Mini-contactors available
- AC/DC common use coil from 150AF
- Thermal (Bimetallic) and electronic type overload relays are available
- CE marked and UL approved

Mini contactors

Page 20

Digital motor protection relay

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Manual Motor Starters

Page 22



Molded Case Circuit Breakers

Page 24

Susol/Metasol series

- 2, 3 and 4 pole series up to 1600AF
- Rated ambient temperature at 40 °C calibrated for 50 °C available
- CE marked according to IEC standard and UL approved MCCBs are also available.

Earth Leakage Circuit Breakers

Page 32

Metasol series

- 2, 3 and 4 pole series up to 1200AF
- CE marked according to IEC standard



Air Circuit Breakers

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Susol/Metasol series

- 65, 85 and 150kA breaking capacity
- High functional digital trip relays
- CE marked and Marine classification

LS Final Distribution Boards

Page 42

LS SMDB Solution

Page 46

Vacuum Circuit Breakers

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Susol series

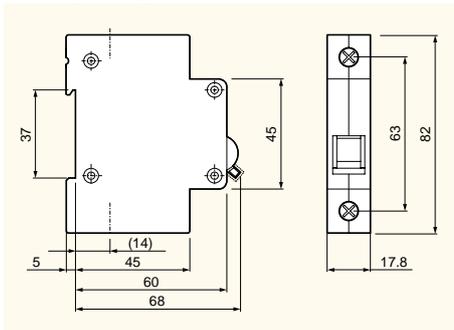


Miniature circuit breakers

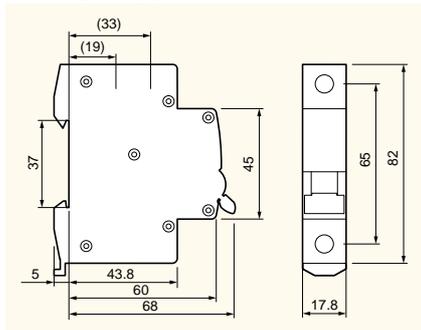
1, 2, 3 and 4 pole series up to 125AF

Type	MCB			
	BKN		BKN-b	
Protection	Overload and short circuit		Overload and short circuit	
Rated current	1, 2, 3, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63A		1, 2, 3, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63A	
Characteristic	B, C, D curve		B, C, D curve	
Poles	1p, 1p+N, 2p, 3p, 3p+N, 4p		1p, 1p+N, 2p, 3p, 3p+N, 4p	
Breaking capacity	1pole	2-4pole	1pole	2-4pole
	1A-63A 6kA at 230/400VAC	1A-63A 6kA at 400VAC	1A-63A 10kA at 240/415VAC	1A-63A 10kA at 415VAC
Standard	IEC 60898/60947-2		IEC 60898/60947-2	
Approval	CCC, SABS, SEMKO CB		KEMA CB, SABS, SEMKO CB, UL 1077 †	
Type of trip	Thermal magnetic release		Thermal magnetic release	
Electrical endurance	6000 operations		8000 operations	
Mount	On 35mm DIN rail		On 35mm DIN rail	
Width	17.8mm per pole		17.8mm per pole	
Terminal	Lug type(cable up to 25mm ²)	Dual type(Lug & Screw)	Lug type(cable up to 25mm ²)	
Auxiliary switch, AX				
Optional	 <p>1 changeover contact 6A at 240VAC, 3A at 415VAC(AX) 6A at 230VAC, 3A at 415VAC(AL) 2A at 48VDC, 1A at 125VDC Lug terminal Cable capacity 2.5mm² 9mm wide *Only for BKN</p>		 <p>1 changeover contact 6A at 240VAC, 3A at 415VAC(AX/AL) 6A at 24VDC, 2A at 48VDC, 1A at 130VDC Lug terminal cable capacity 0.75-2.5mm² 8.8mm wide</p>	
Dimension	See drawing 1		See drawing 2	
Characteristic curve	See curve 1		See curve 1	

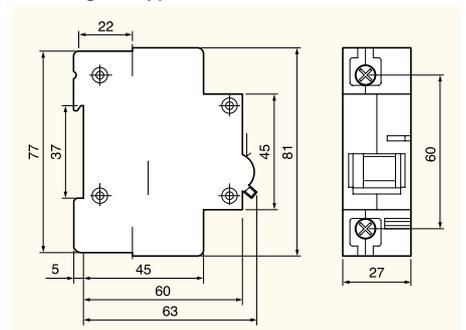
Drawing 1 : Type BKN & BKN-c



Drawing 2 : Type BKN-b



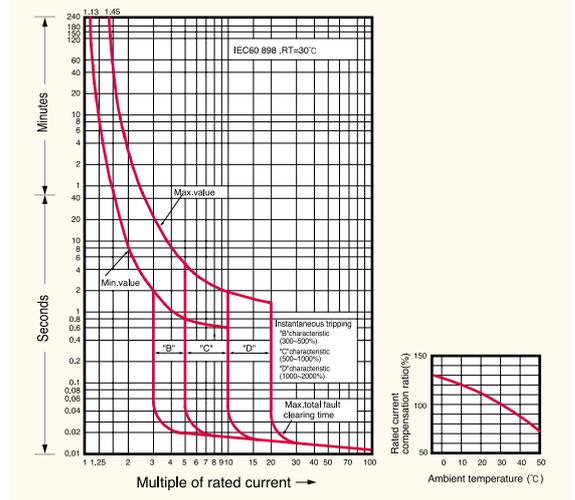
Drawing 3 : Type BKH



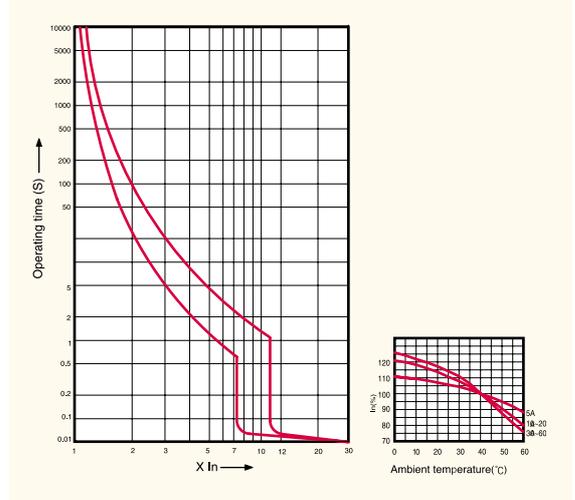


MCB						
BKH		BKP		BF-a	BF-c	BFN
Overload and short circuit		Overload and short circuit		Overload and short circuit		Overload and short circuit
63, 80, 100A, 125A		3, 6, 10, 16, 20, 25, 32A		10~100A		5, 10, 15, 20, 30, 40, 50A
C, D curve		B, C, D curve				
1p, 2p, 3p, 3p+N, 4p		1p+N		1P, 2P, 3P		1P, 2P, 3P
1pole	2~4pole					1pole 2~3pole
63A~125A 10kA at 230/400VAC	63A~125A 10kA at 400VAC	3A~32A 4.5kA at 230VAC		10A~100A 10kA at 240VAC 2.5kA at 415VAC	10A~100A 5kA at 240VAC 2.5kA at 415VAC	5A~50A 10kA at 230VAC 10kA at 400VAC
IEC 60947-2	IEC 60898	IEC 60947-2		IEC 60947-2		IEC 60947-2
CCC, CQC CB †	CCC, CQC CB					SEMKO
Thermal magnetic release	Thermal magnetic release	Thermal magnetic release		Thermal magnetic release		Thermal magnetic release
6000 operations	20000 operations	10000 operations		10000 operations		10000 operations
On 35mm DIN rail	On 35mm DIN rail	Holder mounting (Bolt on with fixing brackets)		Plug-in		Plug-in
27mm per pole	17.8mm per pole	25mm per pole		25mm per pole		25mm per pole
Lug type(cable up to 50mm ²)	Lug type(cable up to 10mm ²)	Clamp type		Lug type (14-6 AWG.)		
See drawing 3	See drawing 4	See drawing 5		See drawing 6		See drawing 6
See curve 1	See curve 1	-		See curve 2		See curve 2

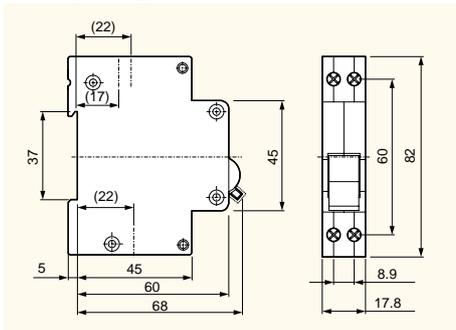
Curve 1 : Type BKN, BKN-b, BKN-c, BKH, BKP, RKP, RKS



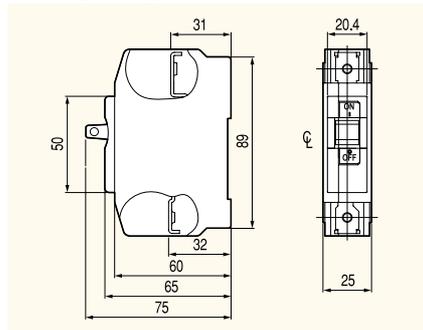
Curve 2 : Type BFN



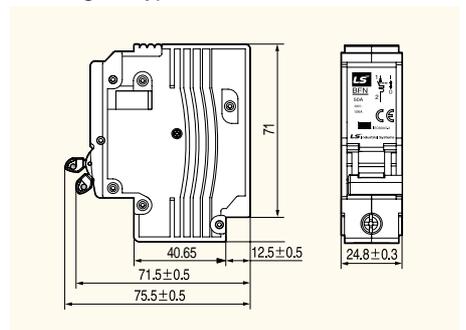
Drawing 4 : Type BKP



Drawing 5 : Type BF-a, BF-c



Drawing 6 : Type BFN

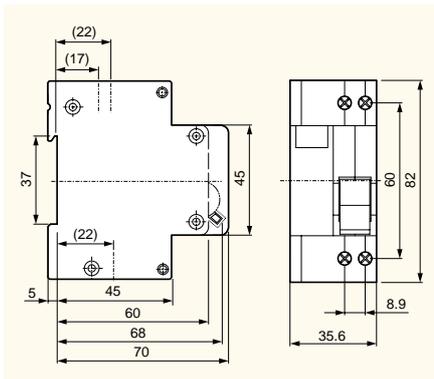


Residual current circuit breakers

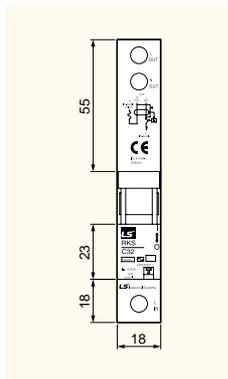
2 and 4 pole series up to 63AF

Type	RCBO							
	RKP	RKS	RKS-b	32KGRc	32KGRd	32GRhc	32GRhd	
Protection	Ground fault and overcurrent		Ground fault and overcurrent		Ground fault and overcurrent		Ground fault and overcurrent	
Rated current, I _n	3(C,D),6,10,16,20,25,32A (B,C,D curve)		6, 10, 16, 20, 25, 32A (B, C curve)		15, 20, 30A		15, 20, 30A	
Rated residual current								
Operating, I _{Δn}	30, 100, 300mA(non-adjustable)		30, 100mA(non-adjustable)		15, 30mA(non-adjustable)		15, 30mA(non-adjustable)	
Non-operating, I _{Δno}	0.5I _{Δn}		0.5I _{Δn}		0.5I _{Δn}		0.5I _{Δn}	
Number of poles	1P+N		1P+N		2 pole		2 pole	
Rated voltage	230VAC		230VAC		110/220VAC		110/220VAC	
Residual current off-time	≤0.1 sec.		≤0.3 sec.		≤0.03 sec.		≤0.03 sec.	
Standard	IEC 61009		IEC 61009		KS		KS	
Approval	CCC, CQC CB, CE		SEMKO CB, CE		-		-	
Type of trip								
Ground fault	Electronic		Electronic		Electronic		Electronic	
Overcurrent	Thermal-magnetic		Thermal-magnetic		Bimetallic		Bimetallic	
Breaking capacity	4.5kA		10kA		1.5kA	2.5kA	1.5kA	2.5kA
Conditional short circuit capacity	-		-		-		-	
Electrical endurance	20000 operations		4000 operations		6000 operations		6000 operations	
Mount	On 35mm DIN rail		On 35mm DIN rail		On 35mm DIN rail / Screw		On 35mm DIN rail / Screw	
Width	35.6mm		18mm		35mm		33mm	
Terminal	Lug type (cable up to 10mm ²)		Lug type (cable up to 10mm ²)		Screw clamp type (cable up to 5.5mm ²)		Screw clamp type (cable up to 5.5mm ²)	
Type of operation	-		-		-		-	
Dimension	See drawing 1		See drawing 2	See drawing 3	See drawing 4		See drawing 5	
Characteristic curve	See page 5(Curve 1)		See page 5(Curve 1)		Curve 3		Curve 4	

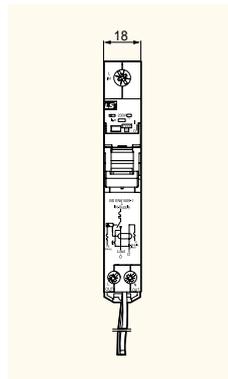
Drawing 1: Type RKP



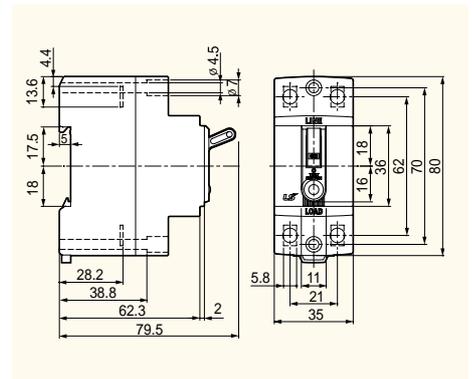
Drawing 2: Type RKS



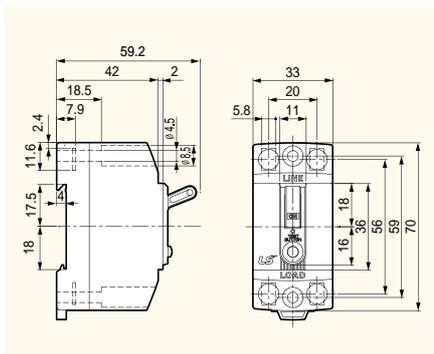
Drawing 3: Type RKS-b



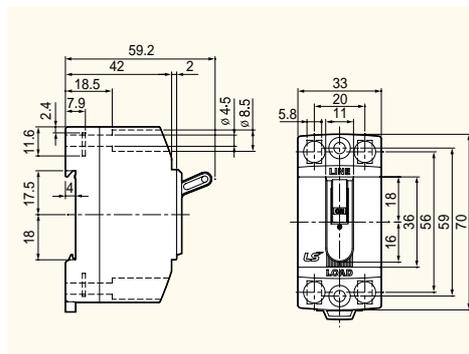
Drawing 4: Type 32KGRc & 32KGRd



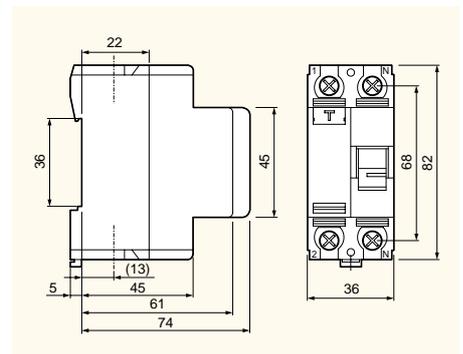
Drawing 5: Type 32GRhc & 32GRhd



Drawing 6: Type BS



Drawing 7: Type RKN

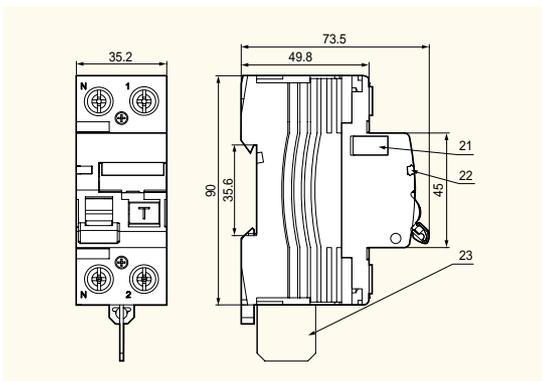




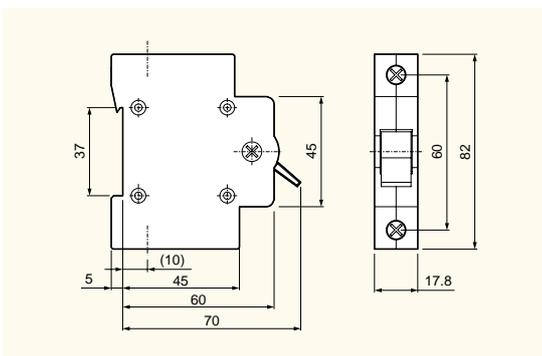
RCCB			
BS32c	BS32d	RKN	RKN-b
Ground fault and overcurrent		Ground fault	
6, 10, 15, 20, 30A	10, 15, 20, 30A	25, 32, 40, 63A	25, 32, 40, 63, 80, 100A
15, 30mA(non-adjustable)		30, 100, 300mA(non-adjustable)	
0.5I Δ n		0.5I Δ n	
2 pole		1P+N, 3P+N	
110/220VAC		230VAC(1P+N), 230/415VAC(3P+N)	
≤0.03 sec.		≤0.1 sec.	
KS C 8321		IEC 61008	
KS		KEMA, CE	SEMCO, CE
Electronic		Electro-magnetic	
Bimetallic		N.A	
1.5kA	2.5kA	-	-
-	-	6kA	10kA
6000 operations		6000 operations	
DIN rail / Screw		On 35mm DIN rail	
33mm		18mm	
Screw clamp type (cable up to 5.5mm ²)		Lug type (cable up to 35mm ²)	
-		A/AC	
See drawing 6		See drawing 7	See drawing 8
-		-	

Isolator	
Type	BKD
Rated current, In	40, 50, 63, 80, 100, 125A
Number of poles	1p, 2p, 3p, 4p
Rated voltage	240/415VAC
Standard	IEC 60947-3
Electrical endurance	40, 50, 63A
	80, 100, 125A
	20000 operations
	10000 operations
Mount	On 35mm DIN rail
Width	17.8mm per pole
Terminal	Lug type(cable up to 50mm ²)
Dimension	See drawing 9

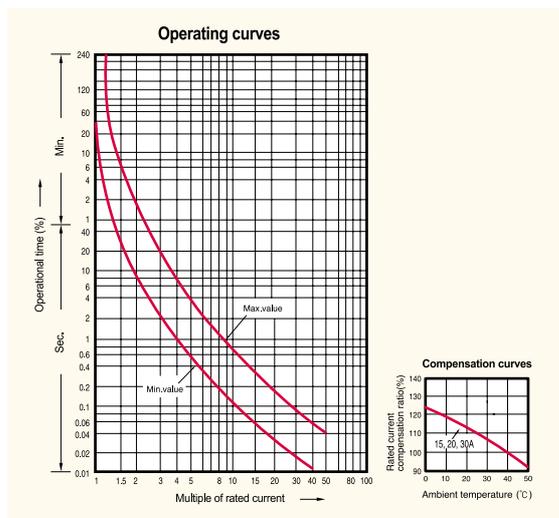
Drawing 8: Type RKN-b



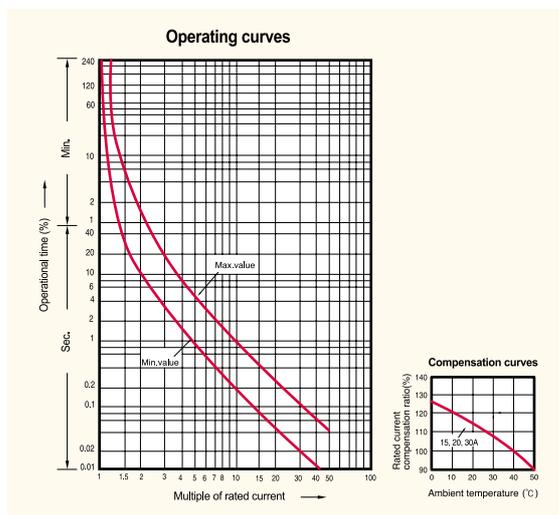
Drawing 9: Type BKD



Curve 3 : Type 32KGRc, 32KGRd



Curve 4 : Type 32GRhc, 32GRhd



BKS Series (Din-rail type)

BKS Series Din-rail type

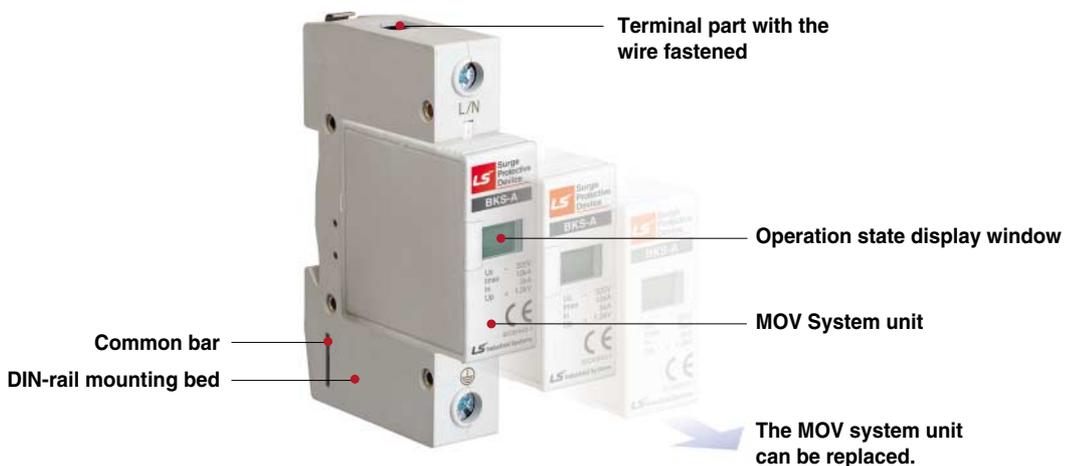
Product description

The BKS surge protective device is applied to the alternating current 50/60Hz power system and provides the protection from the surge overvoltage of an electric system. Moreover, it is the protection element (MOV) replacement type and is the product with convenience and economic efficiency. If the protective device is normal, the display becomes green. The display becomes red after operation (abnormal or after an accident).

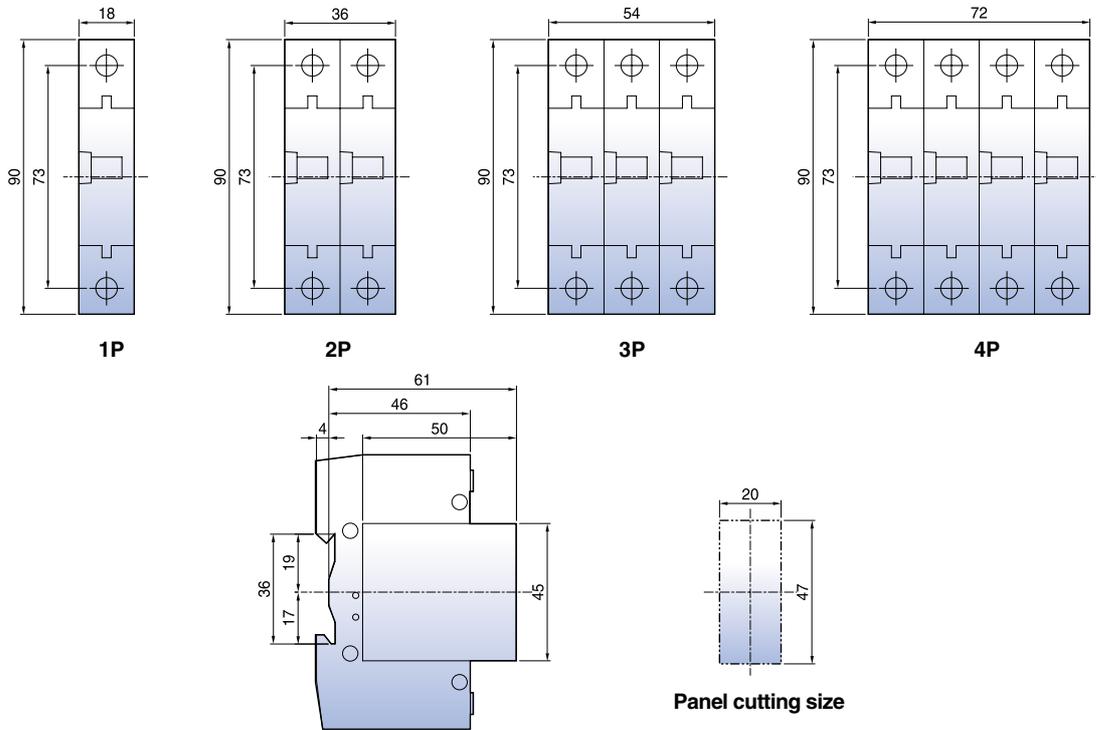


Product rating

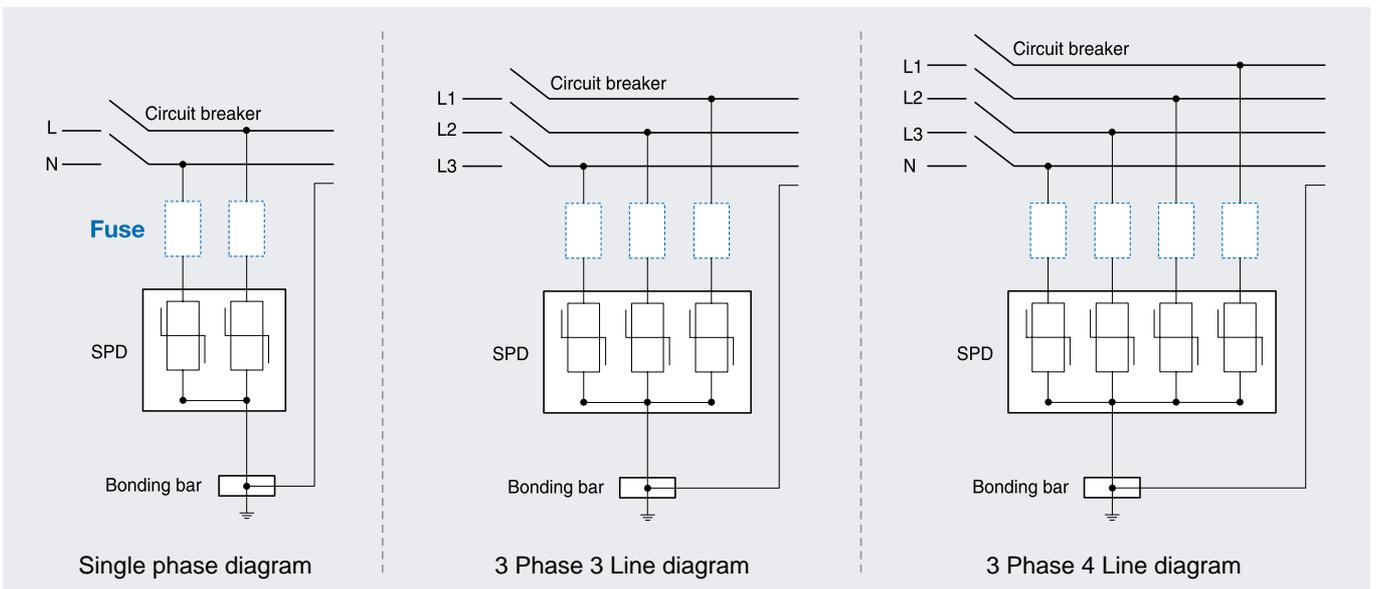
	BKS-A	BKS-B	BKS-C	BKS-D	BKS-E
SPD according to IEC	Class III	Class III	Class II	Class II	Class II
Number of positions [Pole]	1, 2, 3, 4				
Nominal voltage, Un AC [V]	3P4W 380/220, 3P4W 380/440				
Max. continuous operating voltage, Uc AC [V]	320	320	320	420	460
Voltage protection level, Up [kV]	≤ 1.2	≤ 1.2	≤ 1.5	≤ 2.0	≤ 2.5
Nominal discharge current, In 8/20μs [kA, per mode]	5	10	20	30	35
Maximum discharge current, Imax 8/20μs [kA, per mode]	10	20	40	60	70
Response time, ta [ns]	< 25ns				
Operating temperature range [°C]	-40 ~ +80 °C				
Operating frequency [Hz]	50 / 60 Hz				
Mounting on	Din-rail 35mm				
Conductor cross section [mm²]	Line and neutral : 2.5mm², ground : 4mm²				
Degree of protection	IP20				
Modes of protection	L-G, N-G				
Operation status indication	Normal operation : Green, Abnormal/After an accident : Red				



External dimension



Installation wiring method



* A separate fuse can be installed depending on the side conditions. (The fuse should be purchased separately is not supplied by LS.)

SP Series (Box type)

SP Series

Box type

Product description

The SP series surge protective device is applied to the alternating current 50/60Hz, 220V/380V power system and provides the protection from the surge overvoltage of an electric system.

Moreover, the protection module, disconnectable device (fuse), and fastened power and ground wires are organized into the all-in-one steel cabinet with convenient installation and stability.

If the protective device is normal, the display becomes green.

The display becomes red after operation (abnormal or after an accident).



Product rating

- Single phase 2W+G (SPL)

	SPL-110S	SPL-220S	
SPD according to IEC	Class III	Class II/III	
Number of positions [Pole]	2W+G	2W+G	
Nominal voltage, U_n AC [V]	110/220	220	
Max. continuous operating voltage, U_c AC [V]	320	320	
Voltage protection level, U_p [kV]	≤ 1.5	≤ 1.5	
Nominal discharge current, I_{ln} 8/20 μ s [kA, per mode]	10	20	40
Maximum discharge current, I_{max} 8/20 μ s [kA, per mode]	20	40	80
Response time, t_A [ns]	< 5ns		
Operating temperature range [°C]	-40 ~ +70 °C		
Operating frequency [Hz]	50 / 60 Hz		
Mounting on	Screw		
Degree of protection	IP20		
Modes of protection	L-N, L-G, N-G		
Operation status indication	Normal operation : Green, Abnormal/After an accident : Red		

Product rating

-Three phase 3W+G (SPT) AC 380V



	SPT-380S			
	Class II/III		Class I	
Number of positions [Pole]	3W+G			
Nominal voltage, U_n AC [V]	3P3W 380			
Max. continuous operating voltage, U_c AC [V]	320			
Voltage protection level, U_p [kV]	≤ 2.0			
Lightning impulse current, I_{limp} 10/350 μ s [kA, per mode]	-	-	20	40
Nominal discharge current, I_{ln} 8/20 μ s [kA, per mode]	20	40	60	80
Maximum discharge current, I_{max} 8/20 μ s [kA, per mode]	40	80	120	160
Response time, t_A [ns]	< 5ns			
Operating temperature range [°C]	-40 ~ +70 °C			
Operating frequency [Hz]	50 / 60 Hz			
Mounting on	Screw			
Degree of protection	IP20			
Modes of protection	L-G			
Operation status indication	Normal operation : Green, Abnormal/After an accident : Red			

Product rating

-Three phase 3W+G (SPT) AC 440V



SPD according to IEC	SPT-440S			
	Class II/III		Class I	
Number of positions [Pole]	3W+G			
Nominal voltage, U_n AC [V]	3P3W 440			
Max. continuous operating voltage, U_c AC [V]	320			
Voltage protection level, U_p [kV]	≤ 2.0			
Lightning impulse current, I_{imp} 10/350 μ s [kA, per mode]	-	-	20	40
Nominal discharge current, I_n 8/20 μ s [kA, per mode]	20	40	60	80
Maximum discharge current, I_{max} 8/20 μ s [kA, per mode]	40	80	120	160
Response time, t_A [ns]	$< 5ns$			
Operating temperature range [°C]	$-40 \sim +70$ °C			
Operating frequency [Hz]	50 / 60 Hz			
Mounting on	Screw			
Degree of protection	IP20			
Modes of protection	L-G			
Operation status indication	Normal operation : Green, Abnormal/After an accident : Red			

Product rating

-Three phase 4W+G (SPY)



SPD according to IEC	SPY-220S			
	Class II/III		Class I	
Number of positions [Pole]	4W+G			
Nominal voltage, U_n AC [V]	3P4W 380/220			
Max. continuous operating voltage, U_c AC [V]	320			
Voltage protection level, U_p [kV]	≤ 2.0			
Lightning impulse current, I_{imp} 10/350 μ s [kA, per mode]	-	-	20	40, 50, 60
Nominal discharge current, I_n 8/20 μ s [kA, per mode]	20	40	60	80, 100, 120
Maximum discharge current, I_{max} 8/20 μ s [kA, per mode]	40	80	120	160, 200, 240
Response time, t_A [ns]	$< 5ns$			
Operating temperature range [°C]	$-40 \sim +70$ °C			
Operating frequency [Hz]	50 / 60 Hz			
Mounting on	Screw			
Degree of protection	IP20			
Modes of protection	L-G			
Operation status indication	Normal operation : Green, Abnormal/After an accident : Red			

Contactors & Overload relays

Metasol MC 3P 18 to 100A

MC type Magnetic Contactors



Frame size			18AF				22AF				
Type	screws clamp terminals		MC-6a	MC-9a	MC-12a	MC-18a	MC-9b	MC-12b	MC-18b	MC-22b	
Number of poles			3pole				3pole				
Rated operational voltage, Ue			690V				690V				
Rated insulation voltage, Ui			690V				690V				
Rated frequency			50/60Hz				50/60Hz				
Rated impulse withstand voltage, Uimp			6kV				6kV				
Maximum operating rate in operating cycles per hour(AC3)			1800 operations per hour				1800 operations per hour				
Durability	Mechanical		15 mil. operations				15 mil. operations				
	Electrical		2.5 mil. operations				2.5 mil. operations				
Current and power	AC-1, Thermal current	A	25	25	25	32	25	25	40	40	
		kW	2.2	2.5	3.5	4.5	2.5	3.5	4.5	5.5	
	AC-3	200/240V	A	9	11	13	18	11	13	18	22
		kW	3	4	5.5	7.5	4	5.5	7.5	11	
	380/440V	A	7	9	12	18	9	12	18	22	
		kW	3	4	7.5	7.5	4	7.5	7.5	15	
	500/550V	A	6	7	12	13	7	12	13	20	
		kW	3	4	7.5	7.5	4	7.5	7.5	15	
	690V	kW	3	4	7.5	7.5	4	7.5	7.5	15	
		A	4	5	9	9	6	9	9	18	
1000V	kW	-	-	-	-	-	-	-	-		
	A	-	-	-	-	-	-	-	-		
Rated Short-time withstand current (IEC 60947)	1s	A	210	250	280	300	250	280	300	400	
	10s	A	105	110	120	130	110	120	154	186	
	30s	A	70	70	80	85	70	80	100	130	
	1min	A	61	61	61	70	61	61	84	90	
	3min	A	40	45	47	50	45	50	60	60	
	10min	A	30	30	30	40	30	30	40	50	
	≥ 15min	A	25	26	28	40	26	28	40	45	
UL rating (50/60Hz)	Continuous current		A	25	25	25	32	25	25	40	40
	Single phase	110~120V	HP	0.5	0.5	0.75	1	0.5	0.75	1	2
		220~240V	HP	1.5	1.5	2	3	1.5	2	3	3
		200~208V	HP	2	2	3	5	2	3	5	7.5
	Three phase	220~240V	HP	3	3	5	7.5	3	5	7.5	10
		440~480V	HP	5	5	7.5	10	5	7.5	10	15
		550~600V	HP	7.5	7.5	10	15	7.5	10	15	20
	NEMA size			00	00	0	1	00	00	1	
Size and weight	AC control	Weight	0.33				0.34				
		Size(W × H × D) mm	45 × 73.5 × 80.4				45 × 73.5 × 87.4				
	DC control	Weight	0.4				0.41				
		Size(W × H × D) mm	45 × 73.5 × 96.6				45 × 73.5 × 103.6				
Auxiliary(standard)			1NO or 1NC				1NO1NC				
Auxiliary	Side mount		UA-1				UA-1				
	Front mount		UA-2, UA-4				UA-2, UA-4				

Note) Minimum conduct current of Auxiliary contactor is DC 17V 5mA.

MT type Thermal Overload Relays



Type	Screws clamp terminals		MT-12/□	MT-32/□
Rated operational voltage, Ue			690V	690V
Rated insulation voltage, Ui			690V	690V
Rated impulse withstand voltage, Uimp			6kV	6kV
Trip class			10A, 20	10A, 20
Setting range			0.1~18A	0.1~40A
Size and weight	Weight	kg	0.1	0.17
		Size(W × H × D) mm	45 × 73.2 × 63.7	45 × 75 × 90

* The safety cover of magnetic contactor and thermal overload relay is optional.



40AF

MC-32a	MC-40a
●	●
3pole	
690V	
1000V	
50/60Hz	
8kV	
1800 operations per hour	
12 mil. operations	
2 mil. operations	
50	60
7.5	11
32	40
15	18.5
32	40
18.5	22
28	32
18.5	22
20	23
22	22
17	17
600	700
260	300
160	190
100	120
70	80
55	65
50	60
50	60
2	3
5	7.5
7.5	15
10	15
20	30
25	30
1P	2
0.4	
45 × 83 × 90	
0.6	
45 × 83 × 117.1	
2NO2NC	
UA-1	
UA-2, UA-4	



MT-32/□

●
690V
690V
6kV
10A, 20
0.1~40A
0.17
45 × 75 × 90



65AF

MC-50a	MC-65a
●	●
3pole	
690V	
1000V	
50/60Hz	
8kV	
1200 operations per hour	
12 mil. operations	
2 mil. operations	
70	100
15	18.5
55	65
22	30
50	65
30	33
43	60
30	33
28	35
30	33
23	26
1000	1050
550	700
330	380
250	270
150	200
90	120
87	100
70	100
3	5
10	15
20	25
25	30
40	50
50	60
0.9	
55 × 106 × 119	
1.2	
55 × 106 × 146.4	
2NO2NC	
UA-1	
UA-2, UA-4	



MT-63/□

●
690V
690V
6kV
10A, 20
4~65A
0.31/0.33
55 × 81 × 100



100AF

MC-75a	MC-85a	MC-100a
●		●
3pole		
690V		
1000V		
50/60Hz		
8kV		
1200 operations per hour		
12 mil. operations		
2 mil. operations		
110	135	160
22	25	30
75	85	105
37	45	55
75	85	105
37	45	55
64	75	85
37	45	55
42	45	65
37	45	45
28	33	33
1100	1200	1320
750	800	900
400	450	500
300	350	400
220	270	270
140	170	180
114	150	160
110	135	160
5	7.5	10
15	15	20
25	30	30
30	40	40
50	60	75
60	75	75
3		
1.6		
70 × 140 × 135.8		
2.6		
70 × 140 × 172.3		
2NO2NC		
UA-1		
UA-2, UA-4		



MT-95/□

●
690V
690V
6kV
10A, 20
7~100A
0.48/0.5
70 × 97 × 110

Contactors & Overload relays

Metasol MC 3P 150 to 800A

MC type Magnetic Contactors



Frame size			150AF		225AF	
Type			MC-130a	MC-150a	MC-185a	MC-225a
screws clamp terminals			●	●	●	●
Number of poles			3pole		3pole	
Rated operational voltage, Ue			690V		690V	
Rated insulation voltage, Ui			1000V		1000V	
Rated frequency			50/60Hz		50/60Hz	
Rated impulse withstand voltage, Uimp			8kV		8kV	
Maximum operating rate in operating cycles per hour(AC3)			1200 operations per hour		1200 operations per hour	
Durability			5 mil. operations		5 mil. operations	
Electrical			1 mil. operations		1 mil. operations	
Current and power	AC-1, Thermal current	A	160	210	230	275
	AC-3 200/240V	kW	37	45	55	75
		A	130	150	185	225
		kW	60	75	90	132
		A	130	150	185	225
		kW	60	70	110	132
		A	90	100	180	200
		kW	55	55	110	140
		A	60	60	120	150
		kW	75	90	132	140
Rated Short-time withstand current (IEC 60947)	1s	A	1350	1800	2000	2500
	10s	A	950	1200	1500	1700
	30s	A	700	800	1000	1200
	1min	A	550	600	800	1000
	3min	A	350	450	520	700
	10min	A	200	300	350	500
	≥ 15min	A	175	280	320	400
UL rating (50/60Hz)	Continuous current	A	160	210	230	275
	Single phase	110~120V	10	15	15	15
		220~240V	20	25	30	40
	Three phase	200~208V	40	40	60	60
		220~240V	40	50	60	75
		440~480V	75	100	125	150
		550~600V	75	75	125	150
Size and weight	NEMA size		4			
	AC control	Weight kg Size(W × H × D) mm	2.4 95 × 158 × 130.3		5.4 138 × 203 × 185.1	
Auxiliary (standard)	DC control	Weight kg Size(W × H × D) mm				
	Auxiliary	Side mount Front mount	2NO2NC UA-1 UA-2, UA-4		2NO2NC AU-100, AU-100E (Max.4NO4NC) -	

MT type Thermal Overload Relays



Type			MT-150/□	MT-225/□
Screws clamp terminals			●	●
Rated operational voltage, Ue			690V	690V
Rated insulation voltage, Ui			690V	690V
Rated impulse withstand voltage, Uimp			6kV	6kV
Trip class			10A, 20	10A, 20
Setting range			34~150A	65~240A
Size and weight	Weight	kg	0.67	2.5
	Size(W × H × D)	mm	95 × 109 × 113	147 × 141 × 184

* The safety cover of magnetic contactor and thermal overload relay is optional.



400AF

MC-265a	MC-330a	MC-400a
●	●	●
3pole		
690V		
1000V		
50/60Hz		
8kV		
1200 operations per hour		
5 mil. operations		2.5 mil. operations
1 mil. operations		0.5 mil. operations
300	350	450
80	90	125
265	330	400
147	160	200
265	330	400
147	160	225
225	250	350
160	200	250
185	220	300
147	160	185
105	115	140
3500	4000	4600
2400	3000	4400
1500	2500	2974
1100	1700	1846
800	1000	1313
600	620	760
500	553	699
300	350	450
-	-	-
-	-	-
75	100	125
100	100	150
200	200	300
200	200	300
5		

9.2
163 × 243 × 204.4

2NO2NC

AU-100, AU-100E (Max.4NO4NC)



MT-400/□

●
690V
690V
6kV
10A, 20
85~400A
2.6
151 × 171 × 198



800AF

MC-500a	MC-630a	MC-800a
●	●	●
3pole		
690V		
1000V		
50/60Hz		
8kV		
1200 operations per hour		
2.5 mil. operations		0.5 mil. operations
580	660	900
147	190	220
500	630	800
265	330	440
500	630	800
265	330	500
400	500	720
300	400	500
380	420	630
280	355	400
220	262	288
6000	7000	7500
5050	6400	7000
4400	4500	4900
3400	3500	3800
2000	2200	2500
1400	1550	1550
1100	1300	1300
580	660	900
-	-	-
-	-	-
150	200	200
200	250	300
400	500	600
400	500	600
6		7

22.4
285 × 312 × 245.3

2NO2NC

AU-100, AU-100E (Max.4NO4NC)



MT-800/□

●
690V
690V
6kV
10A, 20
200~800A
11.5
360 × 530 × 212

Contactors & Overload relays

Metasol MC 4P 18 to 85A

MC type Magnetic Contactors



Frame size			
Type	Screw clamp terminal		
Number of poles	4		
Rated operational voltage (Ue)	690V		
Rated insulation voltage (Ui)	690V		
Rated frequency	50/60Hz		
Rated impulse withstand voltage, Uimp	6kV		
Maximum operating rate in operating cycles per hour(AC1)	1800 operations per hour		
Durability	Mechanical		
	Electrical		
Current and Power	Thermal current	A	
	AC-1	200/240V	kW
			A
	380/400V	kW	
			A
	500/550V	kW	
		A	
690V	kW		
		A	
UL rating (50/60Hz)	Continuous current		
	Single Phase	110~120V	HP
		220~240V	HP
	200~208V	HP	
			A
	Three Phase	220~240V	HP
440~480V		HP	
	550~600V	HP	
Size and weight	AC Control	Weight	kg
		Size(W×H×D)	mm
	DC Control	Weight	kg
		Size(W×H×D)	mm
Auxiliary(standard)			
Auxiliary	Side Mount		
	Front Mount		



18AF			
MC-6a/4	MC-9a/4	MC-12a/4	MC-18a/4
●			
4pole			
690V			
690V			
50/60Hz			
6kV			
1800 operations per hour			
15 mil. Operations			
0.5 mil. Operations		0.8 mil. Operations	
25	25	25	40
9	9	9	15
25	25	25	40
17	17	17	27
25	25	25	40
21	21	21	35
25	25	25	40
27	27	27	44
25	25	25	40
25	25	25	32
0.5	0.5	0.75	1
1.5	1.5	2	3
2	2	3	5
3	3	5	7.5
5	5	7.5	10
7.5	7.5	10	15
0.33			
45×73.5×79			
0.5			
45×73.5×110.7			
-			
UA-1			
AU-2, AU-4			



22AF	
MC-22a/4	
●	
4pole	
690V	
690V	
50/60Hz	
6kV	
1800 operations per hour	
15 mil. Operations	
1 mil. Operations	
40	
15	
40	
27	
40	
35	
40	
44	
40	
32	
2	
3	
7.5	
7.5	
10	
15	
0.4	
47.2×80×86.8	
0.5	
47.2×80×113.2	
-	
AU-1	
AU-2, AU-4	

40AF	
MC-32a/4	MC-40a/4
●	
4pole	
690V	
690V	
50/60Hz	
6kV	
1800 operations per hour	
15 mil. Operations	
1 mil. Operations	
50	60
18	22
50	60
35	42
50	60
43	52
50	60
55	66
50	60
45	50
2	3
5	5
7.5	10
10	10
20	25
20	25
0.59	
59×83.5×94.5	
0.7	
59×83.5×121	
-	
AU-1	
AU-2, AU-4	

85AF			
MC-50a/4	MC-65a/4	MC-75a/4	MC-85a/4
●			
4pole			
690V			
1000V			
50/60Hz			
8kV			
1800 operations per hour			
12 mil. Operations			
1 mil. Operations			
80	100	110	135
30	37	41	51
80	100	110	135
56	70	76	95
80	100	110	135
70	88	97	120
80	100	110	135
88	110	120	150
80	100	110	135
70	80	90	100
3	5	5	7.5
7.5	10	15	15
10	15	20	25
15	20	25	30
30	40	50	50
30	40	50	50
1.2			
91×123.5×117.8			
1.29			
91×123.5×117.8			
-			
AU-1			
AU-2, AU-4			

Contactors & Overload relays

Metasol MC 4P 225 to 800A

MC type Magnetic Contactors



Frame size			
Type	Screw clamp terminal		
Number of poles	4pole		
Rated operational voltage (Ue)	690V		
Rated insulation voltage (Ui)	1000V		
Rated frequency	50/60Hz		
Rated impulse withstand voltage, Uimp	8kV		
Maximum operating rate in operating cycles per hour(AC1)	1200 operations per hour		
Durability	Mechanical		
	5 mil. Operations		
Current and Power	Electrical		
	0.8 mil. Operations		
Current and Power	Thermal current	A	
	AC-1	200/240V	kW
		380/400V	kW
	500/550V		A
			kW
	690V	kW	A
UL rating (50/60Hz)	Continuous current		A
	Single Phase	110~120V	HP
		220~240V	HP
	200~208V		HP
			HP
	Three Phase	220~240V	HP
440~480V		HP	
550~600V		HP	
		HP	
Size and weight	AC Control	Weight	kg
	DC Control	Size(W×H×D)	mm
		Weight	kg
	DC Control	Size(W×H×D)	mm
Auxiliary(standard)			
Auxiliary	Side Mount		
	Front Mount		



225AF				
MC-100a/4	MC-130a/4	MC-150a/4	MC-185a/4	MC-225a/4
●				
4pole				
690V				
1000V				
50/60Hz				
8kV				
1200 operations per hour				
5 mil. Operations				
0.8 mil. Operations				
160	165	250	300	330
57	60	76	87	100
150	155	200	230	260
106	110	142	165	185
150	155	200	230	260
132	137	180	205	230
150	155	200	230	260
165	170	225	255	290
150	155	200	230	260
160	160	210	230	275
7.5	10	15	15	15
15	20	25	30	40
30	40	40	60	60
30	40	50	60	75
60	75	100	125	150
60	75	100	125	150
5.6				
175×203×185				
2a2b				
AU-100 / AU-100E				
-				

* - FLA = 722 A, LRA = 5618 A

** - FLA = 566 A, LRA = 4495 A



400AF		
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MC-265a/4	MC-330a/4	MC-400a/4
●		
4pole		
690V		
1000V		
50/60Hz		
8kV		
1200 operations per hour		
2.5 mil. Operations		
0.5 mil. Operations		
360	420	500
115	135	160
300	350	420
215	250	300
300	350	420
265	315	375
300	350	420
335	390	470
300	350	420
300	350	450
-	-	-
-	-	-
75	100	125
100	125	150
200	250	300
200	250	300

9.9
206 × 243 × 205

2a2b

AU-100
-

800AF		
-------	--	--

MC-500a/4	MC-630a/4	MC-800a/4
●		
4pole		
690V		
1000V		
50/60Hz		
8kV		
1200 operations per hour		
2.5 mil. Operations		
0.5 mil. Operations		
630	750	900
245	255	310
630	660	800
450	470	570
630	660	800
560	590	710
630	660	800
710	740	900
630	660	800
580	660	900
-	-	-
-	-	-
150	200	200
200	250	300
400	500	600 *
400	500	600 **

26.3
346 × 310 × 244

2a2b

AU-100
-

Mini contactors

6 to 16A

Mini contactors

3NO main contacts
1 auxiliary contacts



Screw clamp type



Fast-on type



Cage clamp type



Solder pin type

Frame size		6A	9A	12A	16A				
Screw clamp type	AC coil	GMC-6M	GMC-9M	GMC-12M	GMC-16M				
	DC coil	GMD-6M	GMD-9M	GMD-12M	GMD-16M				
Fast-on type	AC coil	GMC-6MF	GMC-9MF	GMC-12MF	GMC-16MF				
	DC coil	GMD-6MF	GMD-9MF	GMD-12MF	GMD-16MF				
Cage clamp type	AC coil	GMC-6MC	GMC-9MC	GMC-12MC	GMC-16MC				
	DC coil	GMD-6MC	GMD-9MC	GMD-12MC	GMD-16MC				
Solder pin type	AC coil	GMC-6MP	GMC-9MP	GMC-12MP	GMC-16MP				
	DC coil	GMD-6MP	GMD-9MP	GMD-12MP	GMD-16MP				
Ratings / IEC60947-4		kW	A	kW	A	kW	A	kW	A
AC1		20		20		20		20	
AC3	200/240V	1.5	7	2.2	9	3	12	4	15
	380/440V	2.2	6	4	9	5.5	12	7.5	16
	500/550V	3	5	3.7	6	4	7	5.5	9
	690V	3	4	4	5	4	5	4	5
Ratings / UL508		hp	A	hp	A	hp	A	hp	A
continuous current		lth = 20A (maximum for cage clamp type is 10A)							
single phase	120V	1/2		1/2		1 *		-	
	230V/240V	1		1.5		2 **		-	
three phase	240V	1.5		3		3		-	
	480V	3		5		7.5 ***		-	
	600V	3		5		7.5		-	
Wire Range : Copper, 75°C, Stranded, 18-12AWG									
NEMA size		00		00		00		0	

Additional auxiliary contacts	Screw clamp type	Fast-on type	Cage clamp type	Solder pin type
2-pole, Front mount	AU-2M	AU-2MF	AU-2MC	
4-pole, Front mount	AU-4M	AU-4MF	AU-4MC	
2-pole, Side mount	AU-1M	AU-1MF	AU-1MC	

Note) * = 1/2 for cage clamp type, ** = 1.5hp for cage clamp type, *** = 5hp for cage clamp type
16AF : not approved from UL

Overload Relays

Bimetallic style Type GT		Setting ranges (A)	0.1 - 0.16 0.16 - 0.25 0.25 - 0.4 0.4 - 0.63 0.63 - 1 1 - 1.6 1.6 - 2.5 2.5 - 4	4 - 6 5 - 8 6 - 9 7 - 10 9 - 13 12 - 16		Base for separate mount
	Differential	GTK-12M				
	Non-differential (3-heater)	GTH-12M/3				
	Non-differential (2-heater)	GTH-12M				

Digital motor protection relay



DMP□-S/Sa



DMP□-T/Ta

Model No.			DMP06-S/Sa	DMP60-S/Sa	DMP06-T/Ta	DMP60-T/Ta
Wiring			Screw type		Tunnel type	
Panel mount			Unit or Extension <small>Note1)</small>			
Operation time			Select either reverse time characteristics or definite time characteristics			
Protection	Over current		According to the setting time			
	Phase failure		3 sec.			
	Reverse phase		Within 0.1 sec.			
	Asymmetry		5 sec.			
	Stall		5 sec.			
	Lock		Within 0.5 sec.			
	Under current		3 sec.			
	Ground fault		Within 0.05~1 sec. Selectable (0.05~1.0sec)			
	Short circuit <small>Note2)</small>		Within 50ms			
Alarm			Variable (60~110% of the setting current)			
Current setting range (A)			0.5~6	5~60	0.5~6	5~60
Motor capacity (kW)	220~240V		0.09~0.75	1.1~11	0.09~0.75	1.1~11
	380~440V		0.12~1.5	2.2~22	0.09~1.5	2.2~22
Time setting range (sec)	Definite time	Delay in starting	0~60sec			
		Delay in operating	0~30sec			
	Inverse time		0~60sec			
	Reset		Manual reset			
Tolerance	Current		±5%			
	Time		±5% (or ±0.5sec)			
Operating power <small>Note3)</small>	Voltage		AC 190~250V			
	Frequency		60Hz (50Hz)			
Aux. contact	OL	1a1b	3A/250Vac Resistive load			
	AL	1a	3A/250Vac Resistive load			
Insulation resistance			Over DC500V 100MΩ			
Surge impulse voltage(IEC1000-4-5)			1.2 × 50 _{μs} 6kV (Apply standard wave form)			
Fast transient burst(IEC1000-4-4)			2.5kV/5min			
Environment	Temperature	Operation	-25~70 °C			
		Storage	-30~80 °C			
	Humidity		30~90% RH (No freezing)			
Display	7-Segment		3 phase current, cause of a fault			
	Bar-Graph		60~110% of real load current			
Mounting type			35mm Din-rail/Panel			

Note1) In extension type, the digital EMPR is calibrated with combining the display part and main body so, please cautious not to combine the display part and main body with different part No.

Note2) Instantaneous short circuit protection is optional

Note3) Operational voltage of AC 110V and 50Hz is optional

Manual motor starters

Quick selection table ... IEC rating



Frame			32AF																			
Type	Current adjustable type		MMS-32S								MMS-32H											
	Instantaneous type		-								MMS-32HI											
Breaking capacity			Standard								High breaking											
Handle Type			Toggle								Rotary											
Number of poles			3								3											
Rated operational voltage (Ue)			Up to 690V								Up to 690V											
Rated frequency			50/60 Hz								50/60 Hz											
Rated insulation voltage (Ui)			690V								690V											
Rated impulse voltage (Uimp)			6kV								6kV											
Utilization category	IEC 60 947-2 (Breaker)		Cat. A								Cat. A											
	IEC 60 947-4 (Motor starter)		AC 3								AC 3											
Mechanical endurance (Operating)			100,000								100,000											
Electrical endurance (Cycles)			100,000								100,000											
Max operating frequency per hour (Ope./h)			25								25											
Temperature compensation (Operation)			-20 ~ +60°C								-20 ~ +60°C											
Instantaneous short circuit release			13 × Ie max.								13 × Ie max.											
Overload protection			○								○											
Phase failure function			○								○											
Trip indicating function			×								×											
Test function			○								○											
Dimension(W×H×D)			45×105×54.4								45×105×60.3											
Weight (g)			320								360											
Rated breaking capacity (kA)	Rated operational current (Ie)	Thermal release Adjustment range (A)	220V 240V 230V		415V 400V		460V 440V		525V 500V		690V 600V		220V 240V 230V		415V 400V		460V 440V		525V 500V		690V 600V	
			Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics
	0.16	0.1~0.16	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	0.25	0.16~0.25	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	0.4	0.25~0.4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	0.63	0.4~0.63	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	1	0.63~1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	1.6	1~1.6	100	100	100	100	100	100	100	100	3	3	100	100	100	100	100	100	100	100	100	100
	2.5	1.6~2.5	100	100	100	100	100	100	50	38	3	3	100	100	100	100	100	100	100	100	8	8
	4	2.5~4	100	100	100	100	50	38	15	11	3	3	100	100	100	100	100	100	100	100	8	8
	6	4~6	100	100	100	100	15	11	10	8	3	3	100	100	100	100	100	100	100	100	6	6
	8	5~8	100	100	100	100	15	11	10	8	3	3	100	100	100	100	50	38	50	38	6	6
	10	6~10	100	100	50	38	15	11	6	5	3	3	100	100	100	100	50	38	50	38	6	6
	13	9~13	100	100	50	38	10	8	6	5	3	3	100	100	100	100	50	38	42	32	6	6
	17	11~17	50	38	20	15	10	8	6	5	3	3	100	100	50	38	20	15	10	8	4	4
	22	14~22	40	30	15	11	8	6	6	5	3	3	100	100	50	38	20	15	10	8	4	4
26	18~26	40	30	15	11	8	6	6	5	3	3	100	100	50	38	20	15	10	8	4	4	
32	22~32	30	22	15	11	6	4	5	4	3	3	100	100	50	38	20	15	10	8	4	4	
40	28~40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
50	34~50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
63	45~63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
75	55~75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
90	70~90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
100	80~100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Molded case circuit breakers

Susol MCCB 100AF to 800AF Series

		TE100	TE160	TD100	TD160						
Frame size	[AF]	100	160	100	160						
Rated current, I _n *	[A]	16~100	100,125,160	16, 20, 25, 32, 40, 50, 63, 80, 100	1P: 16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160 2, 3P: 100, 125, 160						
No. of poles		3,4	3,4	2*, 3, 4	1, 2*, 3, 4						
Rated operational voltage, U _e	AC	690	690	690	240(1P), 690						
	DC	500	500	500	250(1P), 500						
Rated impulse withstand voltage, U _{imp}	[kV]	8	8	8	8						
Rated insulation voltage, U _i [V]		750	750	750	750						
Rated ultimate short-circuit breaking capacity, I _{cu}		S	N	S	N	N	H	L	N	H	L
AC 50/60Hz 220/240V	[kA]	50	85	50	85	85	100	200	30(1P) 85	50(1P) 100	200
	380/415V [kA]	37	50	37	50	50	85	150	50	85	150
	440/460V [kA]	25	37	25	37	50	70	130	50	70	130
	480/500V [kA]	18	25	18	25	30	50	65	30	50	65
	660/690V [kA]	6	8	6	8	5	8	10	5	8	10
DC	250V [kA]	37	50	37	50	42	65	100	16(1P) 42	25(1P) 65	100
	500V(2poles in series) [kA]	37	50	37	50	42	65	100	42	65	100
Rated service breaking capacity, I _{cs}	[%I _{cu}]	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Rated short-circuit making capacity I _{cm}											
AC 50/60Hz 220/240V	[kA]	105	187	105	187	187	220	440	105(1P) 187	105(1P) 220	440
	380/415V [kA]	77.7	105	77.7	105	105	187	330	105	187	330
	440/460V [kA]	52.5	77.7	52.5	77.7	105	154	286	105	154	286
	480/500V [kA]	36	52.5	36	52.5	63	105	143	63	105	143
	660/690V [kA]	9.2	13.6	9.2	13.6	8	14	17	8	14	17
Category of utilization		A	A	A	A						
Isolation behavior		●	●	●	●						
Trip unit (release)											
Thermal-Magnetic											
● fixed-thermal, fixed-magnetic	FTU	●	●	●	●					●	
● adjustable-thermal, fixed-magnetic	FMU	●	●	●	●					●***	
● adjustable-thermal, adjustable-magnetic	ATU	-	-	-	-					-	
● magnetic only	MTU	-	-	-	-					-	
Electronic											
● LSI	ETS	-	-	-	-					-	
● LSI	ETM	-	-	-	-					-	
Option	Earth-fault protection, I _g	-	-	-	-					-	
	Zone selective interlocking, ZSI	-	-	-	-					-	
	Ammeter	-	-	-	-					-	
	Communication	-	-	-	-					-	
	Earth-leakage protection module	-	-	-	-					-	
Connection	fixed	front-connection	●	●	●	●	●	●	●	●	●
		rear-connection	●	●	●	●	●	●	●	●	●***
	plug-in	front-connection	-	-	-	-	●	●	●	●	●***
		rear-connection	-	-	-	-	●	●	●	●	●***
Mechanical life	[operations]	25000	25000	25000	25000					25000	
Electrical life @ 415 V AC	[operations]	10000	10000	10000	10000					10000	
Basic dimensions, W×H×D (front connection)	1-pole	[mm]	-	-	-	-	-	-	-	-	35×140×86
	3-pole	[mm]	76×130×82	76×130×82	76×130×82	76×130×82	90×140×86	90×140×86	90×140×86	90×140×86	90×140×86
	4-pole	[mm]	101×130×82	101×130×82	101×130×82	101×130×82	120×140×86	120×140×86	120×140×86	120×140×86	120×140×86
Weight (front connection)	1-pole	[kg]	-	-	-	-	-	-	-	-	0.57
	3-pole	[kg]	1.05	1.05	1.05	1.05	1.5	1.5	1.5	1.5	1.5
	4-pole	[kg]	1.35	1.35	1.35	1.35	1.8	1.8	1.8	1.8	1.8
Reference standard		IEC60947-2	IEC60947-2	IEC60947-2	IEC60947-2						IEC60947-2

Note) ● applicable or available

* Applicable to MCCBs equipped with FTU, FMU, ATU
* 2 pole MCCB in 3pole frame size

** 700A only available for TS800FTU
*** Not applicable to 1pole

※ The trip unit ATU is available from 125A

Molded case circuit breakers

Susol MCCB 1600AF Series

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			1240			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		
			327×210×152.5				
			327×280×152.5				
			13				
			16.8				

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.

Molded case circuit breakers

Metasol 30AF to 250AF Series

Frame Size(AF)		30	50			60	
Type		S-Type	N-Type	S-Type	H-Type	N-Type	S-Type
Type and Pole	2 pole	ABS32c	ABN52c	ABS52c	ABH52c	ABN62c	ABS62c
	3 pole	ABS33c	ABN53c	ABS53c	ABH53c	ABN63c	ABS63c
	4 pole	ABS34c	ABN54c	ABS54c	ABH54c	ABN64c	ABS64c
Rated current, I _n	A	(3, 5, 10) 15, 20, 30	15, 20, 30, 40, 50		15, 20, 30, 40, 50	15, 20, 30, 40, 50, 60	
Rated operational voltage, U _e	AC(V)	690	690	690	690	690	690
	DC(V)	500	500	500	500	500	500
Rated insulation voltage, U _i	V	750	750	750	750	750	750
Rated impulse withstand voltage, U _{imp}	kV	8	8	8	8	8	8
Rated short-circuit breaking capacity(I _{cu}) kA (Sym), KSC8321, IEC 60947-2							
AC	690V	2.5	2.5	5	10	2.5	5
	480/500V	7.5	7.5	10	35	7.5	10
	415/460V	14 (10)	14	18	50	14	18
	380V	18 (14)	18	22	50	18	22
	220/250V	30 (25)	30	35	100	30	35
DC	500V(3P)	5	5	10	30	5	10
	250V(2P)	5	5	10	30	5	10
Service breaking capacity(%I _{cu}), I _{cs}		100	100	100	100	100	100
Category of use		A	A	A	A	A	A
Endurance (Number of operations)	Mechanical	8500	25000	25000	25000	25000	25000
	Electrical	1500	10000	10000	10000	10000	10000
Type of trip unit							
Thermal-magnetic release		fixed	fixed	fixed	fixed	fixed	fixed
Hydraulic-magnetic release							
Magnetic release only without thermal trip							
Earth leakage protection	for 3 pole	▲	▲	▲	▲	▲	▲
Accessories							
Electrical auxiliaries	Auxiliary switch	●	●	●	●	●	●
	Alarm switch	●	●	●	●	●	●
	Shunt trip	●	●	●	●	●	●
	Undervoltage trip	●	●	●	●	●	●
External accessories	Direct rotary handle	●	●	●	●	●	●
	Extended rotary handle	●	●	●	●	●	●
	Terminal shield	●	●	●	●	●	●
	Insulation barrier	●	●	●	●	●	●
	Rear connection	●	●	●	●	●	●
	Pad handle lock	●	●	●	●	●	●
Plug-in device	●	●	●	●	●	●	
Dimensions (mm)	W×H×D (3P)	75×130×60	75×130×60		90×155×60	75×130×60	
Weight(kg)	2 pole	0.5	0.5	0.5	0.7	0.5	0.5
	3 pole	0.7	0.7	0.7	1	0.7	0.7
	4 pole	0.9	0.9	0.9	1.2	0.9	0.9

Note) 1. ● applicable or available
2. ▲ available as a separate breaker



100	125		250		
N-Type	S-Type	H-Type	N-Type	S-Type	H-Type
ABN102c	ABS102c	ABH102c	ABN202c	ABS202c	ABH202c
ABN103c	ABS103c	ABH103c	ABN203c	ABS203c	ABH203c
ABN104c	ABS104c	ABH104c	ABN204c	ABS204c	ABH204c
15, 20, 30, 40, 50, 60, 75, 100	15, 20, 30, 40, 50, 60, 75, 100, 125		100, 125, 150, 175, 200, 225, 250		
690	690	690	690	690	690
500	500	500	500	500	500
750	750	750	750	750	750
8	8	8	8	8	8
5	8	10	8	8	10
10	25	30	18	26	30
18	37	50	26	37	50
22	42	50	30	42	50
35	85	100	65	85	100
10	20	30	10	20	30
10	20	30	10	20	30
100	100	100	100	100	100
A	A	A	A	A	A
25000	25000	25000	25000	25000	25000
10000	10000	10000	5000	5000	5000
fixed	fixed	fixed	fixed	fixed	fixed
▲	▲	▲	▲	▲	▲
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
75 × 130 × 60	90 × 155 × 60		105 × 165 × 60		
0.5	0.7	0.7	1.1	1.1	1.1
0.7	1	1	1.2	1.2	1.2
0.9	1.2	1.2	1.6	1.6	1.6

Calibrated for 40°C	Amb. Temp.	-5°C	0°C	10°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C
	In=15 to 30	111.9%	111.3%	110.0%	108.0%	106.6%	104.9%	102.7%	100.0%	96.8%	93.3%
In=40 to 100	110.2%	109.8%	108.7%	107.0%	105.8%	104.3%	102.4%	100.0%	97.2%	94.0%	
In=100 to 225	114.3%	113.2%	110.6%	107.5%	105.8%	104.0%	102.0%	100.0%	97.9%	95.6%	
In=250 to 800	110.0%	109.0%	107.0%	105.0%	104.0%	103.0%	101.5%	100.0%	98.5%	97.0%	

Molded case circuit breakers

Metasol 400AF to 1200AF Series

Frame Size(AF)		400			
Type		N-Type	S-Type	H-Type	L-Type
Type and Pole	2 pole	ABN402c	ABS402c	ABH402c	ABL402c
	3 pole	ABN403c	ABS403c	ABH403c	ABL403c
	4 pole	ABN404c	ABS404c	ABH404c	ABL404c
Rated current, I _n	A	250, 300, 350, 400			
Rated operational voltage, U _e	AC(V)	690	690	690	690
	DC(V)	500	500	500	500
Rated insulation voltage, U _i	V	750	750	750	750
Rated impulse withstand voltage, U _{imp}	kV	8	8	8	8
Rated short-circuit breaking capacity(I _{cu}) kA (Sym), KSC8321, IEC 60947-2					
AC	690V	5	8	10	14
	480/500V	18	35	50	65
	415/460V	37	50	65	85
	380V	42	65	70	100
	220/250V	50	75	85	125
DC	500V(3P)	10	20	40	40
	250V(2P)	10	20	40	40
Service breaking capacity(%I _{cu}), I _{cs}		100	100	100	75
Category of use		A	A	A	A
Endurance (Number of operations)	Mechanical	4000	4000	4000	4000
	Electrical	1000	1000	1000	1000
Type of trip unit					
Thermal-magnetic release		fixed	fixed	fixed	fixed
Hydraulic-magnetic release		-	-	-	-
Magnetic release only without thermal trip		-	-	-	-
Earth leakage protection	for 3 pole	▲	▲	▲	▲
Accessories					
Electrical auxiliaries	Auxiliary switch	●	●	●	●
	Alarm switch	●	●	●	●
	Shunt trip	●	●	●	●
	Undervoltage trip	●	●	●	●
External accessories	Direct rotary handle	●	●	●	●
	Extended rotary handle	●	●	●	●
	Terminal shield	●	●	●	●
	Insulation barrier	●	●	●	●
	Rear connection	●	●	●	●
	Mechanical interlock	●	●	●	●
	Plug-in device	●	●	●	●
Dimensions (mm)	W×H×D (3P)	140×257×109			
Weight(kg)	2 pole	5.2	5.2	5.2	5.2
	3 pole	6.2	6.2	6.2	6.2
	4 pole	7.8	7.8	7.8	7.8

Note) 1. ● applicable or available
2. ▲ available as a separate breaker



800			1000		1200		
N-Type	S-Type	L-Type	S-Type	L-Type	S-Type		L-Type
ABN802c	ABS802c	ABL802c	-	-	-	-	-
ABN803c	ABS803c	ABL803c	ABS1003b	ABL1003b	ABS1203b	ABS1203bE	ABL1203b
ABN804c	ABS804c	ABL804c	ABS1004b	ABL1004b	ABS1204b	-	ABL1204b
500, 630, 700, 800			1000		1200		
690	690	690	600	600	600	600	600
500	500	500	-	-	-	-	-
750	750	750	690	690	690	690	690
8	8	8	6	6	6	6	6
8	10	14	-	-	-	-	-
25	45	65	50	75	50	50	75
37	65	85	65	85	65	65	85
45	75	100	65	85	65	65	85
50	85	125	100	125	100	100	125
10	20	40	-	-	-	-	-
10	20	40	-	-	-	-	-
100	100	75	50	50	50	50	50
A	A	A	A	A	A	A	A
2500	2500	2500	2500	2500	2500	2500	2500
500	500	500	500	500	500	500	500
fixed	fixed	fixed	fixed	fixed	fixed	-	fixed
-	-	-	-	-	-	Adjustable	-
-	-	-	-	-	-	-	-
▲	▲	▲	-	-	-	●	-
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	-	-	-	-	-
●	●	●	-	-	-	-	-
●	●	●	-	-	-	-	-
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	-	-	-	-	-
●	●	●	-	-	-	-	-
210×280×109			220×400×105		220×400×105		
11	11	11	-	-	-	-	-
11.5	11.5	11.5	19.6	19.6	-	-	-
18.2	18.2	18.2	-	-	25.7	25.7	25.7

Calibrated for 40°C	Amb. Temp.	-5°C	0°C	10°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C
	In=15 to 30	111.9%	111.3%	110.0%	108.0%	106.6%	104.9%	102.7%	100.0%	96.8%	93.3%
	In=40 to 100	110.2%	109.8%	108.7%	107.0%	105.8%	104.3%	102.4%	100.0%	97.2%	94.0%
	In=100 to 225	114.3%	113.2%	110.6%	107.5%	105.8%	104.0%	102.0%	100.0%	97.9%	95.6%
	In=250 to 800	110.0%	109.0%	107.0%	105.0%	104.0%	103.0%	101.5%	100.0%	98.5%	97.0%

Earth Leakage Circuit Breakers

Metasol 30AF to 250AF Series

Frame Size(AF)		30	50			60	
Type		S-Type	N-Type	S-Type	H-Type	N-Type	S-Type
Type and Pole	2-pole	-	EBN52c	-	-	-	-
	3-pole	EBS33c	EBN53c	EBS53c	EBH53c	EBN63c	EBS63c
	4-pole	EBS34c	-	EBS54c	EBH54c	-	EBS64c
Protective function		Overload, Short-circuit and Ground fault	Overload, Short-circuit and Ground fault		Overload, Short-circuit and Ground fault	Overload, Short-circuit and Ground fault	
Rated current, I _n A		15, 20, 30	15, 20, 30, 40, 50			15, 20, 30, 40, 50	60
Rated residual current, I _{Δn} mA		30, 100/200/500	30, 100/200/500			30, 100/200/500	30, 100/200/500
Rated operational voltage, U _e AC(V)		220/460	220/460			220/460	220/460
Rated impulse withstand voltage, U _{imp} kV		6	6			6	6
Residual current off-time at I _{Δn} sec		≤0.1 sec	≤0.1 sec			≤0.1 sec	≤0.1 sec
Rated short-circuit breaking capacity (I _{cu}) kA (Sym), KSC8321, IEC 60947-2							
AC	460V	14	14	18	50	14	18
	415V	14	14	18	50	14	18
	220/250V	30	30	35	100	30	35
Service breaking capacity(%I _{cu}), I _{cs}		100	100	100	100	100	100
Category of use		A	A	A	A	A	A
Endurance (Number of operations)	Mechanical	25000	25000	25000	25000	25000	25000
	Electrical	10000	10000	10000	10000	10000	10000
Type of trip unit							
Overcurrent pick-up		Thermal-magnetic	Thermal-magnetic			Thermal-magnetic	
Earth leakage pick-up		Electronic	Electronic			Electronic	
Accessories							
Electrical auxiliaries	Auxiliary switch	●	●	●	●	●	●
	Alarm switch	●	●	●	●	●	●
	Shunt trip						
	Undervoltage trip						
External accessories	Insulation barrier	●	●	●	●	●	●
	Terminal cover (Long)	●	●	●	●	●	●
	Terminal cover (Short)	●	●	●	●	●	●
	Rotary handle (Direct)	●	●	●	●	●	●
	Rotary handle (Direct, Key lock)	●	●	●	●	●	●
	Rotary handle (Extended)	●	●	●	●	●	●
	Rear terminal (Bar)				●	●	●
	Rear terminal (Round)	●	●	●	●	●	●
	Plug-in kit	●	●	●	●	●	●
	Pad handle lock	●	●	●	●	●	●
Dimensions (mm)	W×H×D (3P)	75×130×60	75×130×60		90×155×60	75×130×60	
Weight(kg)	2 pole	-	0.5	-	-	-	-
	3 pole	0.7	0.7	0.7	1	0.7	0.7
	4 pole	0.9	-	0.9	1.2	-	0.9

Note) 1. ● applicable or available
2. ▲ available as a separate breaker



100		125		250	
N-Type	S-Type	H-Type	N-Type	S-Type	H-Type
EBN102c	-	-	EBN202c	-	-
EBN103c	EBS103c	EBH103c	EBN203c	EBS203c	EBH203c
EBN104c	EBS104c	EBH104c	-	EBS204c	EBH204c
Overload, Short-circuit and Ground fault	Overload, Short-circuit and Ground fault		Overload, Short-circuit and Ground fault		
60, 75, 100	15, 20, 30, 40, 50, 60, 75, 100, 125		100, 125, 150, 175, 200, 225, 250		
30, 100/200/500 220/460	30,100/200/500 220/460		30,100/200/500 220/460		
6	6		6		
≤0.1 sec	≤0.1 sec		≤0.1 sec		
18	37	50	26	37	50
18	37	50	26	37	50
35	85	100	65	85	100
100	100	100	100	100	
A	A	A	A	A	
25000	25000	25000	20000	20000	20000
10000	10000	10000	5000	5000	5000
Thermal-magnetic	Thermal-magnetic		Thermal-magnetic		
Electronic	Electronic		Electronic		
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
75 × 130 × 60	90 × 155 × 60		105 × 165 × 60		
0.5	-	-	1.1	-	-
0.7	1	1	1.2	1.2	1.2
0.9	1.2	1.2	-	1.5	1.5

Earth Leakage Circuit Breakers

Metasol 400AF to 1200AF Series

Frame Size(AF)		400			
Type		N-Type	S-Type	H-Type	L-Type
Type and Pole	3-pole	EBN403c	EBS403c	EBH403c	EBL403c
	4-pole	EBN404c	EBS404c	EBH404c	EBL404c
Protective function		Overload, Short-circuit and Ground fault			
Rated current, I _n A		250, 300, 350, 400			
Rated residual current, I _{Δn} mA		30, 100/200/500mA			
Rated operational voltage, U _e AC(V)		220/460	220/460	220/460	220/460
Rated impulse withstand voltage, U _{imp} kV		6	6	6	6
Residual current off-time at I _{Δn} sec		0.1 sec	0.1 sec	0.1 sec	0.1 sec
Rated short-circuit breaking capacity (I _{cu}) kA (Sym), KSC8321, IEC 60947-2					
AC	415/460V	37	50	65	85
	220/250V	50	75	85	125
Service breaking capacity(%I _{cu}), I _{cs}		100	100	100	75
Category of use		A	A	A	A
Endurance (Number of operations)	Mechanical	40000	40000	40000	40000
	Electrical	10000	10000	10000	10000
Type of trip unit					
Overcurrent pick-up		Thermal-magnetic			
Earth leakage pick-up		Electronic			
Accessories					
Electrical auxiliaries	Auxiliary switch	●	●	●	●
	Alarm switch	●	●	●	●
	Shunt trip	●	●	●	●
	Undervoltage trip	●	●	●	●
External accessories	Insulation barrier	●	●	●	●
	Terminal cover (Long) - 2, 3pole	●	●	●	●
	Terminal cover (Long) - 4pole	●	●	●	●
	Rotary handle (Direct)	●	●	●	●
	Rotary handle (Extended)	●	●	●	●
	Mechanical interlock - 2, 3pole	●	●	●	●
	Mechanical interlock - 4pole	●	●	●	●
	Rear terminal - 2pole	●	●	●	●
	Rear terminal - 3pole	●	●	●	●
	Rear terminal - 4pole	●	●	●	●
Plug-in kit	●	●	●	●	
Dimensions (mm)	W×H×D (3P)	140×257×109			
Weight(kg)	2 pole	-	-	-	-
	3 pole	7	7	7	7
	4 pole	8.4	8.4	7	7

Note) 1. ● applicable or available
2. ▲ available as a separate breaker

Air circuit breakers

Susol ACB Series



Type		
Ampere frame	(AF)	
Rated current(A)	(In max)	at 40°C
Setting current (A) *	Control trip relay (... × In max)	
Rated current of neutral pole (A)		
Rated insulation voltage (V)	(Ui)	
Rated operating voltage (V)	(Ue)	
Rated impulse withstand voltage (kV)	(Uimp)	
Frequency (Hz)		
Number of poles (P)		
Rated breaking capacity (kA sym)	220V/230V/380V/415V	
IEC 60947-2	(Icu)	460V/480V/500V
AC 50/60Hz		550V/600V/690V
Rated service breaking capacity (kA)	(Ics)	... % × Icu
Rated making capacity (kA peak)	220V/230V/380V/415V	
IEC 60947-2	(Icm)	460V/480V/500V
AC 50/60Hz		550V/600V/690V
Rated short-time withstand current (kA) (Icw)	1sec	
	2 sec	
	3 sec	
Operating time (ms)	Maximum total breaking time	
	Maximum closing time	
Life cycle (time)	Mechanical	
	Electrical	
Connections **	Draw-out / Fixed	Horizontal connection
		Vertical connection
		Front connection
		Mixed connection
Weight (kg) (3P/4P)	Draw-out type	Main body (With cradle)
		Cradle only
	Fixed type	Motor charging type
		Manual charging type
External dimensions (mm) (H×W×D)	Draw-out type	3P
		4P
	Fixed type	3P
		4P
Trip relay		
Certificate & Approval		
Marine classification		

Susol						
AH-06D	AH-08D	AH-10D	AH-13D	AH-16D	AH-20D	
630	800	1000	1250	1600	2000	
200	400					
400	630	1000	1250	1600	2000	
630	800					
(0.4 ~ 1.0) × In max						
400	400					
630	630	1000	1250	1600	2000	
	800					
1000						
690						
12						
50/60						
3, 4						
85						
85						
65						
100%						
187						
187						
143						
65						
60						
50						
40						
80						
20,000						
5,000						
					●	-
					○	●
					○	-
					○	-
					63/74	70/85
					61/72	68/83
					29/32	33/40
					34/44	38/47
					32/42	36/45
					430 × 334 × 375	
					430 × 419 × 375	
					300 × 300 × 295	
					300 × 385 × 295	
N, A, P, S type						
KS / KEMA / KERI / GOST / CCC						
LR, ABS, DNV, KR, BV, GL, RINA, NK						

* Refer to trip relay specification. ** ●: Standard, ○: Option

※ Life time means not guarantee, but limitation.

Quality guarantee: On/Off frequency on the basis of IEC60947-2 within the term of guarantee



Susol									
AH-06E	AH-08E	AH-10E	AH-13E	AH-16E	AH-20E	AH-25E	AH-32E	AH-40E	
630	800	1000	1250	1600	2000	2500	3200	4000	
630	800	1000	1250	1600	2000	2500	3200	4000	
(0.4 ~ 1.0) × In max									
630	800	1000	1250	1600	2000	2500	3200	4000	
1,000									
690									
12									
50/60									
3, 4									
100									
100									
85									
100%									
220									
220									
187									
85									
75									
65									
40									
80									
15,000									
5,000									
●									○
○									●
○									-
○									-
			87/103				104/147		
			85/101				102/145		
			44/55				58/70		
			44/55				63/100		
			42/53				61/98		
430 × 412 × 375									
430 × 527 × 375									
300 × 378 × 295									
300 × 493 × 295									
N, A, P, S type									
KS / KEMA / KERI / GOST / CCC									
LR, ABS, DNV, KR, BV, GL, RINA, NK									

Susol		
AH-40G	AH-50G	AH-63G
4000	5000	6300
4000	5000	6300
(0.4 ~ 1.0) × In max		
4000	5000	6300
1,000		
690		
12		
50/60		
3, 4		
150		
150		
100		
100%		
330		
330		
220		
100		
85		
75		
40		
80		
10,000		
2,000		
		○
		●
		-
		-
181/223		186/230
179/221		184/228
97/117		102/124
98/123		103/130
96/121		101/128
460 × 785 × 375		
460 × 1015 × 375		
300 × 751 × 295		
300 × 981 × 295		
N, A, P, S type		
KS / KEMA / KERI / GOST / CCC		
LR, ABS, DNV, KR, BV, GL, RINA, NK		

Air circuit breakers

Metasol ACB Series



Type			
Ampere frame	(AF)		
Rated current(A)	(In max)	at 40°C	
Setting current (A) *	Control trip relay (... × In max)		
Rated current of neutral pole (A)			
Rated insulation voltage (V)	(Ui)		
Rated operating voltage (V)	(Ue)		
Rated impulse withstand voltage (kV)	(Uimp)		
Frequency (Hz)			
Number of poles (P)			
Rated breaking capacity (kA sym)	220V/230V/380V/415V		
IEC 60947-2	(Icu)	460V/480V/500V	
AC 50/60Hz	550V/600V/690V		
Rated service breaking capacity (kA)	(Ics)	... % × Icu	
Rated making capacity (kA peak)	220V/230V/380V/415V		
IEC 60947-2	(Icm)	460V/480V/500V	
AC 50/60Hz	550V/600V/690V		
Rated short-time withstand current (kA)	(Icw)	1 sec 2 sec 3 sec	
Operating time (ms)	Maximum total breaking time Maximum closing time		
Life cycle (time)	Mechanical		
	Electrical		
Connections **	Draw-out / Fixed	Horizontal connection	●
		Vertical connection	○
		Front connection	○
		Mixed connection	○
Weight (kg) (3P/4P)	Draw-out type	Main body (With cradle)	Motor charging type 63/74
		Cradle only	Manual charging type 61/72
	Fixed type	Motor charging type	29/32
		Manual charging type	34/44
External dimensions (mm) (H×W×D)	Draw-out type	3P	430×334×375
		4P	430×419×375
	Fixed type	3P	300×300×295
		4P	300×385×295
Trip relay		N, A, P type	
Certificate & Approval		KS / KEMA / KERI / GOST	
Marine classification		LR, ABS, DNV, KR, BV, GL, RINA, NK	

Metasol					
AN-06D	AN-08D	AN-10D	AN-13D	AN-16D	AS-20D
630	800	1000	1250	1600	2000
200	400				
400	630	1000	1250	1600	2000
630	800				
(0.4 ~ 1.0) × In max					
400	400				
630	630	1000	1250	1600	2000
	800				
1000					
690					
12					
50/60					
3, 4					
					70
					70
					65
					100%
					100%
					143
					143
					105
					50
					65
					42
					55
					36
					50
40					
80					
20,000					
5,000					
					-
					●
					-
					-
					-
					70/85
					68/83
					33/40
					38/47
					36/45
430×334×375					
430×419×375					
300×300×295					
300×385×295					
N, A, P type					
KS / KEMA / KERI / GOST					
LR, ABS, DNV, KR, BV, GL, RINA, NK					

* Refer to trip relay specification. ** ●: Standard, ○: Option

※ Life time means not guarantee, but limitation.

Quality guarantee: On/Off frequency on the basis of IEC60947-2 within the term of guarantee



Metasol			
AS-20E	AS-25E	AS-32E	AS-40E
2000	2500	3200	4000
630, 800			
1000, 1250	2500	3200	4000
1600, 2000			
(0.4 ~ 1.0) × In max			
630, 800			
1000, 1250	2500	3200	4000
1600, 2000			
1,000			
690			
12			
50/60			
3, 4			
85			
85			
85			
100%			
187			
187			
187			
85			
75			
65			
40			
80			
15,000			
5,000			
●			○
○			●
○			-
○			-
87/103			104/147
85/101			102/145
44/50			58/70
44/55			63/100
42/53			61/98
430×412×375			
430×527×375			
300×378×295			
300×493×295			
N, A, P type			
KS / KEMA / KERI / GOST			
LR, ABS, DNV, KR, BV, GL, RINA, NK			

Metasol	
AS-50F	
4000	5000
4000	5000
(0.4 ~ 1.0) × In max	
4000	5000
1000	
690	
12	
50/60	
3, 4	
100	
100	
85	
100%	
220	
220	
187	
85	
75	
65	
40	
80	
10,000	
2,000	
○	●
-	-
-	-
145/173	
143/171	
78/90	
76/94	
74/92	
460×629×375	
460×799×375	
300×597×295	
300×767×295	
N, A, P type	
KS / KEMA / KERI / GOST	
LR, ABS, DNV, KR, BV, GL, RINA, NK	

Metasol		
AS-40G	AS-50G	AS-63G
4000	5000	6300
4000	5000	6300
(0.4 ~ 1.0) × In max		
4000	5000	6300
1,000		
690		
12		
50/60		
3, 4		
120		
120		
100		
100%		
264		
264		
220		
100		
85		
75		
40		
80		
10,000		
2,000		
○	●	-
-	-	-
181/223		186/230
179/221		184/228
97/117		102/124
98/123		103/130
96/121		101/128
460×785×375		
460×1015×375		
300×751×295		
300×981×295		
N, A, P type		
KS / KEMA / KERI / GOST		
LR, ABS, DNV, KR, BV, GL, RINA, NK		

Trip relay(OCR)

The trip relay of Susol ACB provides the additional protection functions for voltage, frequency, unbalance, and others in addition to main protection functions for over current, short-circuit, ground fault. It supports the advanced measurement functions for voltage, current, power, electric energy, harmonics, communication function, and others.

Analog trip function interlocked with mechanism enhanced a durability of devices as well as the breaking capacity of ACB.

Zone selective interlocking function makes the protective coordination more simple and thermal memory can be applied to various loads.



Trip relay types

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 20% of load current.	• Self Power - Power source works over 20% of load current. - 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	-	• 10records (Fault/Current/Date and Time)	• 256records (Fault/Current/Date and Time)	• 256records • 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.

LS Final Distribution Boards

LS Final Distribution Boards is fully type-tested by ASTA and specially designed for residential and commercial area for the protection of people and equipment.



شركة أبوظبي للتوزيع
Abu Dhabi Distribution Co.



Full range of Residential & Commercial Distribution System



Features:

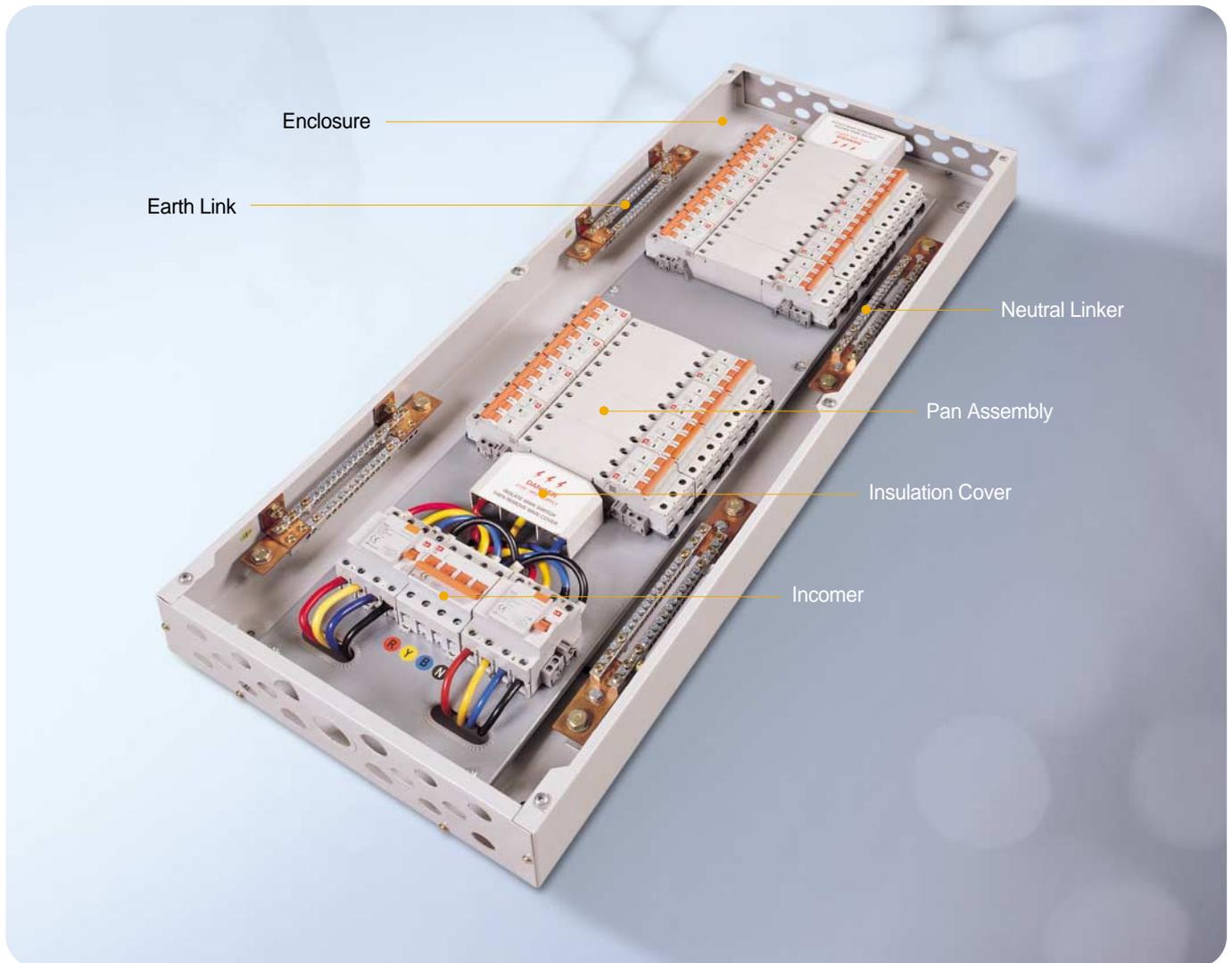
- Designed to provide higher level of safety for final distribution board
- Pan assembly type busbar systems to provide easier cabling
- Split neutral bars provide easy connection and maximum cable space
- Easy and safe mounting of LS Miniature Circuit Breaker
- Flush and surface mounted
- Tin plate and cooper busbar
- Galvanized 1.2mm steel sheet



Technical Description

- In compliance with standards : IEC 60439-3
- Short-circuit withstand: 17kA/0.2s
- Peak short time withstand: 35kA
- Index of degree: IP 4X
- Rated operational Voltage(Ue): 415V
- Rated insulation Voltage(Ui): 460V
- Rated Frequency: 50/60Hz
- Rated impuls withstand Voltage(Uimp): 4kV
- Rated Current (In): Upto 125A

Internal view



Pan Assembly System

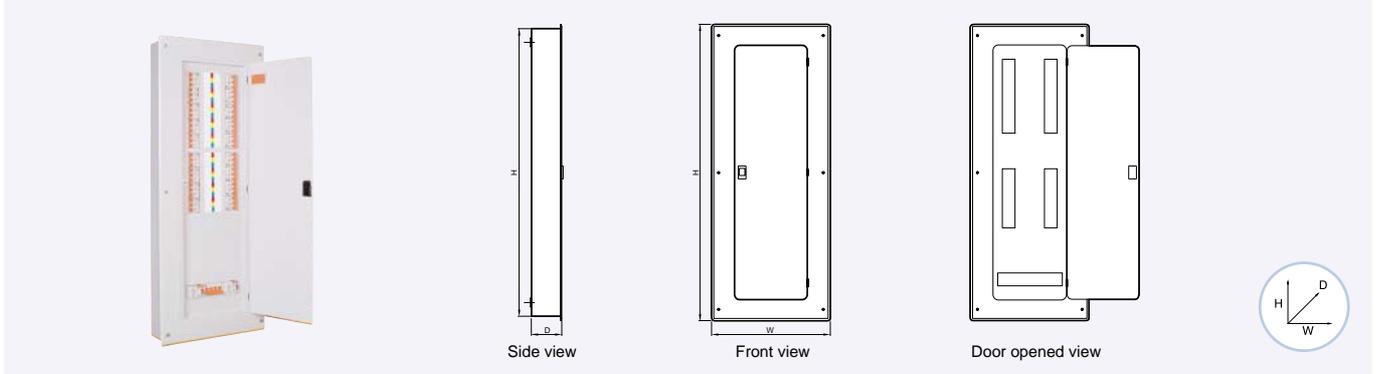


- Rigid and removable pan assembly to provide easier cabling
- Modular panel system
- Flexible connect with CB, RCCB and Disconnect switch

LS Final Distribution Boards

Specific of FDB Split busbar type

with incoming Isolator feeding two ELCBs

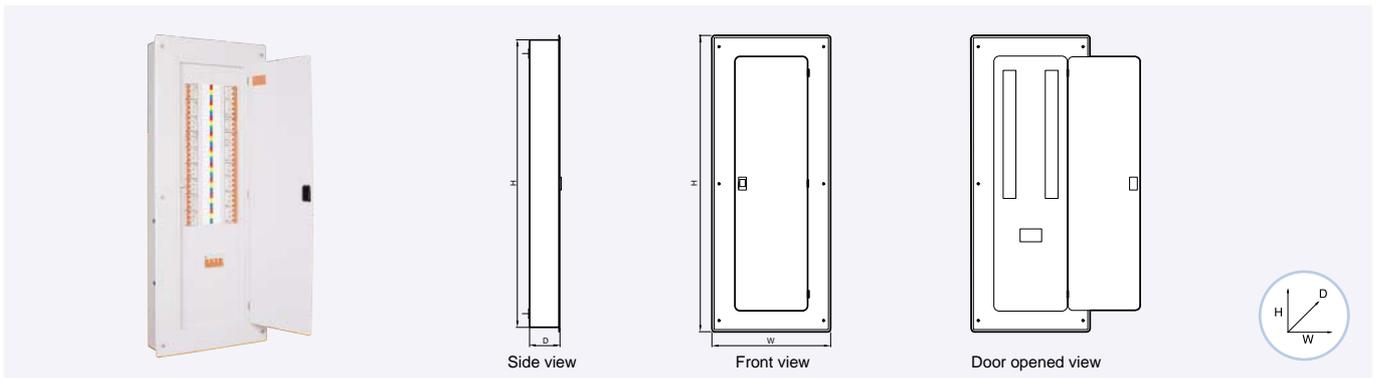


Selection of Enclosure

Code Description	Type	Dimension	
02+02 Way Split DB	Flush	530H×430W×110D mm	
04+02 Way Split DB		580H×430W×110D mm	
04+04 Way Split DB		680H×430W×110D mm	
06+04 Way Split DB		780H×430W×110D mm	
06+06 Way Split DB		780H×430W×110D mm	
08+06 Way Split DB		830H×430W×110D mm	
08+08 Way Split DB		980H×430W×110D mm	
10+08 Way Split DB		980H×430W×110D mm	
12+06 Way Split DB		980H×430W×110D mm	
02+02 Way Split DB		Surface	510H×410W×110D mm
04+02 Way Split DB			560H×410W×110D mm
04+04 Way Split DB			660H×410W×110D mm
06+04 Way Split DB	760H×410W×110D mm		
06+06 Way Split DB	760H×410W×110D mm		
08+06 Way Split DB	810H×410W×110D mm		
08+08 Way Split DB	960H×410W×110D mm		
10+08 Way Split DB	960H×410W×110D mm		
12+06 Way Split DB	960H×410W×110D mm		

Single busbar & Single Incomer type

With Incoming 4P ELCB/MCB/Isolator



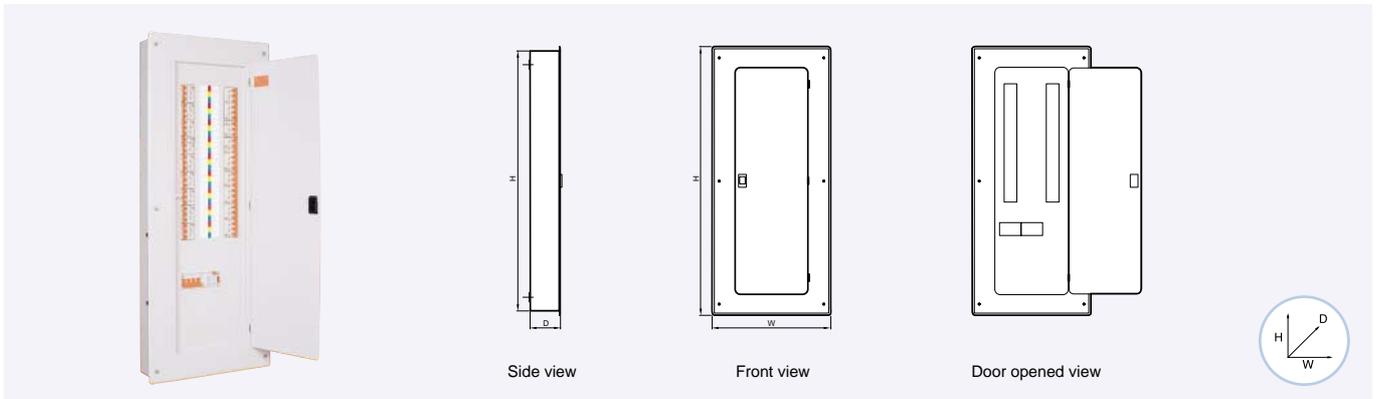
Selection of Enclosure

Code Description	Type	Dimension
4 Way DB 1 INC	Flush	530H×430W×110D mm
6 Way DB 1 INC		580H×430W×110D mm
8 Way DB 1 INC		680H×430W×110D mm
12 Way DB 1 INC		780H×430W×110D mm
14 Way DB 1 INC		830H×430W×110D mm
18 Way DB 1 INC		980H×430W×110D mm
20 Way DB 1 INC		Customized available
24 Way DB 1 INC		Customized available
4 Way DB 1 INC	Surface	510H×410W×110D mm
6 Way DB 1 INC		560H×410W×110D mm
8 Way DB 1 INC		660H×410W×110D mm
12 Way DB 1 INC		760H×410W×110D mm
14 Way DB 1 INC		810H×410W×110D mm
18 Way DB 1 INC		960H×410W×110D mm
20 Way DB 1 INC		Customized available
24 Way DB 1 INC		Customized available

Specific of FDB

Single busbar & Dual Incomer type

With Incoming Isolator & ELCB

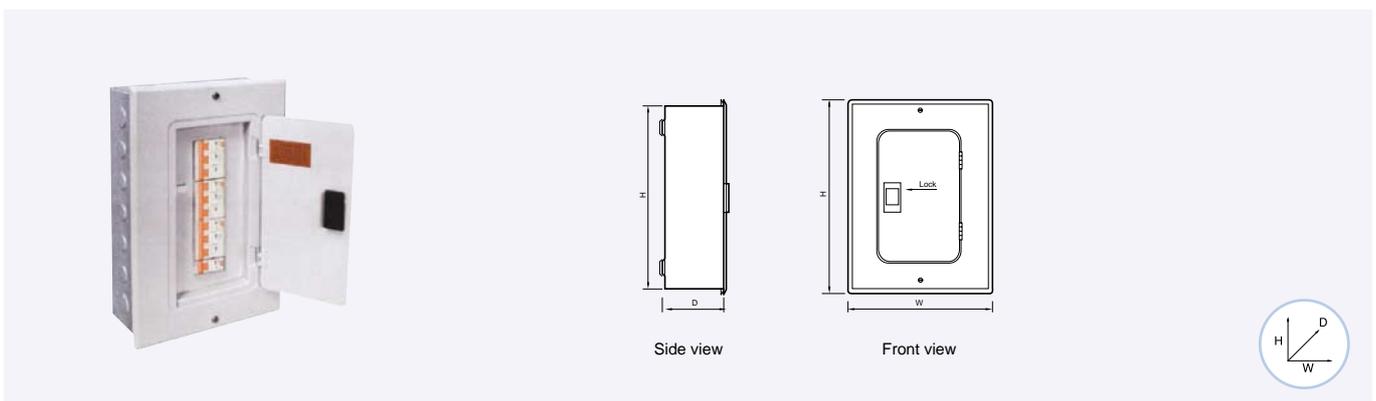


Selection of Enclosure

Code Description	Type	Dimension
4 Way DB 2 INC	Flush	530H×430W×110D mm
6 Way DB 2 INC		580H×430W×110D mm
8 Way DB 2 INC		680H×430W×110D mm
12 Way DB 2 INC		780H×430W×110D mm
14 Way DB 2 INC		830H×430W×110D mm
18 Way DB 2 INC		980H×430W×110D mm
20 Way DB 2 INC		Customized available
24 Way DB 2 INC		Customized available
4 Way DB 2 INC	Surface	510H×410W×110D mm
6 Way DB 2 INC		560H×410W×110D mm
8 Way DB 2 INC		660H×410W×110D mm
12 Way DB 2 INC		760H×410W×110D mm
14 Way DB 2 INC		810H×410W×110D mm
18 Way DB 2 INC		960H×410W×110D mm
20 Way DB 2 INC		Customized available
24 Way DB 2 INC		Customized available

SP&N Consumer Unit

Incoming 2P ELCB / MCB / Isolator



Selection of Enclosure

Code Description	Type	Dimension
6 Way 1P C.Unit		320H×240W×100D mm
9 Way 1P C.Unit		370H×240W×100D mm
12 Way 1P C.Unit		420H×250W×100D mm
15 Way 1P C.Unit		490H×250W×100D mm
18 Way 1P C.Unit		550H×250W×100D mm
22 Way 1P C.Unit		Customized available

- LS SMDB Solutions are arranged for 3 Phase and neutral incoming supply and specially designed easy to install MCCBs.
- These are fitted with Form 3b and 2 busbar assemblies, tested and ASTA Certified.



شركة أبوظبي للتوزيع
Abu Dhabi Distribution Co.



Rating

- A wide choice of incoming MCCBs make LS SMDB panels flexible to suit most of the requirements and represent excellent value and will appeal to consultants, contractors, end users and OEMs. These are offered in ratings of 125A, 250A, 400A, 630A.
- All incoming and outgoing MCCBs have Thermal/Magnetic fixed and adjustable tripping mechanisms incorporated with a trip-to-test button. These are available in ratings as follows : 16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160, 250, 400, 630A.

Technical Specifications

Constructional Characteristics

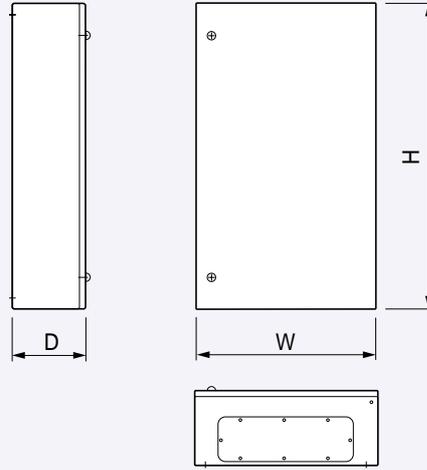
- Complied with IEC 60947-1
- Fully Type Tested, ASTA Certified
- Degree of protection : IP41 as per IEC 60529
- Form of separation: Form 3b
- Enclosure constructed from rigid folded zinc phosphate and protected both internally and externally with polyester powder coating

Electrical Characteristics

- Rated Operational Voltage U_e : upto 690V
- Rated Insulation voltage U_i : upto 750V
- Rated Frequency: 50/60Hz
- Rated Impulse withstand voltage U_{imp} : 8kV
- Rated Short time I_{cw} & peak withstand I_{pk} Current: 36kA/1S

Incoming Devices

MCCB Panelboards



Metasol Series

Incoming Breaker 250 Amps Outgoing Breaker 100 Amps				Incoming Breaker 400 Amps Outgoing Breaker 100 Amps				Incoming Breaker 630 Amps Outgoing Breaker 100 Amps			
No of Ways	Width	Height	Depth	No of Ways	Width	Height	Depth	No of Ways	Width	Height	Depth
2	700	800	180	4	700	1000	250				
4	700	800	180	6	700	1000	250	6	800	1000	250
6	700	800	180	8	700	1200	250	8	800	1200	250
8	700	1000	180	10	700	1400	250	10	800	1400	250
10	700	1200	180	12	700	1400	250	12	800	1400	250
12	700	1200	180	14	700	1600	250	14	800	1600	250

Susol TD/TS Series

Incoming Breaker 250 Amps Outgoing Breaker 100 Amps				Incoming Breaker 400 Amps Outgoing Breaker 100 Amps				Incoming Breaker 630 Amps Outgoing Breaker 100 Amps			
No of Ways	Width	Height	Depth	No of Ways	Width	Height	Depth	No of Ways	Width	Height	Depth
2	700	800	180	4	700	1000	250				
4	700	800	180	6	700	1000	250	6	800	1000	250
6	700	800	180	8	700	1200	250	8	800	1200	250
8	700	1000	180	10	700	1400	250	10	800	1400	250
10	700	1200	180	12	700	1400	250	12	800	1400	250
12	700	1200	180	14	700	1600	250	14	800	1600	250

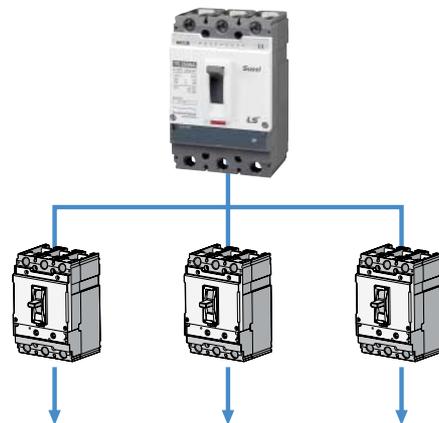
LS SMDB Solution

Incoming Devices

LSIS “Susol series” range of MCCBs

Rated current, In	250A 630A								
Rated operational voltage, Ue	750V								
MCCB breaker type	TS250			TS400			TS630		
Ultimate breaking capacity, Icu (kA rms) at 415V	N	H	L	N	H	L	N	H	L
	50	85	150	50	85	150	50	85	150
Service breaking capacity, Ics.....% Icu	100% Icu			100% Icu			100% Icu		
Protection trip unit	Thermal magnetic / Electronic								
Switch disconnecter type TS	TS250NA			TS400NA			TS630NA		
Short-circuit making capacity Icm (kApeak) (with upstream circuit breaker)	4.9			7.1			8.5		

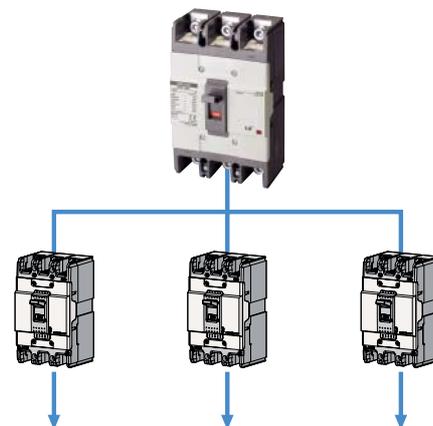
Incoming application



LSIS “Metasol series” range of MCCBs

Rated current, In	250A 630A		
Rated operational voltage, Ue	690V		
Breaker type	ABS203c	ABS403c	ABS803c
Ultimate breaking capacity, Icu (kA rms) at 415V	37	50	65
Service breaking capacity, Ics.....% Icu	100% Icu	100% Icu	100% Icu
Protection trip unit	Thermal magnetic		

Incoming application

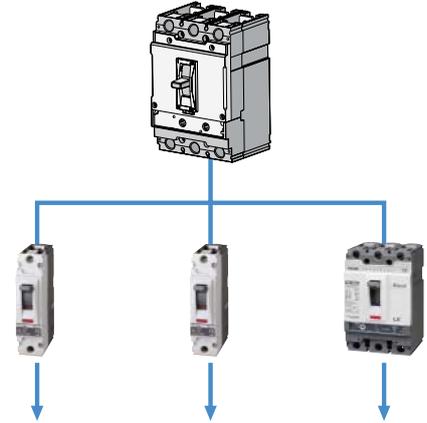


Outgoing devices

LSIS “Susol series” range of MCCBs

Rated current, In	16A 250A					
Rated operational voltage, Ue	upto 750V					
Breaker type	TD100, TD160, TS100, TS160, TS250					
	N		H		L	
No. of poles	1P	3P	1P	3P	1P	3P
Ultimate breaking capacity, Icu (kA rms) at 240V	30	100	50	120	-	200
Service breaking capacity, Ics.....% Icu	100% Icu					
Protection trip unit	Thermal magnetic / Electronic					

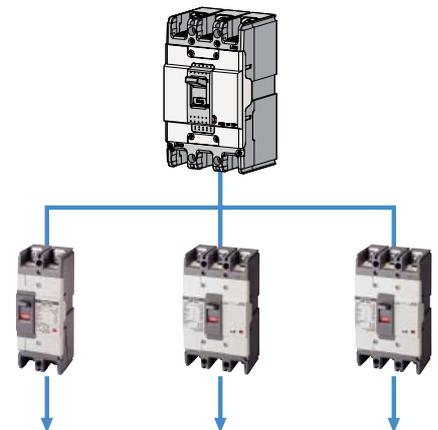
Incoming application



LSIS “Metasol series” range of MCCBs

Rated current, In	15A 100A					
Rated operational voltage, Ue	upto 415V - Single pole upto 690V - Three pole					
Breaker type	ABS103c					
	N		H		L	
No. of poles	2P	3P	2P	3P	2P	3P
Ultimate breaking capacity, Icu (kA rms) at 240V	35		85		100	
Ultimate breaking capacity, Icu (kA rms) at 415V	18		37		50	
Service breaking capacity, Ics.....% Icu	100% Icu					
Protection trip unit	Thermal magnetic					

Incoming application



Vacuum Circuit Breakers

Susol VCB Series

7.2kV (VL-06)

Type		VL-06□08□04	VL-06□13□06
Rated voltage	Ur (kV)	7.2	
Rated normal current	Ir (A)	400	630
Rated frequency	fr (Hz)	50/60	
Rated short-circuit current	Isc (kA)	8	12.5
Rated short-time withstand current	Ik/tk (kA/s)	8/3	12.5/3
Rated short-circuit breaking capacity	(MVA)	100	160
Rated short-circuit making current	Ip (kA)	2.5 * Isc (50Hz)/2.6 * Isc (60Hz)	
Rated breaking time	(cycle)	3	
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	
	Impulse (1.2 × 50μs)	Up (kV)	
Rated operating sequence		O-0.3s-CO-15s-CO	
Control voltage	Closing coil (V)	AC/DC 100~130V, AC/DC 200~250V, DC 125V, DC 24~30V, DC 48~60V, AC 48V	
	Trip coil (V)	AC/DC 100~130V, AC/DC 200~250V, DC 125V, DC 24~30V, DC 48~60V, AC 48V	
Auxiliary contacts		2a2b, 4a4b, 6a6b	
Rated opening time	(sec)	≤ 0.04	
No-load closing time	(sec)	≤ 0.06	
Type test class	Mechanical	M2	
	Electrical	E2 (List1)	
	Capacitive current switching	C2	
Installation version	Fixed	P type	
	Drawout	E, F, G type (for MESSG)	
Phase distance	(mm)	130	
Weight	Breaker (E, F, G type) (kg)	37	37
	Cradle (E, F, G type) (kg)	18, 25, 32	19, 26, 33
Standards		IEC 62271-100 (2008), KS C 4611, JEC 2300/JIS C 4603, V-check (KESCO)	

7.2/12/17.5kV (VL-06/12/17)

Type		VL-06□20/25□06/13/20			VL-12□20/25□06/13/20			VL-17□20/25□06/13/20		
Rated voltage	Ur (kV)	7.2			12			17.5		
Rated normal current	Ir (A)	630	1250	2000	630	1250	2000	630	1250	2000
Rated frequency	fr (Hz)	50/60								
Rated short-circuit current	Isc (kA)	20, 25								
Rated short-time withstand current	Ik/tk (kA/s)	20/3, 25/3								
Rated short-circuit breaking capacity	(MVA)	250/310			410/520			600/750		
Rated short-circuit making current	Ip (kA)	2.5 * Isc (50Hz)/2.6 * Isc (60Hz)								
Rated breaking time	(cycle)	3								
Rated withstand voltage	Power frequency (1 min)	Ud (kV)			28 (42)			38		
	Impulse (1.2 × 50μs)	Up (kV)			75 (82)			95		
Rated operating sequence		O-0.3s-CO-15s-CO								
Control voltage	Closing coil (V)	DC 24~30V, DC 48~60V, DC 110V, DC 125V, DC 220V, AC 48V, AC 100~130V, AC 220~250V								
	Trip coil (V)	DC 24~30V, DC 48~60V, DC 110V, DC 125V, DC 220V, AC 48V, AC 100~130V, AC 220~250V								
Auxiliary contacts		4a4b, 10a10b								
Rated opening time	(sec)	≤ 0.04								
No-load closing time	(sec)	≤ 0.06								
Type test class	Mechanical	M2								
	Electrical	E2 (List3)								
	Capacitive current switching	C2								
Installation version *	Fixed	P type			P type					
	Drawout	E, F, G type (for MESSG), H type (for MCSG)			E, F type (for MESSG), H type (for MCSG)					
Phase distance **	(mm)	150			150 (210)			150 (210)		
Weight	Breaker (E, F, G type) (kg)	100	100	130	115 (120)	115 (120)	130 (140)	115 (120)	115 (120)	130 (140)
	Cradle (E, F, G type) (kg)	170	170	180	170 (200)	170 (200)	180 (200)	170 (200)	170 (200)	180 (200)
Standards		IEC 62271-100 (2008), KERI/KEMA, V-check (KESCO)								

* H type is a box type cradle with CB compartment style structure.

** () displays option of phase distance.

7.2/12kV (LVB-06/12)

Type			VLB-06□-32, 40□12, 20, 32 *			VLB-12□-32, 40□12, 20, 30 *		
Rated voltage	Ur (kV)		7.2			12		
Rated normal current	Ir (A)		1250	2000	3150	1250	2000	3150
Rated frequency	fr (Hz)		50/60					
Rated short-circuit current	Isc (kA)		31.5, 40			31.5, 40		
Rated short-time withstand current	Ik/tk (kA/s)		31.5/3, 40/3			31.5/3, 40/3		
Rated short-circuit breaking capacity	(MVA)		393, 499			393, 499		
Rated short-circuit making current	Ip (kA)		2.5 * Isc (50Hz)/2.6 * Isc (60Hz)					
Rated breaking time	(Cycle)		3					
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20			28		
	Impulse (1.2 × 50μs)	Up (kV)	60			75		
Rated operating sequence			O-0.3s-CO-3min-CO					
Control voltage	Closing coil	(V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V					
	Trip coil	(V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V					
Auxiliary contacts			4a4b, 10a10b					
Rated opening time	(sec)		≤ 0.04					
No-load closing time	(sec)		≤ 0.06					
Type test class	Mechanical		M2					
	Electrical		E2 (List1)					
	Capacitive current switching		C2					
Installation version *	Fixed		P type			-		
	Drawout		E,F,G type (for MESH), MESH Cradle			MESH Cradle		
Phase distance	(mm)		150		210	150		210
Weight	Breaker (MESH, MESH)	(kg)	135, 160	135, 160	210, 220	164	165	220
	Cradle (MESH, MESH)	(kg)	55, 110	63, 117	135, 155	110	117	155
Standards			IEC 62271-100, KERI/KEMA, V-check(KESCO)					

* MESH style drawout type provide a cradle for building in the switchgear, not a box type for CB compartment. Ordering type is LVB.

Note) H type that is a box type cradle for enabling a CB compartment in MESH is under development. Consult us for ordering.

7.2/12/17.5kV (VH-06/12/17)

Type			VH-06□50□13/20/25/32				VH-12□50□13/20/25/32				VH-17□50□13/20/25/32			
Rated voltage	Ur (kV)		7.2				12				17.5			
Rated normal current	Ir (A)		1250	2000	2500	3150	1250	2000	2500	3150	1250	2000	2500	3150
Rated frequency	fr (Hz)		60											
Rated short-circuit current	Isc (kA)		50											
Rated short-time withstand current	Ik/tk (kA/s)		50/3											
Rated short-circuit breaking capacity	(MVA)		623				1039				1515			
Rated short-circuit making current	Ip (kA)		2.6 * Isc (60Hz)											
Rated breaking time	(cycle)		3											
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20				28 (42)				38			
	Impulse (1.2 × 50μs)	Up (kV)	60				75 (82)				95			
Rated operating sequence			O-0.3s-CO-3min-CO											
Control voltage	Closing coil	(V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V											
	Trip coil	(V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V											
Auxiliary contacts			4a4b, 10a10b											
Rated opening time	(sec)		≤ 0.04											
No-load closing time	(sec)		≤ 0.06											
Type test class	Mechanical		M2											
	Electrical		E2 (List3)											
	Capacitive current switching		C2											
Installation version	Fixed		P type											
	Drawout		H type (for MESH)											
Phase distance	(mm)		210		275	210		275	210		275			
Weight	Breaker (H type)	(kg)	230	287	290	230	287	290	230	287	290			
	Cradle (H, type)	(kg)	175	320	320	175	320	320	175	320	320			
Standards			IEC 62271-100(2008), KERI/KEMA, V-check(KESCO)											

Vacuum Circuit Breakers

Susol VCB Series

7.2/12KV (VH-06/12)

Type		VH-06□40, 50□04	VH-12□40, 50□04
Rated voltage	Ur (kV)	7.2	12
Rated normal current	Ir (A)	4000	4000
Rated frequency	fr (Hz)	50/60	
Rated short-circuit current	Isc (kA)	40, 50	
Rated short-time withstand current	Ik/tk (kA/s)	40/3, 50/3	
Rated short-circuit breaking capacity	(MVA)	499, 623	831, 1039
Rated short-circuit making current	Ip (kA)	2.5 * Isc (50Hz)/2.6 * Isc (60Hz)	
Rated breaking time	(Cycle)	3	
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	28
	Impulse (1.2 × 50μs)	Up (kV)	75
Rated operating sequence		O-0.3s-CO-3min-CO	
Control voltage	Closing coil (V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V	
	Trip coil (V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V	
Auxiliary contacts		4a4b, 10a10b	
Rated opening time	(sec)	≤ 0.04	
No-load closing time	(sec)	≤ 0.06	
Type test class	Mechanical	M2	
	Electrical	E2 (List1)	
	Capacitive current switching	C2	
Installation version	Fixed	P type	
	Drawout *	H type (for MESSG), with K type Cradle	
Phase distance	(mm)	275	
Weight	Breaker (P type, H type)	270, 318	
	Cradle (K type)	315	
Standards		IEC 62271-100, KERI/KEMA, V-check(KESCO)	

* K type cradle drawable type provide a cradle for building in the switchgear, not a box type for CB compartment. Ordering type is LVB.

24kV (VH-20)

Type		VH-20□25□25	VH-20□32□13/20/32			VH-20□40□13/20/32			
Rated voltage	Ur (kV)	24/25.8							
Rated normal current	Ir (A)	2500	1250	2000	3150	1250	2000	3150	
Rated frequency	fr (Hz)	60							
Rated short-circuit current	Isc (kA)	25	31.5			40			
Rated short-time withstand current	Ik/tk (kA/s)	25/3	31.5/3			40/3			
Rated short-circuit breaking capacity	(MVA)	1039/1117	1309/1407			1662/1787			
Rated short-circuit making current	Ip (kA)	2.6 * Isc (60Hz)							
Rated breaking time	(cycle)	3							
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	50 (65) <small>Note</small>						
	Impulse (1.2 × 50μs)	Up (kV)	125						
Rated operating sequence		O-0.3s-CO-3min-CO							
Control voltage	Closing coil (V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V							
	Trip coil (V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V							
Auxiliary contacts		4a4b, 10a10b							
Rated opening time	(sec)	≤ 0.04							
No-load closing time	(sec)	≤ 0.06							
Type test class	Mechanical	M2							
	Electrical	E2 (List3)							
	Capacitive current switching	C2							
Installation version *	Fixed	P type							
	Drawout	H type (for MESSG)							
Phase distance **	(mm)	275	210 (275)	210 (275)	275	210 (275)	210 (275)	275	
Weight	Breaker (H type)	(kg)	295	256 (273)	256 (273)	318	256 (273)	256 (273)	318
	Cradle (H type)	(kg)	316	257 (284)	257 (284)	316	257 (284)	257 (284)	316
Standards		IEC 62271-100 (2008), KERI/KEMA, V-check (KESCO)							

* H type is a box type cradle with CB compartment style structure. ** () displays option of phase distance.
Note) Contact us.

36kV (VH-36)

Type			VH-36□25□13/20/32			VH-36□32□13/20/32			VH-36□40□13/20/32		
Rated voltage	Ur (kV)		36								
Rated normal current	Ir (A)		1250	2000	3150	1250	2000	3150	1250	2000	3150
Rated frequency	fr (Hz)		50/60								
Rated short-circuit current	Isc (kA)		25			31.5			40		
Rated short-time withstand current	Ik/tk (kA/s)		25/3			31.5/3			40/3		
Rated short-circuit breaking capacity	(MVA)		1559			1964			2494		
Rated short-circuit making current	Ip (kA)		2.5 * Isc (50Hz)/2.6 * Isc (60Hz)								
Rated breaking time	(cycle)		3								
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	70 (95) <i>Note</i>								
	Impulse (1.2 × 50μs)	Up (kV)	170								
Rated operating sequence			O-0.3s-CO-3min-CO								
Control voltage	Closing coil	(V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V								
	Trip coil	(V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V								
Auxiliary contacts			4a4b, 10a10b								
Rated opening time	(sec)		≤ 0.04								
No-load closing time	(sec)		≤ 0.06								
Type test class	Mechanical		M2								
	Electrical		E2 (List3)								
	Capacitive current switching		C2								
Installation version *	Fixed		P type								
	Drawout		H type (for MCSG)								
Phase distance	(mm)		300								
Weight	Breaker (H type)	(kg)	400	490	400	490	400	490	400	490	
	Cradle (H type)	(kg)	700	750	700	750	700	750	700	750	
Standards			IEC 62271-100 (2008), KERI/KEMA, V-check (KESCO)								

* H type is a box type cradle with CB compartment style structure.

Note) Contact us.

40.5kV (VH-40)

Type			VH-40□25□13/20/32			VH-40□32□13/20/32		
Rated voltage	Ur (kV)		40.5					
Rated normal current	Ir (A)		1250	2000	3150	1250	2000	3150
Rated frequency	fr (Hz)		50					
Rated short-circuit current	Isc (kA)		25			31.5		
Rated short-time withstand current	Ik/tk (kA/s)		25/4			31.5/4		
Rated short-circuit breaking capacity	(MVA)		1754			2210		
Rated short-circuit making current	Ip (kA)		2.5 * Isc (50Hz)					
Rated breaking time	(cycle)		3					
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	95					
	Impulse (1.2 × 50μs)	Up (kV)	180					
Rated operating sequence			O-0.3s-CO-3min-CO					
Control voltage	Closing coil	(V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V					
	Trip coil	(V)	DC 48V, DC 110V, DC 125V, DC 220V, AC 48V, AC 110V, AC 220V					
Auxiliary contacts			4a4b, 10a10b					
Rated opening time	(sec)		≤ 0.04					
No-load closing time	(sec)		≤ 0.06					
Type test class	Mechanical		M2					
	Electrical		20 Operations at 100% Isc					
	Capacitive current switching		C2					
Installation version	Fixed		P type					
Phase distance	(mm)		300					
Weight	Breaker (H type)	(kg)	400	490	400	490	400	490
Standards			GB1984					

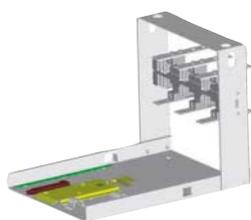
Vacuum Circuit Breakers

Susol VCB Series

Accessories

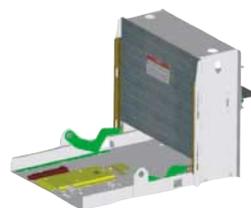
Dimensions	Main	Cradle
	<ul style="list-style-type: none"> • Secondary trip coil • Under voltage trip release • Current trip coil • Position S/W • Keylock • Button padlock • Button cover • Mechanical position indicator 	<ul style="list-style-type: none"> • Mechanical position indicator
	<ul style="list-style-type: none"> • Secondary trip coil • Under voltage trip release • Current trip coil • Position S/W • Keylock • Button padlock • Button cover • Plug interlock • Mechanical position indicator 	<ul style="list-style-type: none"> • Earthing S/W • Earthing with electromechanical interlock • Earthing S/W with position S/W • Earthing S/W with keylock • Door interlock • MOC • TOC • Shutter padlock • Emergency mechanical trip device
	<ul style="list-style-type: none"> • Secondary trip coil • Under voltage trip release • Current trip coil • Position S/W • Keylock • Button padlock • Button cover • Plug interlock • Mechanical position indicator 	<ul style="list-style-type: none"> • Earthing S/W • Earthing with electromechanical interlock • Earthing S/W with position S/W • Earthing S/W with keylock • Door interlock • MOC • TOC • Shutter padlock • Emergency mechanical trip device

Various type of Cradle



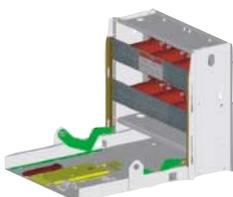
E type

- No Shutter
- For MESG



F type

- Insulation Shutter
- For MESG



G type

- Bushing
- Insulation Shutter
- For MESG



H type

- Bushing
- Metal Insulation Shutter
- Closed Compartment structure
- Earthing Switch & Interlock
- For MCSG
- Door Interlock

Green Innovators of Innovation



Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance. Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.

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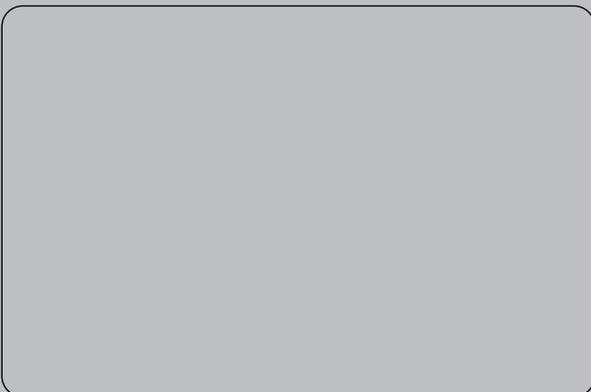
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Specifications in this catalog are subject to change without notice due to continuous product development and improvement.

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