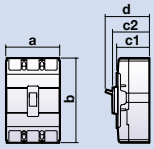
Introduction of New Product

Susol 1600AF MCCB

- **For power distribution**
  - The highest breaking capacity
  - Optimum coordination technique (Cascading & discrimination)
  - Powerful engineering tools
- **For protection of motor & its control device**
  - Optimal overload protection
- **For controlling and disconnecting circuits**
- **For extensive applications**
  - Wide range of optimized auxiliaries and accessories

MCCB	OCR	Accessory
• 1600AF, 3&4pole • Icu: 50/70/150kA • Ics: 100(75)%Icu • Icw: 25kA/1s • Ui: 1000V • Uimp: 8kV • Cat. A, B	• N, A, P, S type • L / S / I / G • Thermal, Ammeter, Power, Harmonic	• Outer: 16 type • Inner: 5 type • Easy connection

TS1600 Rating

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			1240		1420	
	Rated insulation voltage, (V)	Ui		1000			1000		1000	
	Rated impulse withstand voltage, (kV)	Uimp		8			8		8	
	Rated operational	Ue	AC50/60Hz	690			690		690	
	voltage, (V)		DC	-			-		-	
Rated short-circuit breaking capacity				N	H	L	N	H	N	H
IEC60947-2	Rated ultimate short-circuit	AC50/60Hz	220/240V	55	75	200	55	75	55	75
(sym)	breaking capacity, (kA) (Icu)		380/415V	50	70	150	50	70	50	70
			440V/460V	50	65	130	50	65	50	65
			480/500V	40	50	100	40	50	40	50
			660/690V	35	45	50	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,	AC50/60Hz	1s	25	25	12	25	25	25	25
	(kA) (Icw)		3s	-	-	-	-	-	-	
Overriding instantaneous protection		kA peak		50	50	-	50	50	50	50
Isolation					○			○		○
Category				B	B	A	B	B	B	B
	Mechanical life (operations)				10000			10000		10000
(Life cycle)	Electrical life (operations)	440V	In/2	6000	6000	4000	5000	5000	5000	5000
			In	5000	5000	3000	4000	4000	2000	2000
		690V	In/2	4000	4000	3000	3000	3000	2000	2000
			In	2000	2000	2000	2000	2000	1000	1000
Pollution degree					3			3		3
Dimension (mm)			a (3p/4p)	210/280						
			b	327						
			c1	155.5						
			c2	162.7						
			d	185.3						
Weight (kg)			3P	13						
			4P	16.8						

Ordering

■ MCCB

TS1600 — Ampere frame

TS	1000
	1250
	1600

N — Type

N	Normal
H	High
L	Current Limiting
NA	Switch-disconnector

A — Trip relay

N	Normal
A	Ammeter
P	Power meter
S	Supreme meter

1600A — Rated current

800A
1000A
1250A
1600A

3P — Poles

3P	3Pole
4P	4Pole

- — N phase way (4Pole)

L	N-R-S-T
R	R-ST-N

- — Connection type

-	Standard
REAR	Rear Connection

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 30% current of In (one pole)	• Self Power - Power source works over 30% 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

Trip relay

N	G	0

Trip relay type		Communication & protection		Control voltage & frequency	
000	Without trip relay				
N		G		0	
N	Normal	G	Ground fault + L/S/I/G	0	Self-Power, 60Hz
				5	Self-Power, 50Hz
A		G		0	
A	Ammeter	G	Ground fault	0	Self-Power, 60Hz
		Z	Without comm. + Earth leakage (<30A)	1	AC/DC 100V~250V, 60Hz
		E	Without comm. + Earth leakage (>30A)	2	DC 24V~60V, 60Hz
		C	Comm.	5	Self-Power, 50Hz
		K	Comm. + Earth leakage (<30A)	6	AC/DC 100V~250V, 50Hz
		X	Comm. + Earth leakage (>30A)	7	DC 24V~60V, 50Hz
P		C		1	
P	Power meter	C	Ground fault + Com	1	AC/DC 100V~250V, 60Hz
		K	Comm. + Earth leakage (<30A)	2	DC 24V~60V, 60Hz
		X	Comm. + Earth leakage (>30A)	6	AC/DC 100V~250V, 50Hz
		A	Comm. + Pre-trip alarm	7	DC 24V~60V, 50Hz
S		C		1	
S	Supreme meter	C	Ground fault + Com	1	AC/DC 100V~250V, 60Hz
		K	Comm. + Earth leakage (<30A)	2	DC 24V~60V, 60Hz
		X	Comm. + Earth leakage (>30A)	6	AC/DC 100V~250V, 50Hz
		A	Comm. + Pre-trip alarm	7	DC 24V~60V, 50Hz

* L/S/I/G configuration as standard
  -with LED indicators
  -without output contacts
* Ground fault system by vector sum

* L/S/I/G configuration as standard
* Ground fault system by vector sum(G,C)
* Earth leakage system
  - Z,K: External CT - LS ZCT applied(fault current 0.5~30A, 1600AF)
  - E,X: External CT - Private ZCT applied(faullt current >30A)
* Comm. and output contacts DO NOT work under self-power condition.

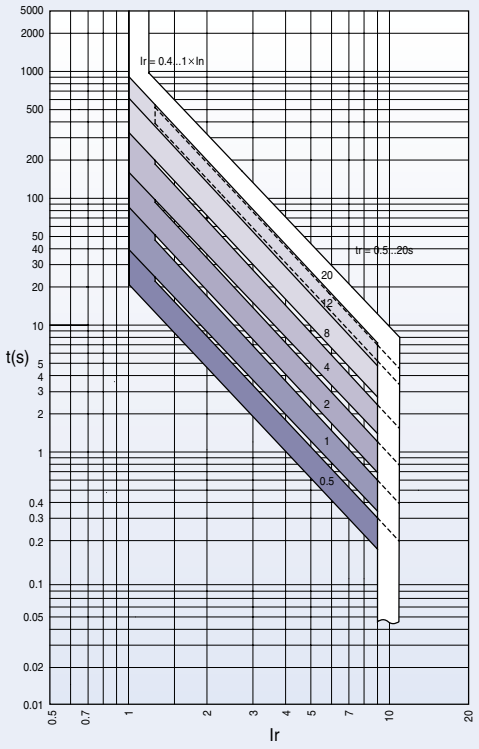
* L/S/I/G configuration as standard
* Ground fault system by vector sum
* Earth leakage system
  - K: External CT - LS ZCT applied(fault current 0.5~30A, 1600AF)
  - X: External CT - Private ZCT applied(faullt current >30A)
* Applicable to generator protection purpose

* L/S/I/G configuration as standard
* Ground fault system by vector sum
* Earth leakage system
  - K: External CT - LS ZCT applied(fault current 0.5~30A, 1600AF)
  - X: External CT - Private ZCT applied(faullt current >30A)
* Applicable to generator protection purpose

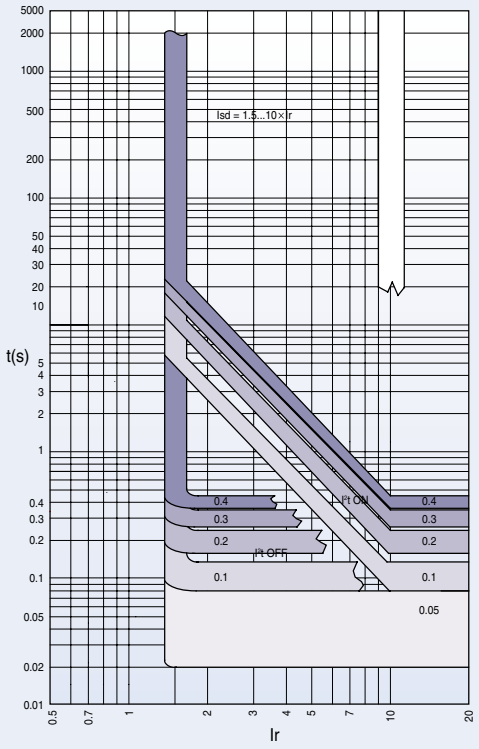
Note) 1. L/S/I/G configuration as standard
2. Ground fault, earth leakage and pre-trip alarm functions are alternative.
3. The functions like Metering, Communication, ZSI, Remote reset and Digital output are NOT available only under Self-power condition.
4. Voltage module should be required for P and S types(supplied seperately)

Characteristic curves

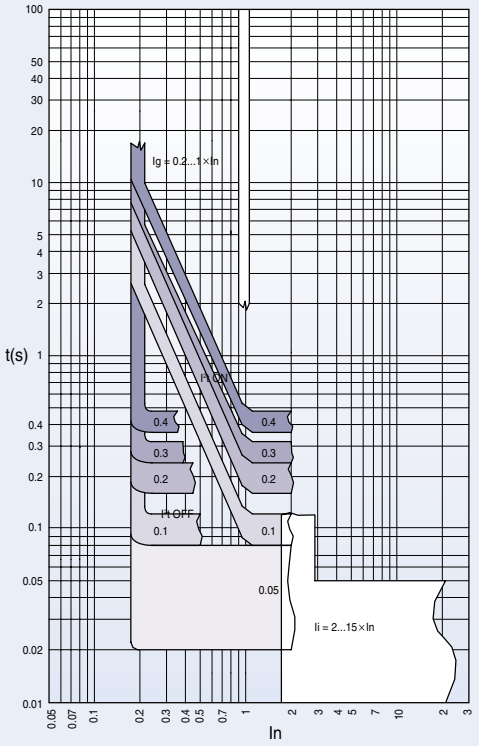
Long-time delay (L)



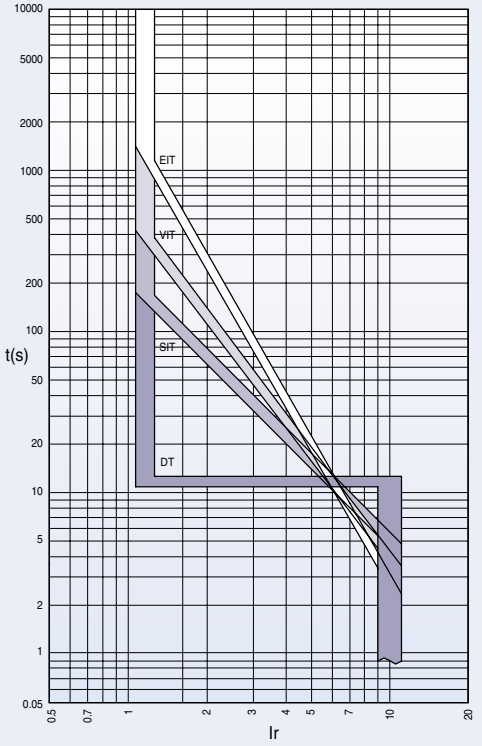
Short-time delay (S)



Instantaneous (I)
Ground fault (G)

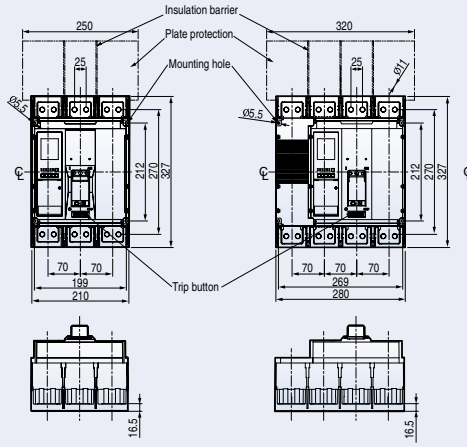


IDMTL

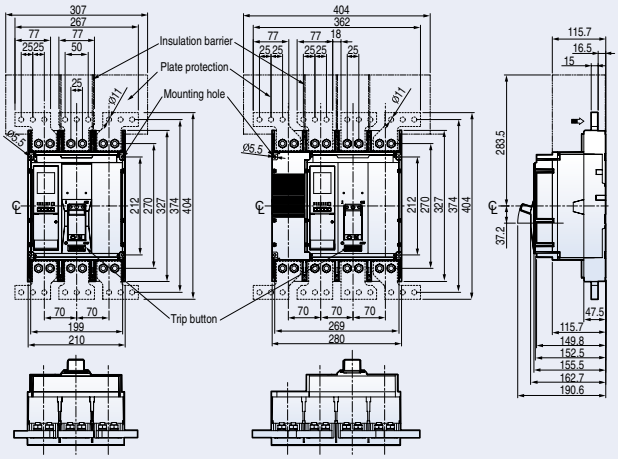


Dimensions

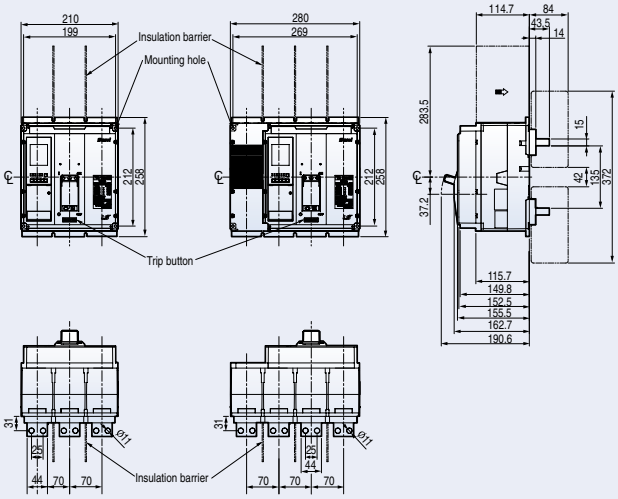
■ Front Type



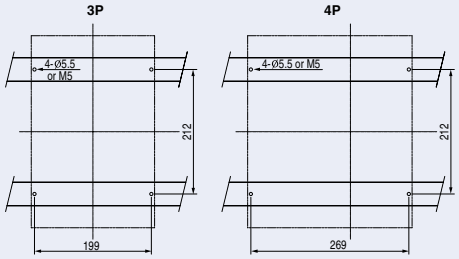
■ Front Type Busbar



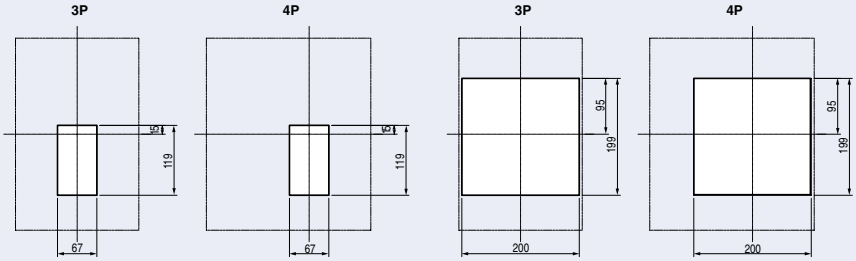
■ Rear Type



■ Panel drilling



■ Front panel cutting



LS constantly endeavor to improve our products so that information in this catalog is subject to change without notice.

■ **HEAD OFFICE**
LS Tower, 1026-6 Hokyeh 1dong, Dongan-gu, Anyang, Kyonggi-Do, 431-848, Korea
Tel. (82-2)2034-4887, 4873, 4918, 4148 Fax. (82-2)2034-4648

Susol 1600AF MCCB / October.2010 Printed in korea STAFF