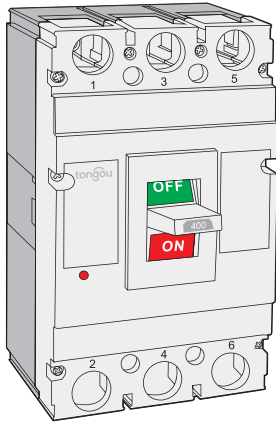




TOS1 Series Moulded Case Circuit Breaker



IEC 60947-2
EN 60947-2

Outline and Mounting Dimension

TOS1 series moulded case circuit breaker is one of products developed and manufactured by adopting international advanced technology. It is supplied with rated insulating voltage 550 and 800V and used for circuit of AC 50/60Hz, rated operating voltage AC 400V (or below), rated operating current up to 1600A for infrequent changing over and starting of the motors. The products conform to IEC60947-2 standard.

Main Technical Specification

Table 1

Type	Rated current (A)	Pole	Rated insulating voltage (V)	Rated operating voltage (V)	Arcing-over distance (mm)	Ultimate short circuit breaking capacity (kA)	Services short circuit breaking capacity (kA)	Operation performance		Utilization category
								Load	Unload	
TOS1-63	(6),10,16,20,25,32,40,50,63	3, 4	500V	400V	0	50	35	1500	8500	A
TOS1-125	(10),16,20,25,32,40,50,63,80,100,125				$0(\leq 50)$	50	35			
TOS1-250	100, 125, 160, 180, 200, 225, 250				≤ 50	50	35	1000	7000	
TOS1-400	315, 350, 400				≤ 100	65	42	1000	4000	
TOS1-630	400, 500, 630				≤ 100	100	65			
TOS1-800	630, 700, 800	≤ 100	100	65						
TOS1-1250	1000, 1250	3	800V	400V	≤ 100	125	75			
TOS1-1600	1600				≤ 100	150	80			

Note: 6A without thermal protection

The N-pole of four-poles breaker is sited at the right side of the product has four types:

Type A: Without current trip-lease on N pole which making all the time, not closing and opening with the other three poles.

Type B: Without current trip-release on N pole which closing and opening with the other poles.

Type C: With current trip-release which closing and opening with the other three poles.

Type D: With current trip-release which making all the time not closing and opening with the other three poles.

Protection Characteristic

The thermodynamic release of a circuit breaker provides the feature of inverse time-delay, while the magnetic release is the instantaneous operation as shown on table 2(distribution circuit breaker) and table 3 (motor protection circuit breaker).

Table 2

Rated current of release (A)	Thermodynamic release(ambient temperature land +40°C marine +45°C)		Operating current of magnetic release (A)
	1.05In(cold state) Inoperative time(h)	1.30In(heat state) Operative time(h)	
10 ≤ In ≤ 63	≥1	< 1	10In120%
63 < In ≤ 100	≥2	< 2	
100 < In ≤ 800	≥2	< 2	5In120% 10In120%

Table 3

Rated current of release (A)	Thermodynamic release (ambient temperature land +40°C marine +45°C)				Operating current of magnetic release (A)
	1.0In(cold state) non-trip time(h)	1.20In(heat state) trip time (h)	1.50In(heat state) trip time (h)	7.2In(cold state) trip time(h)	
10 ≤ In ≤ 225	≥2	< 2	≤ 4min	4s < Tp ≤ 10s	12In120%
225 < In ≤ 630			≤ 8min	6s < Tp ≤ 20s	



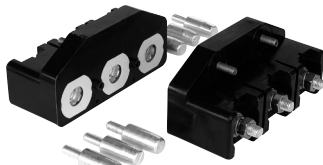
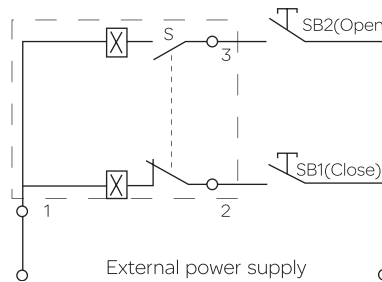
Back panel connection

Accessories of Circuit Breaker

The external accessories of the breaker

Motor-driven operation device

1) Wiring diagram of type CDM electromagnetic operation device(fitting TOS1-63,125,250) see the following drawing (wiring diagram of the external accessories of the breaker in the dotted frame)



Plug-in



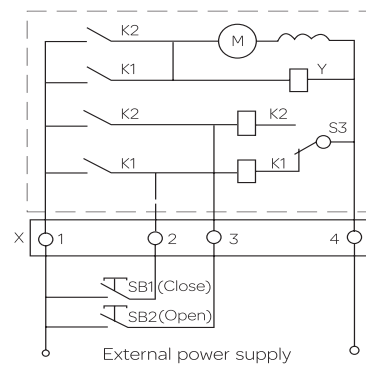
Electromagnetic operation device

Code description: SB1, SB2 stand for push button.(provided by users themselves)

Number "1", "2", "3" stand for number of wiring terminals.

Voltage rating: AC50/60Hz 230V 400V, DC 220V

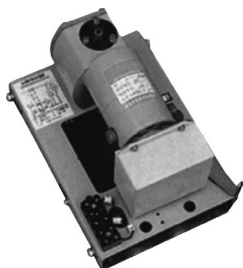
2) Wiring diagram of type CD motor-driven operation device (fitting TOS1-400, 630, 800) see belows (wiring diagram of the external accessories of the breaker in the dotted frame)



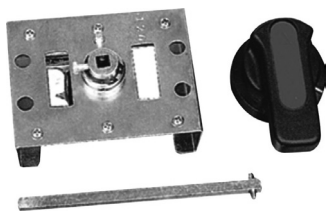
Code description: SB₁, SB₂ stand for push button. (provided by users themselves)

"X" stands for line connection terminals

Voltage rating: AC50/60Hz 230V, 400V, DC220V



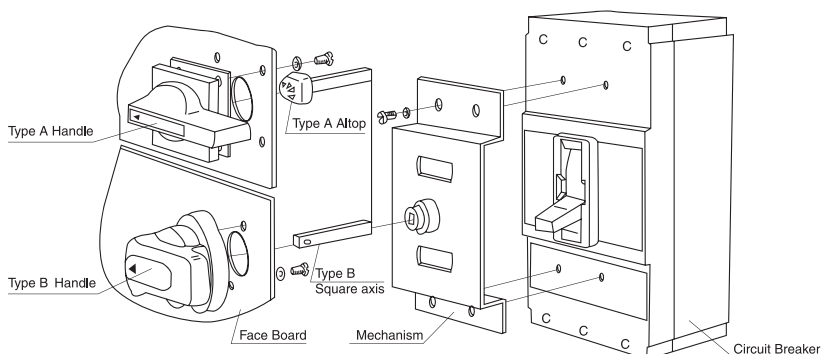
Motor-driven operation device



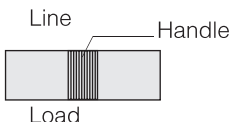
Rotary handle operation device

Rotary handle operation device

The mechanism is used in moulded case circuit breaker to operate the draw-out panel. Power distribution panel and supply box outside the panel by turning the handle ,and to ensure the door of panel would not be opened when the breaker being on.
The hand-drive mechanism can be equipped with two types of operation, one is "A" model square handle , the other is "B" model round handle.



Release pattern and accessories code



SHT: Shunt release; UVR: Under-voltage release;
AX: Auxiliary contact; AL: Alarm contact

Release pattern and accessories code	Name	Type	TOS1-63, 125, 250	TOS1-400	TOS1-630	TOS1-800
200, 300	Without accessories		200: magnetic release (only short circuit protection) 300: thermal magnetic release(both overload and short circuit protection)			
208, 308	Alarm contact		AL	AL	AL	AL
210, 310	Shunt release		SHT	SHT	SHT	SHT
220, 320	Auxiliary contact		AX	AX	AX	AX
230, 330	Under-voltage release		UVR	UVR	UVR	UVR
240, 340	Shunt release Auxiliary contact		SHT AX	SHT AX	SHT AX	AX SHT
250, 350	Shunt release Under-voltage release		SHT UVR	SHT UVR	SHT UVR	UVR SHT
260, 360	Two group of auxiliary contact		AX AX	AX AX	AX AX	AX AX
270,370	Under-voltage release Auxiliary contact		AX UVR	AX UVR	AX UVR	UVR AX
218, 318	Shunt release Alarm contact		AL SHT	SHT AL	AL SHT	AL SHT
228, 328	Alarm contact Auxiliary contact		AL AX	AL AX	AL AX	AL AX
238, 338	Under-voltage release Alarm contact		AL UVR	AL UVR	AL UVR	AL UVR
248, 348	Shunt release, Alarm contact, Auxiliary contact		AL AX SHT	SHT AL AX	AL AX SHT	AL AX SHT
268, 368	Two group of auxiliary contact Alarm contact		AL AX AX	AL AX AX	AL AX AX	AL AX AX
278, 378	Shunt release, Alarm contact, Under-voltage release		AL AX UVR	AL AX UVR	AL AX UVR	AL UVR AX

According to user's demands, accessories could lead to direct wire outcoming or line wiring terminals could be added(please mark out in case of making order).

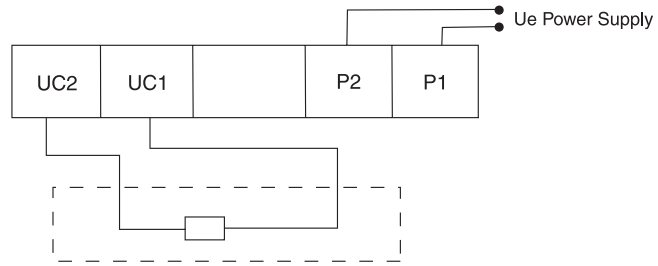
Under-voltage release

Wiring diagram of the under-voltage module connected externally (the internal accessories in the dotted frame)

Ue: AC50/60Hz 230V, 400V



Under-voltage release



When the operation voltage is 35%-70% of the rated voltage, the under-voltage release should make the breaker trip correctly.

When the operation voltage is 85%-110% of the rated voltage, the under-voltage release should make the breaker close.

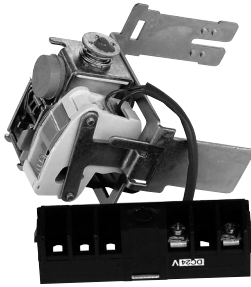
In case of the operation voltage less than 35% of the rated voltage, the under-voltage should prevent the breaker from closing.

Note: Only the under-voltage release should be energized in advanced, the breaker could be recramped and turned-on, otherwise the breaker will be damaged.

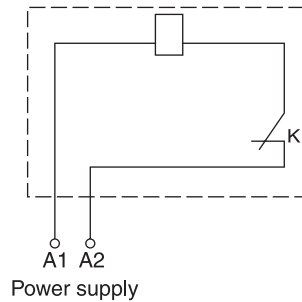
Shunt release

Scheme of wiring(the internal accessories in the dotted frame)

"K" is the slow motion switch normal-close contact connect the coil in series in the shunt release. It turns-on or turns-off voluntarily as soon as the breaker on or off.



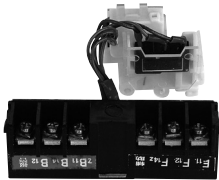
Shunt release



Voltage rating: AC50/60Hz 230V 400V, DC 110V 220V

The shunt release should make the breaker trip reliably when the operation voltage is 70%-110% of the rated control voltage.

Alarm contact



Alarm contact

The position of the breaker in "off" or "on"	
The position of the breaker in "free trip" (alarm)	B ¹¹ and B ¹² switch from "close" to "open", status of B ¹¹ and B ¹⁴ switch from "open" to "close"