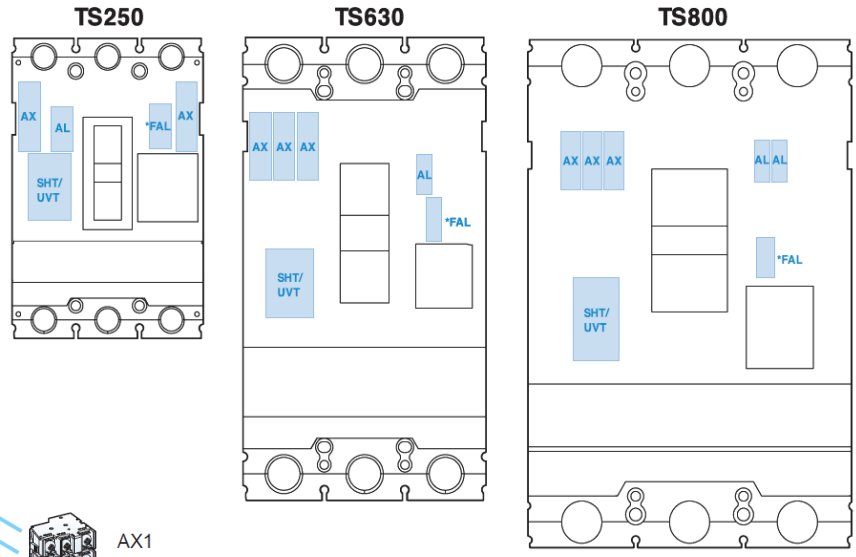
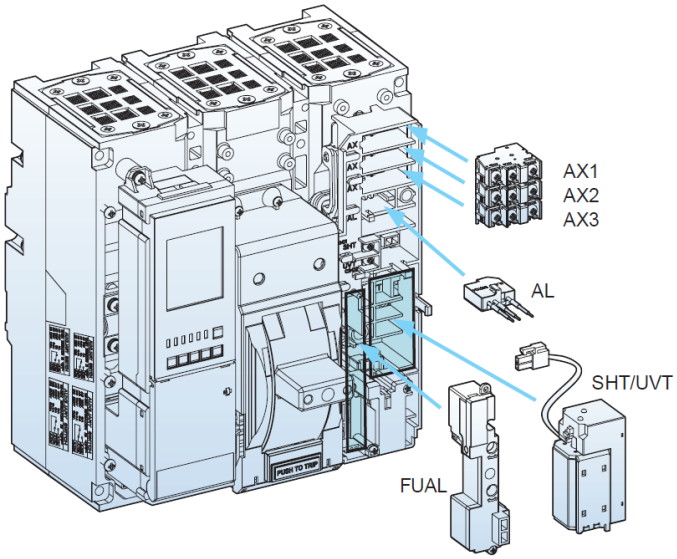
Catalogue number:

LS-AX/AL/FAL/SHT/UVT

Electrical Auxiliaries

Part Number	Description	Suitable MCCB
LS-AX-TS	Auxiliary switch	TS100-800
LS-AX-TS1600	Auxiliary switch	TS1000/1250/1600
LS-AL-TS	Alarm switch	TS100-800
LS-AL-TS1600	Alarm switch	TS1000/1250/1600
LS-FAL-TS	Fault alarm switch	TS100-800
LS-FAL-TS1600	Fault alarm switch	TS1000/1250/1600
LS-SHT-TS-24	Shunt trip 24VAC/DC	TS100-800
LS-SHT-TS1600-24	Shunt trip 24VAC/DC	TS1000/1250/1600
LS-SHT-TS-250	Shunt trip 220-240VAC 250DC	TS100-800
LS-SHT-TS1600-250	Shunt trip 220-240VAC 250DC	TS1000/1250/1600
LS-SHT-TS-500	Shunt trip 380-500VAC	TS100-800
LS-SHT-TS1600-500	Shunt trip 380-500VAC	TS1000/1250/1600
LS-UVT-TS-24	Under Voltage trip 24VAC/DC	TS100-800
LS-UVT-TS1600-24	Under Voltage trip 24VAC/DC	TS1000/1250/1600
LS-UVT-TS-250	Under Voltage trip 220-240VAC/DC	TS100-800
LS-UVT-TS1600-250	Under Voltage trip 220-240VAC/DC	TS1000/1250/1600
LS-UVT-TS-500	Under Voltage trip 380-500VAC	TS100-800
LS-UVT-TS1600-500	Under Voltage trip 380-500VAC	TS1000/1250/1600





TS1000
TS1250
TS1600

TS100-800 Auxiliary Configuration

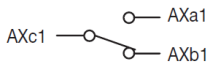
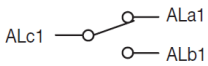
MCCB	ON	OFF	TRIP
Position of AX			
Position of AL, FAL			

Figure 1 Contact Operation

Auxiliary switch, AX

Auxiliary switches are for applications that require remote monitoring of the breaker.
Each switch contains two contacts having a common connection.
One is open and the other closed when the circuit breaker is open, vice-versa.

Alarm switch, AL

Alarm switches offer provisions for immediate audio or visual indication of a tripped breaker due to overload, short circuit, shunt trip, or undervoltage release conditions. They are particularly useful in automated plants where operators must be signalled about changes in the electrical distribution system.
This switch features a closed contact when the circuit breaker is tripped automatically. In other words, this switch does not function when the breaker is operated manually.
Its contact is open when the circuit breaker resets.

Fault alarm switch, FAL

FAL Indicates that the breaker has tripped due to overload or short circuit.
And, it can be applied to only circuit breakers with electronic trip units.

Shunt release, SHT

The shunt release opens the mechanism in response to an externally applied voltage signal.
The release includes coil clearing contacts that automatically clear the signal circuit when the mechanism has tripped.
The shunt release can be installed in the left accessory compartment of the Susol TS circuit breakers.

- Range of operational voltage: 0.7 ~ 1.1Vn
- Frequency (only AC): 45Hz ~ 65Hz

	Control voltage (V)	Consumption			Applicable MCCBs
		AC (VA)	DC (W)	mA	
Power consumption	DC 12V	-	0.36	30	TS100, TS160, TS250, TS400, TS630, TS800
	AC/DC 24V	0.58	0.58	24	
	AC/DC 48V	1.22	1.23	25	
	AC/DC 110~130V	1.36	1.37	10.5	
	AC 220~240V/DC250V	1.80	1.88	7.5	
	AC 380~500V	1.15	-	2.3	
Max.opening time (ms)		50			
Tightening torque of terminal screw		8.2kgf · cm			

Figure 2 Technical data

Undervoltage Trip, UVT

The undervoltage release automatically opens a circuit breaker when voltage drops to a value ranging between 35% to 70% of the line voltage. The operation is instantaneous, and after tripping, the circuit breaker cannot be re-closed again until the voltage returns to 85% of line voltage.

Continuously energized, the undervoltage release must be operating before the circuit breaker can be closed. The undervoltage release can be easily installed in the left accessory compartment of the Susol TS circuit-breakers.

- Range of tripping voltage: 0.35 ~ 0.7Vn
- MCCB making is possible voltage: 0.85Vn (exceed)
- Frequency (only AC): 45Hz ~ 65Hz

	Control voltage (V)	Consumption			Applicable MCCBs
		AC (VA)	DC (W)	mA	
Power consumption	AC/DC 24V	0.64	0.65	27	TS100, TS160, TS250, TS400, TS630, TS800
	AC/DC 48V	1.09	1.10	23	
	AC/DC 110~130V	0.73	0.75	5.8	
	AC 200~240V/DC 250V	1.21	1.35	5.4	
	AC 380~440V	1.67	-	3.8	
	AC 440~480V	1.68	-	3.5	
Max.opening time (ms)		50			
Tightening torque of terminal screw		8.2kgf · cm			
Transformer operating voltage (V) - Drop (Circuit breaker trips) - Rise (Circuit breaker can be switched on)		 0.7~1.35Vn ~0.85Vn			

Figure 3 Technical Data

TS1000/1250/1600 Auxiliary Configuration

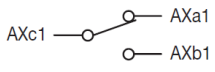
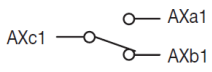
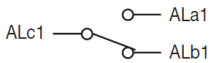
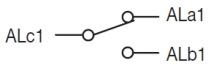
MCCB	ON	OFF	TRIP
Position of AX			
Position of AL, FAL			

Figure 4 Contact Operation

Auxiliary switch, AX

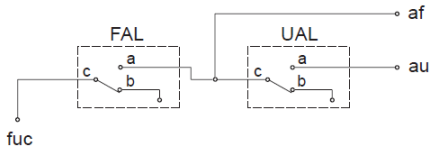
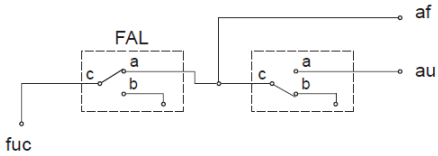
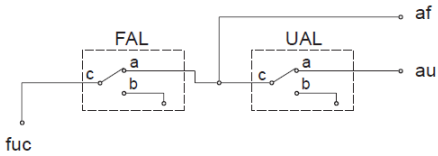
Auxiliary switches are for applications that require remote monitoring of the breaker.
Each switch contains two contacts having a common connection.
One is open and the other closed when the circuit breaker is open, vice-versa.

Alarm switch, AL

Alarm switches offer provisions for immediate audio or visual indication of a tripped breaker due to overload, short circuit, shunt trip, or undervoltage release conditions.
They are particularly useful in automated plants where operators must be signalled about changes in the electrical distribution system. This switch features a closed contact when the circuit breaker is tripped automatically. In other words, this switch does not function when the breaker is operated manually.
Its contact is open when the circuit breaker resets.

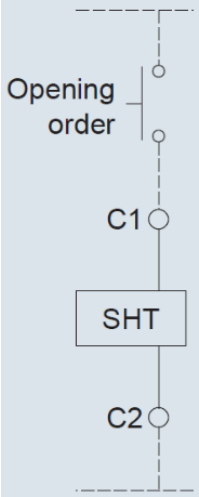
Indication switch, FAL

FAL Indicates that the breaker has tripped due to FAL(overload, short circuit) and UAL(UVT, SHT) Separately.

Normal position CB no trip	 FAL Normal Open / UAL Normal Open
FAL operation CB trip due to OCR	 FAL Normal Close / UAL Normal Open
UAL operation CB trip due to UVT or SHT	 FAL Normal Close / UAL Normal Close

Shunt trip device, SHT

SHT is a control device which trips a circuit breaker from remote place, when applying voltage continuously or instantaneously over 200ms to coil terminals (C1, C2).
When UVT coil is installed, its location is changed.



Rated voltage [Vn]		Operating voltage range [V]	Power consumption (VA or W)		Trip time [ms]
DC [V]	AC [V]		Inrush	Steady-state	
24~30	-	0.6~1.1 Vn	200	5	Less than 40ms
48~60	48	0.6~1.1 Vn			
100~130	100~130	0.56~1.1 Vn			
200~250	200~250	0.56~1.1 Vn			
-	380~480	0.56~1.1 Vn			

Figure 6 Trip coil Characteristics

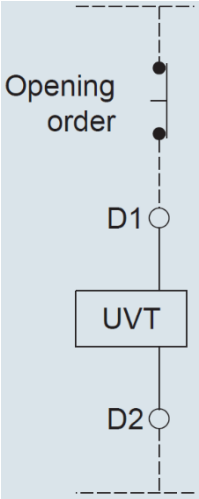
		Rated voltage [Vn]			
		DC 24~30 [V]		DC/AC 48 [V]	
Wire type		#14 AWG (2.08mm²)	#16 AWG (1.31mm²)	#14 AWG (2.08mm²)	#16 AWG (1.31mm²)
Operating voltage	100%	95.7m	61m	457.8m	287.7m
	85%	62.5m	38.4m	291.7m	183.2m

Figure 5 Wire specification

Under Voltage Trip device, UVT

If the voltage of the main circuit or the control circuit is below rated voltage, UVT breaker trips the circuit automatically. Please connect the time-delay device for a delayed trip because UVT is technically instantaneous.

- The closing of a circuit breaker is impossible mechanically or electrically if control power is not supplied to UVT. To close the circuit breaker, 65~85% of rated voltage should be applied to both terminals of UVT coil (D1, D2).
- SHT coil cannot be used in conjunction with the UVT coil.



Rated voltage [Vn]		Operating voltage range [V]		Power consumption (VA or W)		Trip time [ms]
DC [V]	AC [V]	Pick up	Drop out	Inrush	Steady-state	
24~30	-	0.65~0.85 Vn	0.44~0.6 Vn	200	5	Less than 50ms
48~60	48					
100~130	100~130					
200~250	200~250					
-	380~480					

Figure 8 UVT characteristics

		Rated voltage [Vn]			
		DC 24~30 [V]		DC/AC 48 [V]	
Wire type		#14 AWG (2.08mm²)	#16 AWG (1.31mm²)	#14 AWG (2.08mm²)	#16 AWG (1.31mm²)
Operating voltage	100%	48.5m	30.5m	233.2m	143.9m
	85%	13.4m	8.8m	62.5m	39.3m

Figure 7 Wire Specification