



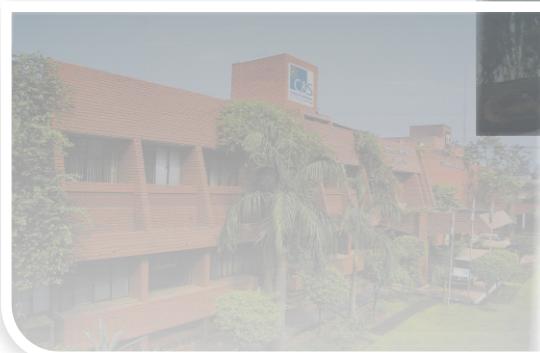
Transmisiones Ltda. Carrera 68 B # 21 A -  
24, bodega UE 28-1 Parque Industrial  
Montevideo PBX: (57+1) 4126898  
Bogotá - Colombia  
info@ transmisiones.de  
www.transmisiones.de

**ACE2**

**State of the art Manufacturing Facilities**



Haridwar, Noida Ph-I  
& Noida Ph-II Plant



**CE**

**C&S Electric Ltd.**

Corporate Office : 222, Okhla Industrial Estate, New Delhi - 110 020

Tel. : +91-11-3088 7520 - 29, Fax: +91-11-2684 7154, 2682 9063

International Business Division: Tel. : +91-11-4161 3503, 3088 7520-29, Fax: +91-11-2683 8291, 2684 7342

email : exports@cselectric.co.in

Central Marketing Office: Tel. : +91-11-3088 7520-29, Fax: +91-11-2684 8241, 2684 7342

email : cmo@cselectric.co.in, info@cselectric.co.in



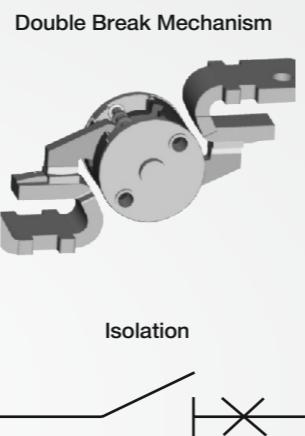
**Moulded Case Circuit Breaker**

# Introduction

## Double Break Mechanism

ACE2 MCCBs have double break mechanism, which means

- No Load line bias i.e. either terminal can be used for incoming/outgoing termination.
- Load Line interchangeability enhances ease of termination & that too without reduction in performance.
- Superior Cam Design ensures constant contact pressure even after erosion.
- Extra long life of contacts.



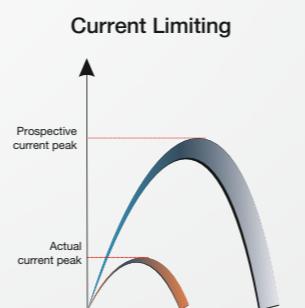
## Isolation

- Compliance to IEC 60947-2.
- Total isolation at "Off" position enhances safety.
- Clear "Off" indication when contact get breaks.

## Current limiting

Unique rotating double break technique ensures current limiting & very fast clearance of short circuit current.

- Enhances breaking capacity of the breaker.
- Low let thru energy, resulting in lower thermal stresses
- Reduces electro-dynamic & thermal stresses on the electrical distribution network.
- Low temperature rise & hence lengthen life of associated equipments & cables.
- Safety to the plant & operating personal.
- Increases life of cables & installation.



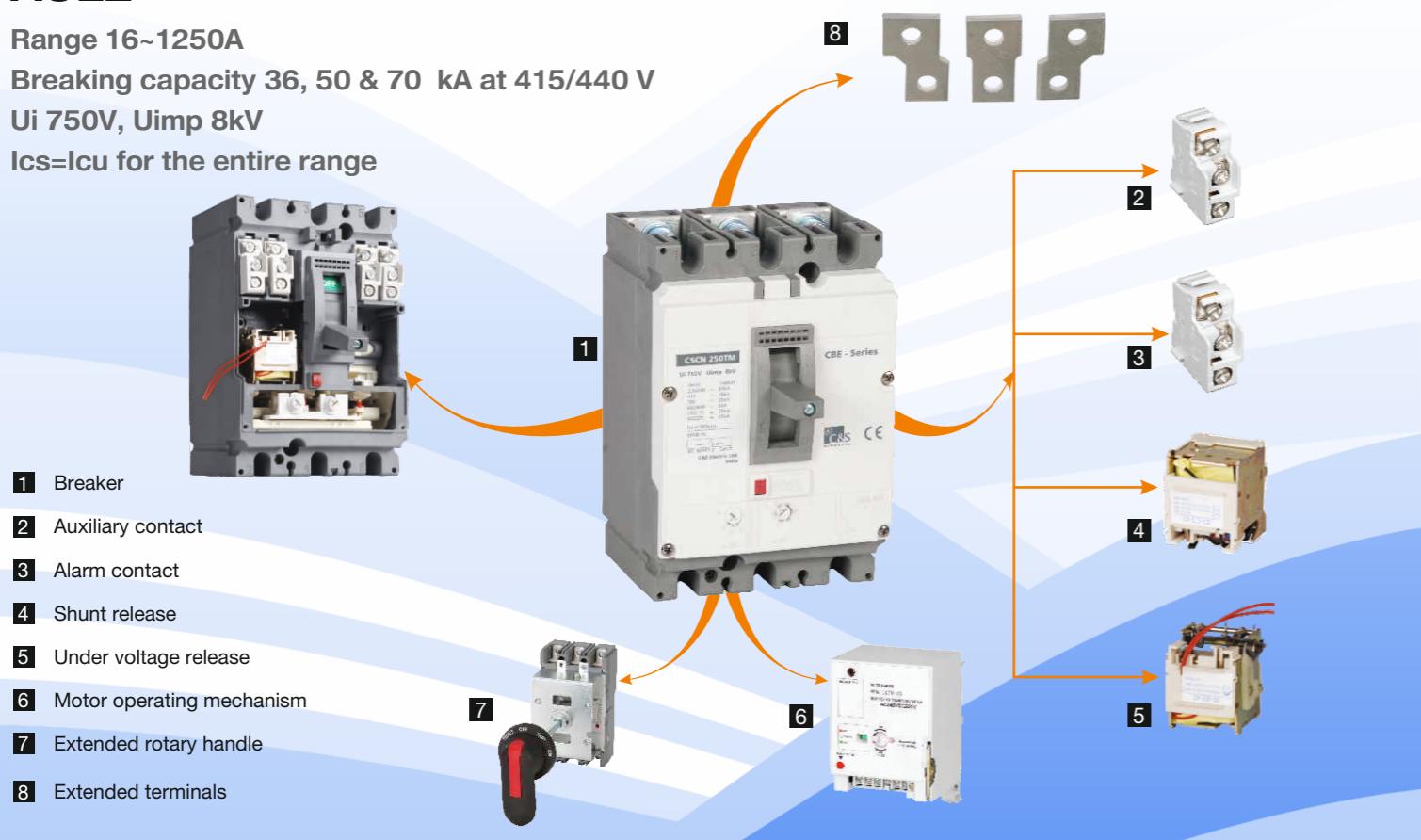
## ACE2

Range 16~1250A

Breaking capacity 36, 50 & 70 kA at 415/440 V

Ui 750V, Uimp 8kV

Ics=Icu for the entire range



# Selection Table

ACE2 MCCB - Thermal Magnetic Type	CSCN125TM	CSCN250TM
Frames	Frame 1	Frame 2
Electric characteristics as per IEC 60947-2		
Rated current (A) In	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	160, 180, 200, 250
Rated insulation voltage (V) Ui	750	750
Rated impulse withstand voltage (kV) Uimp	8	8
Rated operational voltage (V) Ue	AC 50/60Hz DC	690 500
Number of Poles	3 4	3 4
Rated ultimate short-circuit breaking capacity (kA RMS) Icu	AC 415V/440V DC 250V (1P) DC 500V (2P)	36 25 25
Rated service breaking capacity Ics=(%Icu)		100
Utilization category		A
Suitability for isolation		■
Safety of insulation		■
Life(CO recycle)	Mechanical Electrical	20,000 20,000
Protection		Thermo-Magnetic
Release units		■
Over-load protection		■
Short-circuit protection		■
Motor-driven mechanism		■
Shunt and under-voltage release		■
Auxiliary and alarm contact		■
Pad locking system		■
Interphase barrier		■
Dimension (mm) WxHxD	90x140x79	120x140x79
Weight(kg)	1.2	1.6
	105x157x88	140x157x88

## Thermo-Magnetic release

Thermo-Magnetic release of CSCN125TM & CSCN250TM is suitable to meet basic protection.

Protections	CSCN125TM	CSCN250TM
Rated value (A) In 40°C	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	160, 180, 200, 250
Over-load protection		Thermo protection
Tripping current $I_R$ (A)	Adjustable range 0.8, 0.9 & 1x In	Adjustable range 0.8, 0.9 & 1x In
Short Circuit protection		Magnetic protection
Tripping current $I_L$ (A)	10In (for power distribution protection) 12In (for motor protection)	Adjustable range 5~10 x In 12In (for motor protection)

## Selection Table

ACE2 MCCB		CSC*125EM			CSC*250EM			CSC*400EM			CSC*630EM			CSC*800EM			CSC*1250EM								
3 Frames		Frame 1									Frame 2						Frame 3								
Electric characteristics as per IEC 60947-2		40,100,125						160,200,250						315,350,400						700,800	1000,1250				
Rated current (A) In		750						8						750						750	8				
Rated insulation voltage (V) Ui		690						690						690						690	690				
Number of Poles		3			4			3			4			3			4			3					
Breaking capacity code		N	S	H	N	S	H	N	S	H	N	S	H	S	H	S	H	S	H	S	H	S	H		
Rated ultimate short-circuit breaking capacity (kA RMS) Icu	AC 220V/230V/240V	85	85	100	85	85	100	85	85	100	85	85	100	85	85	85	85	85	85	65	100	65	100	65	100
	AC 380V/400V/415V	36	50	70	36	50	70	36	50	70	36	50	70	50	70	50	70	50	70	50	70	50	70	50	70
	AC 500V	25	35	50	25	35	50	25	35	50	25	35	50	35	35	35	35	35	35	30	50	30	50	30	50
	AC 660V/690V	6	6	8	6	6	8	6	6	8	6	6	8	10	10	10	10	10	10	10	20	10	20	10	20
Rated service breaking capacity Ics=(%Icu)		100			100			100			100			100			100			100					
Suitability for isolation		■			■			■			■			■			■			■					
Utilization category		A			A			A			A			A			A			A					
Safety of insulation		■			■			■			■			■			■			■					
Life (CO recycle)	Mechanical	20,000			20,000			15,000			15,000			10,000			10,000			10,000					
	Electrical	20,000			20,000			6,000			4,000			4,000			4,000			4,000					
Protection		Electronic			Electronic			Electronic			Electronic			Electronic			Electronic			Electronic					
Release units		■			■			■			■			■			■			■					
Over-load protection		■			■			■			■			■			■			■					
Short-circuit protection		■			■			■			■			■			■			■					
Residual current protection	Added on residual current protection module	-			-			-			-			-			-			-					
Protection		current protection module			■			■			■			■			■			■					
Motor operating mechanism		■			■			■			■			■			■			■					
Shunt and under-voltage release		■			■			■			■			■			■			■					
Auxiliary and alarm contact		■			■			■			■			■			■			■					
Pad locking system		■			■			■			■			■			■			■					
Interphase barrier		■			■			■			■			■			■			■					
Dimension and weight																									
Dimension (mm) WxHxD		105x157x88	140x157x88	105x157x88	140x157x88	140x255x113	185x255x113	140x255x113	185x255x113	210x370x196	280x370x196														
Weight(kg)		2.1	2.8	2.1	2.8	8	11	8	11	17.5	23	17.5	23	17.5	23	17.5	23	17.5	23	17.5	23				



# Trip Units

## Electronic Release

ACE2 Electronic release is an universal module. It provides LSIN protection with indication.

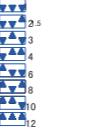
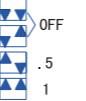
- Overload Protection
- Short Circuit Protection
- Instantaneous Protection
- Neutral Protection

Tripping current  $I_r$ ,  $I_{sd}$ ,  $I_i$  &  $I_g$  should be set with three-digit switch or rotary knob and can be adjusted as per customer's requirements where as OFF stands for status without protection

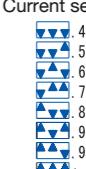
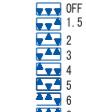
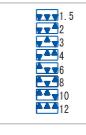
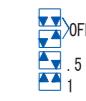
LED indicator light status for over-load indication:

- When single-phase operational current is  $< 90\% I_r$ , LED blinks
- When single-phase operational current is  $\geq 115\% I_r$ , LED lit permanently

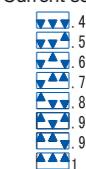
## 1st frame is available in 6 current specification: 40A, 100A, 125A, 160A, 200A & 250A

Protection	CSC*125EM	CSC*250EM	DIP Switch position
Rated value In (A)	40,100,125	160, 200, 250	
<b>Over-load protection</b>			
Tripping current $I_r$	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1xIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1xIn	
Tripping time	1.05lr 1.3 lr 1.5lr 6lr	>2h non tripping ≤ 1h 96s 6s	>2h non tripping ≤ 1h 96s 6s
<b>Short Circuit Protection</b>			
Tripping current $I_{sd}$	Adjustable range OFF, 1.5, 2, 3, 4, 6, 8 xIn	Adjustable range OFF, 1.5, 2, 3, 4, 6, 8xIn	
<b>Short Circuit Protection (Instantaneous)</b>			
Tripping current $I_i$	Adjustable range 1.5,2,3,4,6,8,10, 12xIn	Adjustable range 1.5,2,3,4,6,8,10, 12xIn	
<b>N-line Protection</b>			
Tripping current $I_g$	Adjustable range OFF, 0.5, 1xIn	Adjustable range OFF, 0.5, 1xIn	

## 2nd frame is available in 5 current specification: 315A, 350A, 400A, 500A, and 630A

Protection	CSC*400EM	CSC*630EM	DIP Switch position	
Rated value A In	315, 350, 400	500, 630		
<b>Overload Protection (LTD)</b>				
Tripping current $I_r(A)$	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1xIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1xIn		
Tripping time	1.05lr 1.3 lr 1.5lr 2lr 6lr	>2h non tripping <1h 48, 96, 192, 288s 27, 54, 108, 162s 3, 6, 12, 18s	>2hnon tripping <1h 48, 96, 192, 288s 27, 54, 108, 162s 3, 6, 12, 18s	 
<b>Short Circuit Protection</b>				
Tripping current $I_{sd}(A)$	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8xIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8xIn		
Tripping time $T_{sd}(s)$	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4		
<b>Short Circuit Protection (Instantaneous)</b>				
Tripping current $I_i(A)$	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12xIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12xIn 12In(for motor protection)		
<b>N-line Protection</b>				
Tripping current $I_g(A)$	Adjustable range OFF, 0.5, 1xIn	Adjustable range OFF, 0.5, 1xIn		
Tripping time $T_g(s)$	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4		

## 3rd frame is available in 4 current specification: 700A, 800A, 1000A, and 1250A

Protection	CSC*800EM	CSC*1250EM	DIP Switch position	
Rated value A In	700, 800	1000, 1250		
<b>Overload Protection (LTD)</b>				
Tripping current $I_r(A)$	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1xIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1xIn		
Tripping time	1.05lr 1.3 lr 1.5lr 2lr 6lr	>2h non tripping <1h 48, 96, 192, 288s 27, 54, 108, 162s 3, 6, 12, 18s	>2hnon tripping <1h 48, 96, 192, 288s 27, 54, 108, 162s 3, 6, 12, 18s	 
<b>Short Circuit Protection</b>				
Tripping current $I_{sd}(A)$	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8xIn	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8xIn		
Tripping time $T_{sd}(s)$	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4		
<b>Short Circuit Protection (Instantaneous)</b>				
Tripping current $I_i(A)$	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12xIn 12In(for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12xIn 12In(for motor protection)		
<b>N-line Protection</b>				
Tripping current $I_g(A)$	Adjustable range OFF, 0.5, 1xIn	Adjustable range OFF, 0.5, 1xIn		
Tripping time $T_g(s)$	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4		

# Accessories

## Internal Accessories



### Shunt release

Shunt release opens the mechanism in response to an externally applied voltage signal  
 $U_s=70\sim100\%U_n$ , circuit breaker reliably operates  
 Long-time electrification is prohibited  
 Time of response: pulsive type  $\geq 20ms$ ,  $\leq 60ms$



### Under-voltage release

Under voltage release automatically opens a circuit breaker  
 when voltage drops to a value ranging between 35~70% of the line voltage  
 $U_s > 85\%U_n$ , circuit breaker reliably breaks  
 $U_s < 35\%U_n$ , prevent circuit breaker from making  
 Note: With under-voltage release,  $U_s \geq 85\%U_n$ , circuit breaker normally makes and breaks



### Auxiliary contact

Auxiliary contact is used for applications requiring remote 'ON' and 'OFF' indication

Circuit breaker is at breaking positon F11 —— O —— F12  
 —— F14

Circuit breaker is at making positon F11 —— O —— F12  
 —— F14



### Alarm Contact

Alarm Contact offers provisions for immediate audio or visual indication of a tripped breaker due to

- Over-load
- Short-circuit
- Earth fault
- Operation of under-voltage releasing or free tripping

During normal course of making & breaking, alarm contact remains un-operative. It operates only in case of free tripping or tripping due to failure

Circuit breaker is at breaking or making position B11 —— O —— B12  
 —— B14

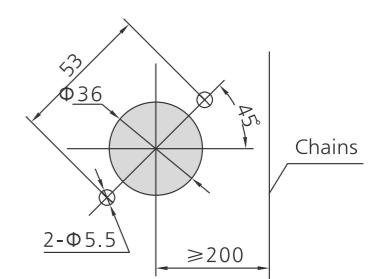
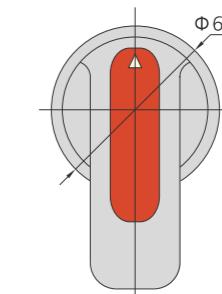
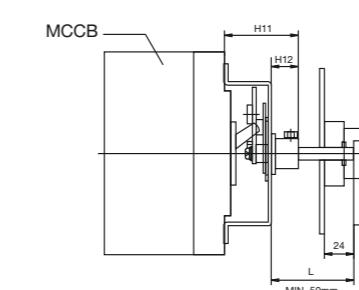
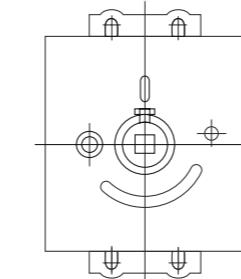
Circuit breaker is at alarming (or free release) position B11 —— O —— B12  
 —— B14

## External Accessories



### Extended Rotary Handle

Protection Degree: IP30  
 At "OFF" status, MCCB can be fitted with max. 3 padlocks with a diameter of 5~8 mm. This prevents the door of the panel being opened unwantedly.



(dimensions in mm)

**CSCN125, 250TM  
CSC\*125, 250EM**

H12

14

**CSC\*400, 630EM**

H11

56

20

60



### Motor Operating Mechanism

Protection degree: IP40

#### Functions

#### Safety

- Isolation function indication
- Closing & Opening the breaker manually or automatically
- Free releasing of circuit breaker

#### Manual operation

For manual operation, shift "manual/auto" switch to "manual" position and then turn the handle to make and break the breaker.

#### Automatic operation

- Shift "manual/auto" switch to "auto" position and then press the button to make and break the breaker thru remote operation
- The make/break operation is carried out via self-retaining type signal or via pulse
- Operational range: 85%Un~110%Un.

Circuit Breaker	Rated control voltage	Electrical life	Operational current	Power consumption
CSCN125, 250TM	100-240 V AC, 100-220 V DC / 24V DC	10,000 operations	$\leq 0.5$ A	14VA, 14W
CSC*125, 250EM	100-240 V AC, 100-220 V DC / 24V DC	10,000 operations	$\leq 0.5$ A	14VA, 14W
CSC*400, 630EM	230 V AC, 110 V AC 220 V DC, 110 V DC, 24 V DC	5,000 operations	$\leq 2$ A	35VA, 35W
CSC*800, 1250EM	230 V / 400 V AC	3,000 operations	$\leq 7.5$ A	200W

# Accessories

Suitable for MCCB TYPE	Product Reference		
Description			
Auxiliary Contact(Left)	AXC-L		
Auxiliary Contact(Middle)	AXC-M		
Auxiliary Contact(right)	AXC-R		
Alarm Contact	ALC		
Shunt Release	220V AC	380V AC	24V DC
CSCN125TM	STC92	STC95	STC98
CSCN250TM			
CSC*125EM			
CSC*250EM	STC93	STC96	STC99
CSC*400EM			
CSC*630EM			
CSC*800EM	STC94	STC97	STC00
CSC*1250EM			STC01
Under Voltage Release	220V AC	380V AC	
CSCN125TM		UVTC02	UVTC05
CSCN250TM			
CSC*125EM			
CSC*250EM		UVTC03	UVTC06
CSC*400EM			
CSC*630EM			
CSC*800EM		UVTC04	UVTC07
CSC*1250EM			
Extended Rotary Handle	3 Pole	4 Pole	
CSCN125TM	EC-55	EC-19	
CSCN250TM			
CSC*125EM	EC-56	EC-20	
CSC*250EM			
CSC*400EM			
CSC*630EM	EC-57	EC-21	
CSC*800EM			
CSC*1250EM	EC-58	EC-58	
Motor Operating Mechanism	Product Reference	Control Voltage	
CSCN125TM	MOPC-88	240V AC/220V DC	
CSCN250TM			
CSC*125EM	MOPC-89	240VAC/220VDC	
CSC*250EM			
CSC*400EM			
CSC*630EM	MOPC-90	230VAC/220VDC	
CSC*800EM			
CSC*1250EM	MOPC-91	230VAC/400V AC	
DIN Rail Adapter	3 Pole	4 Pole	
CSCS125TM	DA-27	DA-29	
CSCS250TM	DA-28	DA-30	

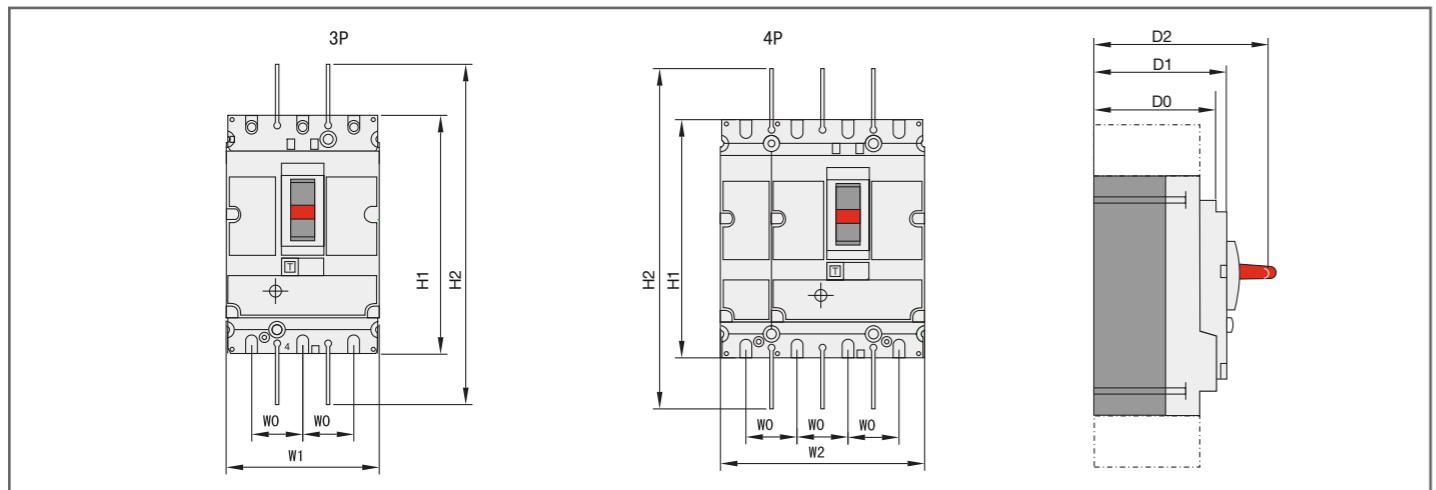
Accessory	Mounting and wiring mode			
	CSCN125, 250TM	CSC*125, 250 EM	CSC*400, 630 EM	CSC*800, 1250EM
	3 & 4 Pole	3 & 4 Pole	3 & 4 Pole	3 & 4 Pole
Without Accessory				
Alarm Contact				
Shunt release				
Auxiliary Contact				
Under-voltage release				
Shunt release Auxiliary contact				
Two groups of auxiliary contact				
Auxiliary contact Under-voltage release				
Shunt release Alarm contact				
Auxiliary contact Alarm contact				
Under-voltage release Alarm contact				
Two groups of auxiliary contact Alarm contact				
Auxiliary contact, alarm contact under-voltage release				
Shunt release Auxiliary contact, Alarm				

■-Shunt release      ▲-Under-voltage release      ○-Auxiliary contact      ●-Alarm contact

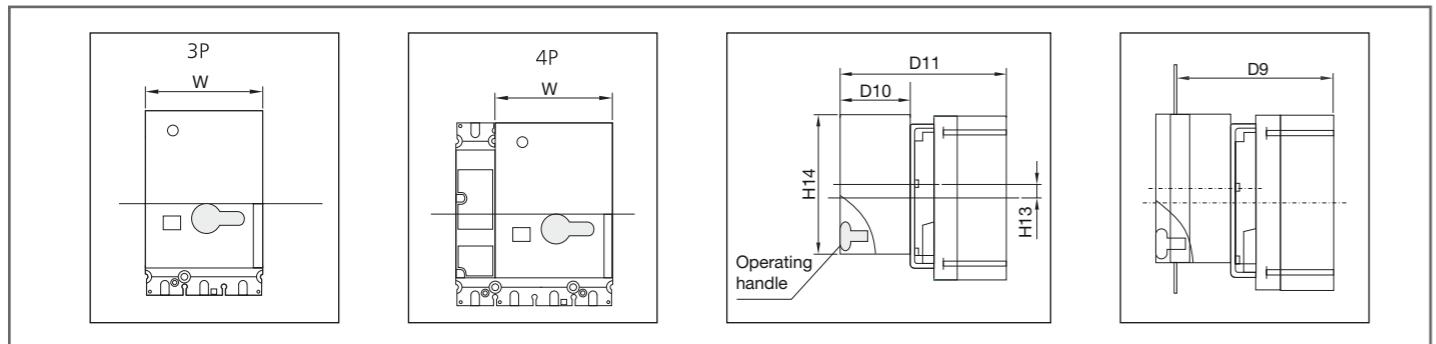
Note: 1. For CSCN125, 250TM under-voltage and shunt release couldn't be simultaneously equipped on one breaker.  
 2. For CSC\*125, 250, 400, 630 under-voltage and shunt release couldn't be simultaneously equipped on one breaker.  
 3. For CSC\*800, 1250 at most three auxiliary contacts could be equipped, Under-voltage and shunt release could be simultaneously equipped on one breaker, in addition, their positions could be exchanged.

## Dimensions

### Overall Dimensions



### Motor Operating Mechanism



MCCB	H1	H2	H11	H12	H13	H14	D0	D1
CSCN125TM	140	240	56	14	14.5	117	72	79
CSCN250TM	157	357	56	14	14.5	117	82	88
CSC*125EM / 250EM	255	474	60	20	19	174	95	113
CSC*400EM / 630EM	370	570	60	20	19	174	132	144

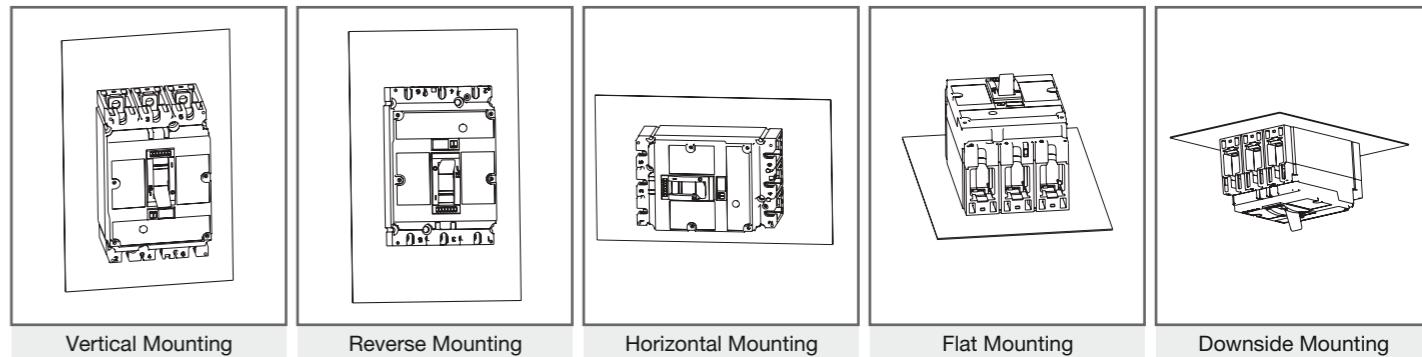
MCCB	D2	D9	D10	D11	W	W0	W1	W2
CSCN125TM	103	144	77	164	90	30	90	120
CSCN250TM	126	155	77	175	90	35	105	140
CSC*125EM / 250EM	168	225	115	250	107	45	140	185
CSC*800EM / 1250EM	206	225	115	250	107	70	210	280

(dimensions in mm)

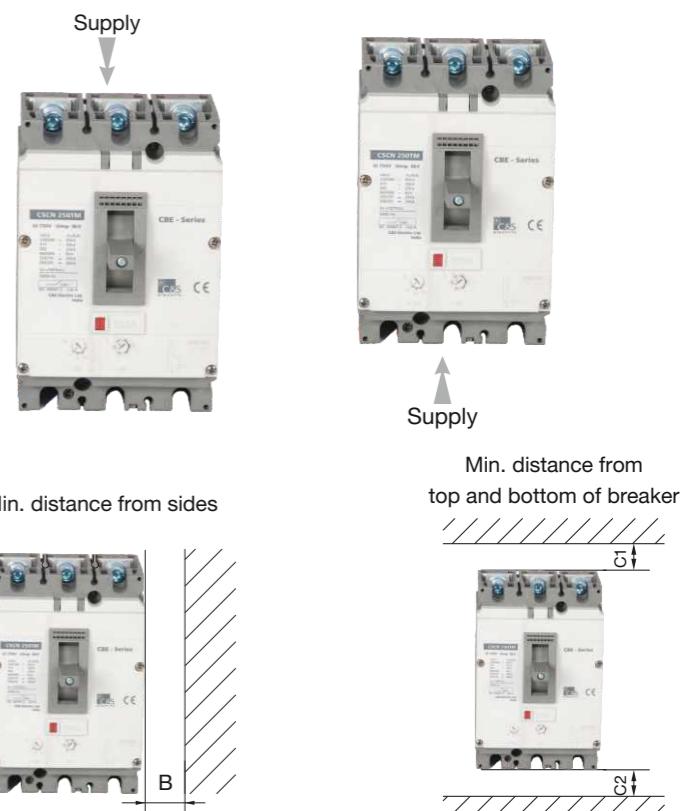
## Installation Methods

### Mounting of circuit breaker

Modes of mounting



Two options are available to connect the main supply i.e. from upside as well as downside. It will neither de-rate the MCCB nor affect normal operation.



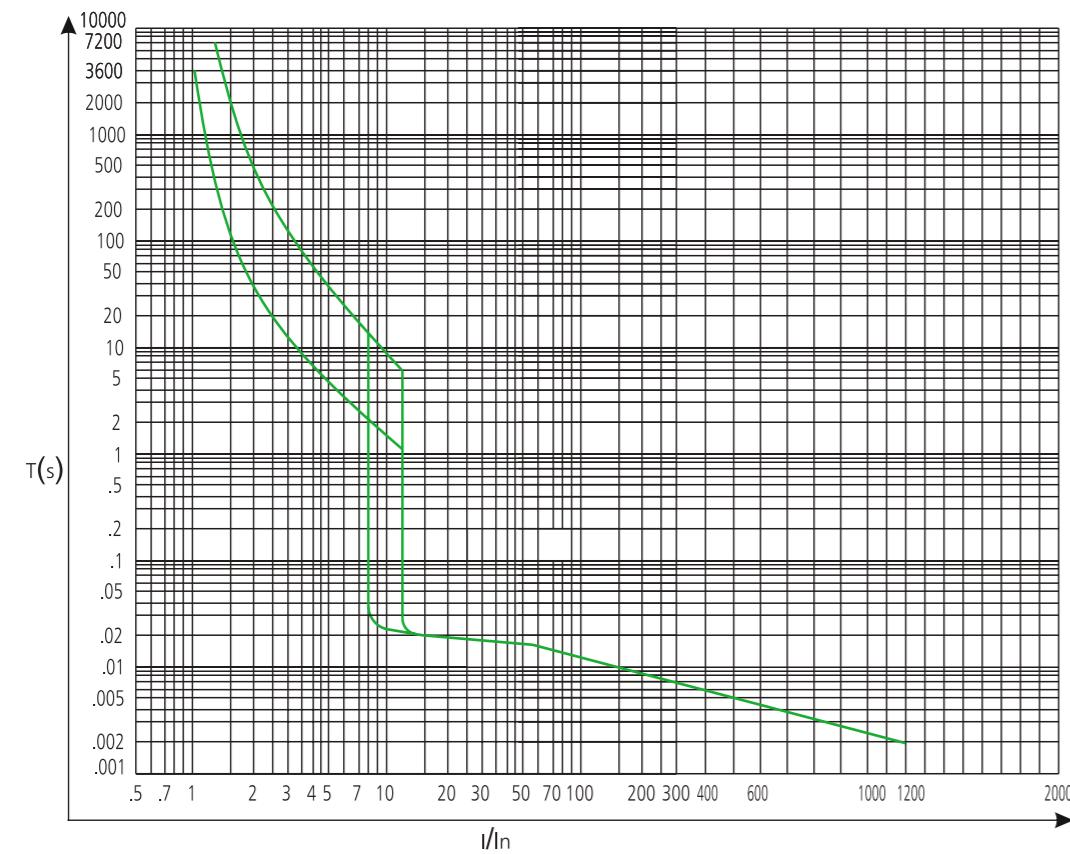
### Secured distance

Breaker	B	Insulation plate or insulation terminal (mm)		White or colored metal plate (mm)	
		C1	C2	C1	C2
CSCN125 / 250TM CSC*125EM / 250EM	Ue≤440V	5	30	30	30
	Ue<600V	10	30	30	30
CSC*400EM / 630EM	Ue≥600V	20	30	30	30
	Ue≤440V	5	30	30	60
CSC*800EM / 1250EM	Ue<600V	10	30	30	60
	Ue≥600V	20	30	30	100
S/H Type	10	130	100	70	70

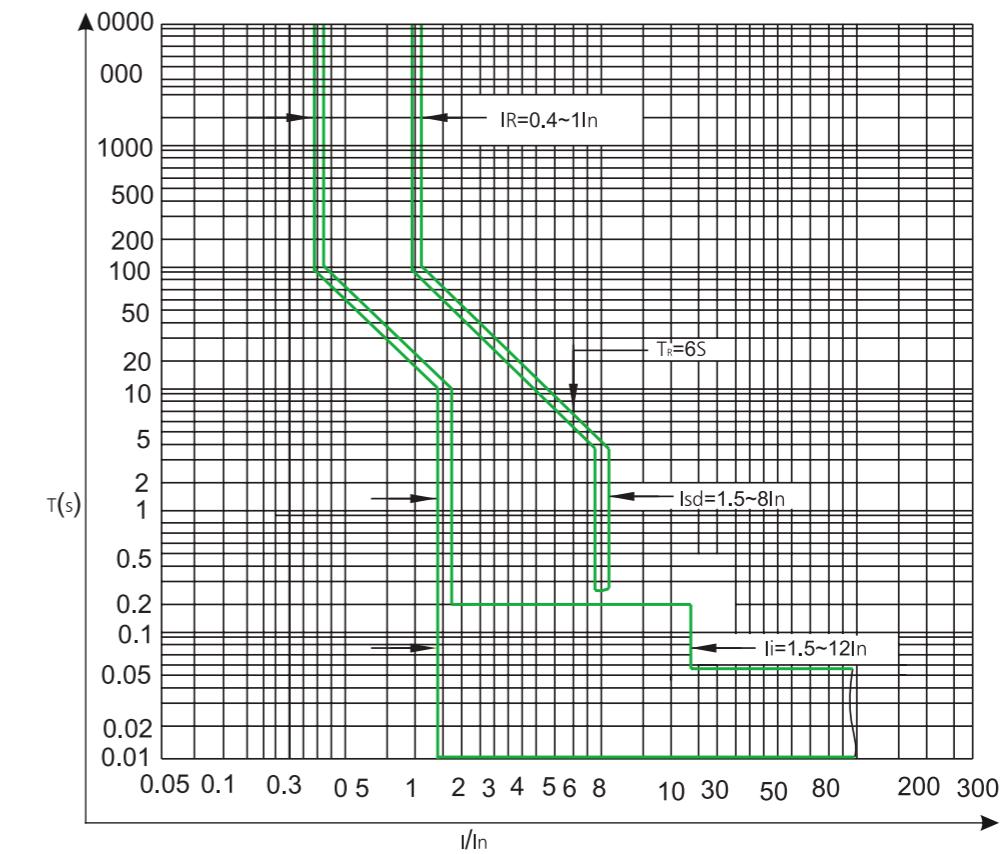
Note: When voltage is  $\geq 500V$ , extended terminal cover should be mounted

## Operating Curves

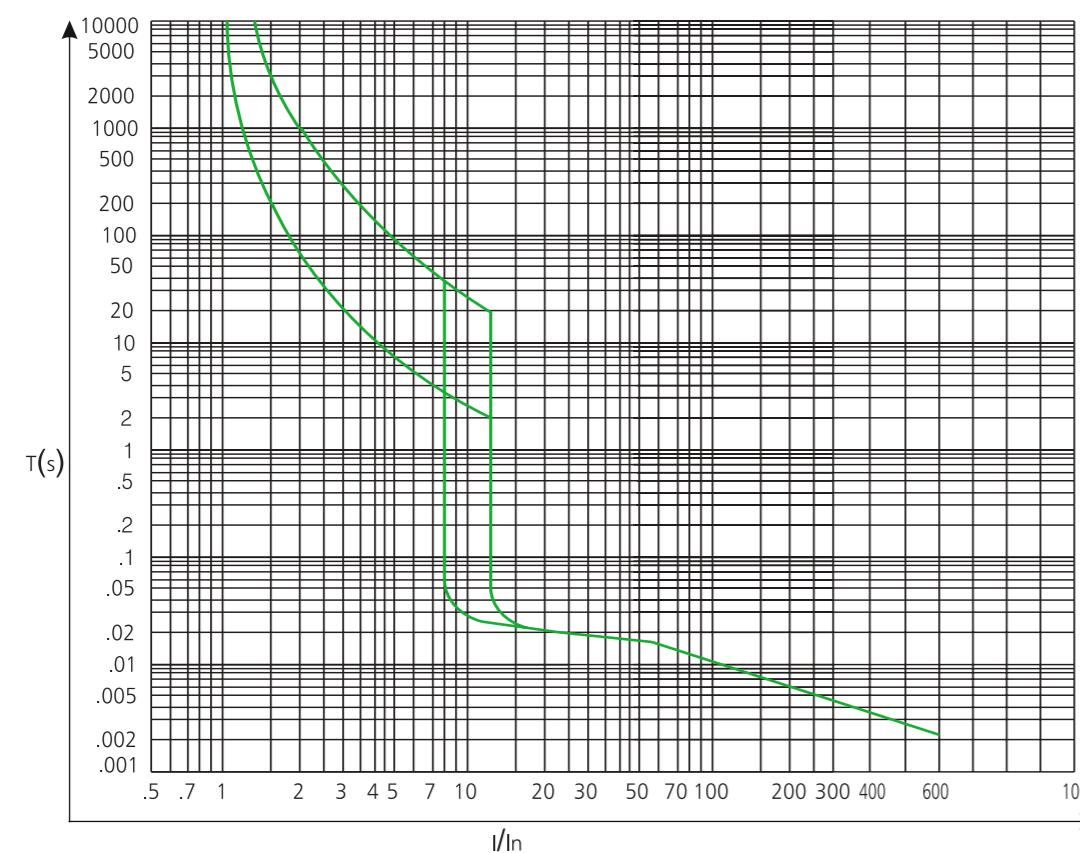
**CSCN125TM**



**CSC\* 125, CSC\*250EM (40~250A)**



**CSCN250TM**



**CSC\* 400, CSC\*630EM (250~630A)  
CSC\* 800, CSC\*1250EM (630~1250A)**

