State of the art Manufacturing Facilities

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

WiNbreak2

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winbreak2 03/01/2013

C&S electric

Moulded Case Circuit Breaker

Overview

WiNbreak2 CD and CS circuit breakers provide superior performance in a compact package. They are used in cascade rated systems, allowing the use of lower interruption circuit breakers downstream, which lead to lower system cost.

While meeting IEC60947-2 service and interrupting ratings, these breakers provide unmatched flexibility by employing a wide variety of trip units including adjustable thermal-fixed magnetic, adjustable thermal adjustable magnetic, and electronic release.

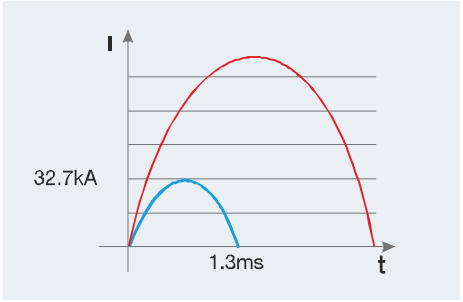
WiNbreak2 CD circuit break is available from 16 to 100A, in single frame and CS circuit breakers are available in four frame sizes in ratings from125 to 1600A and in interrupting capacities up to 150kA at 415V AC.

Standard calibration is at 40 °C with optional 55 °C factory calibration available for application where higher ambient temperatures are encountered.

WiNbreak2 MCCB incorporate contemporary safety features like positive isolation, finger proof terminals & double insulated housing.

5 Frame Size

Salient Features

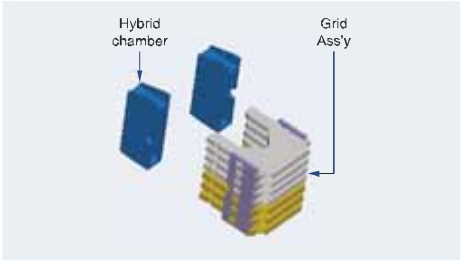


Current Limiting

The current limiting capacity of WiNbreak2 MCCB is its aptitude to reduce short-circuit currents. Through current limiting capacity, harmful effects on the installation can be reduced. WiNbreak2 MCCB is the fastest opening breaker. It clears the fault in just 1.3 msec. WiNbreak2 MCCB dissipates extremely low let through energy thereby minimizing stress under fault conditions.

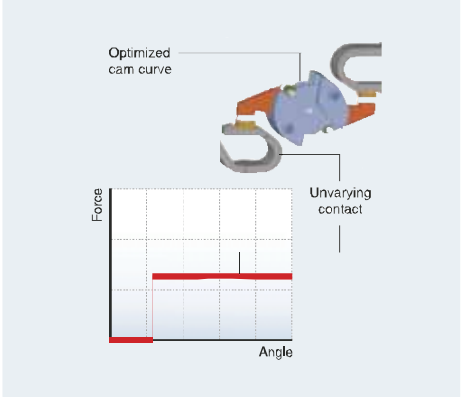
Double Contact Structure

WiNbreak2 MCCB has double break contact which ensures less thermal stresses & choice free operating quadrant. At Installation, Double Break switching contacts offer flexibility of retaining either quadrant. WiNbreak2 MCCB offers convenience of connection to either terminal side as there is no load-line bias & hence no de-ration in breaking capacity of MCCB.



Arc Extinguishing Unit

WiNbreak2 MCCB has new technology for arc quenching called PASQ .PASQ is the abbreviation of Puffer Assisted Self Quenching which is the technology to increase the interrupting performance by blowing out the gas to the arc. The gas pressure which is generated from hybrid chamber is accumulated in the space of Hybrid chamber & then the gas is blown to the arc to extinguish. Especially this technology improves the high voltage breaking performance.



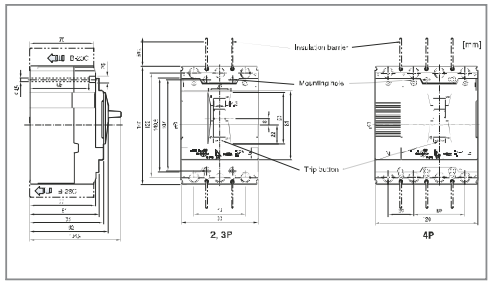
Constant Contact Force

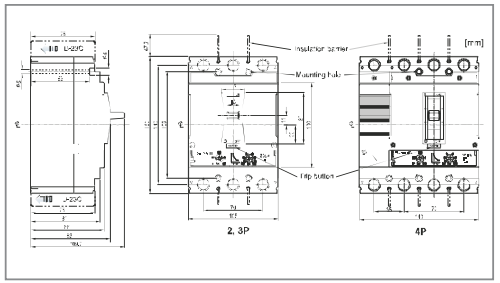
The technology is to maintain constant contact pressure through optimization of cam curve in rotating contact device. WiNbreak2 MCCB has Unvarying contact force regardless of over travel. Open speed of moving contact is rapid by optimized cam curve regardless of trip signal.

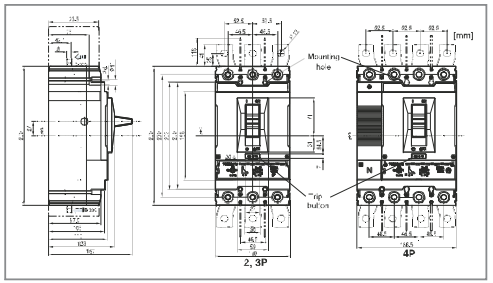
Technical Data

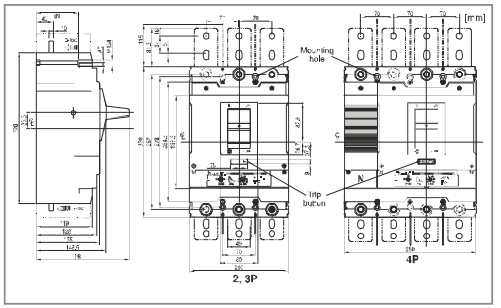



			CD100			CS160			CS250			CS400			CS630			CS800		
Frame size		[AF]	100			160			250			400			630			800		
Rated current, In ♣		[A]	16~100			125 160			125, 160, 200, 250			300, 400			500, 630			800		
No. of poles			2*, 3, 4			2*, 3, 4			2*, 3, 4			2*, 3, 4			2*, 3, 4			2*, 3, 4		
Rated operational	AC	[V]	690			690			690			690			690			690		
voltage, Uo	DC	[V]	500			500			500			500			500			500		
Rated impulse withstand voltage, Uimp		[kV]	8			8			8			8			8			8		
Rated insulation voltage, Ui		[V]	750			750			750			750			750			750		
Rated ultimate short-circuit breaking capacity, Icu			N	H	L	N	H	L	N	H	L	N	H	L	N	H	L	N	H	L
AC 50/60Hz	220/240V	[kA]	85	100	200	100	120	200	100	120	200	100	120	200	100	120	200	100	120	200
	380/415V	[kA]	50	85	150	50	85	150	50	85	150	65	85	150	65	85	150	65	100	150
	440/460V	[kA]	50	70	130	50	70	130	50	70	130	65	85	130	65	85	130	65	100	130
	480/500V	[kA]	30	50	65	42	65	85	42	65	85	42	65	85	42	65	85	42	85	100
	660/690V	[kA]	5	8	10	10	15	20	10	15	20	10	20	35	10	20	35	10	20	35
DC	250V	[kA]	42	65	100	50	85	100	50	85	100	50	85	100	50	85	100	50	85	100
DC(2poles in series)	500V	[kA]	42	65	100	50	85	100	50	85	100	50	85	100	50	85	100	50	85	100
Rated service breaking capacity, Ics		[%Icu]	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Category of utilization			A			A			A			A			A			A		
Isolation behavior			●			●			●			●			●			●		
Reference standard			IS 13947-2 / IEC60947-2			IEC60947-2			IEC60947-2			IEC60947-2			IEC60947-2			IEC60947-2		
Trip unit (release)**																				
Thermal-Magnetic																				
● adjustable-thermal, fixed-magnetic		FMU	●			●			●			●			●			●		
● adjustable-thermal, adjustable-magnetic		ATU	-			●			●			●			●			●		
Electronic																				
● LSI		ETS	-			●			●			●			●			●		
● LSI		ETM	-			-			-			●			●			●		
Option	Earth-fault protection, Ig		-			-			-			▲(Option)			▲(Option)			▲(Option)		
	Zone selective interlocking, ZSI		-			-			-			▲(Option)			▲(Option)			▲(Option)		
	Ammeter		-			-			-			▲(Option)			▲(Option)			▲(Option)		
	Communication		-			-			-			▲(Option)			▲(Option)			▲(Option)		
	Residual current device module (RTU)		▲(Option)			▲(Option)			▲(Option)			▲(Option)			▲(Option)			▲(Option)		
Connection	fixed	front-connection	●			●			●			●			●			●		
		rear-connection	●			●			●			●			●			●		
	plug-in	front-connection	●			●			●			●			●			●		
		rear-connection	●			●			●			●			●			●		
Mechanical life		[operations]	25000			25000			25000			20000			20000			10000		
Electrical life @ 415 V AC		[operations]	10000			10000			10000			6000			6000			3000		
Basic dimensions, W×H×D	3-pole	[mm]	90×140×86			105×160×86			105×160×86			140×260×110			140×260×110			210×320×135		
(front connection)	4-pole	[mm]	120×140×86			140×160×86			140×160×86			185×260×110			185×260×110			280×320×135		
Weight	3-pole	[kg]	1.5			2			2			5.4			5.4			15.1		
(front connection)	4-pole	[kg]	1.8			2.6			2.6			7.2			7.2			19.6		



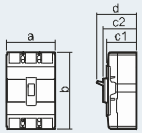






♣ Applicable to MCCBs equipped with FMU, ATU * 2 Pole MCCB in 3 Pole Frame size ** MTU Release (For motor protection) is also available

Selection Table

Type				CS1000			CS1250		CS1600	
Ampere frame				1000			1250		1600	
	Pole			3, 4			3, 4		3, 4	
	Rated current,(A)	In	-5~40℃	800, 1000			1250		1600	
			50℃	800, 1000			1250		1560	
			65℃	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, (kA) (Icw)	AC50/60Hz	1s	25	25	12	25	25	25	25
			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	500
			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						

Communication

Communication
with RS 485 port

Interchangeable Trip Units

WiNbreak2 circuit breakers provide several kinds of protection function according to selected trip unit and thanks to interchangeable trip unit concept, user can change the trip unit easily and rapidly. Especially, electronic trip units offer may kinds of protection functions, including communication, zone selectivity.

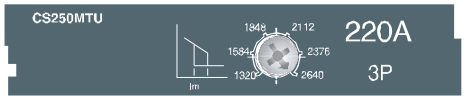
Protection of Power Distribution Systems

Thermal Magnetic trip units

- FMU: Adjustable thermal and Fixed magnetic trip unit
- ATU: Adjustable thermal and Adjustable magnetic unit

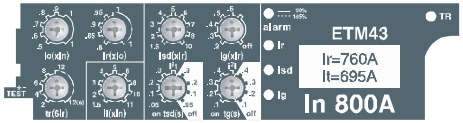
Motor Protection

- MTU: Magnetic only trip unit



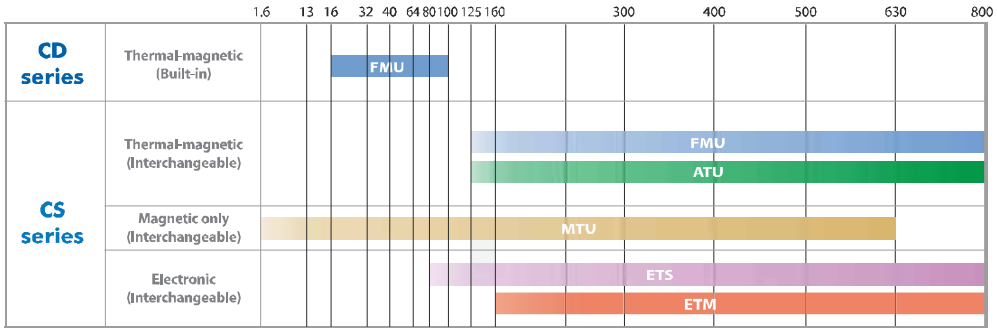
Electronic trip units

- ETS: Standard electronic unit
- ETM: Multi-functional electronic trip unit



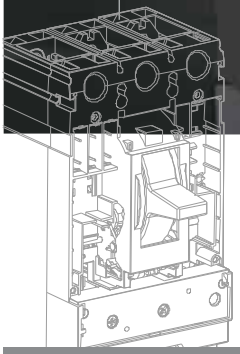
Control and Disconnection

- DSU: Disconnecting Switch unit



Trip Release - CS1600AF

Classification	N type	A type	P type	S type
Externals				
Current protection	EL / 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



Simplicity

The range of Internal Accessories of CD & CS series circuit breakers is characterized by common use regardless of frame size and allows inventory management. Since the housing is double insulated, fitment of electrical accessories is safe even during energized condition.

Common use to all WiNbreak2 CD & CS circuit breakers

Electrical auxiliaries that are installed internally are common from 16 to 800A

Alarm Switch (AL)

Alarm switches offer provisions for immediate audio or visual indication of a tripped breaker due to overload, short-circuit, operation of shunt trip or under voltage trip conditions, operation of push button.

They are particularly useful in automated plants where operators must be signaled about changes in the electrical distribution system. This switch features a closed contact when the circuit breaker is operated manually. Its contact is open when the circuit breaker is reset.

Fault Alarm Switch (FAL)

FAL indicates that the circuit breaker has tripped because of overload or short-circuit

Auxiliary Switch (AX)

Auxiliary switch is for applications requiring remote “ON” and “OFF” indication. Each switch contains two contacts having a common connection. One is open and the other closed when the circuit breaker is open and vice-versa.

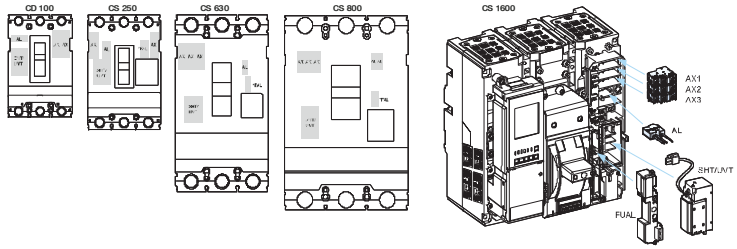
Under Voltage trip (UVT)

The under voltage trip coil 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 the circuit breaker cannot be re-closed until the voltage returns to 85% of line voltage. Continuously energized, the under voltage trip must be operating be fore the breaker can be closed.

Shunt Trip (SHT)

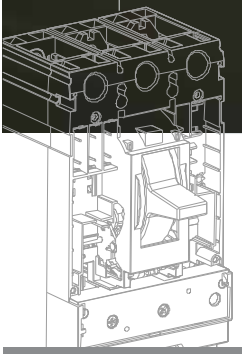
The shunt trip opens the mechanism in response to an externally applied voltage signal. CS shunt trips include clearing contacts that automatically clear the signal circuit when the mechanism has tripped.

Maximum Possible configuration of electrical auxiliaries



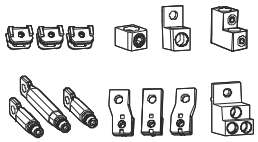
Phase	Accessory	CD 100	CS 160/250	CS 400/630	CS 800
R (Left)	AX	-	1	3	3
	AL	1	1	-	-
	SHT or UVT	1	1	1	1
T (Right)	AX	2	1	-	-
	AL	-	-	1	2
	FAL	-	1	1	1

Note: FAL can be applied to only MCCB with electronic trip release.



Convenience

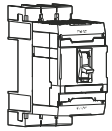
Wide range of external accessories provides convenient solution for mounting, cable connection, insulation, safety lock and remote control.



Front and rear connection

Several kinds of terminals can be equipped with WiNbreak2 CD & CS circuit breakers.

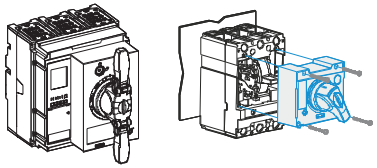
- Terminal mounter
- Terminal box for bare cable
- Extended lug terminal box
- Spreader
- Rear Terminal



Plug-in base

It makes to extract and / or rapidly replace the circuit breaker without having to touch connections. (Easy replacement and maintenance)

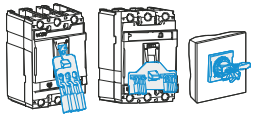
- Standard Plug-in base
- Plug-in base for 2 line arrangement



Direct & Extended Rotary Handle

There are two types of rotary handles.

- Direct rotary handle (with or W/O key lock device)
- Extended rotary handle

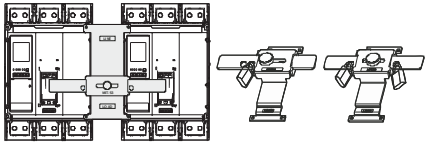


Locking Device

- Fixed padlock
- Removable padlock
- Key lock device on direct handle

Motor Operator

Motor operators enable the circuit-breaker to be switched ON and OFF locally or by remote control.



Mechanical Interlocking Device

Interlocks prevent connection to both sources at the same time, even momentarily.

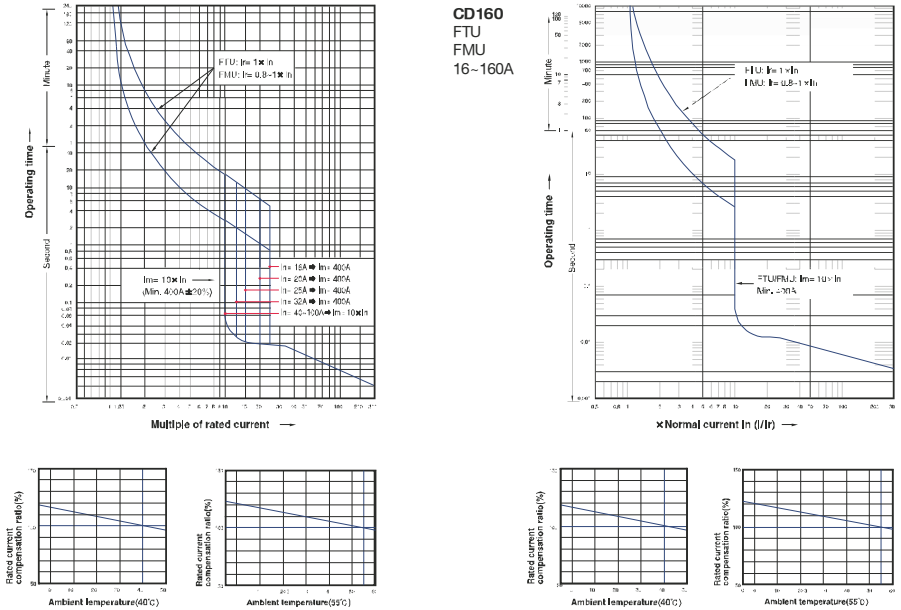
WiNbreak2 MCCB

- High Breaking capacity >> Ics=100% Icu
- Fast operating >> Low let through energy
- Advanced μP protection >> Communication compatible
- Common Electrical Accessories

Characteristics Curves

Circuit breakers with thermal-magnetic trip units

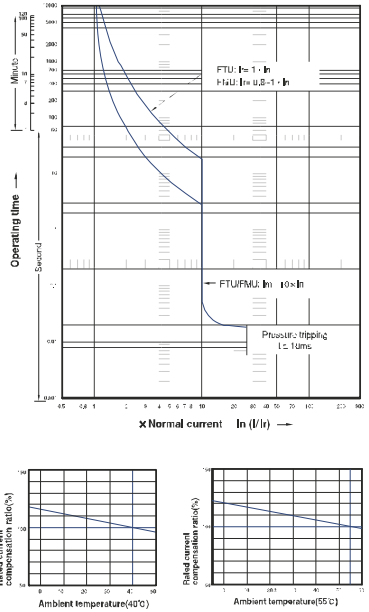
CD100
FTU
FMU
16~100A



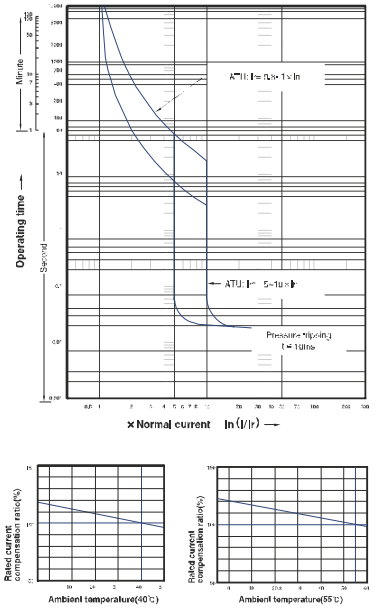
CD160
FTU
FMU
16~160A

Circuit breakers with thermal-magnetic trip units

CS160
FTU
FMU
100, 125, 160A

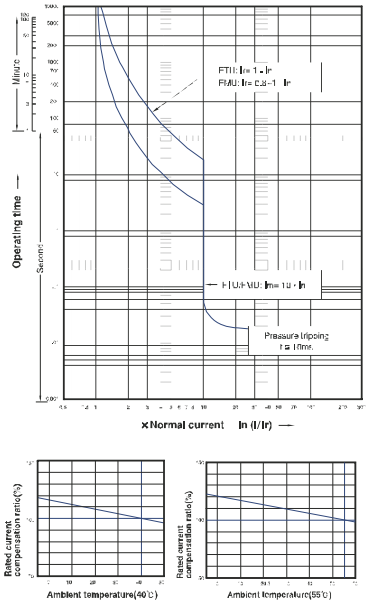


CS160
ATU
100, 125, 160A



Circuit breakers with thermal-magnetic trip units

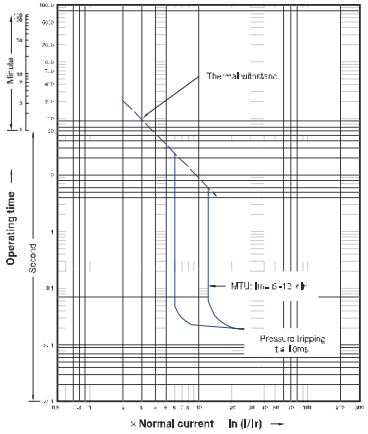
CS100
FTU
FMU
40~100A



Circuit breakers with magnetic only trip units

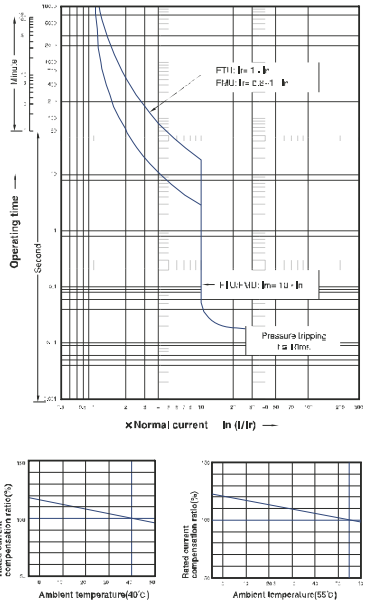
CS100
Magnetic only
MTU
1.6~100A

CS160
Magnetic only
MTU
32~160A

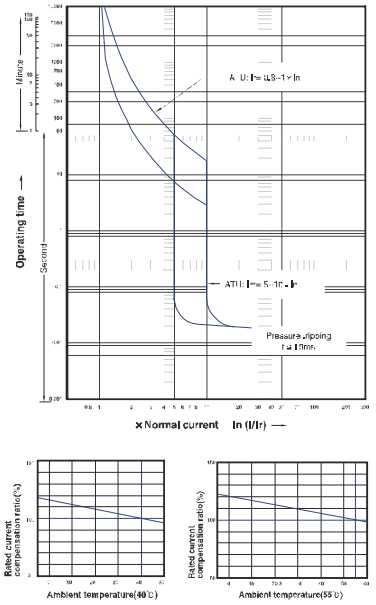


Circuit breakers with thermal-magnetic trip units

CS250
FTU
FMU
125~250A



CS250
ATU
125~250A

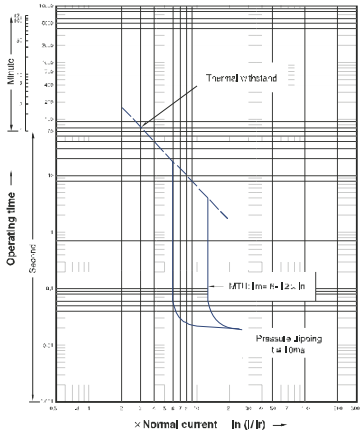


Characteristics Curves

Circuit breakers with magnetic only trip units

CS250

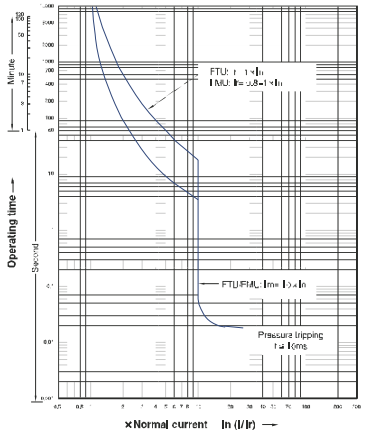
Magnetic only
MTU
100, 160, 220A

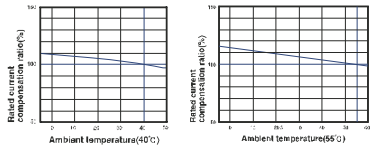


Circuit breakers with thermal-magnetic trip units

CS400

FTU
FMU
300, 400A

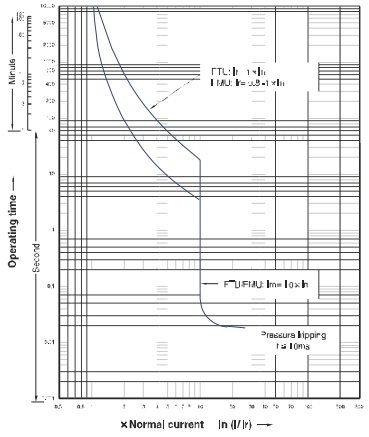


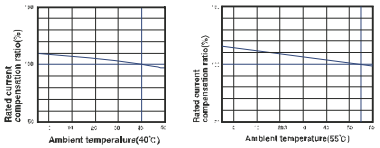


Circuit breakers with thermal-magnetic trip units

CS630

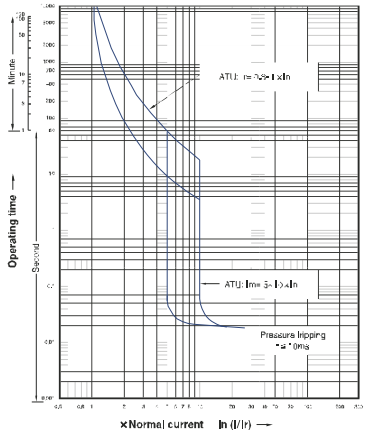
FTU
FMU
500, 630A

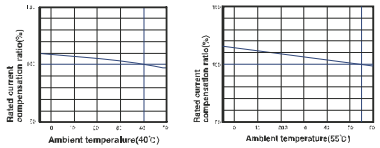




CS630

ATU
500, 630A

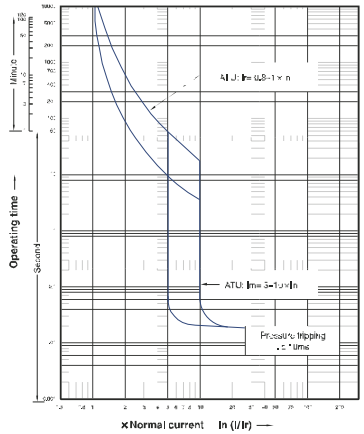


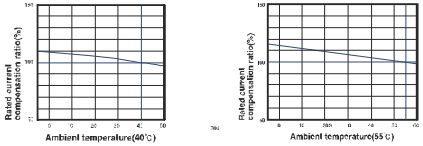


Circuit breakers with thermal-magnetic trip units

CS400

ATU
300, 400A

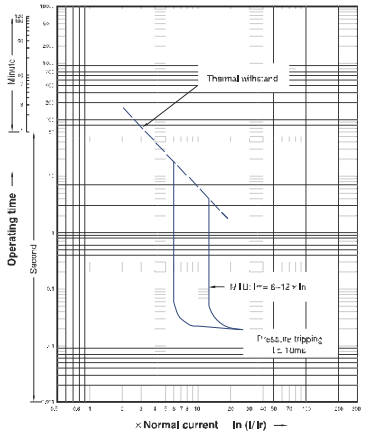




Circuit breakers with magnetic only trip units

CS400

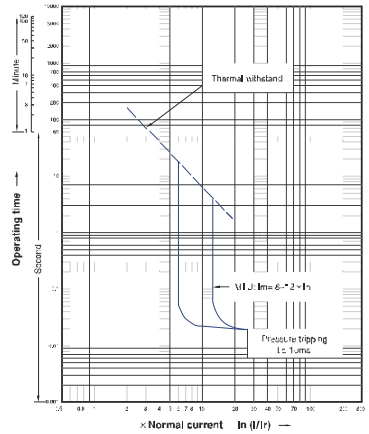
MTU
320A



Circuit breakers with magnetic only trip units

CS630

MTU
500A

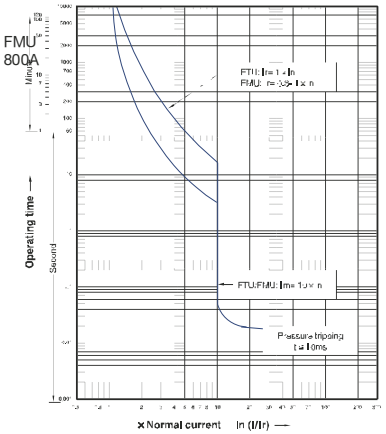


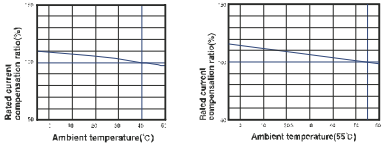
Circuit breakers with thermal-magnetic trip units

CS800

FTU
700, 800A

FMU
800A



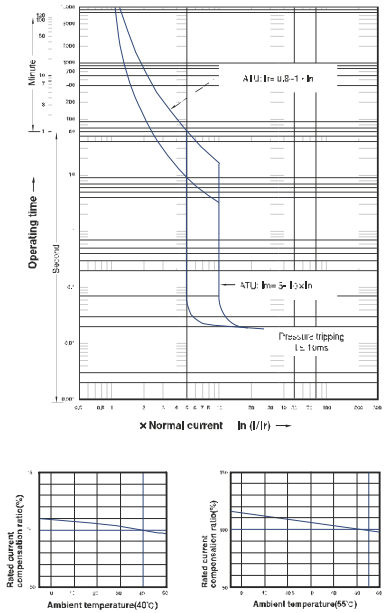


Characteristics Curves

Circuit breakers with thermal-magnetic trip units

CS800

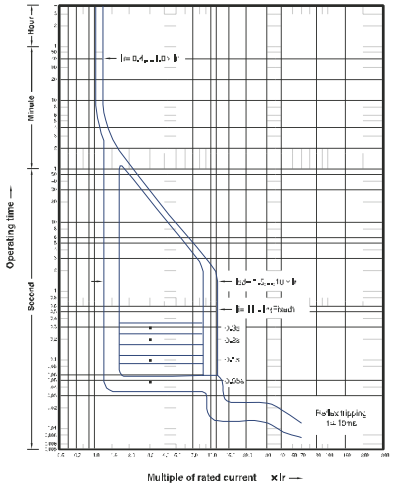
ATU
800A



Circuit breakers with electroni trip unit (ETS)

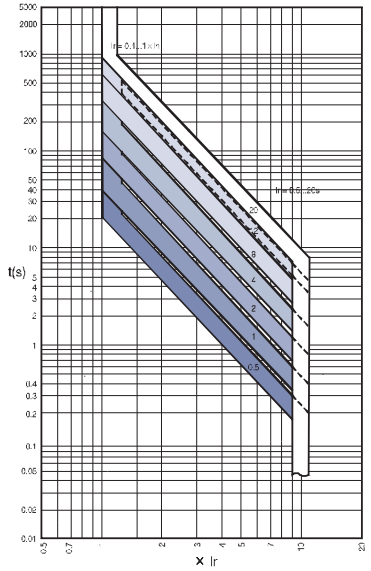
CS100 to CS800

ETS23
ETS33
ETS43



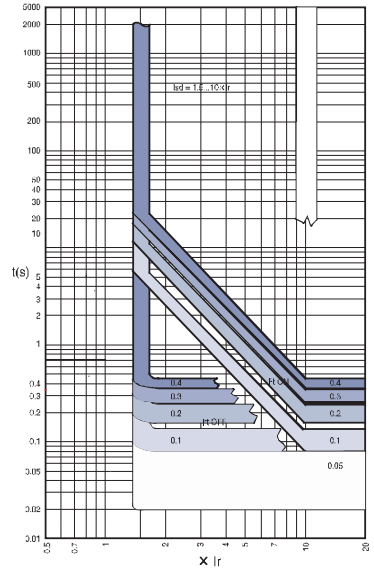
Long-time delay (L)

CS1600



Short-time delay (S)

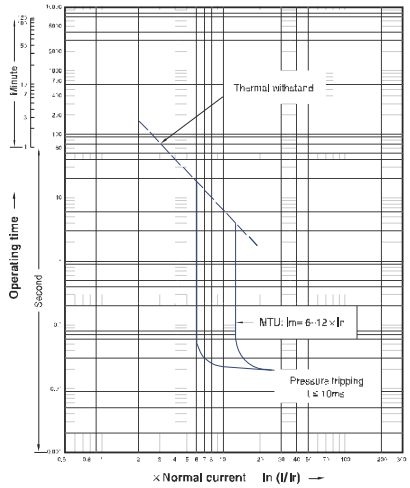
CS1600



Circuit breakers with magnetic only trip units

CS800

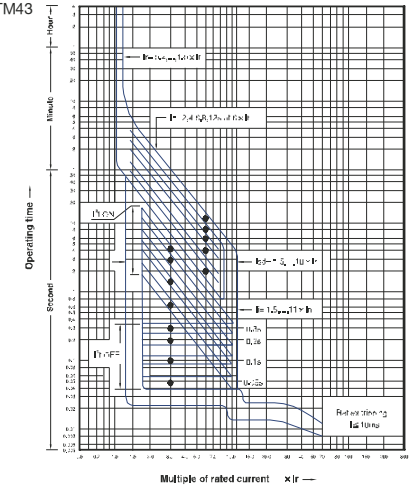
MTU
630A



Circuit breakers with electroni trip unit (ETM)

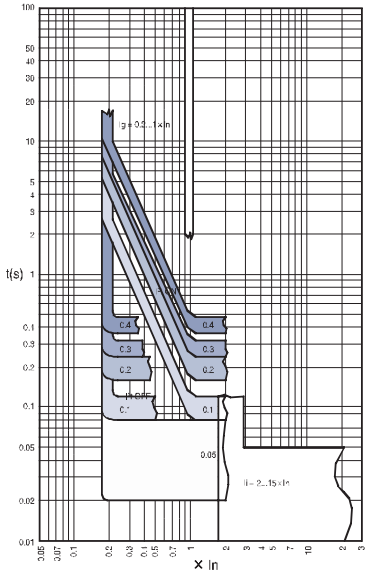
CS400
CS630
CS800

ETM33
ETM43



Instantaneous (I) Ground Fault (G)

CS1600



IDMTL

CS1600