

Designed for **Toughest Conditions**

## Moulded Case Circuit Breaker

**Reilient**  
BCH ELECTRIC LIMITED

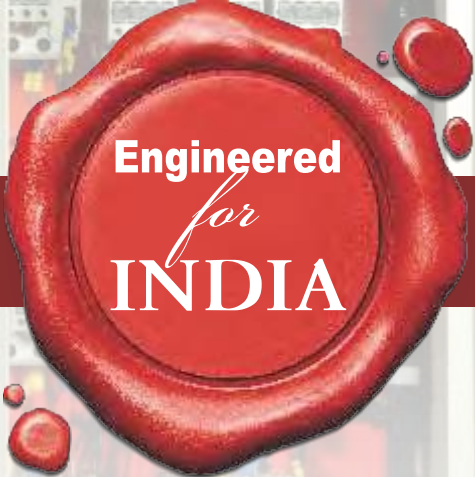


**BCH ELECTRIC LIMITED**  
*we care for you*



# Resilient

BCH ELECTRIC LIMITED



Engineered  
*for*  
**INDIA**

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BCH Electric is one of India's oldest and respected LV Switchgear manufacturer with world-class manufacturing facilities, pan-India distribution network and a wide product portfolio. Our decades of operations in Indian LV Switchgear market has helped us understand that Indian Industrial conditions are one of the harshest and most demanding in nature. And we know the importance of a device which seamlessly, effortlessly and quite reliably delivers the best performance in varied applications under these harsh Indian conditions.

Presenting to you the **Resilient** range of MCCB, available in two frame sizes with standard and high performance variants. As the name Resilient implied, the product is designed and tested to perform excellently in harsh Indian conditions.



Remarkable performance



Superior flexibility



Reliability



Design excellence



## Offers Remarkable Performance

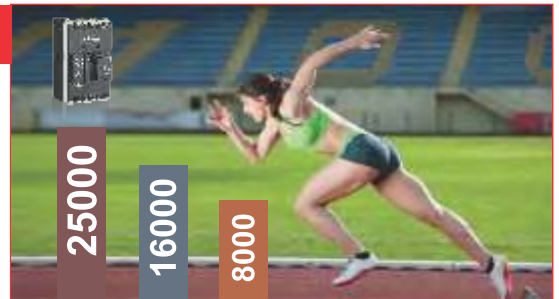
### Tested for 50°C Ambience

- We understand Indian conditions well, so the entire range of Resilient MCCB is tested for rated performance at 50°C
- With every 5°C dip in temperature, breaker can be uprated as much as 4%



### Excellent Electrical / Mechanical Life

- With more than 8000 Electrical cycles and more than 25000 Mechanical cycles, Resilient MCCBs are designed for longer life and reliability



### High Performance Compact Size

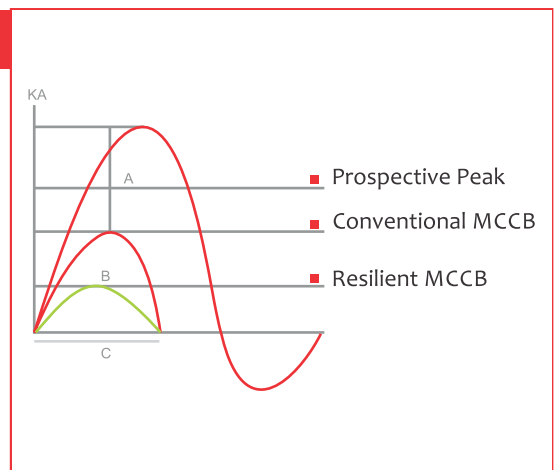
- Resilient MCCB offers 50 kA Short circuit breaking capacity in smallest frame size of 75 X 130 X 60 mm (WXHxD)



### Outstanding Current Limiting Performance

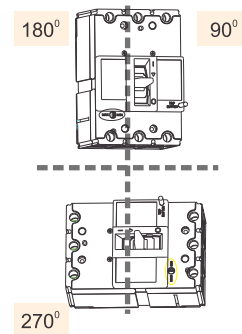


- Owing to a salient U shaped terminal and fast acting mechanism, Resilient MCCB offers excellent current limiting performance
- Designed for a very low level of let through energy, Resilient MCCBs provides not only safety of installation but also reduces stress on downstream equipments



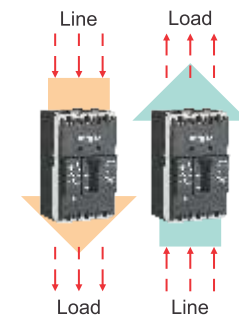
### Flexibility of Installation

- Resilient MCCBs can be installed in any orientation



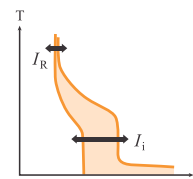
### Line Load Interchangeability

- The entire range of Resilient MCCB is suitable for line load interchangeability, with unmarked terminals



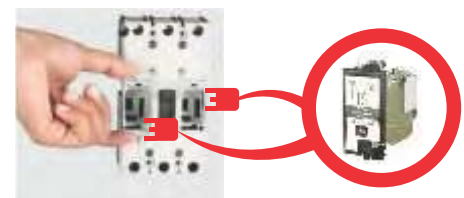
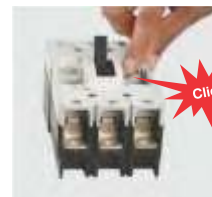
### Thermal Flexibility

- Adjustable overload protection from as low as 70 % to 100 %



### Unbeatable Flexibility of Accessory Mounting

- Resilient MCCB is one of its kind to have flexibility to install UVT & Shunt together at a time
- There's no predefined location for UVT, Shunt, Auxiliary or Trip Alarm unit
- All accessories can be field fitted, with no need for dismantling breaker







Offers Reliability

### International Standards

- Entire range of Resilient MCCB is tested and certified as per IS / IEC 60947-2
- Resilient MCCB also carries CE mark

IEC 60947



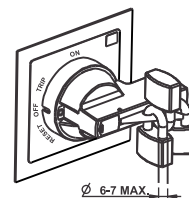
### Suitability for Isolation

- Resilient Range of MCCB is suitable for positive isolation
- Ensures complete safety of operator and installation



### Isolation of Accessories

- Internal accessory mounting chamber is isolated from main mechanism for safety of installation
- A safety feature ensures that accessories can be fitted only when breaker is in TRIP condition
- Rotary handle is lockable in OFF condition to prevent any unintended interventions



### Safety of Installation

- Finger proofed terminal





Offers Design Excellence

## Constructional features

The Resilient MCCB is meticulously designed to incorporate necessary design features for superlative performance

Unique Design for Controlled exhaust of ARC to minimize safety perimeter & ground surface

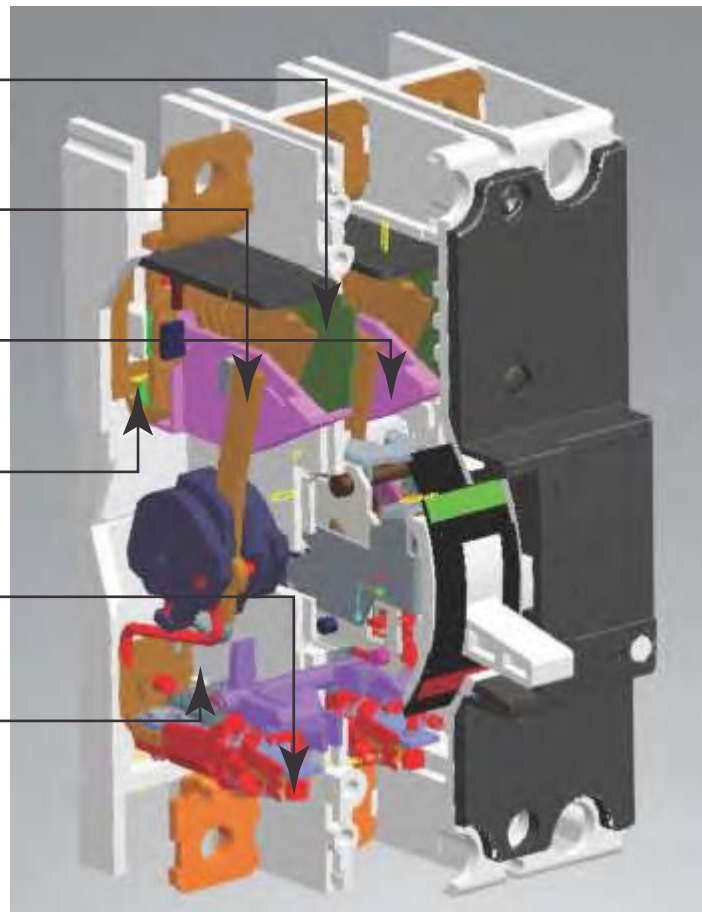
Inherent Contact System Design to provide wiping effect between Contacts for self-cleaning action

Use of special ABLATIVE material generates gases to suppress ARC PLASMA & Quench ARC

Maximized Contact Repulsion forces with U-Shape design for high ARC interruption capacity

Bimetal senses Overload protection

Electro Magnet senses Short Circuit Protection



## Technical Specifications

Type	RS		
FRAME	1		
<b>Features</b>			
Ref Standards	IS/IEC60947 - 2		
No. of Poles	3		
Rated Operational Voltage( $U_e$ ) - (V)	415		
Rated Insulation Voltage( $U_i$ ) - (V)	690		
Rated Impulse withstand Voltage( $U_{imp}$ ) - (kV)	6		
Rated Current ( $I_b$ ) - (A)	16, 20, 25, 32, 40, 50, 63, $\Omega$ 80, $\Omega$ 100		
Ultimate Breaking Capacity( $I_{cu}$ ) - kA at 415V	10	15	30
Service Breaking Capacity( $I_{cs}$ ) - % of $I_{cu}$	75	100	50
Suitability for Isolation	Yes	Yes	Yes
Utilization Category	A	A	A
Electrical Life - Cycles	5000	6000	6000
Mechanical Life - Cycles	25000	25000	25000

### Protection against Over Current (Trip Unit)

Thermal (Fixed / Adjustable)	Fixed	Fixed	Adjustable
Magnetic	Fixed	Fixed	Fixed
Terminal Cable Capacity	50 mm <sup>2</sup>	50 mm <sup>2</sup>	50 mm <sup>2</sup>
Dimensions - (mm) WxHxD	75X130X60	75X130X60	75X130X60
Weight - (Kg)	0.84 / 0.92*	0.84 / 0.92*	0.84 / 0.92*
Operating Temp Range - °C	-5 to +50	-5 to +50	-5 to +50
Reference Temperature - °C	50	50	50
<b>Accessories - INTERNAL</b>			
Auxiliary (2C/O)	Yes	Yes	Yes
Aux / Alarm (1C/O + 1 C/O)	Yes	Yes	Yes
Shunt Release	Yes	Yes	Yes
Under Voltage Release (UVR)	Yes	Yes	Yes
<b>Accessories - EXTERNAL</b>			
Rotary Operating Handle (Extended)	Yes	Yes	Yes
Phase Barriers	Yes	Yes	Yes
Spreaders / Terminal Extensions	Yes	Yes	Yes
DIN Rail Mounting Kit	Yes	Yes	Yes

\*Weight along with spreader link

$\Omega$  Spreader link available with breaker above 80A  $I_n$  in F1 & 200A  $I_n$  F2

## Range & Ordering Codes

For Frame 1 ( $I_{th} = 100$ A)			
XF	E	100	G*
	L: 36 kA H: 30 kA S: 25 kA N: 15 kA E: 10 kA	100: 100A 80: 80A 63: 63 A 50: 50A 40:40A 32: 32A 25: 25A 20: 20A 16: 16A	P : $I_{cs}$ 100% of $I_{cu}$ G : $I_{cs}$ 75% of $I_{cu}$ N : $I_{cs}$ 50% of $I_{cu}$
* add a suffix V ( PV and NV) for variable thermal variant			



For MCCB of any other rating, please contact nearest sales office



RH			RS		RH			
1			2		2			
IS/IEC60947 - 2			IS/IEC60947 - 2		IS/IEC60947 - 2			
3			3		3			
415			415		415			
690			690		690			
6			8		8			
16, 20, 25, 32, 40, 50, 63, Ω80, Ω100			125, 160, Ω200, Ω250		125, 160, Ω200, Ω250			
25	36	50	25	36	36	30	50	50
100	50	50	100	50	75	100	50	100
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
A	A	A	A	A	A	A	A	A
8000	8000	8000	5000	5000	8000	8000	8000	8000
25000	25000	25000	12000	12000	12000	12000	12000	12000

Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable
Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
50 mm <sup>2</sup>	50 mm <sup>2</sup>	50 mm <sup>2</sup>	120 mm <sup>2</sup>	120 mm <sup>2</sup>	120 mm <sup>2</sup>	120 mm <sup>2</sup>	120 mm <sup>2</sup>	120 mm <sup>2</sup>	120 mm <sup>2</sup>
75X130X60	75X130X60	75X130X60	105x160x81	105x160x81	105x160x81	105x160x81	105x160x81	105x160x81	105x160x81
0.84 / 0.92*	0.84 / 0.92*	0.84 / 0.92*	2.3 / 2.4*	2.3 / 2.4*	2.3 / 2.4*	2.3 / 2.4*	2.3 / 2.4*	2.3 / 2.4*	2.3 / 2.4*
-5 to +50	-5 to +50	-5 to +50	-5 to +50	-5 to +50	-5 to +50	-5 to +50	-5 to +50	-5 to +50	-5 to +50
50	50	50	50	50	50	50	50	50	50
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	No	No	No	No	No	No	No



### For Frame 2 ( $I_{th} = 250 A$ )

XF2	E	250	GV*
	H: 50 kA	250: 250A	PV : $I_{cs}$ 100% of $I_{cu}$
	N: 36 kA	200: 200A	GV : $I_{cs}$ 75% of $I_{cu}$
	E: 25 kA	160: 160A	NV : $I_{cs}$ 50% of $I_{cu}$
		125: 125A	




\* Variable thermal setting available by default

For MCCB of any other rating, please contact nearest sales office

## Internal Accessories

Compliance to : IS/IEC 60947-2 Without any adjustments.

Universal accessories mounting

		
<b>Shunt Release</b>	<b>Undervoltage Release</b>	<b>Alarm / Auxiliary &amp; Auxiliary: Switch</b>
<ul style="list-style-type: none"> <li>• Wide Operating voltage range : 220 - 415 V AC/DC</li> <li>• Pick up consumption : 230V AC &lt;16 VA &amp; 440V AC &lt;54 VA</li> <li>• Sealed consumption : &lt;5 VA</li> <li>• Response time : &lt;20 ms</li> <li>• Operates at 70% to 110% of Ue</li> <li>• With Shunt Release energized not possible to Switch ON the MCCB</li> </ul>	<ul style="list-style-type: none"> <li>• Operating Voltage : 24V / 48V / 110 V AC/DC, 220/240 V AC, 415 V AC</li> <li>• UV Release operates &amp; opens the MCCB at 35 % of Ue</li> <li>• At 30% of Ue it is not possible to close the MCCB</li> <li>• At 85% of Ue it is possible to close the MCCB</li> </ul>	<ul style="list-style-type: none"> <li>• Auxiliary Switch - 2 Changeover</li> <li>• Trip Alarm &amp; Auxiliary - Auxiliary (1 C/O) + Alarm(1 C/O)</li> <li>• Rating for Utilization categories : - At 250V : AC15 - 2A, DC13 - 0.2A</li> <li>• I<sub>th</sub>=5A, U<sub>e</sub>=230V, I<sub>e</sub>=2A for AC15 Duty</li> <li>• Auxiliary Switch operates in normal ON/OFF operation simultaneously with main contacts. Alarm operates only when the breaker trips</li> </ul>

## Rotary Operating Handle - Extended

- Handle - Pistol type grip
- Door interlocking in ON condition
- Defeat feature for door interlock
- Adjustable shaft length at customer site
- Upto three Padlocks (6mm) possibility in OFF condition
- Ingress protection : IP42 when mounted in enclosure
- Minimum depth required to mount ROH in panel

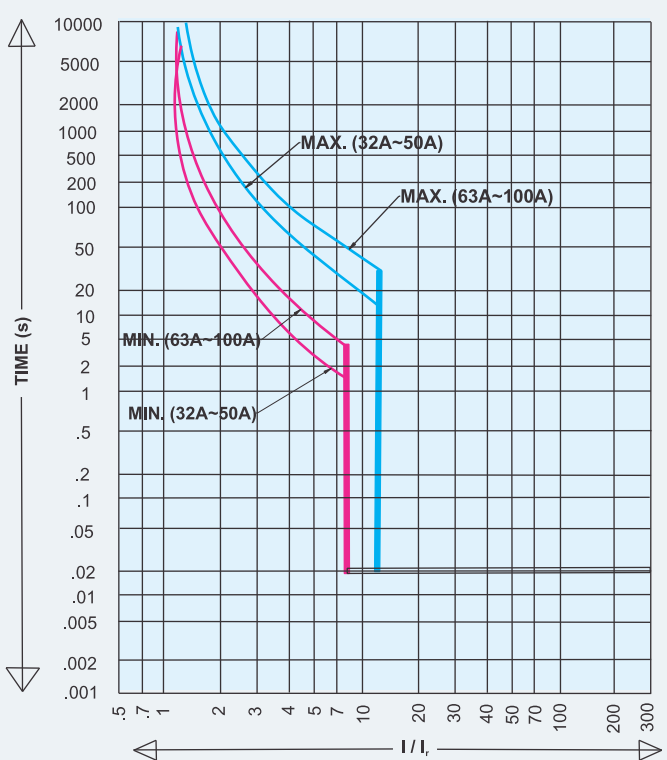
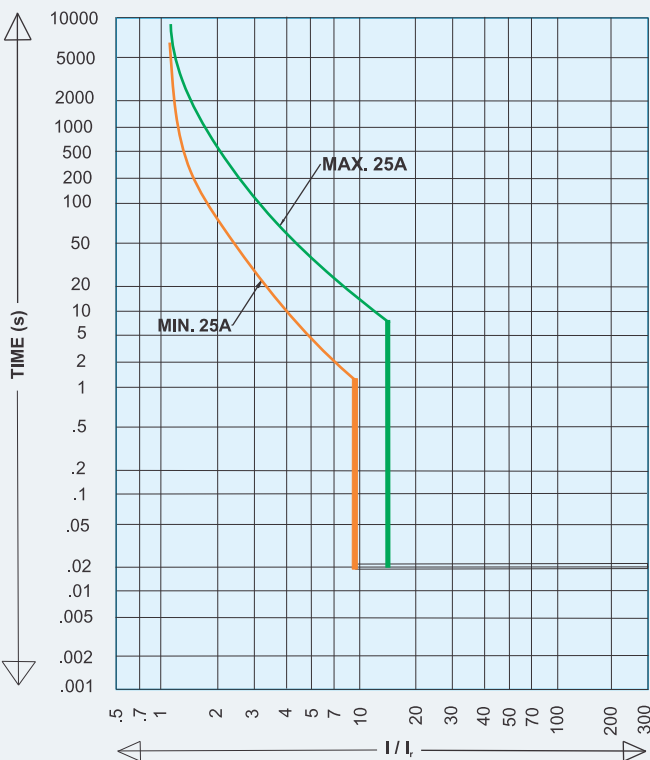
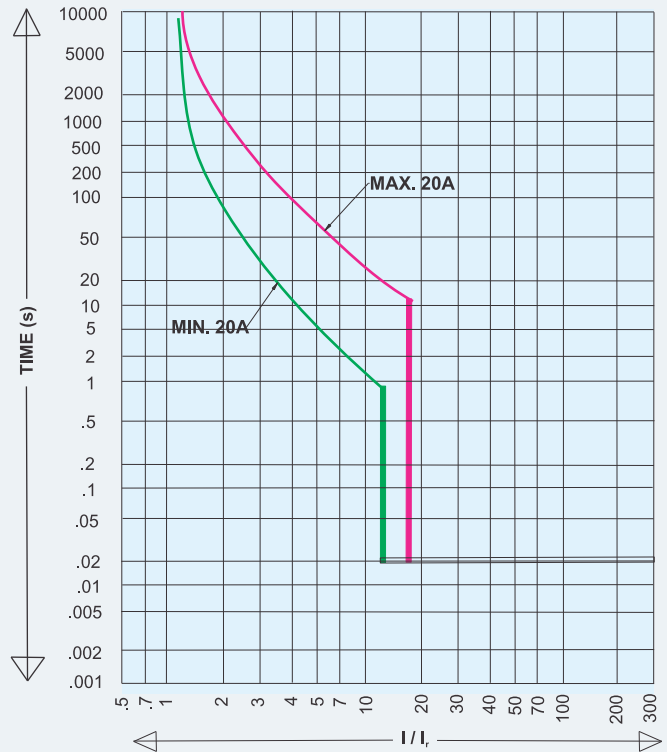
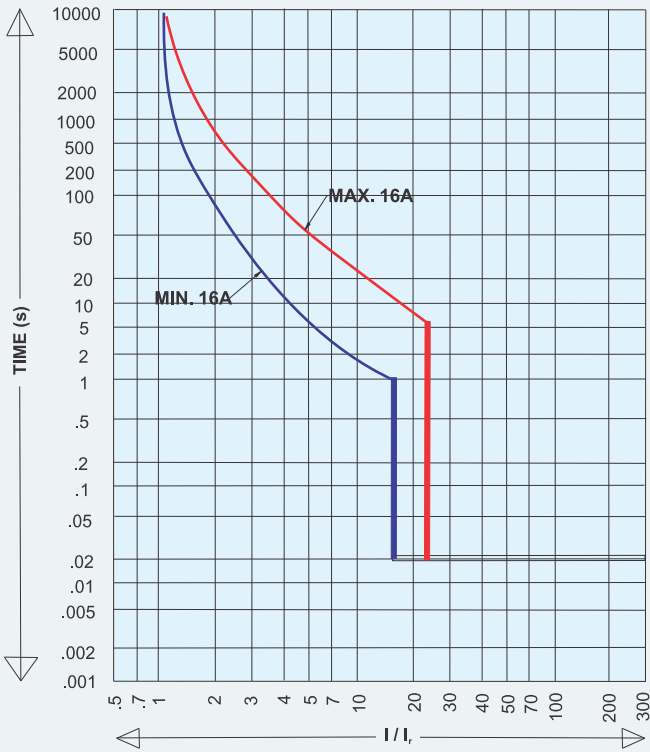


Type	RATING	ORDERING CODE	DESCRIPTION
Internal Accessories	220V - 415V	XFSHT220V	SHUNT RELEASE 220-415V
	240V	XFUV240VA	UNDER VOLTAGE RELEASE 240V AC
	415V	XFUV415VA	UNDER VOLTAGE RELEASE 415V AC
	1 C/O + 1 C/O	XFALAX11	AUXILIARY CONTACT + TRIP ALARM
	2 C/O	XFAX2	AUXILIARY CONTACT
External Accessories	F1 MCCB	F1DIN	DIN RAIL MOUNTING KIT FOR F1 MCCB
	F1 MCCB	F1ROHE	F1 ROTARY HANDLE (EXTENDED)
	F2 MCCB	F2ROHE	F2 ROTARY HANDLE (EXTENDED)
	F1 MCCB	ACMF1TP100	SPREADER LINK F1
	F2 MCCB	ACMF2TP250	SPREADER LINK F2
	F1 MCCB	F1PB	PHASE BARRIER F1
	F2 MCCB	F2PB	PHASE BARRIER F2



# Tripping Curves

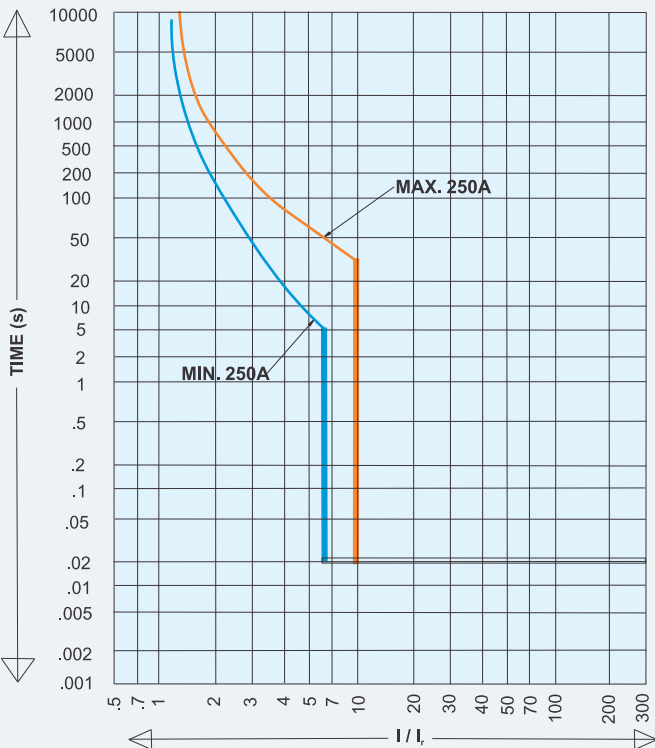
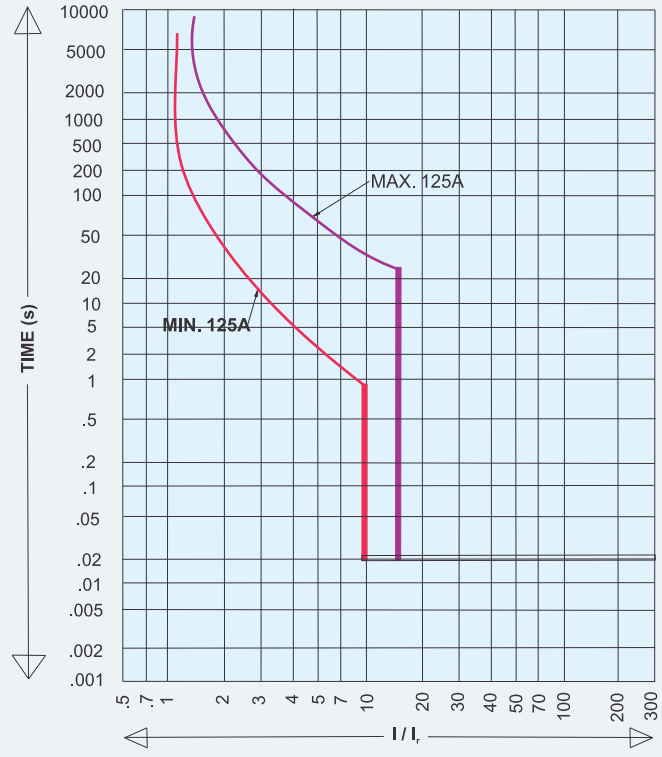
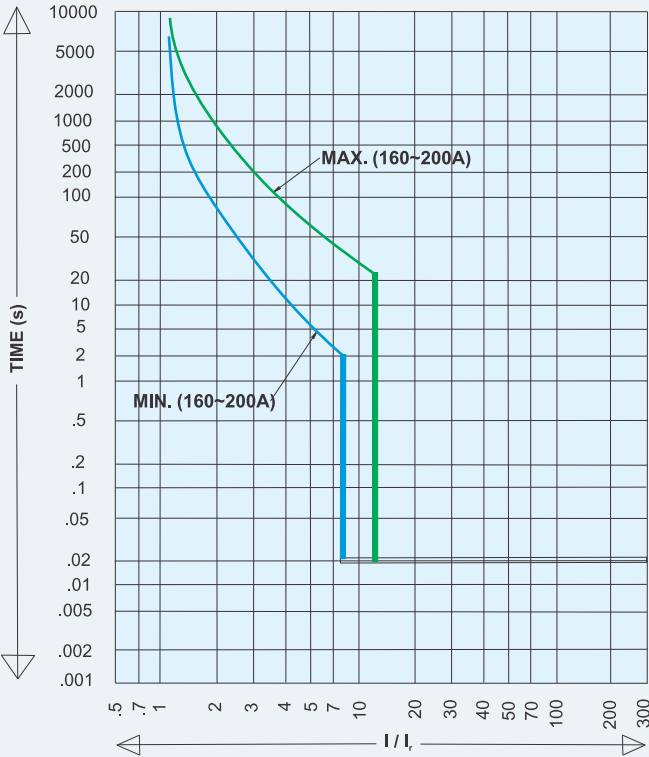
### Frame 1 ( $\leq 100 A$ )



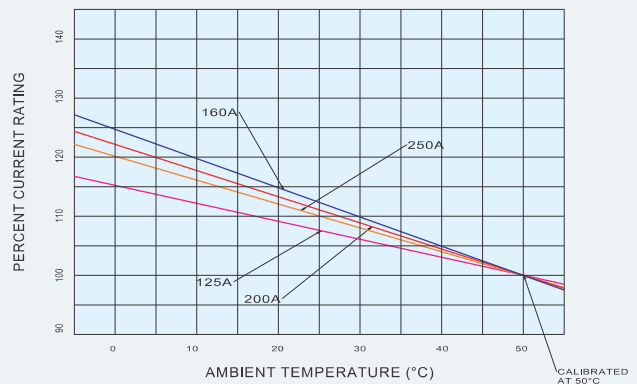
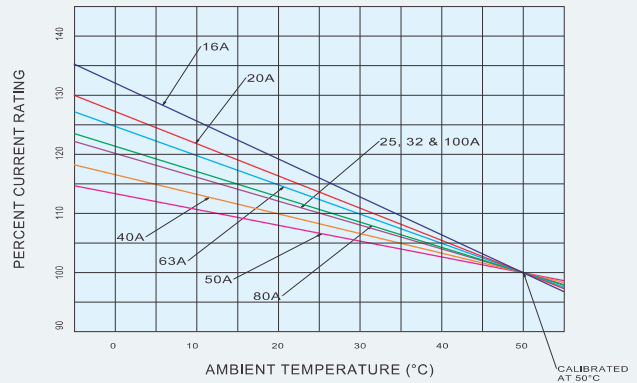


**Tripping Curves**

**Frame 2 ( $\leq 250$  A)**

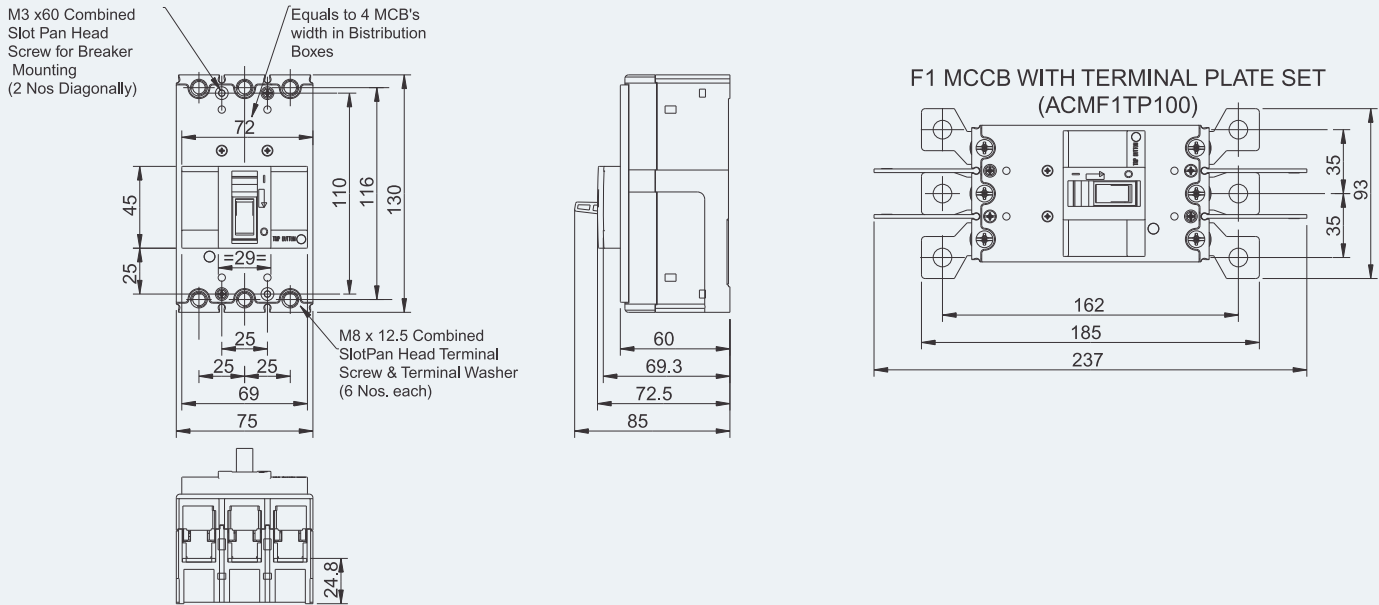


**Ambience correction graph**

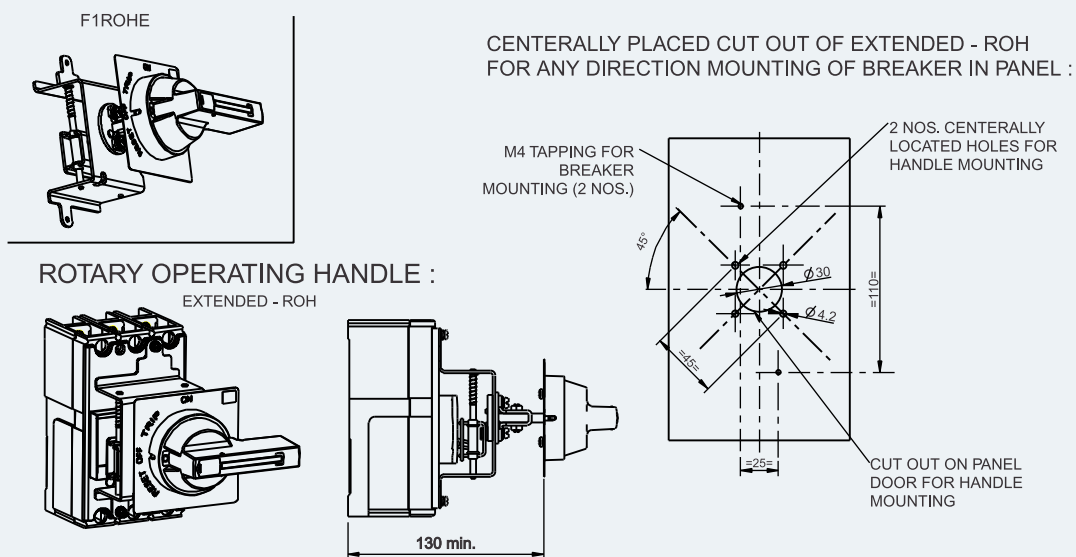


## Frame 1 – Installation Dimensions

### BREAKER MOUNTING PROCEDURE AND MOUNTING DIMENSIONS FOR FRONT CONNECTION (FC) :

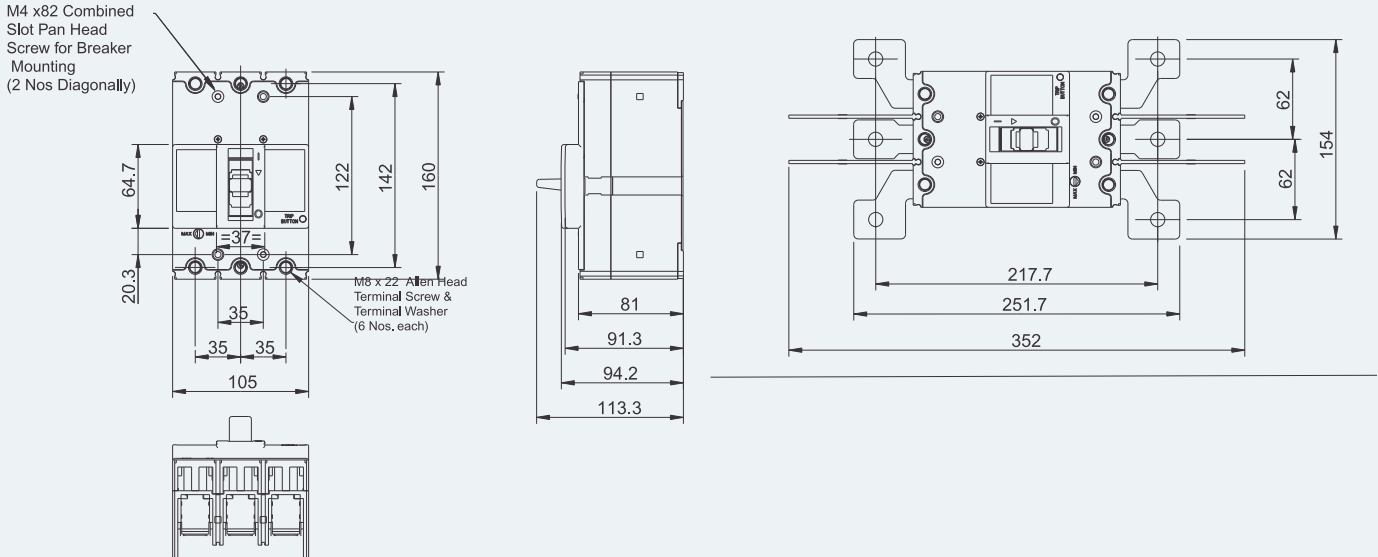


## Frame 1 – Rotary Handle Installation Dimensions



**Frame 2 – Breaker Installation Dimensions**

BREAKER MOUNTING PROCEDURE AND MOUNTING DIMENSIONS FOR FRONT CONNECTION (FC) :



**Frame 2 – Rotary Handle Installation Dimensions**

ROTARY OPERATING HANDLE :

CENTERALLY PLACED CUT OUT OF EXTENDED - ROH FOR ANY DIRECTION MOUNTING OF BREAKER IN PANEL :

