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CAT/Microprocessor MCCB/02-23



HPL Electric & Power Ltd

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Customer Care No. :
18004190198

www.hplindia.com

Microprocessor MCCB

*intelli***TAB**
intelligent protection RANGE



Special Features:

- Compact & Optimized design.
- High level of safety.
- Made of high quality of Polyester Resin G. F. material.
- True RMS sensing for precise and Reliable protection.
- Varied settings for Current & Time.



SWITCHGEAR



Microprocessor MCCB

intelliTAB
intelligent protection RANGE

HPL intelliTAB range of Moulded Case Circuit Breakers are manufactured in the state-of-the-art plant in Kundli, Sonapat. These MCCBs are provided with Microprocessor based Trip Release which gives Overload, Short circuit and Ground Fault protection with precision. These MCCBs deliver comprehensive solutions to customer applications ensuring operational safety, reliability and versatility. These are provided with all the accessories like Shunt coils, UVT coils, Auxiliary & Alarm Contacts etc.



Corporate Information

HPL vision of creating a niche, as a major player in India Electrical Industry with commitment to state-of-the-art technology & world class products.

HPL Group possess 7 State-of-the-art Manufacturing Facilities, ISO 9001 : 2000, ISO 14001, OHSAS 18001 certified located at Gurgaon, Kundli, Panipat and Jabli, Himachal Pradesh having 5,00,000 sq. feet covered area to manufacture products conforming to International and Indian standards.

HPL Products Profile has the following Strategic Business Units :

- ▶ LV Switchgears
- ▶ LV Protection Devices
- ▶ Metering and Energy Management Systems
- ▶ Lighting
- ▶ Luminaires
- ▶ Wire & Cables
- ▶ Solar Solutions
- ▶ Electrical Wiring Accessories

HPL Products are tested at CPRI, ERDA, ERTL, NPL etc. according to Indian Standards, where as MCB's, Rewireable Switches & Electronic Energy Meters carry ISI marking. Further HPL products have approvals from CPWD, State PWD's, MES, BSNL & many more Institutional users.

HPL Group with Head Office at Noida (U.P.) has extensive Sales & Marketing Network of 90 Branch offices & Representative Offices, over 900+ Authorised Dealers and 27000+ Retailers across country, who are committed to provide solutions and services to customer's delight.

HPL is also exporting its products to Middle East, SAARC and European Countries.

Current Range (Ampere)

HPL intelliTAB range of MCCBs are available in the following Frame sizes in 3-Pole & 4-Pole versions:

- Frame-2 : 32A, 40A, 50A, 63A, 80A, 100A, 125A, 160A, 200A, 250A
- Frame-3 : 250A, 315A, 400A, 500A
- Frame-4 : 500A, 630A, 800A

Salient Features

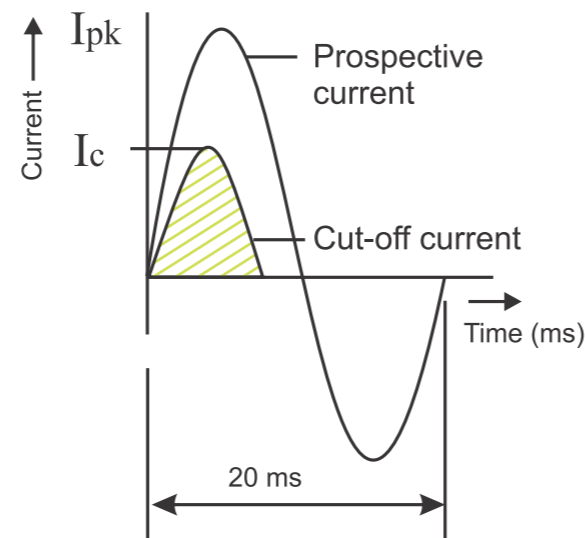
- Compact & Optimized Design.
- High level of SAFETY.
- Made of HIGH quality of Polyester Resin G. F. material.
- True RMS sensing for precise and RELIABLE protection
- VARIED settings for Current & Time.
- Overload protection ADJUSTABLE in the range 30% to 100% of I_n with variable time setting.
- Field Testing facility available.
- Short circuit Protection ADJUSTABLE in the range 400% to 1000% of I_r with variable time setting.
- Ground Fault Protection ADJUSTABLE in the range 10% to 40% of I_n with variable time setting.
- Suitable for DISCRIMINATION.
- NO EXTERNAL Power required for the electronic circuit.
- CONSISTENT performance and LONG Life.



Working Principle

These MCCBs work on Current Limiting principle. In case of any fault, the breaker's tripping mechanism opens the circuit so fast that very low energy (I^2t) is released in a very short time so that the entire system connected on the Load side is fully protected. This is achieved by

- Reversing current mechanism opens the contacts fast.
- The intelligent Arc Interrupter.
- Arc guided rapidly away from the separating contacts and towards the arc chamber.
- Quick arc quenching in the arc chamber.



As a result, there is substantial reduction in the peak current which reduces the overall electro-thermal dynamic stresses produced in the system during fault conditions helping the downstream devices to be SAFE & SECURED.

Moreover, during fault condition, the current transformers fitted in the circuit of each phase senses the current and sends signal to the tripping device through the electronic circuit and trips the breaker. For discrimination, the tripping time and respective tripping current can be set with the help of Piano type DIP switches provided on the front of the breaker.

Operating Conditions

- Altitude : It should be less than 2000m.
- Pollution Degree : These MCCBs are suitable for use in Pollution degree 3, where conductive pollution or dry non-conductive pollution that becomes conductive due to condensation occurs (Harsh environments like Industrial environment or construction sites).

Positive Isolation

Intelli TAB MCCBs ARE SUITABLE FOR ISOLATION AS PER IS/IEC 60947-2, which highlights the following points:

- The operating knob should correctly show the OFF - TRIP - ON position.
- No leakage current between the contacts in OPEN condition.
- High impulse withstand capacity for the breaker.



Accessories

intelliTAB MCCBs have a wide range of accessories giving convenience and additional protection.

These are of two types :

- External accessories
- Internal accessories



External Accessories

Rotary Handle

This is a toggle handle operating mechanism which serves as switching position indicator for ON, OFF & TRIP. Basically it is used with a breaker which is installed in an enclosure that does not allow ready access to the breaker's operating handle. The handle can be locked in OFF or ON position for safety during service condition.



Phase Barrier

Phase barriers are provided between the phases to increase the creepage distance between them thereby reducing the risk of phase to phase shorting.



Internal Accessories

Shunt Trip Coil

Shunt Trip Coil is a release energized by a source of voltage which may be independent of the main circuit voltage and provides remote tripping facility. Once the MCCB trips, the micro switch connected to the Shunt coil, prevents the coil from burning even if supply of voltage is continuous. It operates in the voltage range of 70 - 110% of the rated coil voltage. It is available in 110Vac, 240Vac, 415Vac, 24Vdc & 48Vdc.



Under Voltage Trip Coil

UVT Coil is a release which trips the breaker when the voltage drops below certain level so that the connected LOAD is protected. It operates in the voltage range of 35 - 70% of the rated coil voltage. It is available in 110Vac, 240Vac, 415Vac, 24Vdc & 48Vdc.



Auxiliary Switch

This is used for signaling and control purposes. It consists of one or more potential free changeover contacts and acts as an indicator whether the circuit breaker's status is OPEN or CLOSED.



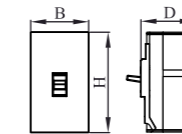
Alarm Switch

This is used for giving Tripping indication once the breaker trips. It looks similar to Auxiliary Switch but operates only when the MCCB trips.



Specifications - Frame 2

Parameters	Offered		
No. of poles	3/4		
Type	N	S	
Rated Current (In A)	32A, 40A, 50A, 63A, 80A, 100A, 125A, 160A, 200A, 250A		
Rated Operational Voltage (Ue)	440V		
Rated Insulation Voltage (Ui)	1000V		
Rated Impulse withstand voltage (Uimp)	8kV		
Rated Frequency	50/60 Hz		
Reference Ambient Calibration Temperature**	40°C		
Rated Ultimate S.C. Breaking Capacity (at 440 VAC, 50/60 Hz) Icu in kA	36	50	
Rated Ultimate S.C. Breaking Capacity (at 250 VAC, 50/60 Hz) Icu in kA	65	85	
Rated Service S.C. Breaking Capacity (at 440 VAC, 50/60 Hz) Ics in kA	100% Icu	100% Icu	
Rated Service S.C. Breaking Capacity (at 250 VAC, 50/60 Hz) Ics in kA	100% Icu	100% Icu	
Rated S.C. Making Capacity (at 440 VAC, 50/60 Hz) Icm in kA	75.6	105	
Utilization Category	A		
Positive Isolation	Available		
No. of operating cycles	Mechanical-15000; Electrical-3000		
Type of Releases	Microprocessor Based Release		
Communication Jack	RJ-45 Terminal		
Test Function (TF)	↑ 1 ↑ 2 - OFF ↓ 1 ↓ 2 - ON		
Terminal Capacity (Cable)	95mm ² max.		
Terminal Capacity (Link)	120mm ² max.		
Terminal Capacity (Busbar width for direct mounting)	24mm max.		
Size (H x B x D)mm	Dim.	3P	4P
	H	214	214
	B	105	140
	D	117	117
Gross Weight*	4.2 Kg (3P) & 5.2 Kg (4P)		
Reference Standards	IS/IEC 60947-2		

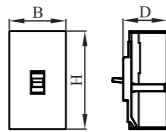


Notes :-

- **However on demand, MCCBs can be provided with calibration done at higher temperature also.
- As product improvement is a continuous process, HPL reserves the right to modify the above specification, in case if required.
- *Weight shown above is for the highest rating of MCCB in the Frame size. It may vary according to different current ratings.

Specifications - Frame 3

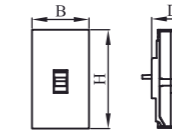
Parameters	Offered		
No. of poles	3/4		
Type	N	S	H
Rated Current (In A)	250A, 315A, 400A, 500A		
Rated Operational Voltage (Ue)	440V		
Rated Insulation Voltage (Ui)	1000V		
Rated Impulse withstand voltage (Uimp)	8kV		
Rated Frequency	50/60 Hz		
Reference Ambient Calibration Temperature**	40°C		
Rated Ultimate S.C. Breaking Capacity (at 440 VAC, 50/60 Hz) Icu in kA	36	50	65
Rated Ultimate S.C. Breaking Capacity (at 250 VAC, 50/60 Hz) Icu in kA	65	85	95
Rated Service S.C. Breaking Capacity (at 440 VAC, 50/60 Hz) Ics in kA	100% Icu	75% Icu***	50% Icu
Rated Service S.C. Breaking Capacity (at 250 VAC, 50/60 Hz) Ics in kA	100% Icu	75% Icu***	50% Icu
Rated S.C. Making Capacity (at 440 VAC, 50/60 Hz) Icm in kA	76	105	143
Utilization Category	A		
Positive Isolation	Available		
No. of operating cycles	Mechanical-15000; Electrical-3000		
Type of Releases	Microprocessor Based Release		
Communication Jack	RJ-45 Terminal		
Test Function (TF)	↑ 1 ↑ 2 - OFF ↓ 1 ↓ 2 - ON		
Terminal Capacity (Cable)	-		
Terminal Capacity (Link)	320mm ² max.		
Terminal Capacity (Busbar width for direct mounting)	28 mm max.		
Size (H x B x D)mm	Dim.	3P	4P
	H	258	258
	B	140	184
	D	117	117
Gross Weight*	7.75 Kg (3P) & 9.5 Kg (4P)		
Reference Standards	IS/IEC 60947-2		



- Notes :-
- **However on demand, MCCBs can be provided with calibration done at higher temperature also.
 - As product improvement is a continuous process, HPL reserves the right to modify the above specification, in case if required.
 - *Weight shown above is for the highest rating of MCCB in the Frame size. It may vary according to different current ratings.
 - ***However on demand, MCCBs can be provided with Ics = 100% of Icu.

Specifications - Frame 4

Parameters	Offered		
No. of poles	3/4		
Type	N	S	H
Rated Current (In A)	500A, 630A, & 800A		
Rated Operational Voltage (Ue)	440V		
Rated Insulation Voltage (Ui)	1000V		
Rated Impulse withstand voltage (Uimp)	8kV		
Rated Frequency	50/60 Hz		
Reference Ambient Calibration Temperature**	40°C		
Rated Ultimate S.C. Breaking Capacity (at 440 VAC, 50/60 Hz) Icu in kA	36	50	65
Rated Ultimate S.C. Breaking Capacity (at 250 VAC, 50/60 Hz) Icu in kA	65	85	95
Rated Service S.C. Breaking Capacity (at 440 VAC, 50/60 Hz) Ics in kA	100% Icu	75% Icu***	50% Icu
Rated Service S.C. Breaking Capacity (at 250 VAC, 50/60 Hz) Ics in kA	100% Icu	75% Icu***	50% Icu
Rated S.C. Making Capacity (at 440 VAC, 50/60 Hz) Icm in kA	76	105	143
Utilization Category	A		
Positive Isolation	Available		
No. of operating cycles	Mechanical-5000; Electrical-2500		
Type of Releases	Microprocessor Based Release		
Communication Jack	RJ-45 Terminal		
Test Function (TF)	↑ 1 ↑ 2 - OFF ↓ 1 ↓ 2 - ON		
Terminal Capacity (Cable)	-		
Terminal Capacity (Link)	430mm ² max.		
Terminal Capacity (Busbar width for direct mounting)	43 mm max.		
Size (H x B x D)mm	Dim.	3P	4P
	H	280	280
	B	210	280
	D	120	120
Gross Weight*	11.5 Kg (3P) & 15.5 Kg (4P)		
Reference Standards	IS/IEC 60947-2		

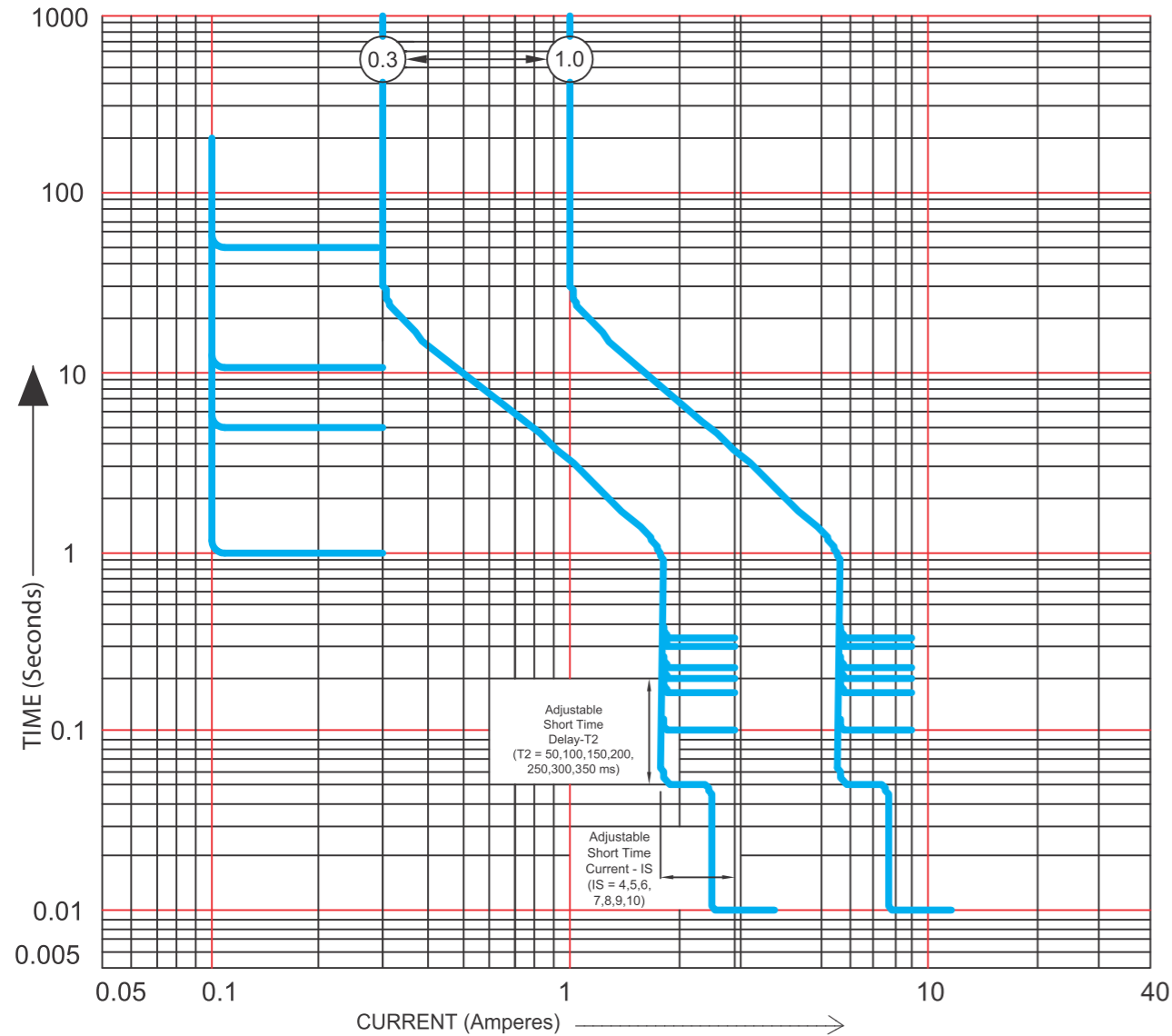


- Notes :-
- **However on demand, MCCBs can be provided with calibration done at higher temperature also.
 - As product improvement is a continuous process, HPL reserves the right to modify the above specification, in case if required.
 - *Weight shown above is for the highest rating of MCCB in the Frame size. It may vary according to different current ratings.
 - ***However on demand, MCCBs can be provided with Ics = 100% of Icu.

Electronic Trip Relay - Frame 2, 3 & 4

Parameters	Offered
Long Time Delay	$I_r = I_n * \Sigma(0.3+A)$
Current Settings (A)	0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 10
Time Delay (sec)	1, 5, 10, 15, 20, 25, 30, 35
Short Time Delay	$I_s = I_r * \Sigma(x)$
Current Settings (A)	4x, 6x, 8x, 10x
Time Delay (Sec)	0.01, 0.15, 0.2, 0.35
Instantaneous Setting	$I_i = 10 * I_n$
Instantaneous Setting	Fixed
Ground Fault(Available in 4P version only)	$I_g = * I_n$
Current Settings (A)	0.1, 0.2, 0.3, 0.4
Time Delay(Sec)	1, 5, 10, 15

Time Current Characteristics Curve



Operating Instructions - Frame 2, 3 & 4

Operating Instruction sheet for "intelliTAB" Electronics MCCB (TP)

Settings for "LTD C" Long Time Delay Current		Settings for "LTD T" Long time delay Time	
	30%		1s
	40%		5s
	50%		10s
	60%		15s
	70%		20s
	80%		25s
	90%		30s
	100%		35s

NOTES:- $I_r = I_n * \Sigma(0.3+A)$; Example:- For 90% setting of 630A, $630 * \Sigma(0.3+0.2+0.4) = 567A$

▮ Means "NOT IN USE"; ■ Means "ON" for the particular setting

Settings for "STD C" Short Time Delay Current	Settings for "STD T" Short time delay Time

NOTES:- $I_s = I_r * \Sigma(x)$; Example:- For 10x of 630A, $630 * \Sigma(4+6)$;

▮ Means "NOT IN USE"; ■ Means "ON" for the particular setting

Operating Instructions - Frame 2, 3 & 4

Operating Instruction sheet for "intelliTAB" Electronics MCCB (FP)

Settings for "LTD C" Long Time Delay Current		Settings for "LTD T" Long time delay Time	
 0.1 0.2 0.4	 0.1 0.2 0.4	 5s 10s 20s	 5s 10s 20s
 0.1 0.2 0.4	 0.1 0.2 0.4	 5s 10s 20s	 5s 10s 20s
 0.1 0.2 0.4	 0.1 0.2 0.4	 5s 10s 20s	 5s 10s 20s
 0.1 0.2 0.4	 0.1 0.2 0.4	 5s 10s 20s	 5s 10s 20s

NOTES:- $I_r = I_n * \Sigma(0.3+A)$; Example: For 90% setting of 630A, $630 * \Sigma(0.3+0.2+0.4) = 567A$

■ Means "NOT IN USE"; ■ Means "ON" for the particular setting

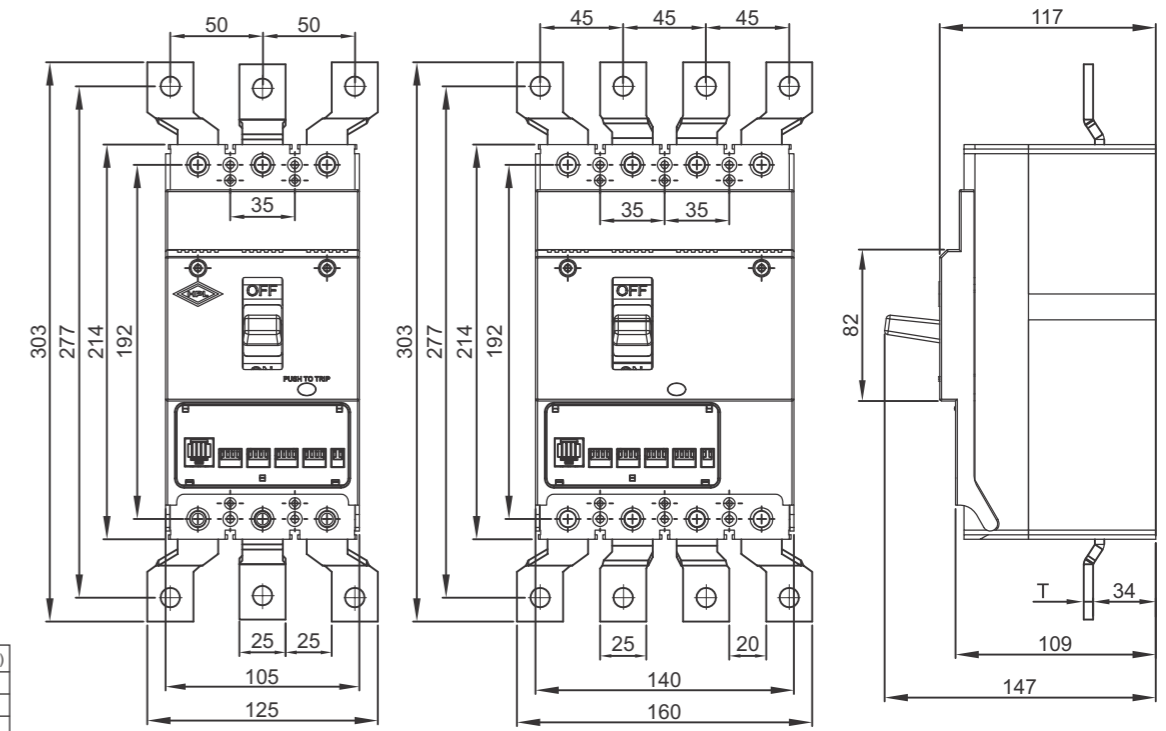
Settings for "STD C" Short Time Delay Current & Settings for "STD T" Short time delay Time		Settings for "GF C" Ground fault Current & Settings for "GF T" Ground fault delay Time (Available only in 4P)	
STD_C 4x	STD_T Inst. 0.01s	GF_C 10%	GF_T 1s
 6x	 0.15	 20%	 5s
 8x	 0.2	 30%	 10s
 4x 6x	 0.35	 40%	 15s

NOTES:- $I_s = I_r * \Sigma(x)$; Example:- For 10x of 630A, $630 * \Sigma(4+6)$

✕ Means "NOT IN USE"; ■ Means "ON" for the particular setting

MCCB Dimensional Details - Frame 2 (mm)

3 & 4 Pole Version



Rating	Thickness (T)
upto 125A	3mm
160A ~200A	4mm
250A	5mm

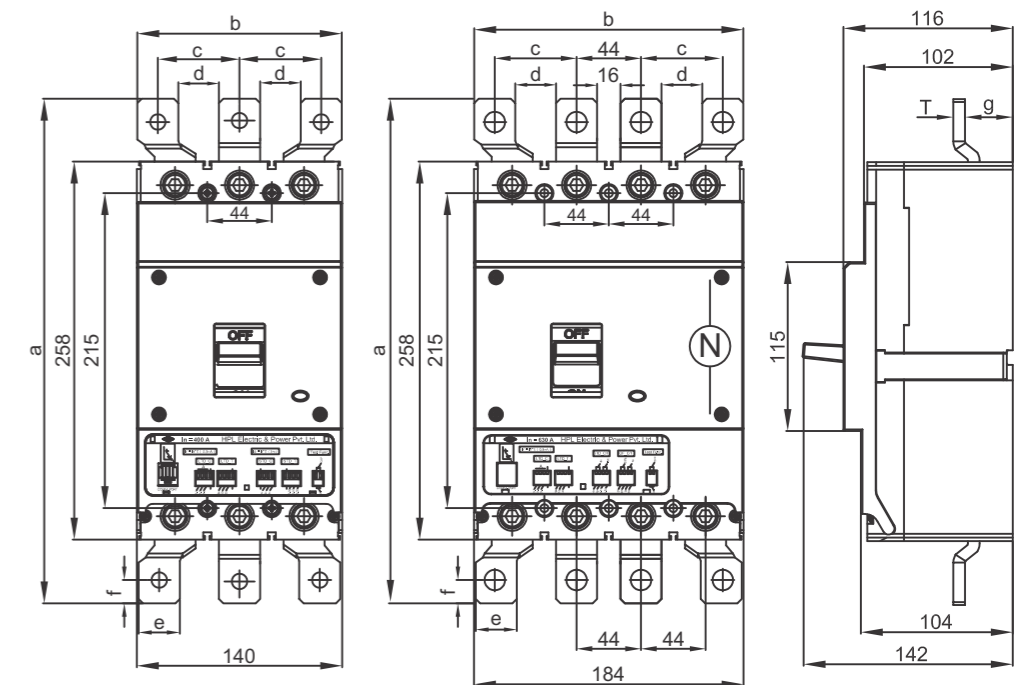
Note: All dimensions are in mm with ± 5% Tolerance.

MCCB Dimensional Details - Frame 3 (mm)

3 & 4 Pole Version

	3-Pole		4-Pole	
	Dom.	Export	Dom.	Export
a	342	403	342	403
b	140	188	184	232
c	56	74	56	64
d	28	34	28	24
e	28	40	28	40
f	16	20	16	20
g	33	40	33	40

Rating	Thickness (T) for Domestic	Thickness (T) for Export
250A	4mm (Load Guard Type)	4mm
315A-400A	6mm (Load Guard Type)	6mm
500A	8mm	

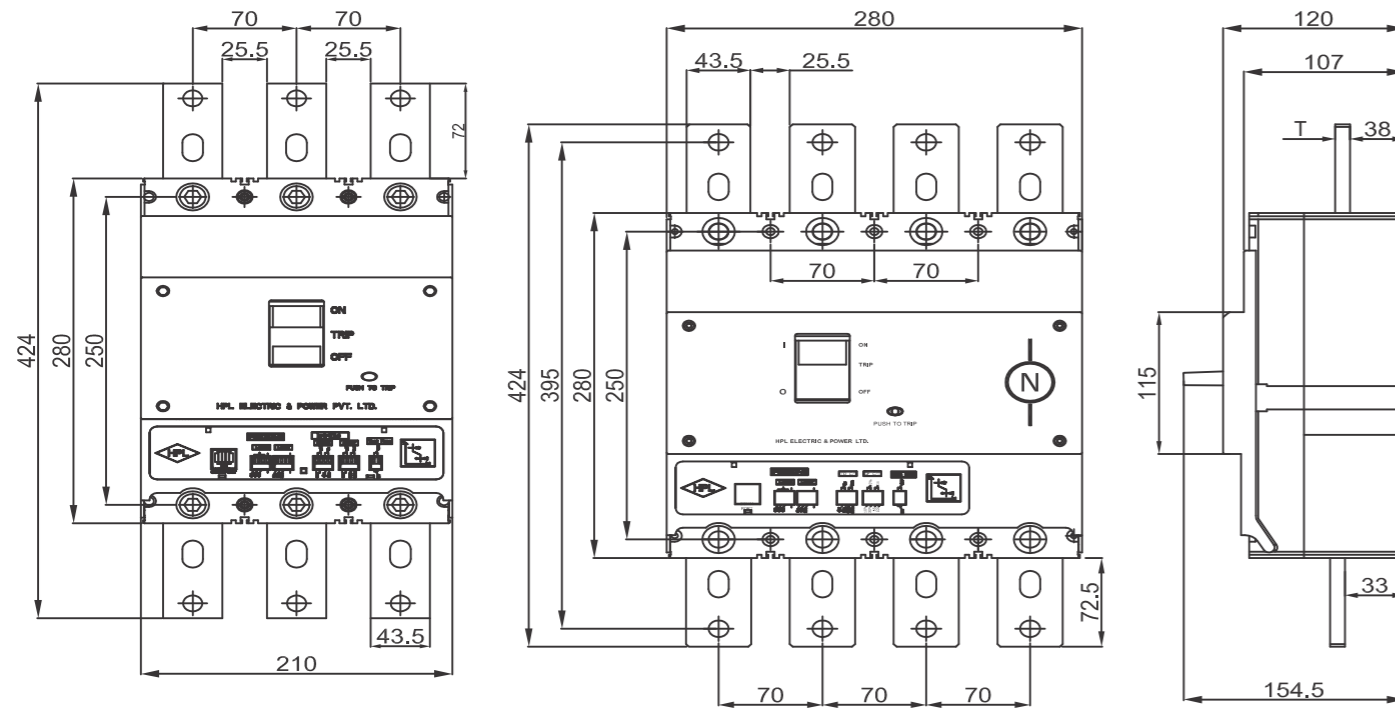


Note: All dimensions are in mm with ± 5% Tolerance.



MCCB Dimensional Details - Frame 4 (mm)

3 & 4 Pole Version



Extended Terminal details

Rating	Thickness (T)	Quantity
500-630A	10mm	1 per pole
800A	12mm	2 per pole

Note: All dimensions are in mm with ± 5% Tolerance.

Communication Facility

HPL make intelli PROTECT MCCBs are provided with communication facility where two way communication is achieved through RS 232/485 port. This communication facility enables the user to monitor the entire system from his control room on a PC or Laptop. Through this facility it is possible to monitor Current & Setting for LTD, STD, GF, Inst. functions of the electronic MCCB from PC/Laptop as per user requirement.

The software required for this communication system is offered by HPL as an optional feature.



Other HPL Industrial Products



ACB



Controlgear



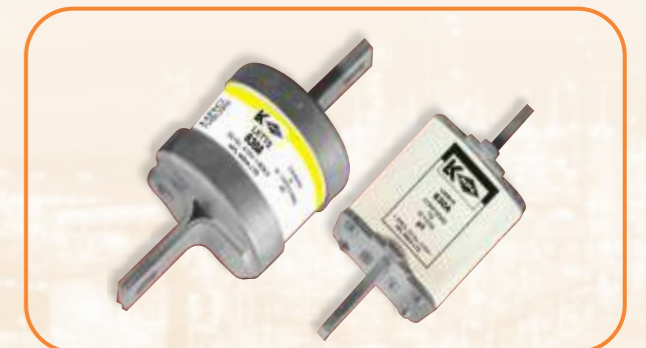
On Load Changeover Switch



TAB MCCB (TM Range)



Switch Disconnecter Fuse



HRC Fuse Link