Branch Offices:

AHMEDABAD

B-802, Iscon Elegance, Nr. Prahlad Nagar Corner, Opp. Karnavati Club, S.G. Highway, Ahmedabad-380051 Ph.: 079 - 66168835/36

E-mail: ahmedabad@hplindia.com

BANGALORE

No.2D, Ilnd Floor, Farah Winsford, 133, Infantry Road, Bangalore - 560001 Ph.: 080-22863068/69 E-mail: bangalore@hplindia.com

BHUBANESWAR

N3-135, IRC Village, Nayabali, Behind Old Sai Baba Temple, Bhubaneswar-751012, Ph.: 0674-2550826 E-mail: orissa@hplindia.com

CHANDIGARH

SCO-14, 1st Floor, Industrial & Business Park, Phase-II, Chandigarh-160002 Ph.: 0172-2639157/ 8146404442 E-mail: chandigarh@hplindia.com

CHENNAL

"Amar Sindur" S-4, 2nd Floor, No.-43, Pantheon Road, Egmore, Chennai-600 008 Ph.: 044-28551530, 28551537

Ph.: 044-28551530, 2855153 Fax: 044-42638243

Fax: 044-42030243

E-mail: chennai@hplindia.com

COCHIN

1st Floor, A.K.S. Mahal Building, XL/7813J, Achutha Warrier Lane, M.G.Road, Ernakulam, Cochin-682035 Telefax: 0484-2354595 E-mail: cochin@hplindia.com

COIMBATORE

Designer Complex, Door No.130, C/2, 2nd Floor, Dr. Nanjappa Road, Coimbatore - 641018

Ph.: 0422-4393995

E-mail: coimbatore@hplindia.com

DEHRADUN

09/4/6, Ist Floor, East Canal Road, (Near Doon Defence Academy) Dehradun-248001

Ph.: 0135-2710567, 2710587 E-mail: Uttranchal@hplindia.com

GUWAHATI

Rajgarh Road, Opposite China Town Restaurant, Guwahati-781003 Ph.: 0361-2450889

E-mail: guwahati@hplindia.com

HUBLI

9-10, 1st Floor, Vernekar Plaza, Desh Pande Nagar, Hubli-580029 Ph.: 0836-4251463 E-mail: hubli@hplindia.com

HYDERARAD

No. 7-1-58, Flat No.403, 4th Floor, Concourse Building, Green Lands Road, Hyderabad-500016 Ph.: 040-66687878

E-mail: hyderabad@hplindia.com

INDORE

203, Millinda Manor 2, RNT Marg, Near Ravindra Natya Grah, Indore-452001, Ph.: 0731-4280525, 4225540 E-mail: Indore@hplindia.com

JAIPUR

512, 5th Floor, Plot No. 8-9, Corporate Park, Gopal Bari, Ajmer Road, Jaipur-302001 Ph.: 0141-4021035 E-Mail: jaipur@hplindia.com

JAMMU

Plot No.86, Yard No.6, Transport Nagar, Jammu-180006 E-mail: jammu@hplindia.com

KOI KATA

69, Ganesh Chandra Avenue, India House, 7th Floor, Block-C, Kolkata-700013 Ph.: +91 9038094379 E-Mail: calcutta@hplindia.com

LUCKNOW

1st Floor, Jain Building, 14/A5, Park Road Hazratganj ,Lucknow-226001 Ph.: 0522-4021687 E-Mail: lucknow@hplindia.com

LUDHIANA

698 - D, Model Town Extn., Opp. Silverstone Hotel, Ludhiana-141003 Ph.: 0161-4062877 E-Mail: ludhiana@hplindia.com

MUMBAI

2C/H, Rushabh Chambers, 2nd Floor, Off-Makwana Road, Near Rubi Hotel, Marol, Andheri East, Mumbai-400059 E-mail: mumbai@hplindia.com

NAGPUR

Jagtap House, Plot No. 07, Ist Floor, Ganesh Gruh Nirman Society, Near Ganesh Mandir, Ring Road, Pratap Nagar, Nagpur-440022, Ph.: 0712-2222988 E-mail: nagpur@hplindia.com

DATNA

Hem Plaza, 5th Floor - 510 Frazer Road, Patna-800001(Bihar) Ph.: +91 9334697299 E-mail: patna@hplindia.com

DUNE

Sunrise Skyline 3rd Floor, Plot No. 28/2 Scheme No. 11 B Opp. MSEB Office Somwar Peth Pune-411001 Ph.: +91 9028032724 E-mail: pune@hplindia.com

DAIDLID

1st Floor, Near Holy Heart School Chattisgarh College Road, Civil Line, Raipur (C.G.)-492006 Ph.: 0771-4218002/04 E-mail: raipur@hplindia.com

RANCHI

203, 2nd Floor, Mahalaxmi Complex, Line Tank Road, Ranchi-834001 Telefax: 0651-2206144 E-mail: ranchi@hplindia.com

SILIGURI

1st Floor, Parasuna Bhawan, Ward No.13, Udham Singh Sarani, Asram Para, Siliguri-734001

VADODARA

409/410, Silver Oak Complex, Near Sainik Park, Char Rasta, Productivity Road, Akota, Vadodara - 390020 Gujarat Ph.: 0265-2341747, Fax:0265-2352107 E-mail: baroda@hplindia.com

VIJAYAWADA

D.No.-29-37-135, 2nd Floor, G. R. Plaza, Eluru Road, Beside Canara Bank, Vijayawada-520002 Ph.: 0866-6622291 E-mail: vijayawada@hplindia.com

E-IIIa

VIZAG
B.K. Towers, 49-34-1/63, 3rd Floor
Akka Yyapalem Main Road, NH-5 Junction,
Vizag-530016 (A.P.)
Ph.: 0891-2794506
E-mail: vizag@hplindia.com

Resident Offices:

Agaitala	Dalasore	Davangere	Jilai Suguda	Moradabad	Olicital	ναρι
Agra	Belgaum	Durg	Jodhpur	Mysore	Surat	Varanasi
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HPL Electric & Power Ltd Corp. Office: Windsor Business Park, B-1D, Sector-10,

Noida, U.P. - 201301, INDIA. Tel.: +91-120-4656300, Fax: +91-120-4656333 Registered Office: 1/20, Asaf Ali Road, New Delhi - 110 002, INDIA. E-mail: hpl@hplindia.com; enquiry@hplindia.com Customer Care No. : 18004190198

www.hplindia.com

Microprocessor MCCB

- COMPACT & OPTIMIZED design
- High level of SAFETY
- Made of HIGH quality of Polyster Resin G.F. material
- True RMS sensing for precise and RELIABLE protection
- VARIED settings for Current & Time







SWITCHGEAR



HPL intelli TAB range of Moulded Case Circuit Breakers are manufactured in the state-of-the-art plant in Kundli, Sonepat. 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 and Alarm Contacts etc.





Corporate Information

HPL's 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
- Wires & Cables
- Solar Solutions
- Electrical Wiring Accessories

HPL Products are tested at CPRI, ERDA, ERTL, NPL etc. according to Indian Standards, whereas 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 2000+ 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 intelli TAB range of MCCBs are available in the following Frame sizes in 3-Pole & 4-Pole versions:

• Frame-2: 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 Polyster 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 In with variable time setting
- Short circuit Protection ADJUSTABLE in the range 400% to 1000% of Ir with variable time setting

- Ground Fault Protection ADJUSTABLE in the range 10% to 40% of In with variable time setting
- Suitable for DISCRIMINATION
- NO EXTERNAL Power required for the electronic circuit
- Field Testing facility available
- CONSISTENT performance and LONG Life



Microprocessor MCCB



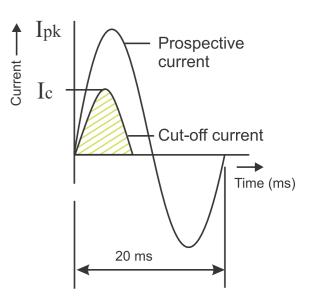
Working Principle

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 (l²t) 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)







HIPL

Microprocessor MCCB



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



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

These are of two types:

External accessories

Internal 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		
Туре	N	S	Н	
Rated Current (In A)	63A, 80A, 100A, 125A,			
		160A, 200A, 250A		
Rated Operational Voltage (Ue)		415V		
Rated Insulation Voltage (Ui)		800V		
Rated Impulse withstand voltage (Uimp)	8kV			
Rated Frequency		50/60 Hz		
Reference Ambient Calibration Temperature**		40°C		
Rated Ultimate S.C. Breaking Capacity (at 415 VAC, 50/60 Hz) Icu in kA	25	36	50	
Rated Ultimate S.C. Breaking Capacity (at 230 VAC, 50/60 Hz) Icu in kA	40	65	85	
Rated Service S.C. Breaking Capacity (at 415 VAC, 50/60 Hz) Ics in kA	100% lcu	100% lcu	100% lcu	
Rated Service S.C. Breaking Capacity (at 230 VAC, 50/60 Hz) Ics in kA	100% lcu	100% lcu	100% Icu	
Rated S.C. Making Capacity	52.5	75.6	105	
(at 415 VAC, 50/60 Hz) Icm in kA	32.3	75.0	103	
Utilization Category		А		
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			
rest rainerism (m)	↓ 1↓ 2-ON			
Terminal Capacity (Cable)	95mm² max.			
Terminal Capacity (Link)	120mm² max.			
Terminal Capacity (Busbar width for direct mounting)	24mm max.			
Size (H x B x D)mm	Dim. H B D	3P 214 105 117	4P 214 140 117	
Gross Weight*	4.2 Kg (3P) & 5.2 Kg (4P)			
Reference Standards	IS/IEC 60947-2			

- Notes:- 1. **However on demand, MCCBs can be provided with calibration done at higher temperature also.
 - 2. As product improvement is a continuous process, HPL reserves the right to modify the above specification, in case if required.
 - 3. *Weight shown above is for the highest rating of MCCB in the Frame size. It may vary according to different current ratings.



Microprocessor MCCB



Specifications - Frame 3

Parameters		Offered	
No. of poles		3/4	
Туре	N	S	Н
Rated Current (In A)		250A, 315A, 400A, 50	0A
Rated Operational Voltage (Ue)		415V	
Rated Insulation Voltage (Ui)		800V	
Rated Impulse withstand voltage (Uimp)		8kV	
Rated Frequency		50/60 Hz	
Reference Ambient Calibration Temperature**		40°C	
Rated Ultimate S.C. Breaking Capacity (at 415 VAC, 50/60 Hz) Icu in kA	36	50	65
Rated Ultimate S.C. Breaking Capacity (at 230 VAC, 50/60 Hz) Icu in kA	65	85	95
Rated Service S.C. Breaking Capacity (at 415 VAC, 50/60 Hz) Ics in kA	100% lcu	75% lcu	50% lcu
Rated Service S.C. Breaking Capacity (at 230 VAC, 50/60 Hz) Ics in kA	100% lcu	75% lcu	50% lcu
Rated S.C. Making Capacity (at 415 VAC, 50/60 Hz) Icm in kA	76	105	143
Utilization Category		Α	
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		
rest runction (11)	↓ 1 ↓ 2 - ON		
Terminal Capacity (Cable)		-	
Terminal Capacity (Link)	320mm² max.		
Terminal Capacity (Busbar width for direct mounting)		28 mm max.	
Size (H x B x D)mm	Dim. H B D	3P 258 140 117	4P 258 184 117
Gross Weight*	7.75 Kg (3P) & 9.5 Kg (4P)		
Reference Standards	IS/IEC 60947-2		

Notes :- 1. **However on demand, MCCBs can be provided with calibration done at higher temperature also.

^{2.} As product improvement is a continuous process, HPL reserves the right to modify the above specification, in case if required.

^{3. *}Weight shown above is for the highest rating of MCCB in the Frame size. It may vary according to different current ratings.









Specifications - Frame 4

Parameters		Offered		
No. of poles		3/4		
Туре	N	S	Н	
Rated Current (In A)		500A, 630A, & 800A		
Rated Operational Voltage (Ue)		415V		
Rated Insulation Voltage (Ui)		800V		
Rated Impulse withstand voltage (Uimp)		8kV		
Rated Frequency		50/60 Hz		
Reference Ambient Calibration Temperature**		40°C		
Rated Ultimate S.C. Breaking Capacity (at 415 VAC, 50/60 Hz) Icu in kA	36	50	65	
Rated Ultimate S.C. Breaking Capacity (at 230 VAC, 50/60 Hz) Icu in kA	65	85	95	
Rated Service S.C. Breaking Capacity (at 415 VAC, 50/60 Hz) Ics in kA	100% lcu	75% lcu	50% lcu	
Rated Service S.C. Breaking Capacity (at 230 VAC, 50/60 Hz) Ics in kA	100% lcu	75% lcu	50% lcu	
Rated S.C. Making Capacity (at 415 VAC, 50/60 Hz) Icm in kA	76	105	143	
Utilization Category		A		
Positive Isolation	Available			
No. of operating cycles	Med	Mechanical-5000; Electrical-2500		
Type of Releases	Microprocessor Based Release			
Communication Jack		RJ-45 Terminal		
Test Function (TF)	↑ 1 ↑ 2 - OFF			
lest i diretion (11)	↓ 1 ↓ 2 - ON			
Terminal Capacity (Cable)	al Capacity (Cable)			
Terminal Capacity (Link)	430mm² max.			
Terminal Capacity (Busbar width for direct mounting)	43 mm max.			
Size (H x B x D)mm	Dim. H B D	3P 280 210 120	4P 280 280 120	
Gross Weight*	11.5 Kg (3P) & 15.5 Kg (4P)			
Reference Standards	IS/IEC 60947-2			

- Notes :- 1. **However on demand, MCCBs can be provided with calibration done at higher temperature also.
 - 2. As product improvement is a continuous process, HPL reserves the right to modify the above specification, in case if required.
 - 3. *Weight shown above is for the highest rating of MCCB in the Frame size. It may vary according to different current ratings.

Electronic Trip Relay - Frame 2, 3 & 4

Parameters		Offered
Long Time Delay	$Ir=In*\Sigma(0.3+A)$	
	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	$ls=lr*\Sigma(x)$	
	Current Settings (A)	4x, 6x, 8x, 10x
	Time Delay(Sec)	0.01, 0.15, 0.2, 0.35
Instantaneous Setting	li=10*ln	Fixed
Ground Fault(Available in 4P version only)	lg=*In	
	Current Settings(A)	0.1, 0.2, 0.3, 0.4
	Time Delay(Sec)	1, 5, 10, 15

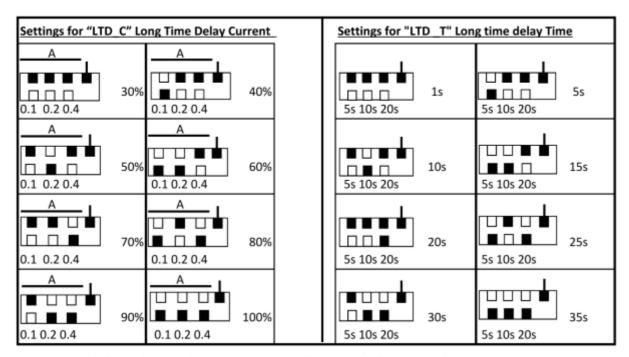






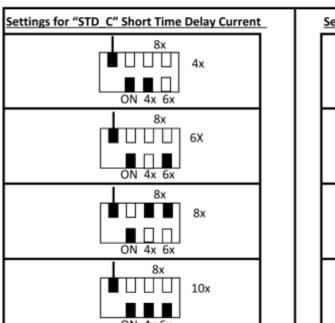
Operating Instructions - Frame 2, 3 & 4

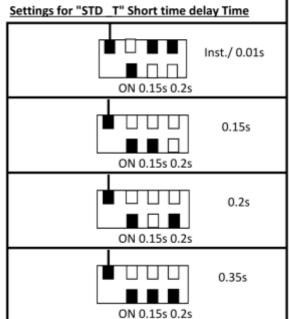
Operating Instruction sheet for "intelliTAB" Electronics MCCB (TP)



NOTES:- Ir=In* Σ (0.3+A); Example:- For 90% setting of 630A, 630* Σ (0.3+0.2+0.4)=567A

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



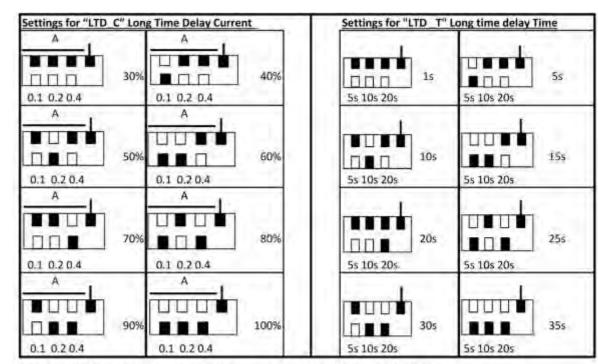


NOTES:-Is=Ir* Σ (x); Example:- For 10x of 630A, 630* Σ (4+6);

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

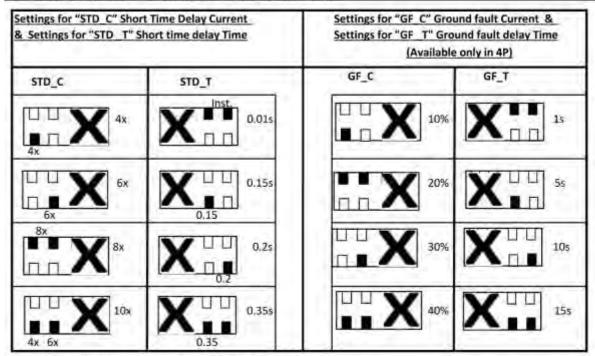
Operating Instructions - Frame 2, 3 & 4

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



NOTES:- Ir=In*Σ(0.3+A); Example: For 90% setting of 630A, 630*Σ(0.3+0.2+0.4)=567A

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

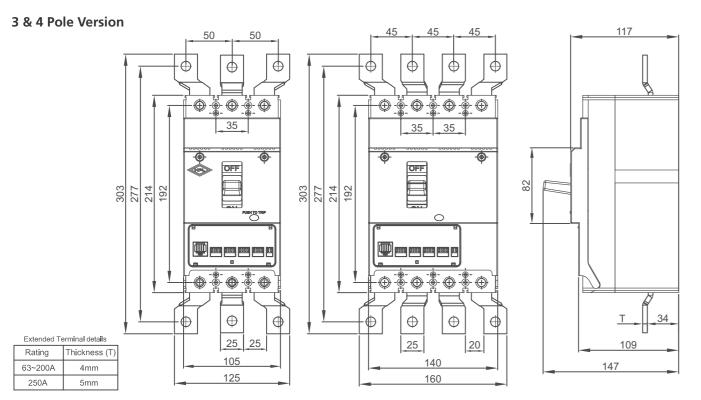


NOTES:-Is=Ir*Σ(x); Example:- For 10x of 630A, 630*Σ(4+6);

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



MCCB Dimensional Details - Frame 2 (mm)



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

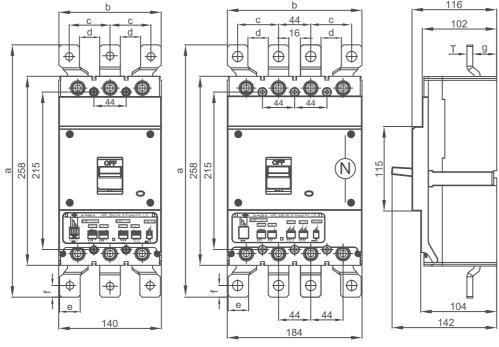
MCCB Dimensional Details - Frame 3 (mm)

3 & 4 Pole Version

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



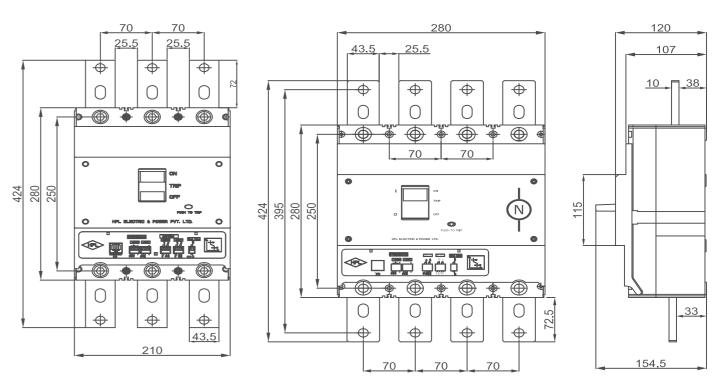
Exteriaca Formina actailo				
Rating	Thickness (T) for Domestic	Thickness (T) for Export		
250A	4mm (Load Guard Type)	4mm		
315A-400A	6mm (Load Guard Type)	6mm		
500A	6mm			



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

MCCB Dimensional Details - Frame 4 (mm)

3 & 4 Pole Version



Extended Terminal details

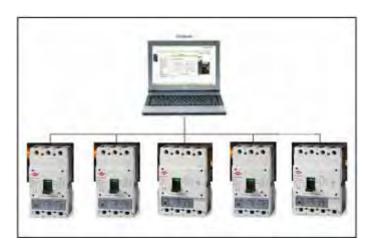
Rating	Thickness (T)	Quantity
500-630A	10mm	1 per pole
800A	8mm	2 per pole

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.

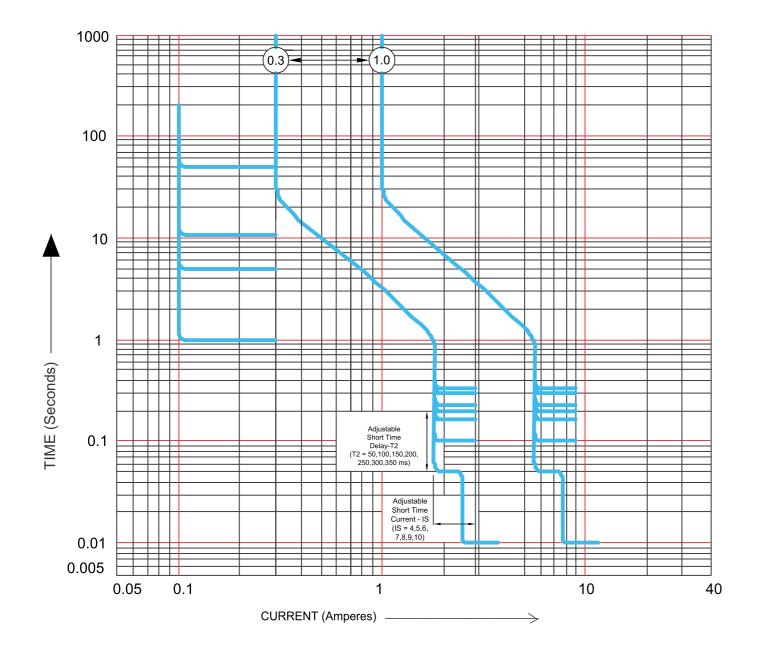






intelligent protection RANGE

Time Current Characteristics Curve



Other HPL Industrial Products



ACB

Controlgear





On Load Changeover Switch

TAB MCCB (TM Range)





Switch Disconnector Fuse

HRC Fuse Link

Notes Notes