



d sine

Moulded Case Circuit Breakers



LARSEN & TOUBRO

It's all about Imagineering

About us

Larsen & Toubro is a technology-driven USD 8.5 billion company that infuses engineering with imagination. The Company offers a wide range of advanced solutions in the field of Engineering, Construction, Electrical & Automation, Machinery and Information Technology.

L&T Switchgear, which forms part of the Electrical & Automation business, is India's largest manufacturer of low voltage switchgear, with the scale, sophistication and range to meet global benchmarks. With over four decades of experience in this field, the Company today enjoys a leadership position in the Indian market with growing presence in international markets.

It offers a complete range of products including controlgear, powergear, motor starters, energy meters, wires and host of other accessories. Most of our product lines conform to international standards, carry CE marking and are **KEMA** certified.

The **d sine** range, a new generation of MCCBs, stands out due to its state-of-the-art design, contemporary user-friendly features, wide choice of protective releases, ergonomics, aesthetics and compactness.

The **d sine** range complies with the latest standards like IEC 60947-2, EN 60947-2 & IS 13947-2. The products conform to international standards, carry CE markings and are **KEMA** & CB certified. The range is specially designed for tropical conditions, ensuring reliable performance at high ambient and humid environments.

The **d sine** range is designed to meet the changing needs of users after extensive analysis and user feedback. The range can satisfy the most demanding system requirements.

The **d sine** range, complimented by a wide range of accessories, offer total solution to customer applications ensuring operational safety, reliability and versatility.



Switchgear Factory, Mumbai

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DN4

DN3

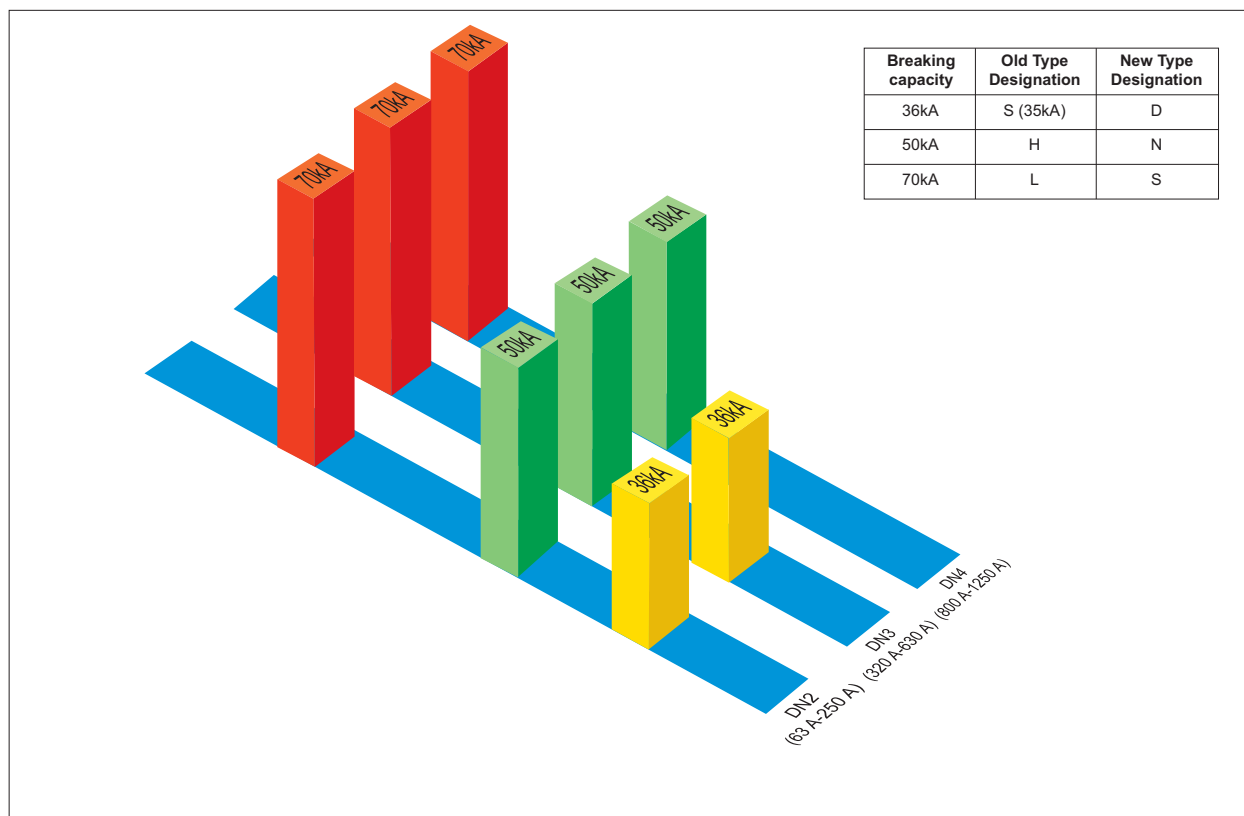
DN2

Features

- ➔ From 63 A to 1250 A
- ➔ 3 Pole & 4 Pole
- ➔ Choice of 36kA/50kA/70kA breaking capacities
- ➔ With protection releases in Microprocessor, Thermal-Magnetic and only Magnetic
- ➔ MCCBs for distribution and SD versions
- ➔ Manual, rotary or motorised versions
- ➔ Wide range of internal and external accessories

DN2		
Rated Current	63, 80, 100, 125, 160, 200, 250 A	40, 63, 100, 160, 250 A
Release	Thermal-Magnetic	Microprocessor
DN3		
Rated Current	320, 400, 500, 630 A	63, 160, 250, 400, 630 A
Release	Thermal-Magnetic	Microprocessor
DN4		
Rated Current	800, 1000, 1250 A	
Release	Microprocessor	

Breaking Capacities



Note : Since there is no change in the constructional aspect of the MCCBs, the product certification with old designation remain valid with new type designation.

Thermal-Magnetic Release



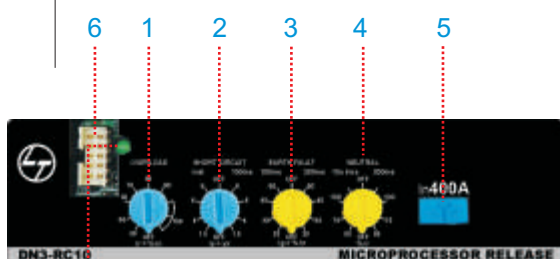
Features of Thermal-Magnetic Release

- Adjustable overload settings
- Adjustable short circuit settings
- True RMS sensing
- No contact with live parts

Protection	Settings
	DN2 & DN3
Overload	80% - 100% I_n
Short circuit*	6 - 10 I_n *
Earth fault	External

*Except for 630A MCCBs. Setting from 3 - 6 I_n available on request.

Microprocessor Release



Features of RC10 Microprocessor Release

- Overload protection with inverse time delay ①
- Short circuit protection with selectable time delay ②
- Instantaneous over ride protection
- Earth fault protection with selectable time delay ③
- Neutral protection with selectable time delay ④
- Push to trip button ⑤
- Port for release testing ⑥
- Power ON LED ⑦
- Self powered protections
- True RMS sensing

RC10	
Rated Current I_n (A)	From 63 to 1250 A
Overload (Phase)	
Current setting, I_r ($I_r = X I_n$)	OFF, 0.4 to 1.0 in steps of 0.1
Time delay, t_r (Inverse)	10 sec at $6 I_r$
Protection mode	ON / OFF
Overload (Neutral)	
Current setting, I_n ($I_{nrl} = X I_r$)	0.5, 0.75 & 1.00 I_{nrl}
	Inverse 10 sec at 6 I_{nrl} / Fixed 200ms
Protection mode	ON / OFF
Short Circuit	
Current setting, I_s ($I_s = X I_r$)	1.5, 4 & $6 I_r$
Time delay, t_s	Inst. / 100 msec
Protection mode	ON / OFF
Instantaneous Over ride	
Current setting, I_p	DN2-8 I_n , DN3-400-12 I_n , DN3-630-8 I_n , DN4-8 I_n
Earth Fault	
Current setting, I_g	0.2 to 0.5 I_n steps of 0.1
Time delay, t_g	100 / 200 msec
Protection mode	ON / OFF

Microprocessor Release



Features of RC20 - Communication Capable

- Communication using RS 485
- Power on LED
- Backlit LCD display
- Scroll buttons
- Push to trip button
- All features of RC10 release are incorporated
- Metering for current parameters
- Protection against unbalanced load / single phasing
- I^2t protection
- Neutral protection
- Cold load protection
- User friendly navigation system
- Self powered
- MODBUS RTU protocol

RC20	
Rated Current I_n (A)	From 63 to 630 A
Overload (Phase)	
Current setting (A), I_r ($I_r = xI_n$)	0.4 to 1.0 in steps of 0.1
Time delay, t_r (s) (Inverse)	3, 6, 10, 15, 30 at $6I_r$
Protection mode	ON / OFF
Preset trip alarm setting	0.8 to $1.0I_r$ in steps of 0.05
Thermal memory	ON / OFF
Overload (Neutral)	
Current setting (A), I_r	50%, 100% I_n
Protection mode	ON / OFF
Short Circuit	
Current setting (A), I_s	1.5, 4, $6I_r$
Time delay t_s (ms)	For – I^2t OFF 20 to 200 in steps of 20
	For – I^2t ON 60 to 200 in steps of 20
Protection mode	ON / OFF
Preset trip alarm setting	0.8 to 1.0 times I_s in steps of 0.05 I_s
Cold load pickup	Enable / Disable
Instantaneous	
Instantaneous	1.5 to $8I_n$ in steps of $0.5I_n$
Protection mode	ON / OFF
Cold load pickup	Enable / Disable
Instantaneous Over ride	
Current setting (A), I_p	DN2- $8I_n$, DN3-400- $12I_n$, DN3-630- $8I_n$, DN4- $8I_n$
Earth Fault	
Current setting (A), I_g	0.2 to $0.5I_n$ steps of $0.1I_n$
Time delay (ms), t_g	0.1, 0.2, 0.5, 1, 3 sec.
Preset trip alarm setting	0.8 to 1.0 I_g in steps of 0.05
Protection mode	ON / OFF
Cold load pickup	Enable / Disable

Additional Features of RC20

Current unbalance	
Current setting (A) $\times I_n$	10% to 100% I_n in steps of 5%
Time delay (s)	1 to 10 in steps of 0.5
Protection mode	ON / OFF
Cold load pickup	Enable / Disable
Temperature rise	
Alarm / Trip	At 80°C / At 100°C
Metering	
Current	Phase, Neutral and Earth
Display	Backlit LCD
Communication*	
Protocol	MODBUS RTU
Link used	RS 485
Event records	Pickup, Trip, Alarm upto 128 records-volatile memory
Trip history	Last 5 trips records - non volatile memory
Trip counter record	Counts for total number of trips

* To establish communication with computer every MCCB with RC20 will require a communication module.

→ Faster tripping

The unique speed contact system accelerates the opening of contacts during short circuit. This ensures faster tripping and an ultimate current limiting feature. The result—very low let-through, cut-off current and fault clearing time.

→ Mechanical Anti-reclosing

This unique feature ensures that under short circuit conditions, the contacts open and latch even before the release gives a trip command to the mechanism. This avoids contact re-closing and bounce.

→ Low watt loss

The entire current carrying path is optimally designed to achieve very low watt loss.



Extra Grip on handle

→ Positive Isolation

The MCCB knob indicates the true position of the contacts.

→ Double Insulation

The internal accessories are housed in insulated casings to ensure first level of insulation. When the front cover is opened for the fixing of internal accessories, the MCCB is totally insulated ensuring the double insulation.

→ Marking

CE marking ensures use of superior engineering plastic, meeting all requirements of flammability and glow wire testing path is optimally designed to achieve very low watt loss.

→ Common Internal accessories

The internal accessories remain same across DN2 / DN3 / DN4 range* and they are snap fit type easy to install



→ No load line bias

Either side of MCCB terminal can be used as load or line

→ Terminal finger proofing

Front terminal plates conceal the terminals to prevent human contact thus achieving complete finger proofing

→ Release shrouding

Release is shrouded from the front thus preventing tampering by unauthorized person

→ Safer release adjustments

No live parts are in contact during release adjustments



→ Common front adjustments for protection release

Overload & short circuit setting can be adjusted from front using a common knob for all the poles

→ Visibility

Push to trip button and release ratings are visible even when release plate is fitted



* Except under voltage release

Internal Accessories



Auxiliary Contact

List of Internal Accessories

- ➔ Auxiliary Contact 1 C/O
- ➔ Auxiliary Contact 2 C/O
- ➔ Trip Alarm Contact
- ➔ Auxiliary & Trip Alarm Contact
- ➔ Shunt Release
- ➔ Under Voltage Release (suitable for electrical interlocking)

d sine range of MCCBs come with snap-fit type, easily installable internal accessories. There is no need to open main cover and no live parts are accessed during installation. TAC, Aux+TAC to be fitted in the right cavity & under voltage release to be fitted in left cavity.



MCCB with mid cover opened & Internal accessories fitted

External Accessories

Extended Rotary Handle (Panel Mounted)

- ➔ ROM mounts directly on the MCCB without removal of mid cover
- ➔ Clear ON / OFF / TRIP indication
- ➔ Clear view of the MCCB rating label with ROM mounted
- ➔ Direct access to push to trip button with ROM mounted
- ➔ IP 54 degree of protection with extended rotary handle
- ➔ Unique coupling to allow $\pm 3\text{mm}$ tolerance
- ➔ Door interlock in ON position, with defeat facility
- ➔ Door interlock in OFF condition with padlock feature
- ➔ Auto restoration of door interlock
- ➔ External keylock for mechanical interlocking



**Extended Rotary Handle:
Panel Mounted**



Panel Door Mounted Key lock
(To be used along with extended rotary handles)



Rotary Operating Mechanism

The rotary operating mechanism (ROM) for **d sine** MCCBs are available in Direct & Extended versions.

Direct rotary handle (MCCB mounted)

These versions are available for the entire family of **d sine** MCCBs.

Mechanical Interlocking Schemes

1. Mechanical Interlocking Kit:

Two MCCBs can be interlocked using base plate mechanism, in side-by-side configuration.

Features

- For 3 Pole & 4 Pole versions
- For DN2 & DN3 frames
- Site fittable

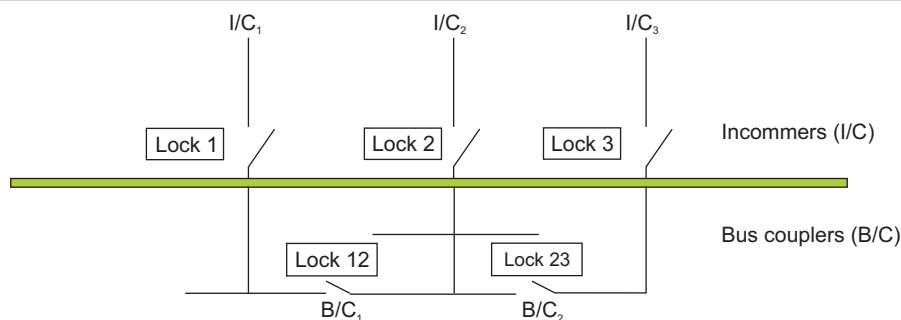


2. Mechanical Interlocking using key locks:

For mechanical interlocking through extended rotary operating mechanism, a panel mounted key lock is available. The selection of the key lock as per the following details:

2 I/C	Any 1 type of lock for both MCCBs
2 I/C and 1 B/C	Lock 1 and Lock 2 for I/C and Lock 12 for B/C
3 I/C and 2 B/C	Locks 1, 2, 3 for I/Cs and Locks 12, 23 for B/Cs

Key Lock Selection



Type of lock	Exclusively operable by Key Nos.
1	1
2	2
3	3
12	1, 2 & 12
23	2, 3 & 23

Electrical Operating Mechanism



Features

- Clear **ON / OFF** indication
- Safety Interlock-EOM will not operate if
 - EOM cover is open
 - EOM is not properly fixed on MCCB
- Permits manual operation, If required
- Padlock facility for locking in OFF position
- Easy access to the protection setting on the MCCBs

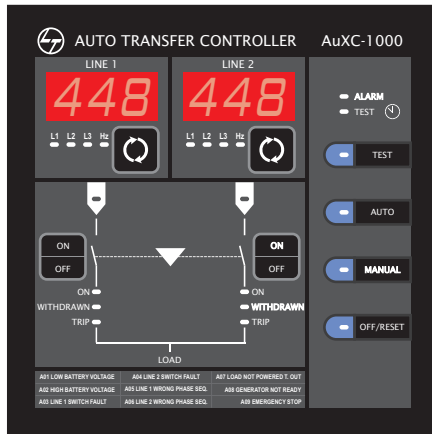
* 240 VAC available on request

External Neutral CTs

The External Neutral CT is an add-on accessory of the 3P MCCB that gives protection against neutral faults. Thus, with an External Neutral CT, a 3P MCCB can be used for full protection of a 3 phase, 4 Wire system*.

* Contact nearest branch for details & availability

Automatic Source Transfer Switch Controller AuXC-1000



The AuXC-1000 controller brings simplicity and flexibility to an auto source transfer system. It has been developed to control and supervise the automatic or manual transfer of a utility load from a principal power supply source to a stand-by. It sets a new benchmark in Auto source transfer switch controller technology.


It includes all the necessary features to supervise and control power supply sources, composed by energy distribution systems or generating sets, and the relative transfer equipment, such as contactors, motorized moulded case circuit breakers and air circuit breakers.

The automatic transfer takes place through AuXC-1000 whenever conditions predefined by the user takes place, for example:

- Power supply source not respecting programmed limits
- The need to have a very reliable power source
- The need to use the most economical power source

Some of the key features of this controller are:

- Front display for monitoring the system voltage and frequency and for onsite controller programming
- Six programmable inputs and five programmable outputs
- Front test feature to simulate the operation of the diesel generator set
- Status indication through 22 LEDs
- Flush mounting arrangement
- Communication capable

The AuXC-1000 controller is compatible with U-Power range of Air circuit breakers,  range of MCCBs and MCX range of contactors.



MIL with Base Plate & EOM

Technical Data

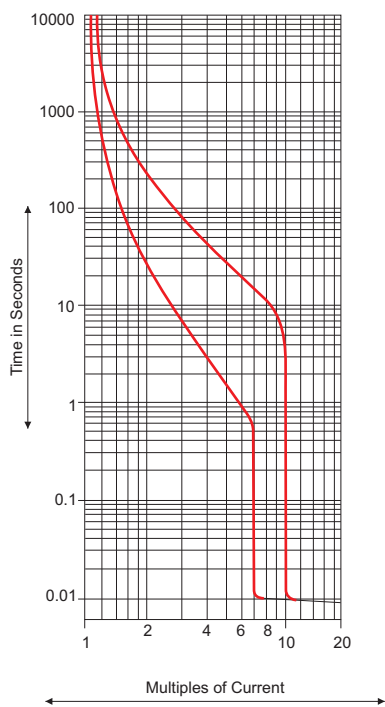


Frame			250 A			400 A			630 A			800 / 1000 / 1250 A	
Type			DN2-250			DN3-400			DN3-630			DN4-1250	
			D	N	S	D	N	S	D	N	S	N	S
Current Range (A)			63, 100, 125, 160, 200 & 250 A			63, 160, 250, 320, 400			63, 160, 250, 320, 400, 630 A			800, 1000, 1250	
Poles			3 / 4			3 / 4			3 / 4			3 / 4	
Impulse withstand Voltage (kV)			8			8			8			8	
Rated Operational Voltage (V) (max)			690			690			690			690	
Rated Insulation Voltage (V)			750			750			750			750	
Utilisation Category			A			A			A			A	
Standard			IEC / EN / IS / GB			IEC / EN / IS / GB			IEC / EN / IS / GB			IEC / EN / IS / GB	
IEC-60947-2	Icu (kA)	230 / 240 V	65	85	100	65	85	100	65	85	100	85	100
		400 / 415 V	36	50	70	36	50	70	36	50	70	50	70
		500 V	25	36	50	25	36	50	25	36	50	25	36
		550 V	18	25	36	15	20	25	15	20	25	20	25
		600 V	16	18	22	12	18	22	12	18	22	16	20
		690 V	10	15	20	8	15	20	8	10	15	10	18
		250 V DC (3P in series)	15	25	36	15	25	36	15	25	36	-	-
	500 V DC (3P in series) L/ R<15msec	5	10	20	5	10	20	5	10	16	-	-	
Ics as % Icu		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Life span		Mechanical	25000			15000			15000			8000	
		Electrical @1.0 In	10000			4000			2000			750	
Operating Frequency (Hz)			50 / 60										
Total Opening Time			<10 msec									<20 msec	
Finger-proof Terminals			Yes										
Ambient Temperature			-5° to 55° C										
Storage Temperature			-35° to 70° C										
Mounting Positions			Vertical and 90° in both directions										
Dimensions (W x D x H)		3-Pole	105 x 96 x 179			140 x 111.5 x 266			140 x 111.5 x 266			278 x 143 x 370	
		4-Pole	140 x 96 x 179			183.5 x 111.5 x 266			183.5 x 111.5 x 266			278 x 143 x 370	
Weight (kg) (3/4 Pole)			2.5 / 3.3			5.5 / 7.2			6 / 7.8			15 / 16	
ACCESSORIES	Internal	Auxiliary Contact	1C/O or 2C/O			1C/O or 2C/O			1C/O or 2C/O			1C/O or 2C/O	
		Trip Alarm Contact	1C/O			1C/O			1C/O			1C/O	
		Auxiliary & Trip Alarm Contact	1C/O + 1C/O			1C/O + 1C/O			1C/O + 1C/O			1C/O+1C/O	
		Shunt Release \$	110 - 415 V AC 50 / 60 Hz, 110 - 220 V DC			110 - 415 V AC 50 / 60 Hz,110 - 220 V DC			110 - 415 V AC 50 / 60 Hz,110 - 220 V DC			110 - 415 V AC 50 / 60 Hz, 110 - 220 V DC	
		Under Voltage Release	220 - 240 V AC 50 Hz			220 - 240 V AC 50 Hz			220 - 240 V AC 50 Hz			220 - 240 V AC 50 Hz	
	External	Rotary Operating Mechanism	✓			✓			✓			✓	
		Electrical Operating Mechanism	✓			✓			✓			x	
		Earth Fault Release	✓			Inbuilt protection with Microprocessor release			Inbuilt protection with Microprocessor release			Inbuilt protection with Microprocessor release	
		Mechanical Interlock	✓			✓			✓			✓	
		Spreader Links	✓			✓			✓			✓	
		Key lock / Pad lock	✓			✓			✓			✓	

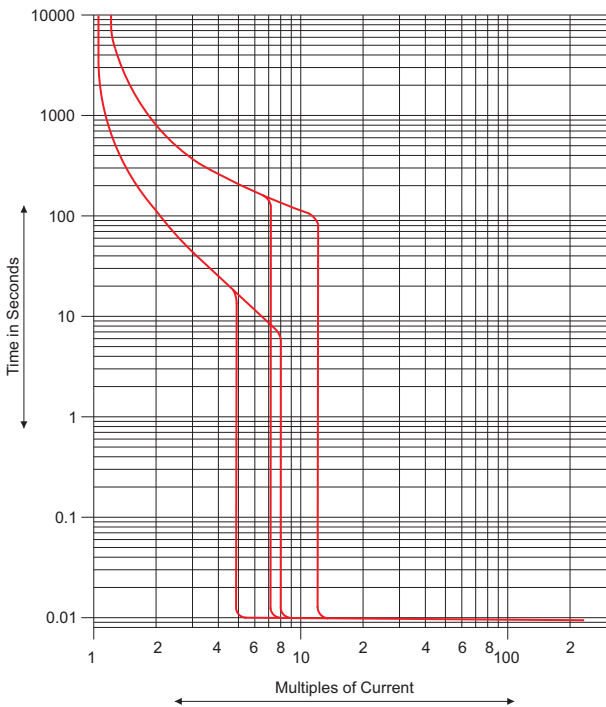
\$: 'NO' of control contactor to be connected in series for 220V DC application.
Note: • Any two internal accessories can be mounted at a time
• For special application like capacitor switching, DC please contact nearest branch office
• For motor application, use 'M' series MCCBs (DN2M, DN3M)

Thermal-Magnetic Release

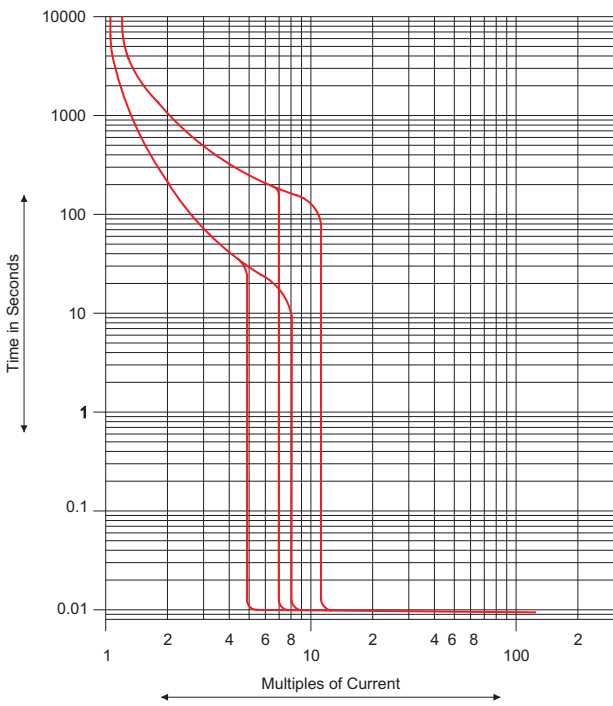
DN0-100



DN2-160/250

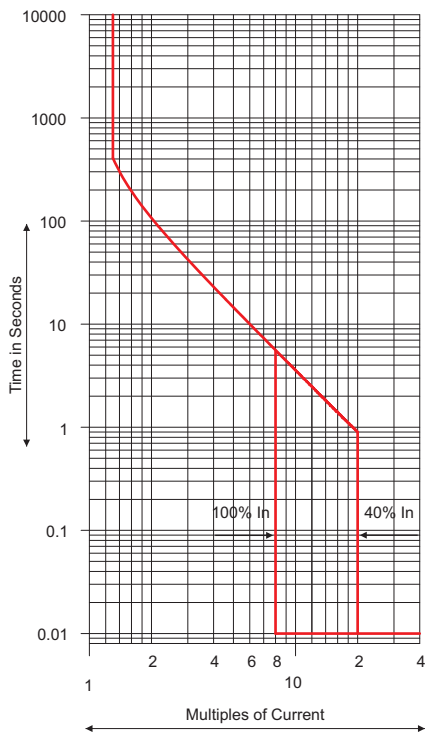


DN3-400/630

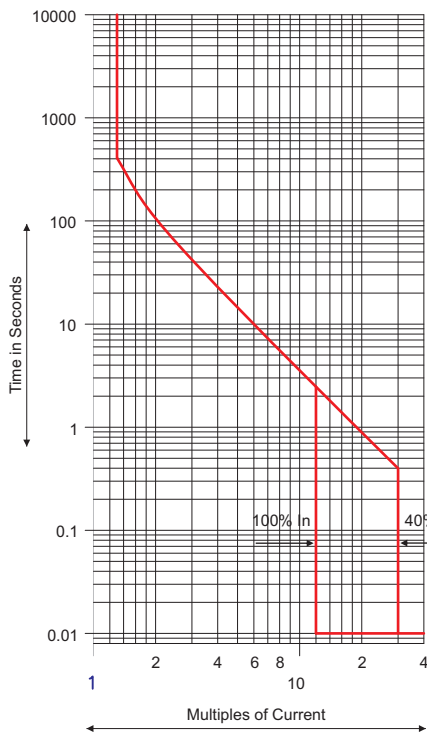


Microprocessor Release-RC10

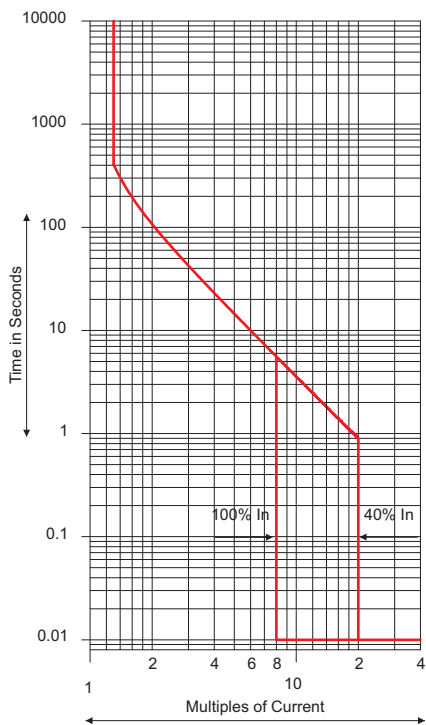
DN2-250A



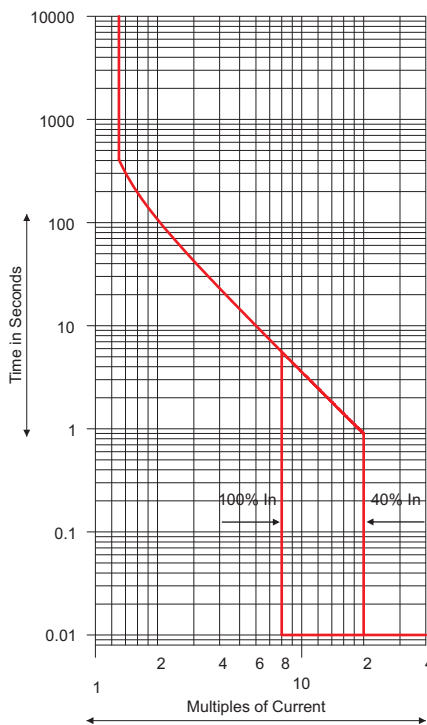
DN3-400A



DN3-630A

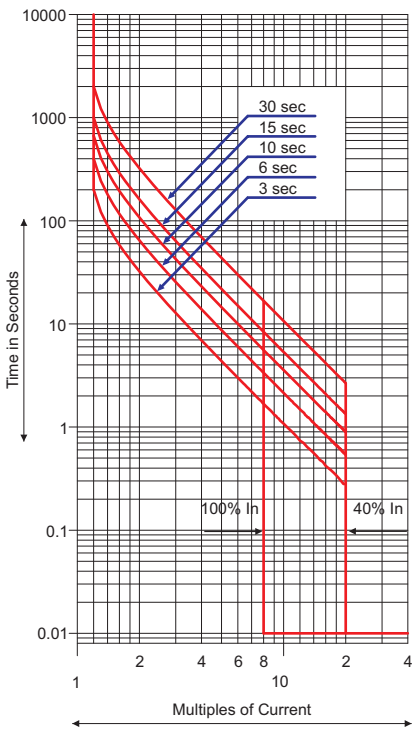


DN4-1250A

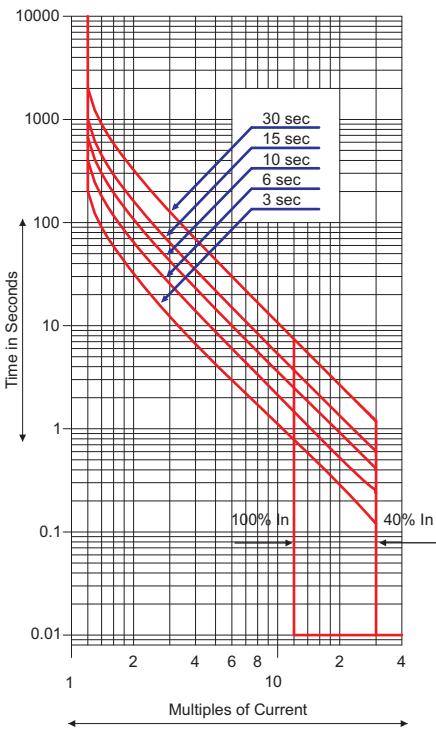


Microprocessor Release-RC20

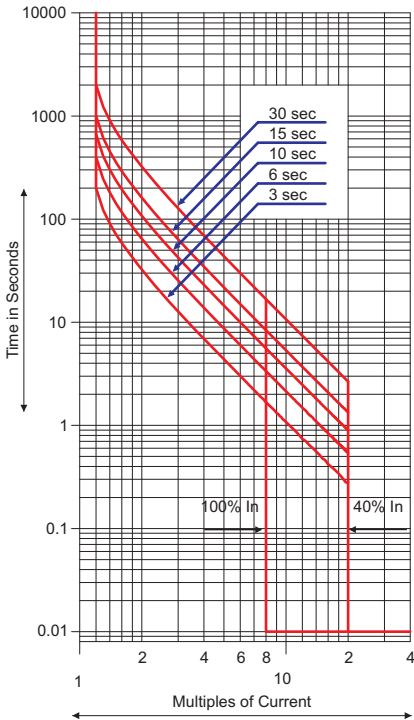
DN2-250A



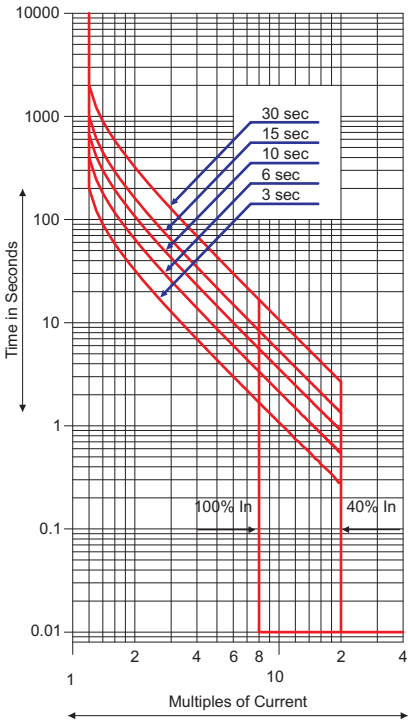
DN3-400A



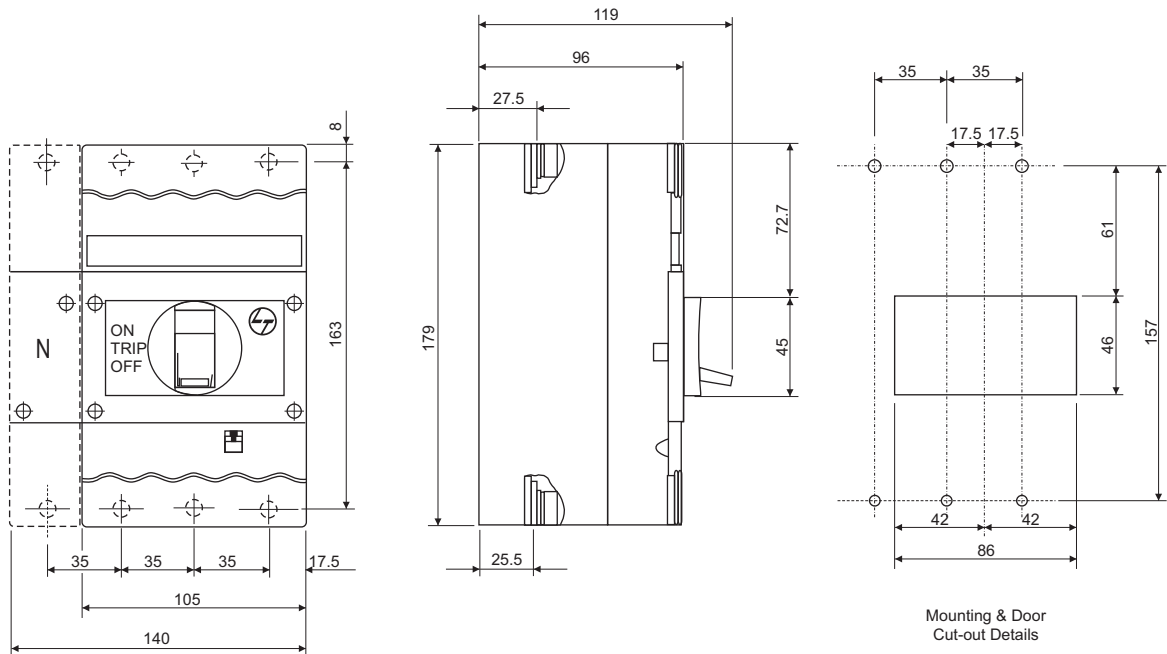
DN3-630A



DN4-1250A

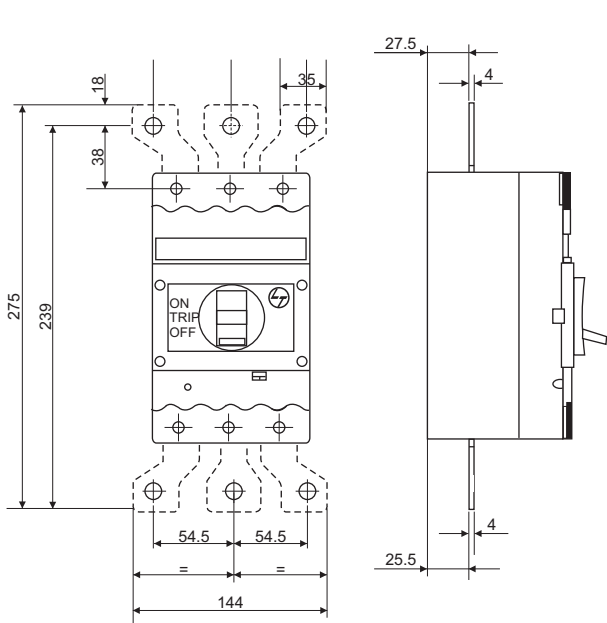


DN2-250 MCCB

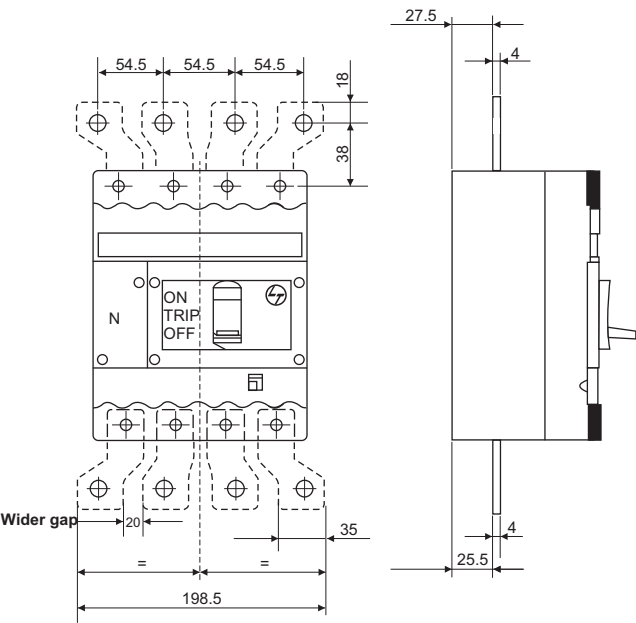


Terminal width = 25.5mm

DN2-250 3P
with Spreader Links



DN2-250 4P
with Spreader Links



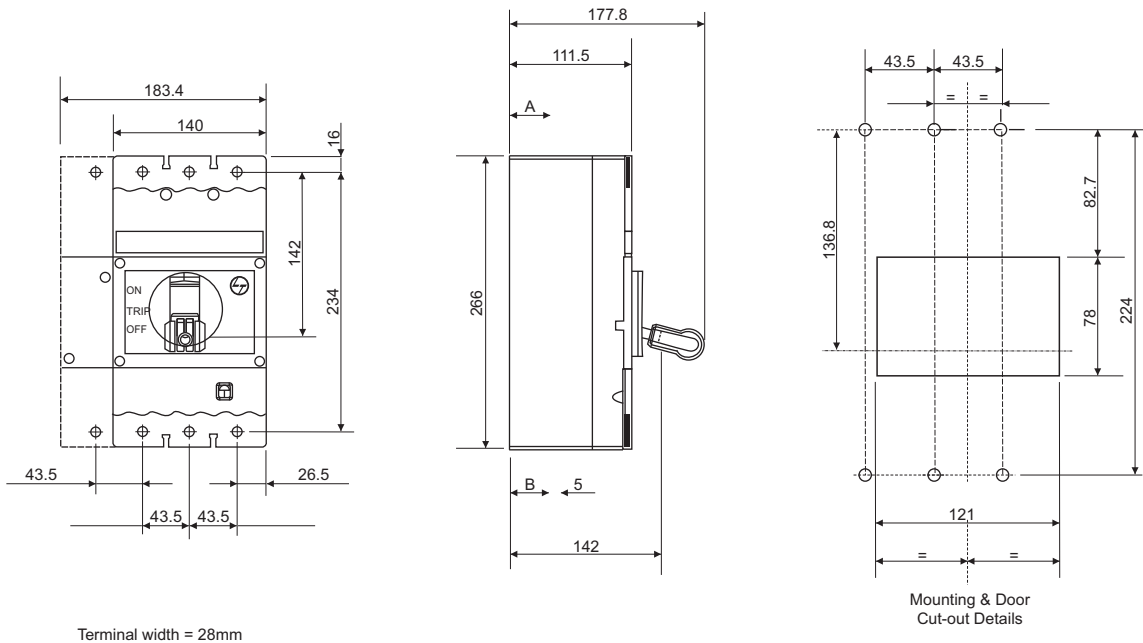
Recommended CAT number for DN2 spreaders

3P	4P
ST980530000	CM920070000

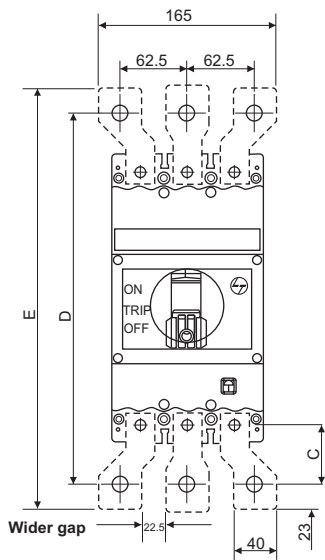
Note : Spreaders are available as spare. It is recommended to use spreader links for enhancing termination capacity.

All dimension are in mm

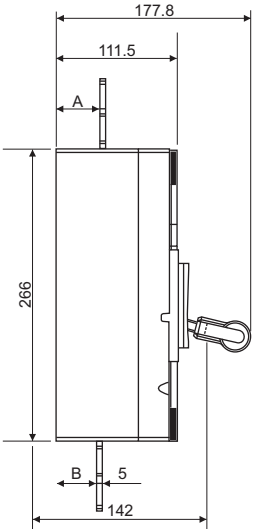
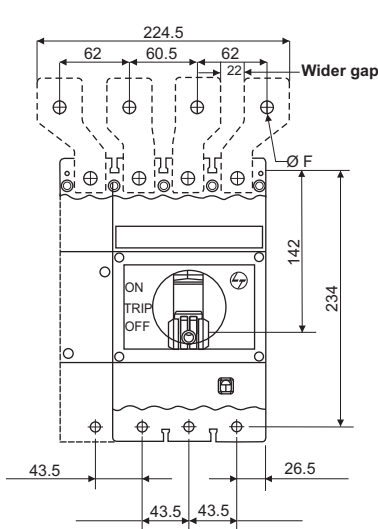
DN3-400/630 MCCB



DN3-400/630 3P with Spreader Links



DN3-400/630 4P with Spreader Links



Type	DN3-400	DN3-630
A	39	41
B	37	38
C	45	55
D	324	344
E	370	390
F	13	11

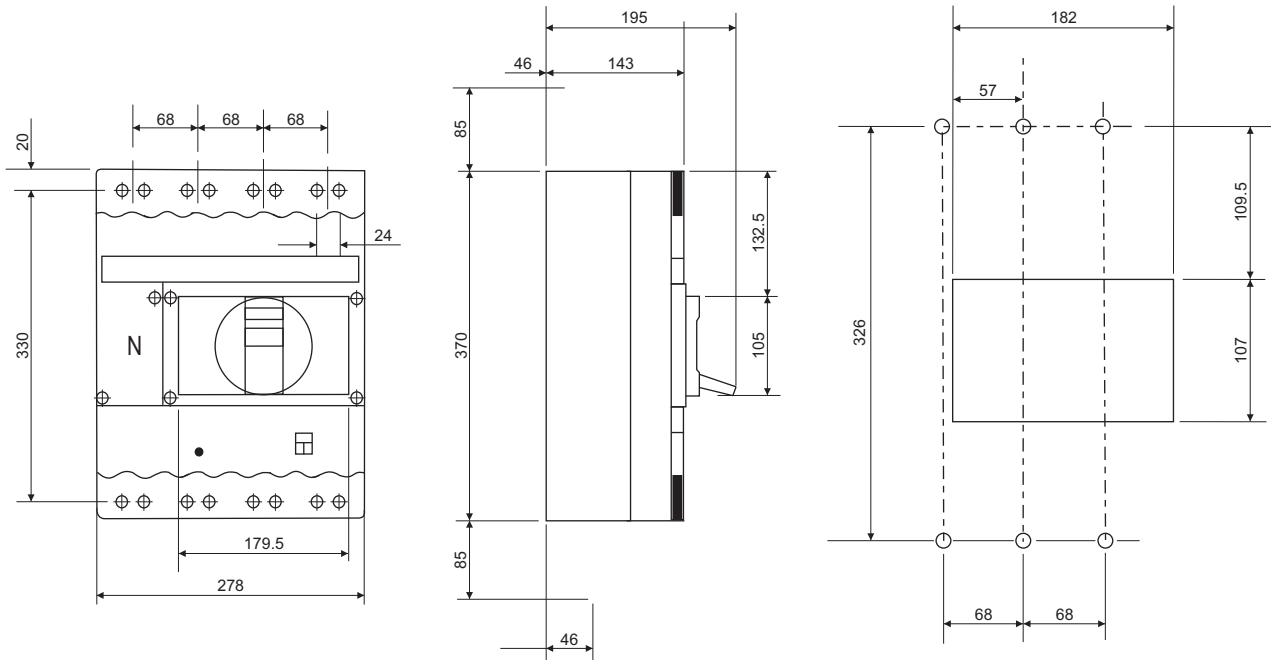
Note : Spreaders are available as spare. It is recommended to use spreader links for enhancing termination capacity.

Recommended CAT numbers for DN3 spreaders

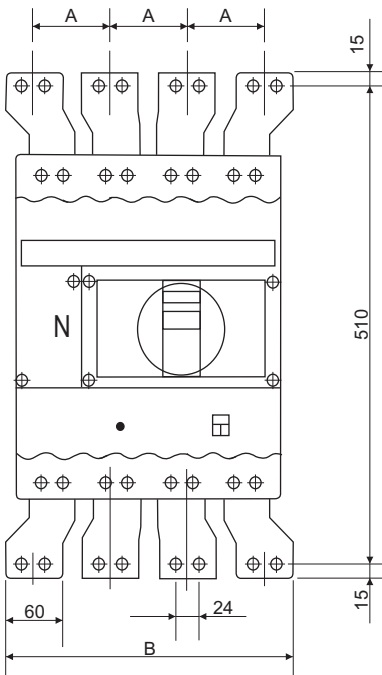
Rating	3P	4P
400A	ST980650000	ST980660000
630A	ST980540000	CM920040000

All dimension are in mm

DN4-800/1000/1250 MCCB



DN4-800 MCCB with Spreader Links

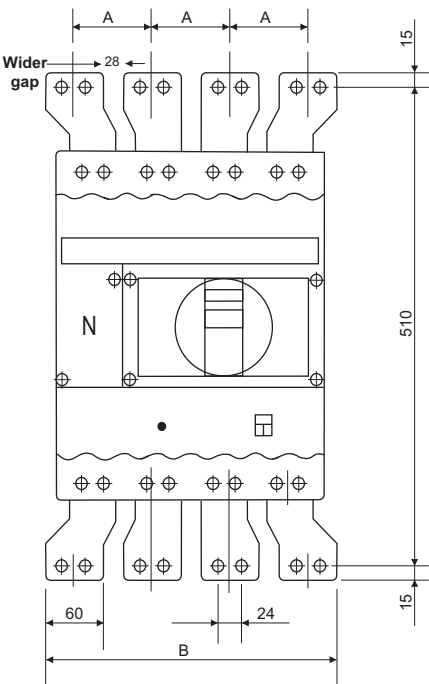


Dimensions

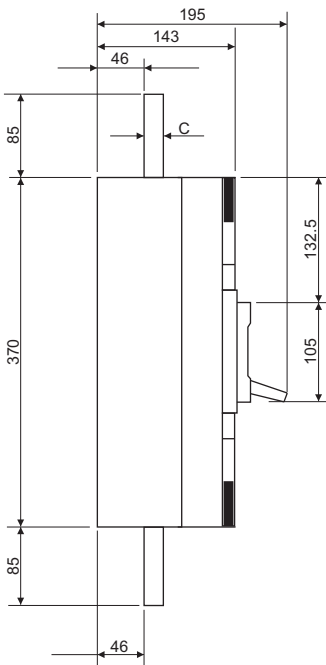
Type	A	B	C
800A	88	324	6
1000/1250/1600A	80	300	20

Note : Spreaders are available as spare. It is recommended to use spreader links for enhancing termination capacity.

DN4-1000/1250 MCCB with Spreader Links



DN4-800/1000/1250 MCCB

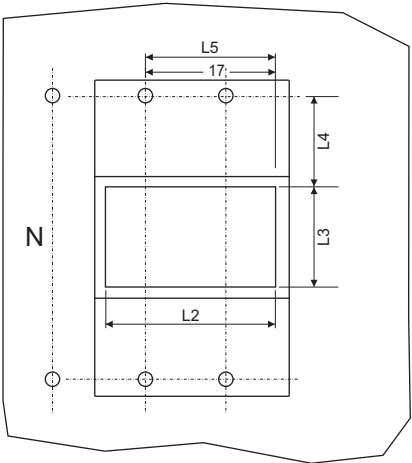
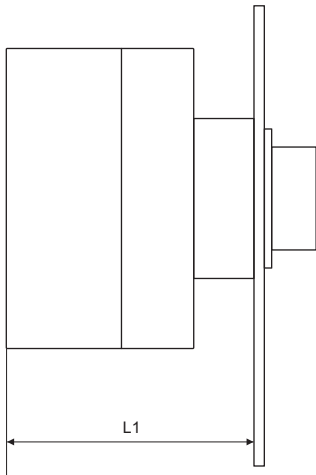


Recommended CAT numbers for DN4 spreaders

Rating	3P	4P
800A	ST90361O000	ST90362O000
1000A /1250A	ST98055O000	ST98058O000

All dimension are in mm

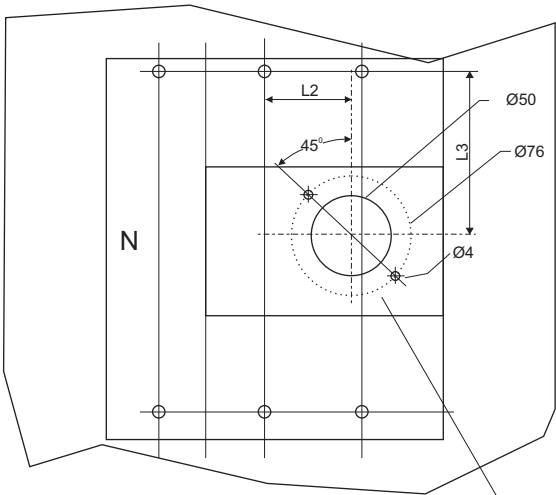
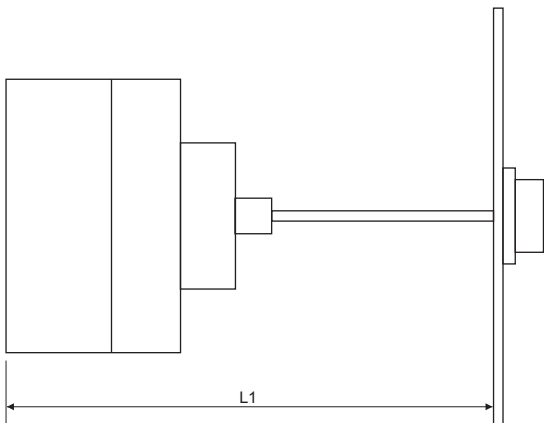
Direct ROM door cut-out detail



L1 = Mounting depth
L2/L3 = Panel cut-out
L4/L5 = Breaker mounting reference

Type	L1	L2	L3	L4	L5
DN0	96.5	58	52	44	37
DN2	122	96	63	53	66
DN3	156	121	87	78	82

Extended ROM door cut-out detail

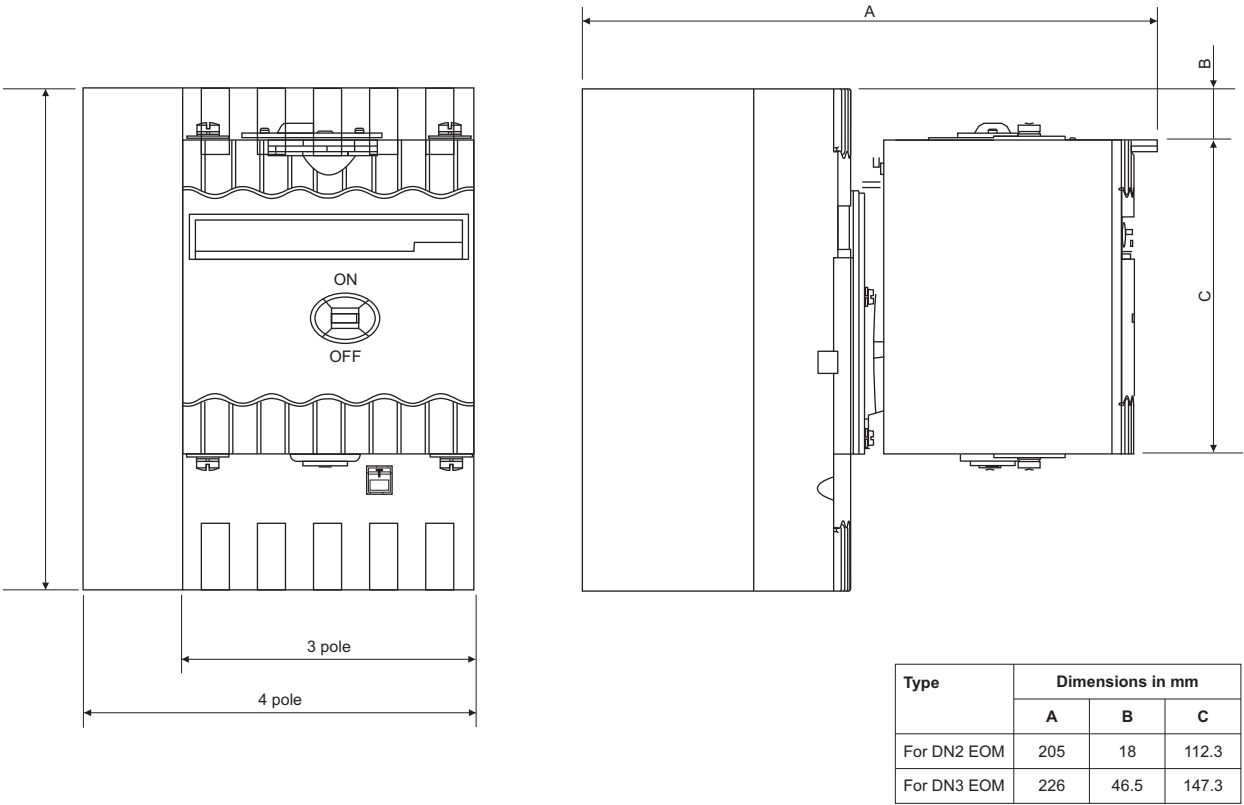


L = Length of shaft required for panel depth L1

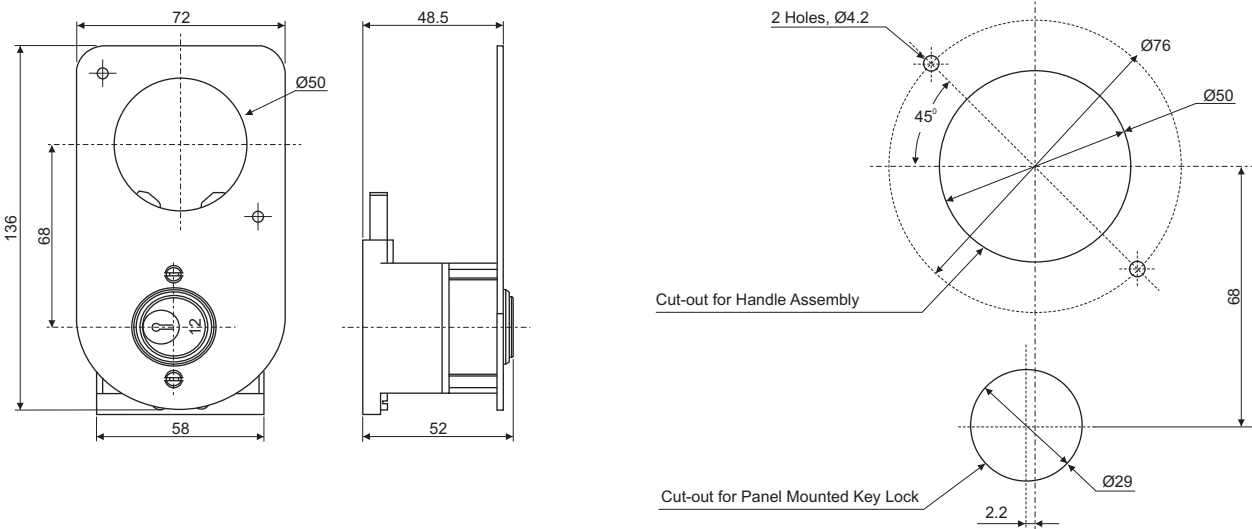
Type	L1	L	L2	L3
DN0	169	L1 - 119	7.5	69.5
DN2	202	L1 - 152	27	84
DN3	233	L1 - 183	39	122
DN4	302	L1 - 252	69	170

All dimension are in mm

MCCB with EOM

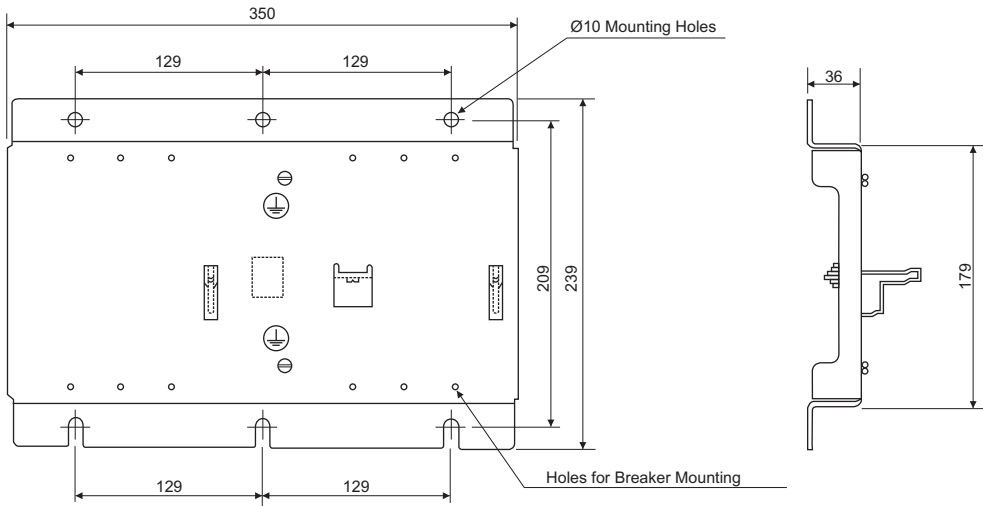


Panel Mounted Key Lock

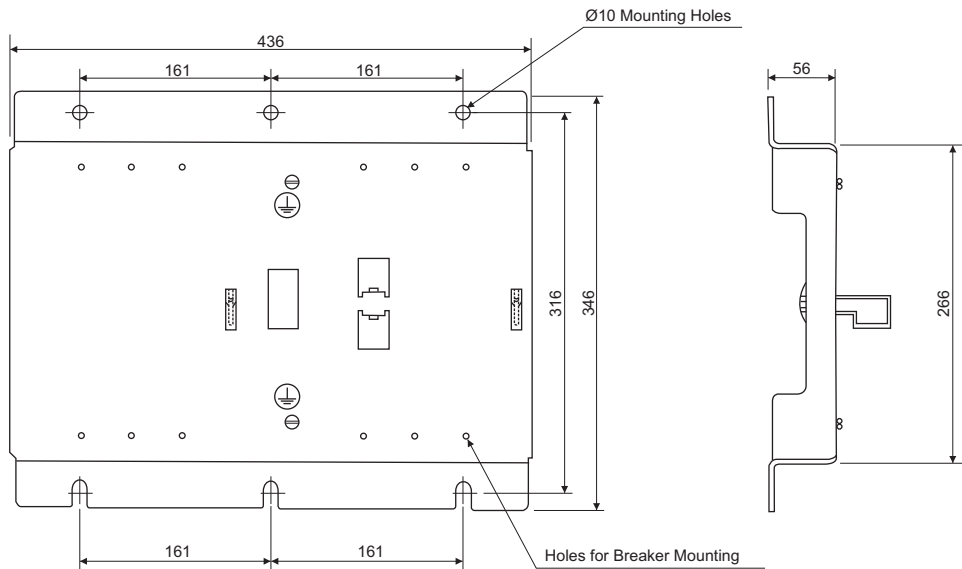


All dimension are in mm

DN2 MIL Kit

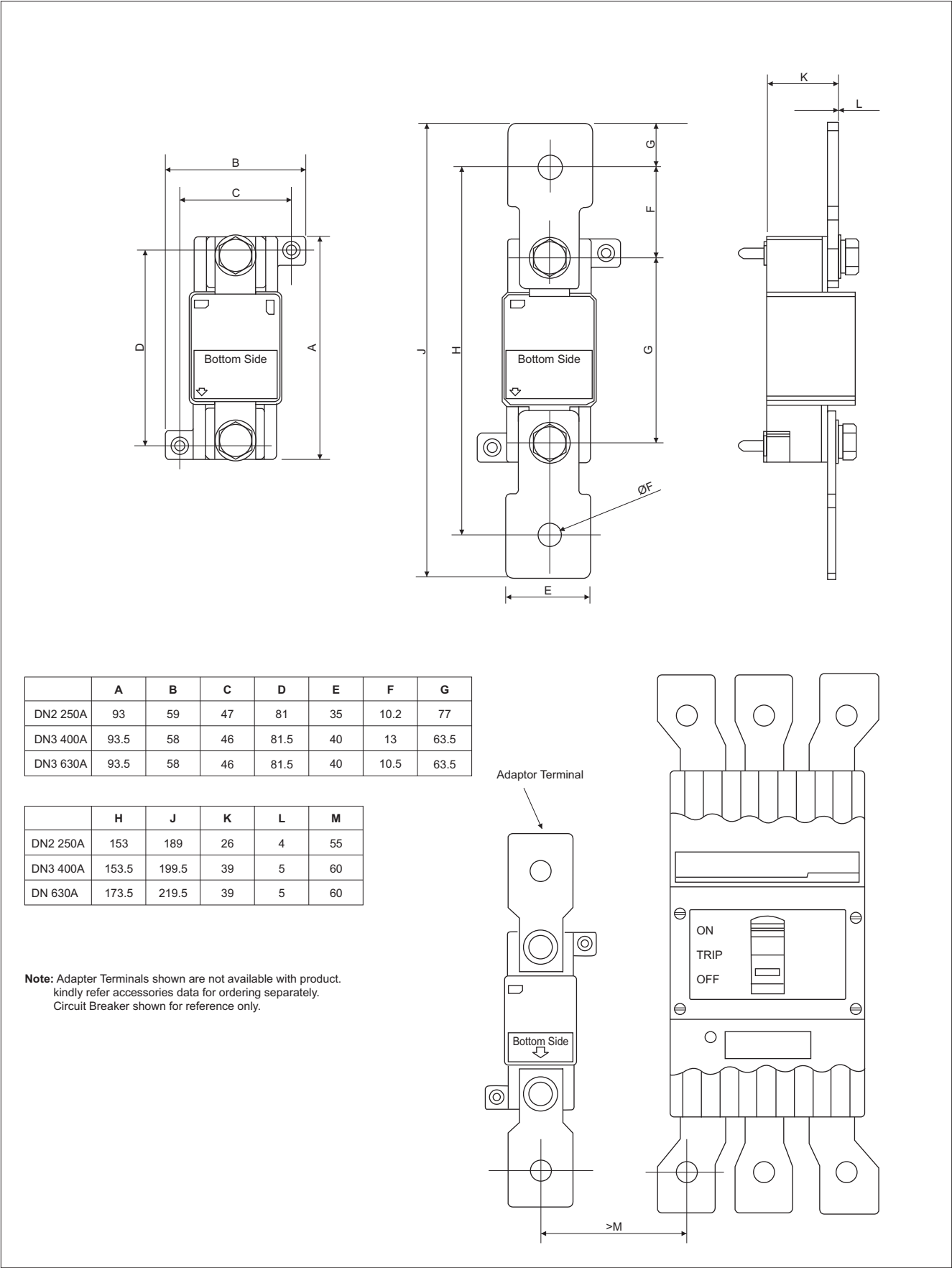


DN3 MIL Kit



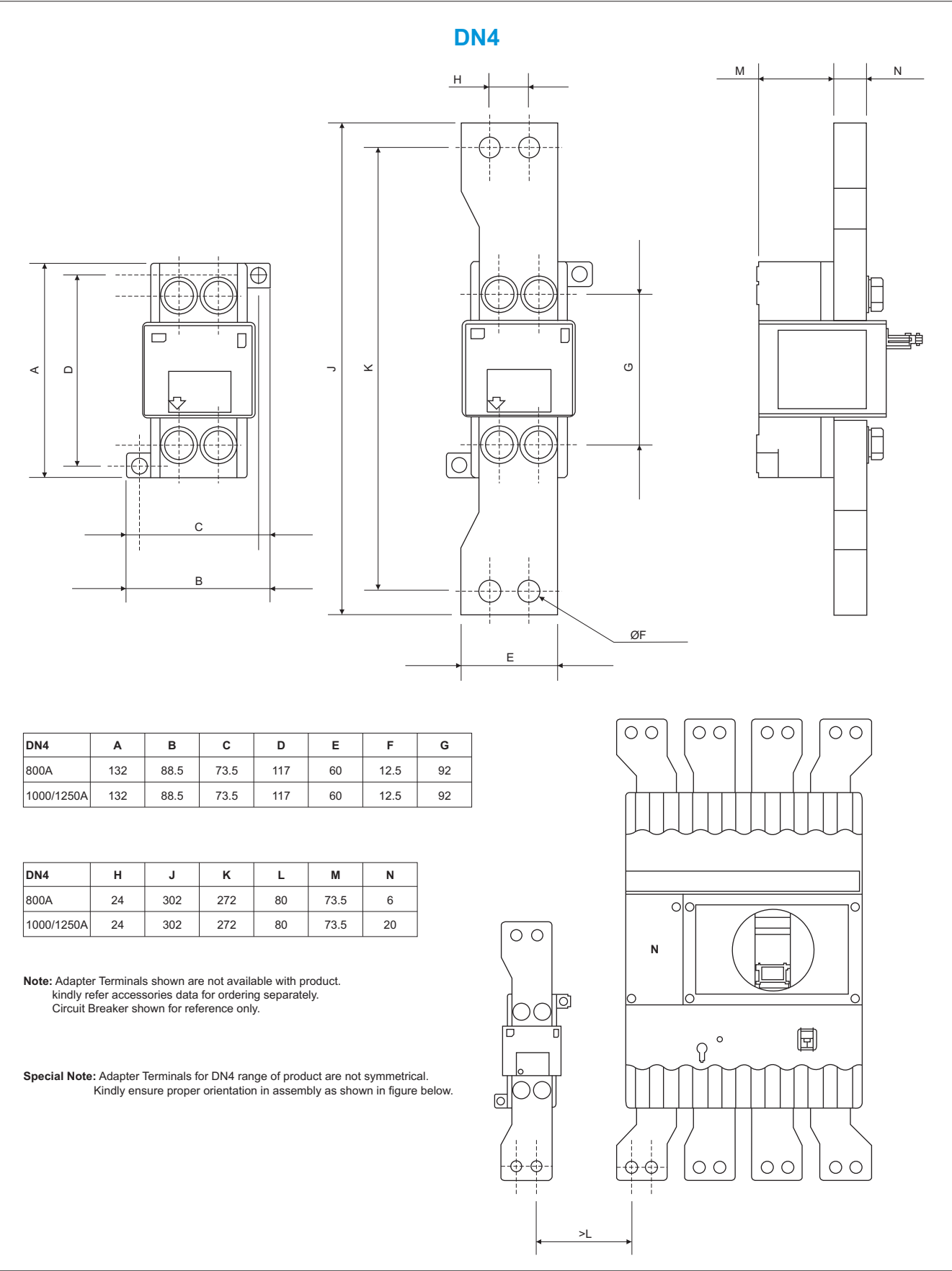
All dimension are in mm

External Neutral CTs



All dimension are in mm

External Neutral CTs



All dimension are in mm

Notes:

[illegible]

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Moulded Case Circuit Breakers

New DU Series
20 A to 250 A




LARSEN & TOUBRO

It's all about Imagineering


About us

Larsen & Toubro is a technology-driven USD 7 billion company that infuses engineering with imagination. The Company offers a wide range of advanced solutions in the field of Engineering, Construction, Electrical & Electronics, Machinery and Information Technology.

L&T Switchgear, which forms part of the Electrical & Automation business, is India's largest manufacturer of low voltage switchgear, with the scale, sophistication and range to meet global benchmarks. With over four decades of experience in this field, the Company today enjoys a leadership position in the Indian market with growing presence in international markets.

It offers a complete range of products including controlgear, powergear, motor starters, energy meters, wires and host of other accessories. Most of our product lines conform to international standards, carry CE marking and are **KEMA**  certified.

The DU Series, a new generation of MCCBs, stands out due to its state-of-the-art design, contemporary user-friendly features, wide choice of protective releases, ergonomics, aesthetics and compactness.

The DU Series complies with the latest standards like IEC 60947-2, EN 60947-2 & IS 13947-2. The products conform to international standards, carry CE marking and are **KEMA**  & CB certified. The range is specially designed for tropical conditions, ensuring reliable performance at high ambient and humid environments. The range can satisfy the most demanding system requirements.

The DU Series, has a wide range of accessories, ensuring operational safety, reliability and versatility.



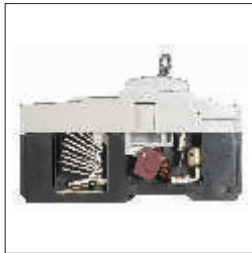
Switchgear Factory, Mumbai

L&T now extends the DU range of MCCBs with DU100H & DU250.

Salient Features of New DU Series

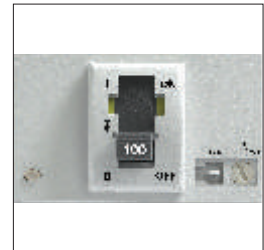
New Technology

- Specially designed arc suction effect & speedo quench contact system



Ergonomic Design & User Friendliness

- Knob designed for better grip
- Color indication of ON/TRIP/OFF
- Current rating on the knob
- Overload adjustment from front *
- Easy ON/OFF/RESET operations
- Wide variety of snap fit accessories*



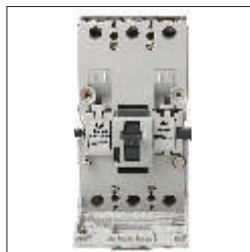
Compact

- Compact size
- Suitable for side by side mounting
- Suitable for use in MCB Distribution Board



Safe to Use

- Positive isolation with positive OFF indication
- Finger proof terminals
- Lockable shroud on thermal knob to prevent unauthorized operation*
- CE Marked range



Internal Accessories*

- Auxiliary contacts
- Trip alarm contacts
- Combined Auxiliary + Trip alarm contacts #
- Shunt release \$
- Under Voltage release \$



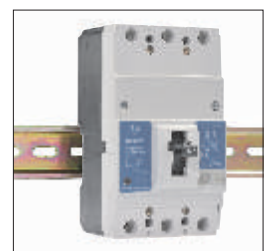
External Accessories*

- Direct mounted & extended ROM
- Spreader links
- Padlock is available (Only with ROM)
- Box clamps
- Terminal shroud**



Easy to Install

- 45mm door cutout
- Built in DIN rail mounting**



* For 3P & 4P MCCBs.

** Only for DU100H

To be fitted in the right cavity

\$ To be fitted in the LHS cavity

Technical Data

DU Series

Technical Parameter		Specification		
Type Designation		DU100H 1P	DU100H 2P/3P/4P	DU250 3P
No. of Poles		1	2/3/4	3
Rated Current	In	20 A to 100 A	20 A to 100 A	100 A to 250 A
Rated Operational Voltage	Ue	240 V	415 V	
Rated Insulation Voltage	Ui	690 V		
Operational Frequency		@ 50 or 60 Hz		
Reference Temperature		40°C		
Rated Ultimate S. C. Breaking Capacity (Icu)	240 V	25kA	65kA	65kA
	400 V	8kA	36kA	36kA
	415 V	5kA	30kA	36kA
	500 V	-	10kA	10kA
	600 V	-	5kA	5kA
Rated Service S. C. Breaking Capacity (Ics)		50% of Icu		
Mechanical Life	No. of operations	30000		10000
Electrical Life	No. of operations	6000		3000
Reference Standard		IEC 60947 - 2, EN 60947 - 2, IS 13947 - 2 (part 2)		
Type of Release		Thermal - Magnetic		
Thermal		Fixed	Variable (0.8 - 1.0 x In)	Variable (0.8 - 1.0 x In)
Magnetic		Fixed (10 x In)	Fixed (9 x In)	Fixed (9 x In)
Terminal Capacity				
Cables with Lug		35mm ²		120mm ²
With box clamp		35mm ²		120mm ²
Link		16mm		25mm
Overall Dimensions				
Width		25mm	75/75/100 mm	105mm
Height		130mm	130mm	165mm
Mounting Depth		60mm	60mm	60mm
Weight		0.28kg	0.60/0.73/0.96 kg	1.45kg

Ordering Information

Rating	Catalogue No.
	DU250 3P
100 A	CM98064O0000
125 A	CM98063O0000
160 A	CM98062O0000
200 A	CM98061O0000
250 A	CM98060O0000

Rating	Catalogue No.			
	DU100H 1P	DU100H 2P	DU100H 3P	DU100H 4P
20 A	CM97922OOC2	CM97898OOC2	CM97894OOC2	CM97933OOC2
25 A	CM97922OOD2	CM97898OOD2	CM97894OOD2	CM97933OOD2
32 A	CM97922OOE2	CM97898OOE2	CM97894OOE2	CM97933OOE2
40 A	CM97922OOF2	CM97898OOF2	CM97894OOF2	CM97933OOF2
50 A	CM97922OOG2	CM97898OOG2	CM97894OOG2	CM97933OOG2
63 A	CM97922OOH2	CM97898OOH2	CM97894OOH2	CM97933OOH2
80 A	CM97922OOJ2	CM97898OOJ2	CM97894OOJ2	CM97933OOJ2
100 A	CM97922OOK2	CM97898OOK2	CM97894OOK2	CM97933OOK2

Internal Accessories

3-Pole & 4-Pole versions

Description	Catalogue No.
Auxiliary Contact 1C/O	CM97886O0000
Auxiliary Contact 2C/O	CM97887O0000
Trip Alarm Contact (TAC) 1C/O	CM97888O0000
Trip Alarm Contact 2C/O	CM97889O0000
Aux. 1C/O + (TAC) 1C/O	CM97890O0000
Shunt Release 415/240 V AC	CM97883OMOO
Under Voltage Release, 240 V AC	CM97892BOOO

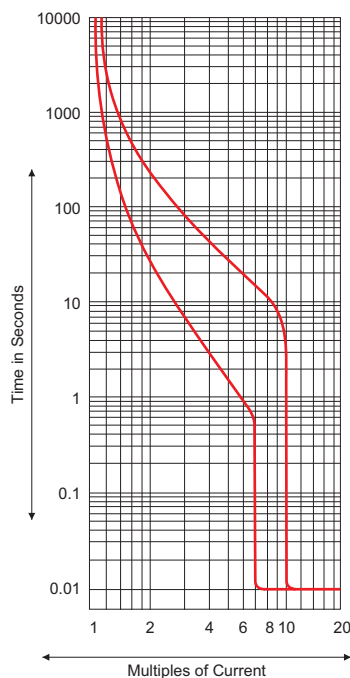
External Accessories

3-Pole Version

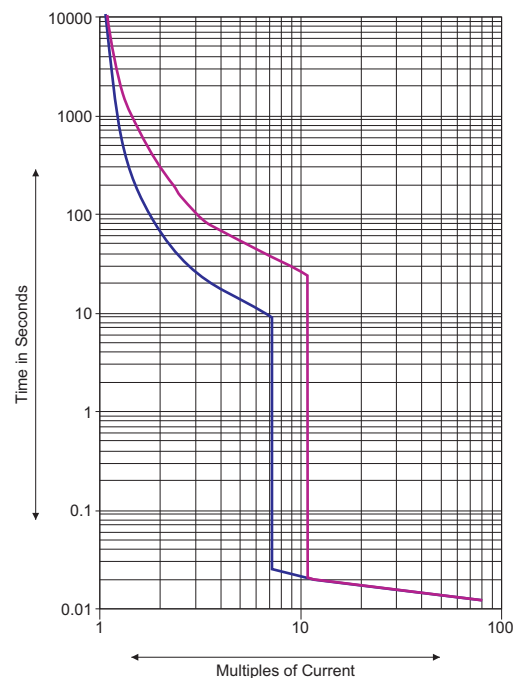
Description	DU100H 3P	DU100H 4P	DU250 3P
Spreader Links	CM97785O0000	CM97921O0000	ST98053O0000
ROM - Extended	CM97896O0000	CM97896O0000	CM98041O0000
ROM - Direct	CM97895O0000	CM97895O0000	CM98040O0000

I-T Characteristics Curves

DU100H



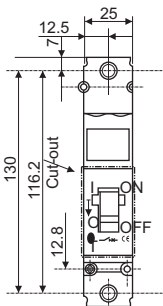
DU250 MCCB



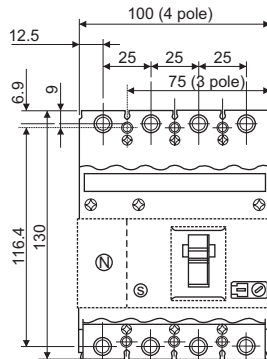
Overall Dimensions

DU100H

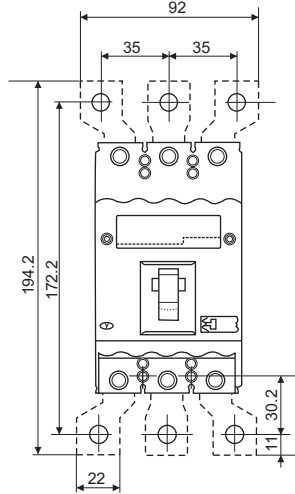
1-Pole



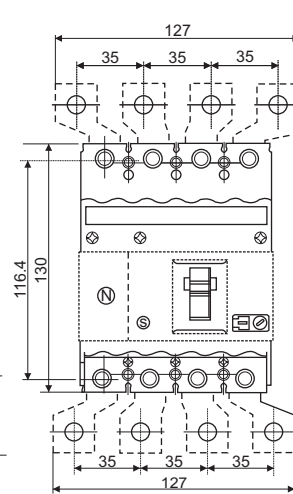
3-Pole, 4-Pole



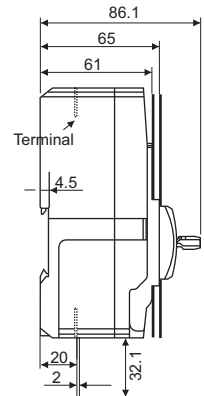
3-Pole with spreaders



4-Pole with spreaders

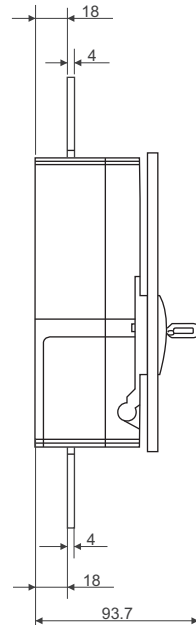
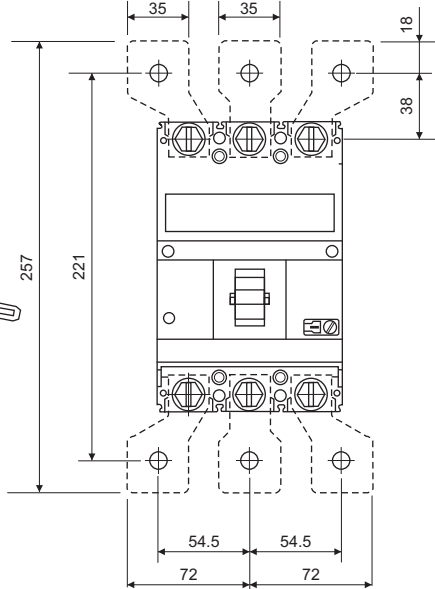
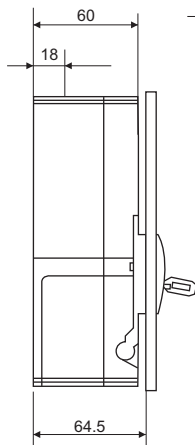
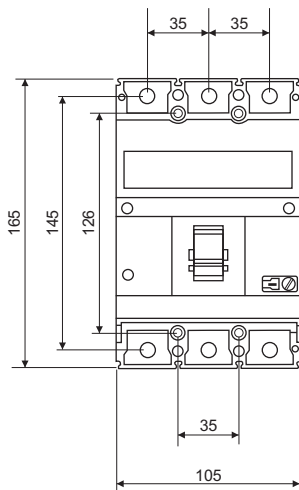


1-Pole, 3-Pole, 4-Pole



For 2-Pole MCCB, refer 3-Pole dimensions
Spreader links are available as spare.
It is recommended to use spreader links
for enhancing termination capacity.

DU250 3P

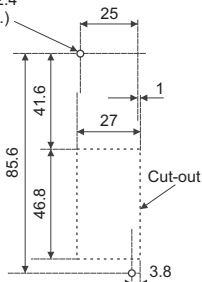


Spreader links are available as spare.
It is recommended to use spreader links
for enhancing termination capacity.

Panel Cut-out Dimension

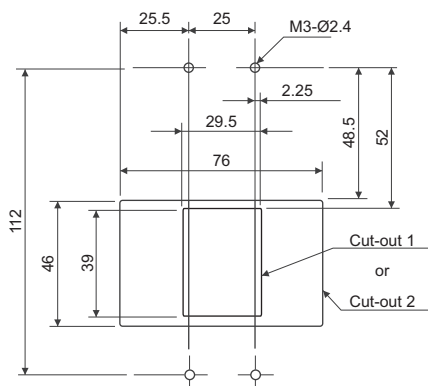
DU100H 1P

Mount MCCB with two Screws
at Diagonal Position
M3-Ø2.4
(2 nos.)



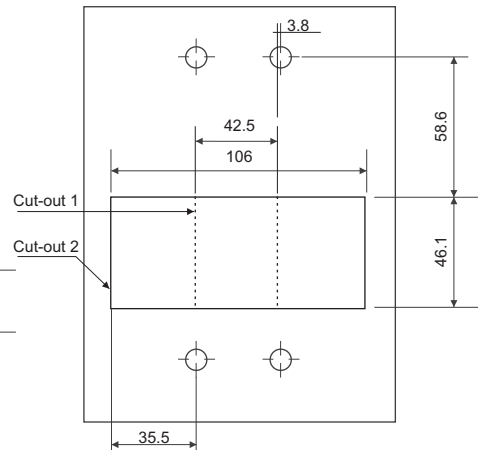
Door Cut-out Dimensions

DU100H 3P



Door Cut-out Dimensions

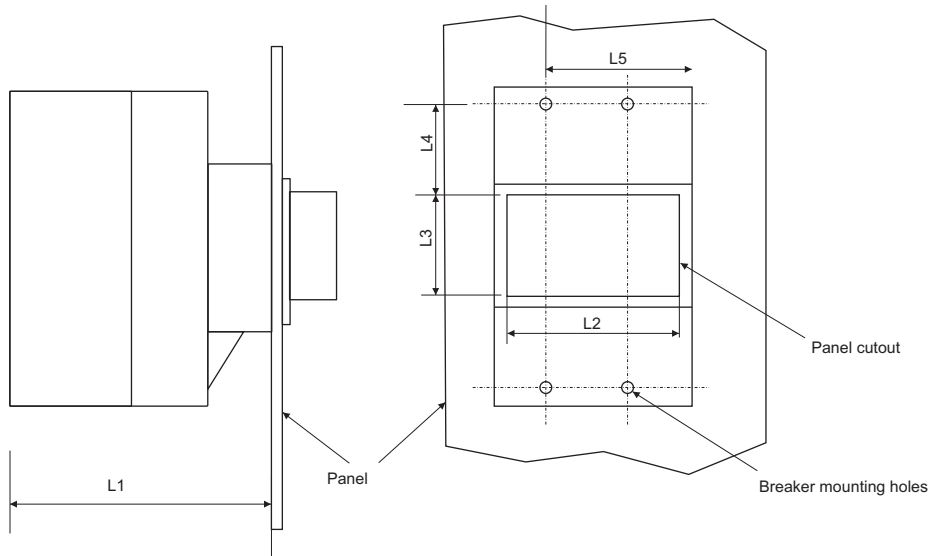
DU250 3P



All dimensions are in mm

ROM Mounting Dimension

Mounting Dimensions - Direct ROM

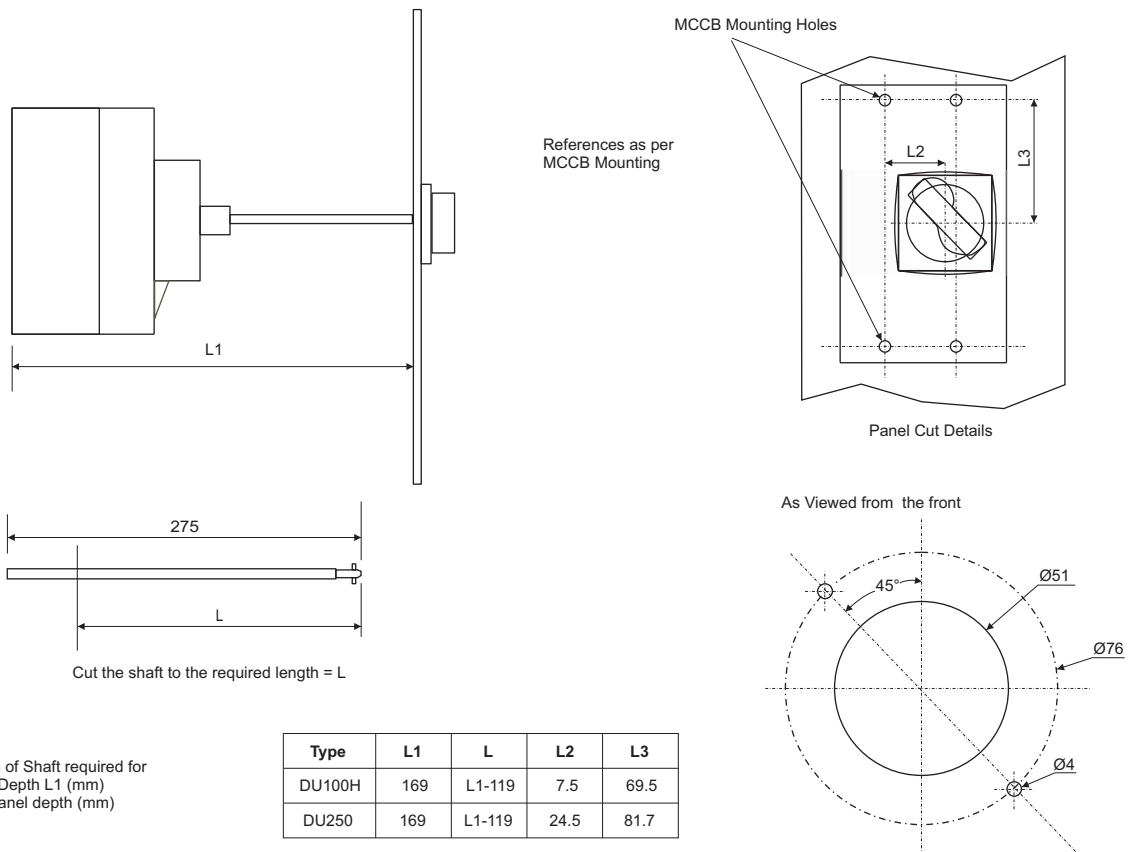


Type	L1	L2	L3	L4	L5
DU100H	96.5	58	52	44	37
DU250	96.5	75	52	56.5	55

L1 = Mounting depth
L2/L3 = Panel cut-out
L4/L5 = Breaker mounting reference

Extended ROM

Handle Assembly Mounting Dimensions - Extended ROM



Type	L1	L	L2	L3
DU100H	169	L1-119	7.5	69.5
DU250	169	L1-119	24.5	81.7

L = Length of Shaft required for
Panel Depth L1 (mm)
L1 = Min. Panel depth (mm)

Cut the shaft to the required length = L

All dimensions are in mm

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48-8-16, Dwarakanagar
Visakhapatnam 530 016
Tel: 0891-6620411-4
Fax: 0891-6620416
e-mail: esp-viz@LNTEBG.com

Product improvement is a continuous process. For the latest information and special applications, please contact any of our offices listed here.

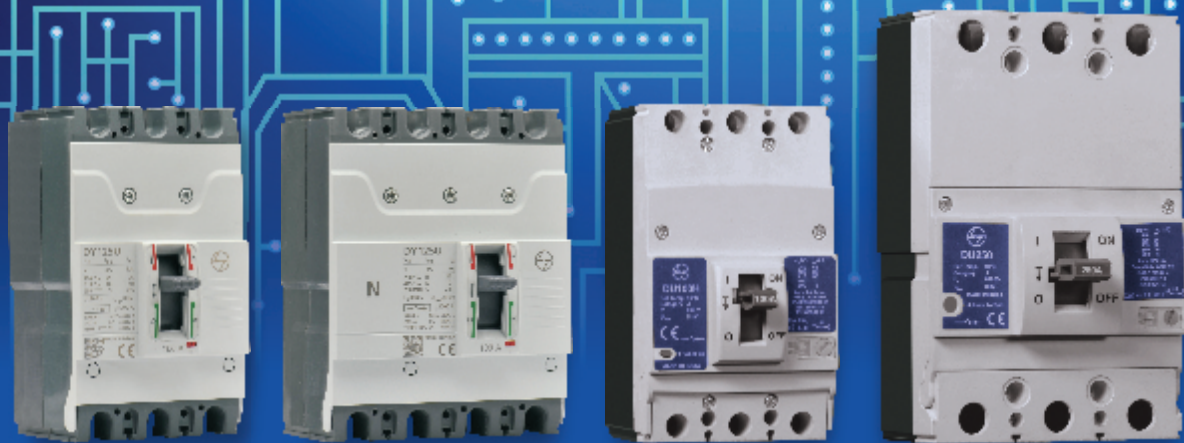


Electrical Standard Products
Larsen & Toubro Limited
Powai Campus, Mumbai 400 072
Customer Interaction Center (CIC)
BSNL / MTNL (toll free) : 1800 233 5858
Reliance (toll free) : 1800 200 5858
Tel : 022 6774 5858
Fax : 022 6774 5859
E-mail : cic@LNTEBG.com
Website : www.LNTEBG.com



DU / DY Range of Moulded Case Circuit Breakers

A Journey of Continuous Upgradation



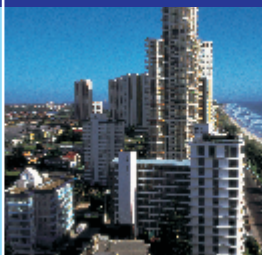
UTILITY



DG SET



BUILDING



UPS



BATTERY BANKS



CAPACITOR



ABOUT US

L&T Electrical & Automation (E&A) is a market leader for electrical distribution, monitoring and control solutions in the low voltage category.

Popular among customers as L&T Switchgear, E&A offers a wide range of low and medium voltage switchgear, motor starters, electrical systems, industrial automation, building electrical solutions, energy management solutions, electrical modernization solutions and metering solutions. Its products and solutions cater to key sectors of economy like industries, utilities, infrastructure, building and agriculture.

E&A's manufacturing operations at Navi Mumbai, Ahmednagar, Vadodara, Coimbatore and Mysuru in India adhere to global practices of excellence and receive support from well-equipped in-house design and development centres as well as tooling facilities that contribute to precision in manufacturing.



Switchgear Factory, Vadodara

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NEW



INTRODUCTION

The DU/DY Series, a new generation of MCCBs, stands out due to its state-of-the-art design, contemporary user-friendly features, ergonomics, aesthetics and compactness.

DU/DY Series complies with the latest standards like IS/IEC 60947-2, IEC 60947-2 & EN 60947-2. The products conform to international standards, carry CE marking and are *KEMA* & CB certified.

The range is specially designed for tropical conditions, ensuring reliable performance at high ambient and humid environments. The range can satisfy the most demanding system requirements.

The DU/DY Series, having a wide range of accessories, ensures operational safety, reliability and versatility.

MCCB ENCLOSURE

New Range of MCCB enclosures, Size I Enclosure suitable for DU100D/DU125D/DU100H/DU125H/DY125U and Size II Enclosure suitable for DU250/DU250C. These standalone enclosures not only provides ample space for cable termination but are also superior in aesthetics.

- Conforms to IEC 62208, IEC 62262 and IEC 60529
- Common Enclosure for 3P/4P MCCBs
- RoHS compliant
- IP30 Protection & IK08 Protection
- Inbuilt Neutral Link for TPN systems
- Mounting Holes on the back plate
- Louvers for better heat dissipation

Enclosure	Height (mm)	Width (mm)	Depth (mm)
Size I	543	198	97
Size II	830	337	111

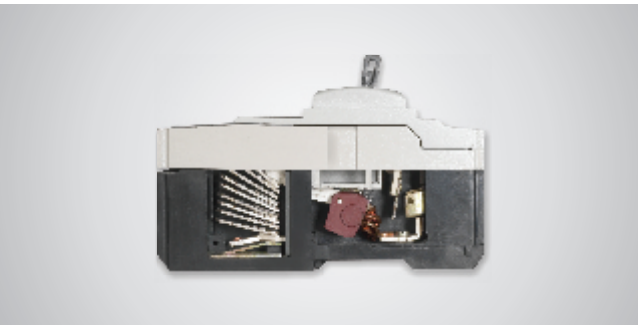


Size I Enclosure

Size II Enclosure

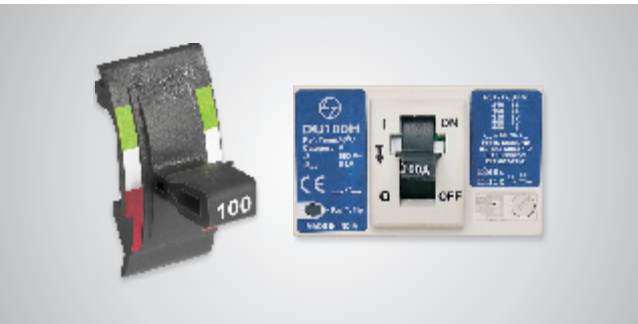
Separate cable gland box NOT required

Common Enclosure for 3P & 4P MCCBs



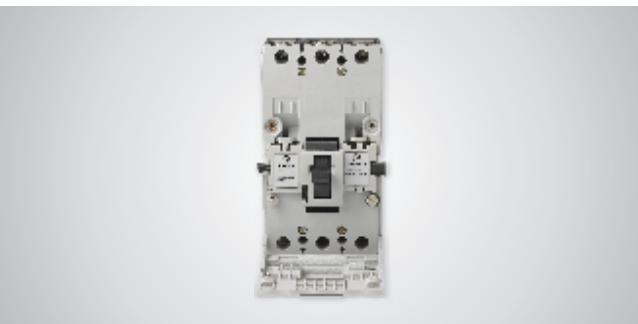
Technology

- Current Limiting MCCBs: The unique speed contact system with current limiting feature accelerates the opening of contacts during short circuit, resulting in very low let-through energy
- No load line bias: Either side of MCCB terminal can be used as load or line
- MCCB Mechanism: Quick make, quick break & trip free mechanism



Ergonomic Design & User Friendliness

- Knob designed for better grip
- Color indication of ON/TRIP/OFF
- Current rating on the knob*
- Overload adjustment from front*
- Easy ON/OFF/RESET operations



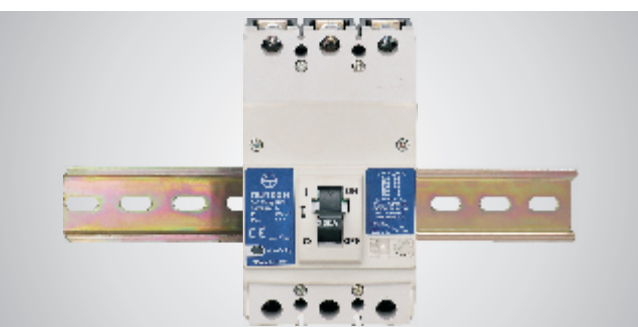
Safe to Use

- Suitable for Isolation
- Finger proof terminals
- Phase barriers supplied along with MCCBs to enhance the clearance between the phases
- Lockable shroud on thermal knob to prevent unauthorized operation*
- CE marked range
- Double Insulation



Accessories

- Auxiliary contacts
- Trip alarm contacts
- Combined Auxiliary + Trip alarm contacts*
- Shunt release
- Under Voltage release*
- Direct & Extended ROM with Padlocking
- Spreader links
- Size I & Size II Enclosure
- GF module for earth fault protection*
- All internal accessories are Snap fit type



Compact & Easy to Install

- Compact size
- Common depth upto 250A
- 46mm door cutout upto 250A

* For DU100D / DU125D / DU100H / DU125H / DU250C / DU250 / DU400N

DY Series

NEW

Technical Parameters		Specifications
Type Designation		DY125U
No. of Poles		2/3/4
Rated Current	I_n (A)	16, 20, 25, 32, 40, 50, 63, 80, 100, 125
Impulse Withstand Voltage	U_{imp} (kV)	8
Rated Operational Voltage	U_o (V AC)	415
	U_o (V DC)	250
Rated Insulation Voltage	U_i (V AC)	800
Operational Frequency (Hz)		50 / 60
Utilisation Category		A
Reference Temperature		40 °C
Operating Temperature		-5 °C to + 55 °C
Standard		IS60947-2, IEC60947-2 & EN60947-2
I_{cu} (kA)	240 V AC	25
	415 V AC	10
	250 V DC [#]	10
Rated Service S. C. Breaking Capacity (I_{cs})		100% of I_{cu}
Mechanical Life	No. of operations	30000
Electrical Life	No. of operations	8000 ^{\$}
IP Protection (from front side)		IP40
Pollution Degree		III
Type of Release		Thermal - Magnetic
Thermal		Fixed
Magnetic		Fixed ($10I_n$)*
Terminal Capacity (without spreaders)		
Cables with Lug (mm ²)		50
Link (mm)		≤17
Overall Dimensions		
Width (3/4 Pole) (mm)		75/100
Height (mm)		130
Depth (mm)		60
Weight (2/3/4 Pole) (kg)		0.60 / 0.67 / 0.92

Note: 2 Pole in 3 Pole frame size

\$ 5000 for 125 A

* 320A for 16A, 20A, 25A

Any 2 poles can be used. One for "+" polarity & other for "-" polarity.

DU Series

Technical Parameters			Specifications				
Type Designation			DU100D/DU125D	DU100H/DU125H	DU250C	DU250	DU400N
No. of Poles			3/4	2/3/4	3/4	2/3/4	2/3/4
Rated Current	I_n (A)	20, 25, 32, 40, 50, 63, 80, 100, 125	20, 25, 32, 40, 50, 63, 80, 100, 125	160, 200, 250		320, 400	
Impulse Withstand Voltage	U_{imp} (kV)	8					8
Rated Operational Voltage	U_o (V AC)	415					690
Rated Insulation Voltage	U_i (V AC)	800					800
Operational Frequency (Hz)			50 / 60				
Utilisation Category			A				
Reference Temperature			40 °C				
Operating Temperature			-5 °C to + 55 °C				
Standard			IS/IEC60947-2, IEC60947-2 & EN60947-2				
I_{cu} (kA)	240 V AC	32	65	65	65	65	
	415 V AC	18	30	25	36	50	
	250 V DC (2P in series) L/R<15 msec	-	15	-	15	25	
	250 V DC (3P in series) L/R<15 msec	15	20	15	20	30	
	500 V DC (3P in series) L/R<15 msec	10	15**	10	15**	20***	
Rated Service S. C. Breaking Capacity (I_{cs})		100% of I_{cu}	50% of I_{cu}				
Single Stage Capacitor Rating at 415V, 50Hz (kVAr)		upto 50 kVAr* (for 100A) & 65 kVAr* (for 125A)			upto 95 kVAr*		upto 150 kVAr*
Mechanical Life	No. of operations	40000			15000		10000
Electrical Life	No. of operations	8000 [§]			5000 [§]		4000
IP Protection (from front side)		IP40					
Pollution Degree		III					
Type of Release		Thermal - Magnetic					
Thermal		Variable (0.8 - 1.0 I_n)					
Magnetic		Fixed (9 I_n)					
Terminal Capacity (without spreaders)							
Cables with Lug (mm²)		35			120		185
Link (mm)		≤17			≤26		≤32
Overall Dimensions							
Width (mm)		75/100	75/75/100	105/140		140/184	
Height (mm)		130			165		205
Depth (mm)		60			60		110.5
Weight (2/3/4 Pole) (kg)		0.85/1.1	0.6/0.85/1.1	1.55/2	1.3/1.55/2		4/5

* Please use Capacitor Duty Contactors with MCCB for Capacitor Applications. Capacitor ratings mentioned are with MO C only.

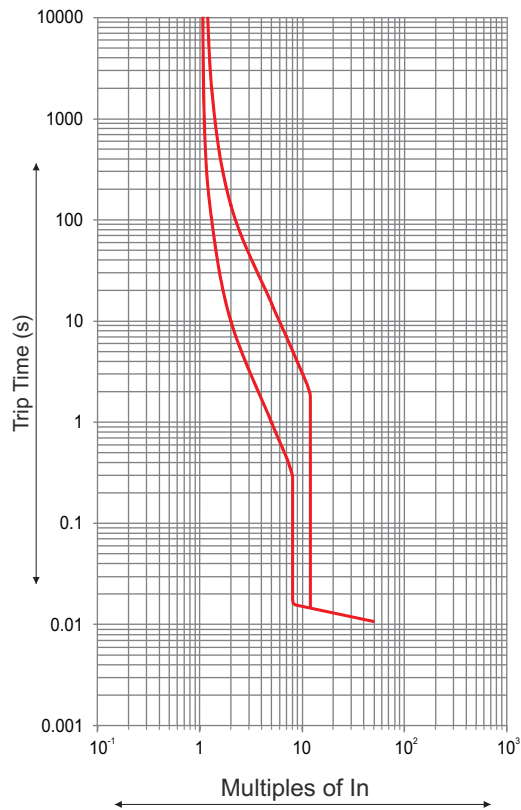
** 10 kA at 500V d.c. (2P in series) L/R<15 msec

*** 15kA at 500V d.c. (2P in series) L/R<15 msec

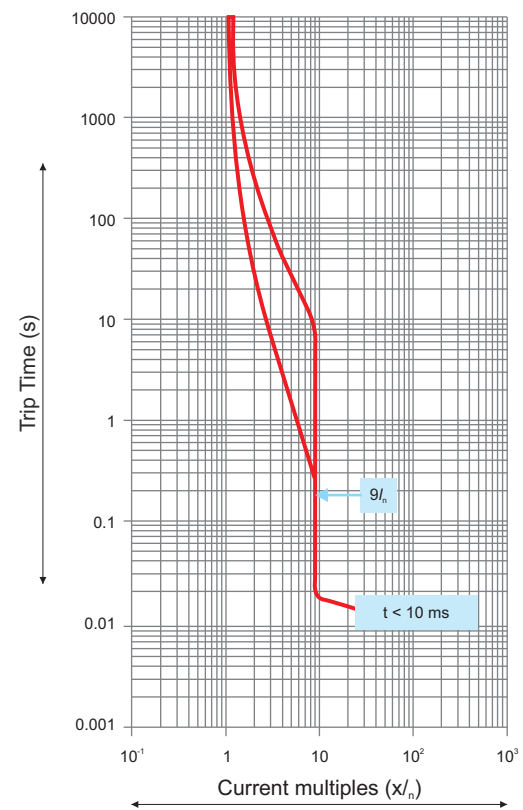
§ 4000 for DU125D/DU125H, 3000 for 250A DU250/DU250C

Note : 2P MCCBs are available upto 100A in DU100H

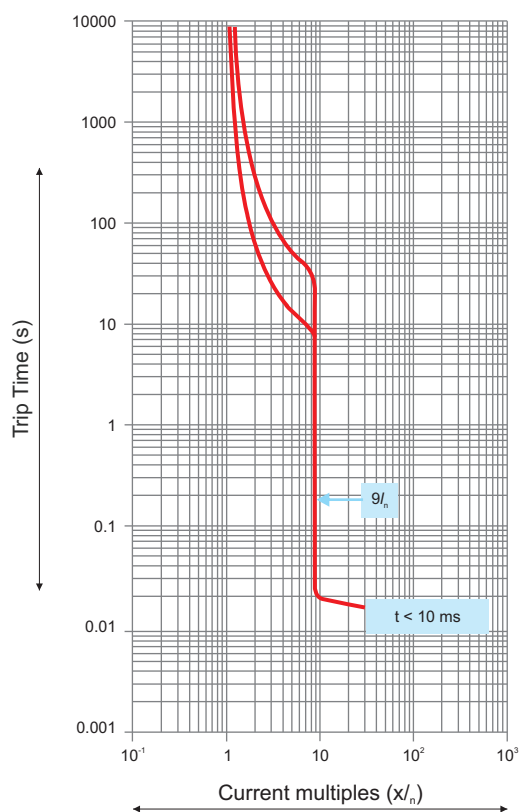
DY125U



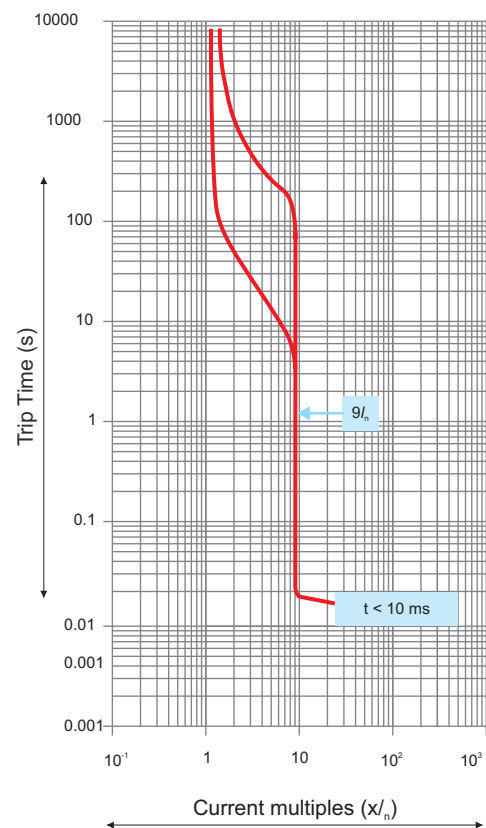
DU100D / DU125D / DU100H / DU125H



DU250C / DU250

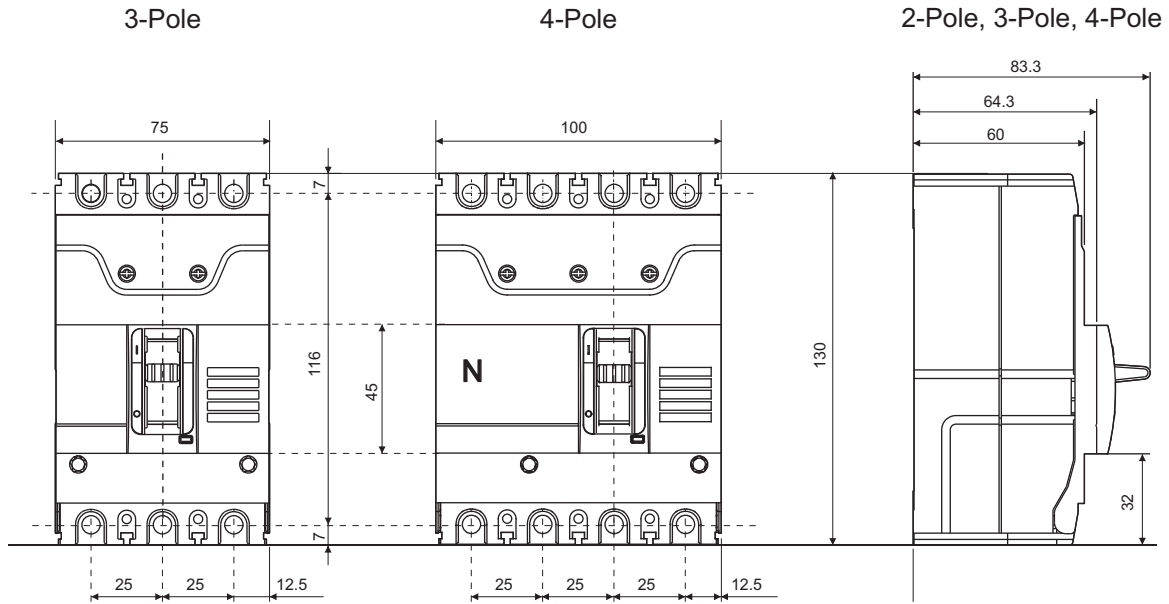


DU400N

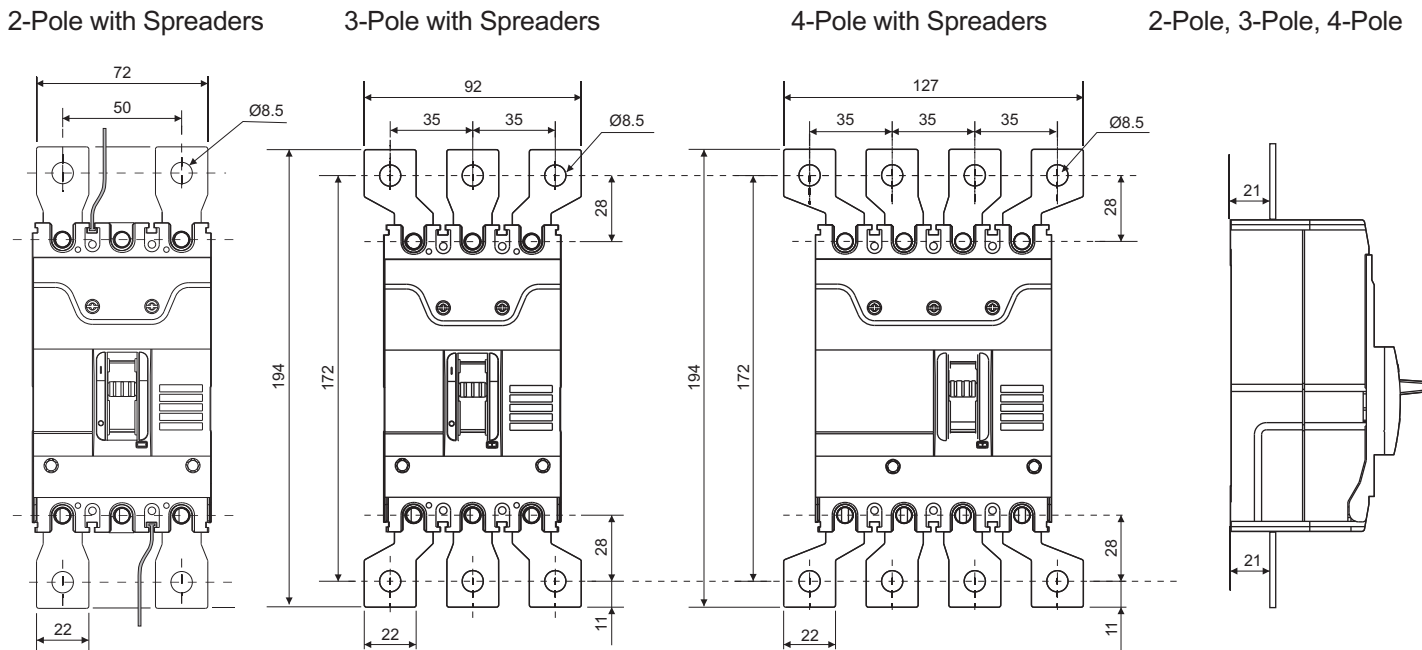


Note : All Curves are I_r (rated current) based till overload zone.

DY125U



DY125U With Spreader

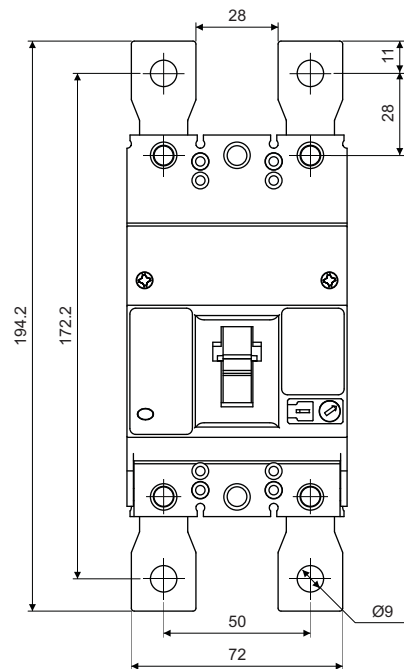


Link width (without spreader) : $\leq 17\text{mm}$
 Link width (with spreader) : 25mm

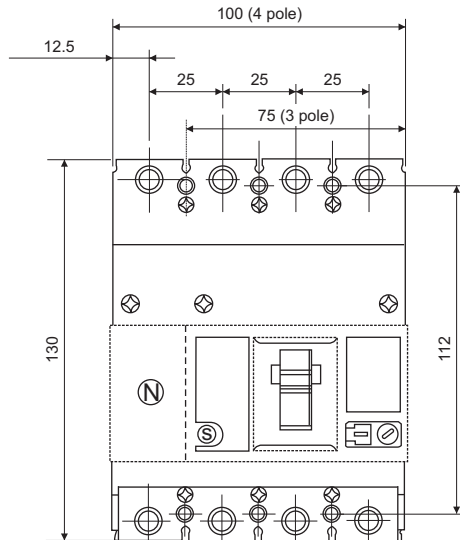
Note: Spreader links are available as spare.
 It is recommended to use spreader links for enhancing termination capacity.
 Please use 125A MCCB with its recommended Spreader only.

DU100D / DU125D / DU100H / DU125H

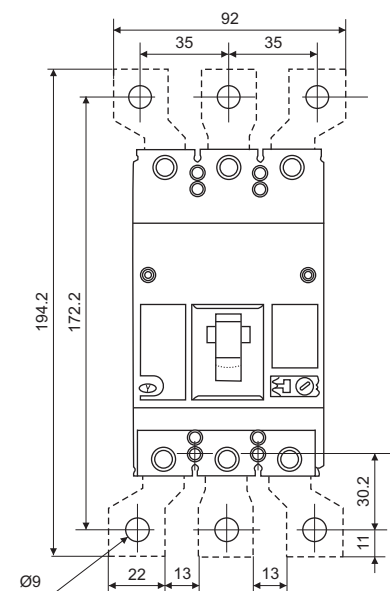
2-Pole



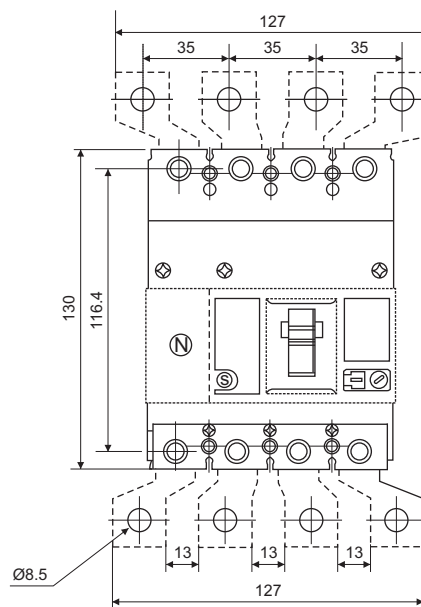
3-Pole, 4-Pole



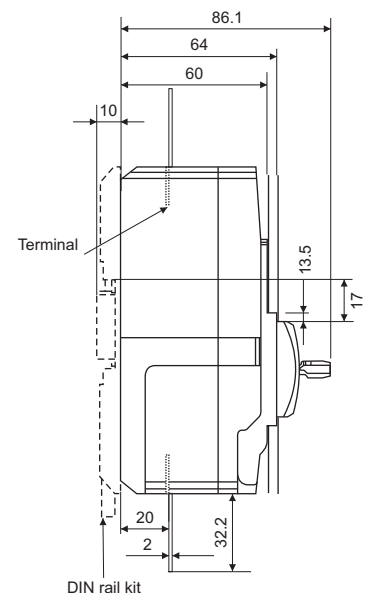
3-Pole with Spreaders



4-Pole with Spreaders



2-Pole, 3-Pole, 4-Pole



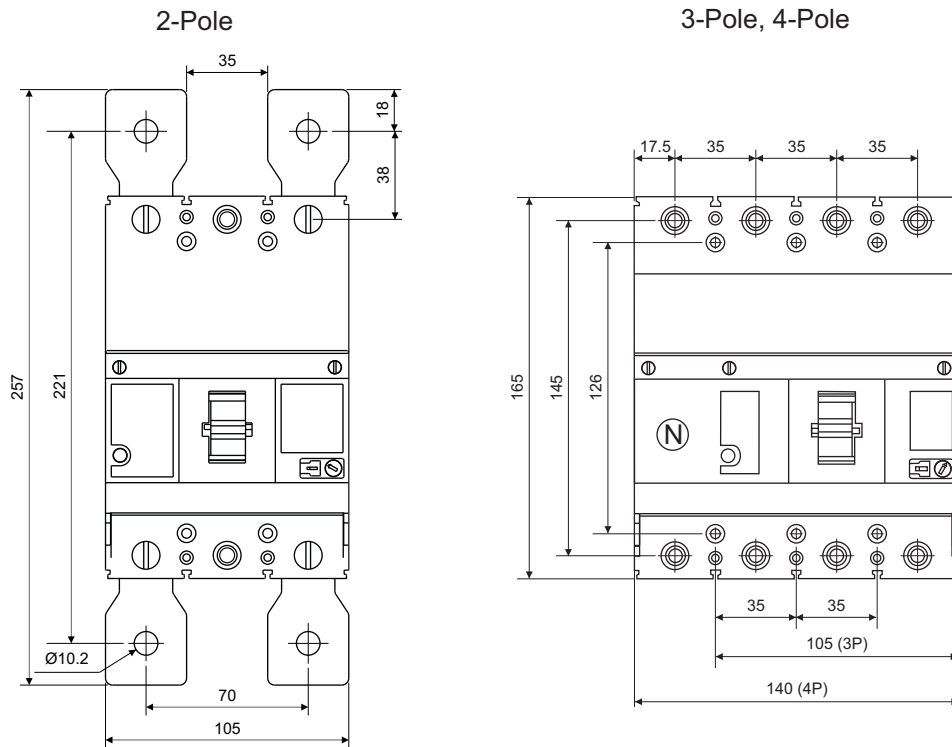
Link width (without spreader) : $\leq 17\text{mm}$
 Link width (with spreader) : 22mm

Note: Spreader links are available as spare.

It is recommended to use spreader links for enhancing termination capacity.

Please use 125A MCCB with its recommended Spreader only.

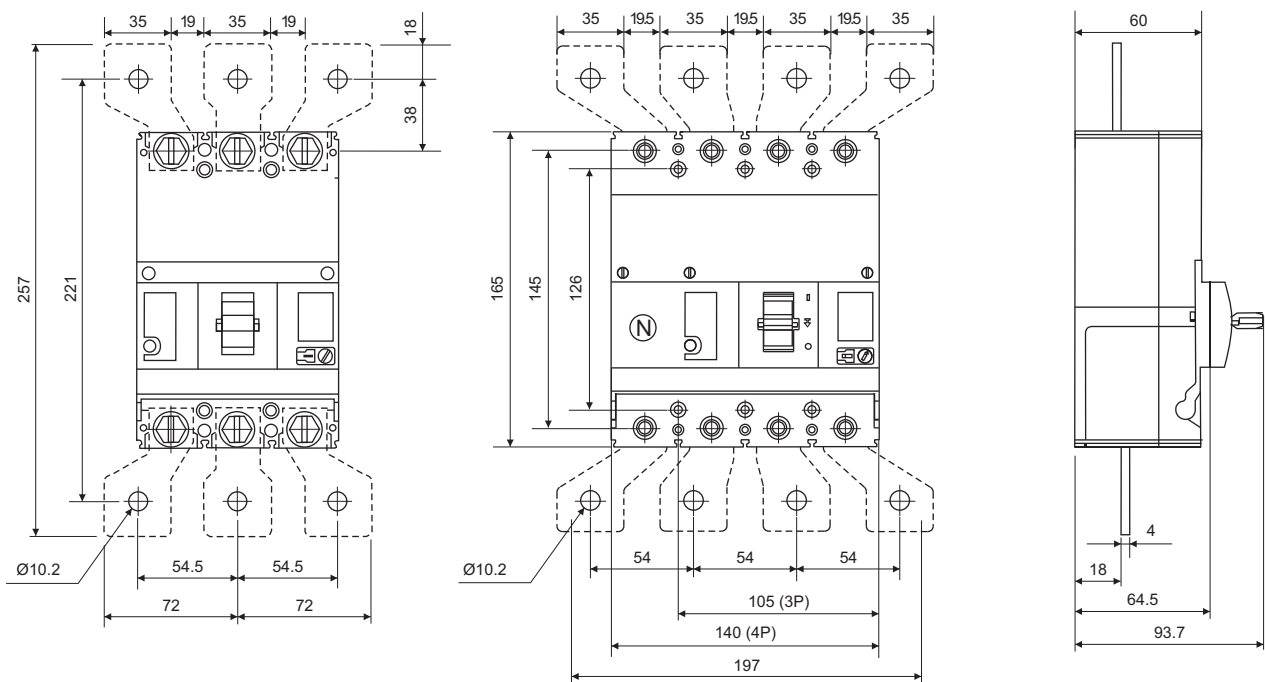
DU250C / DU250



3-Pole with Spreaders

4-Pole with Spreaders

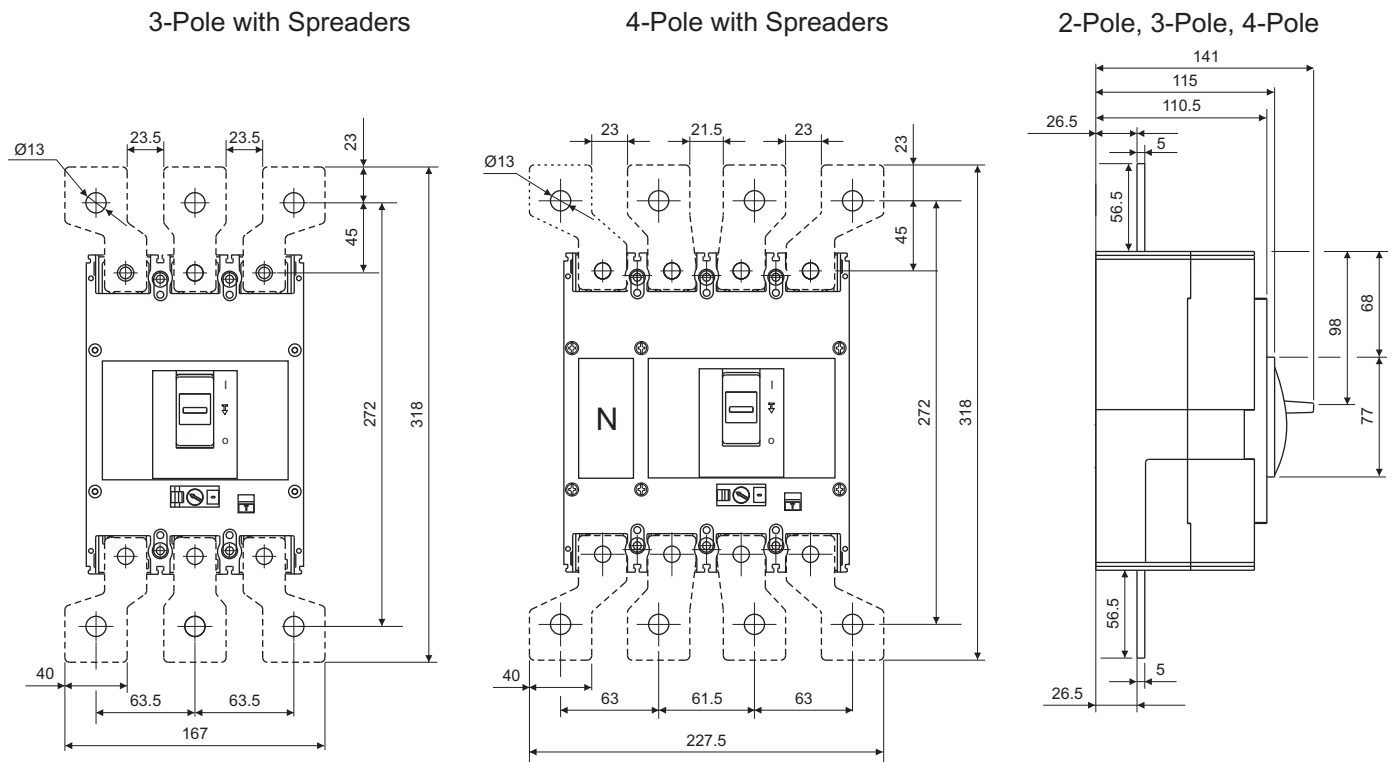
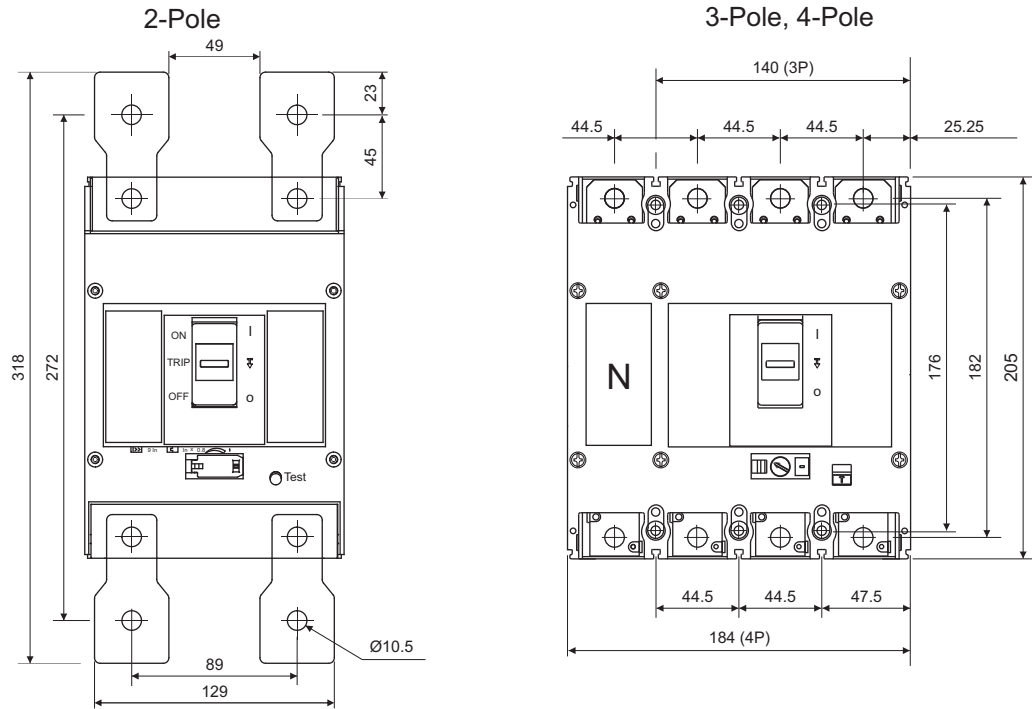
2-Pole, 3-Pole, 4-Pole



Link width (without spreader) : ≤ 26 mm
 Link width (with spreader) : 35 mm

Note: Spreader links are available as spare. It is recommended to use spreader links for enhancing termination capacity.

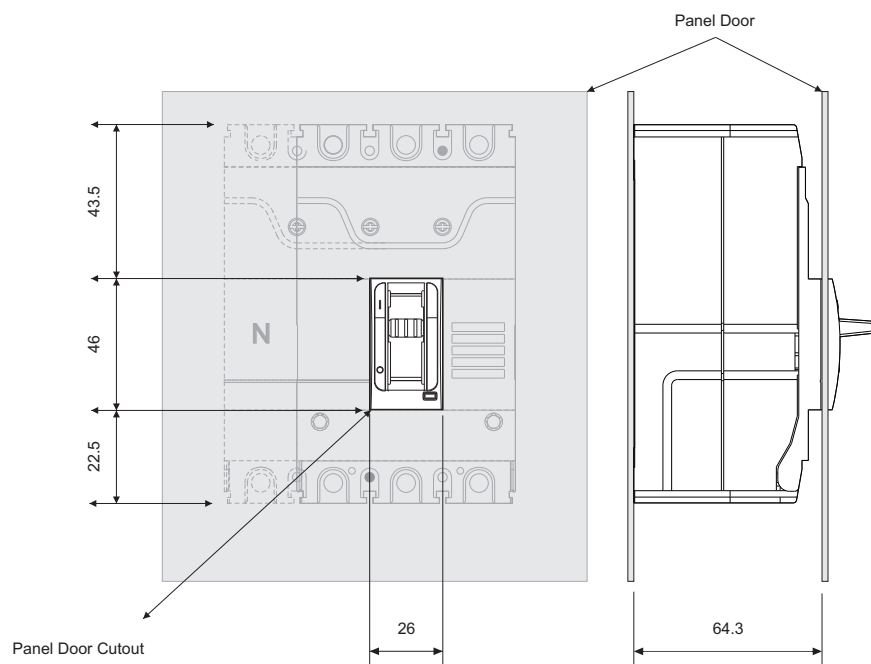
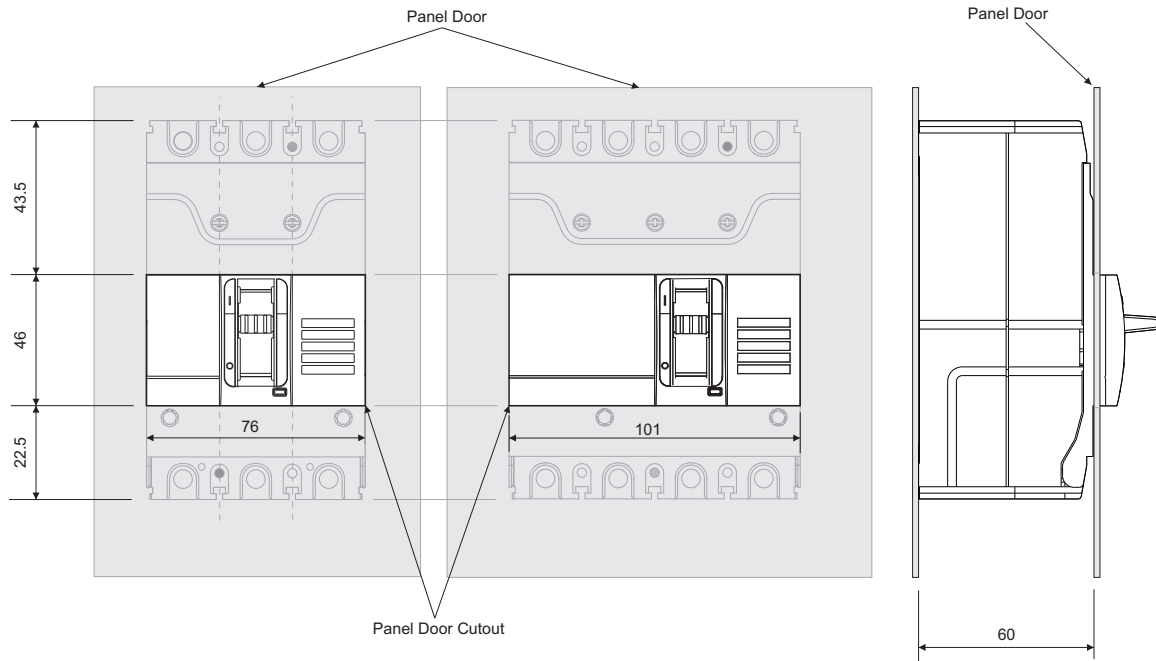
DU400N



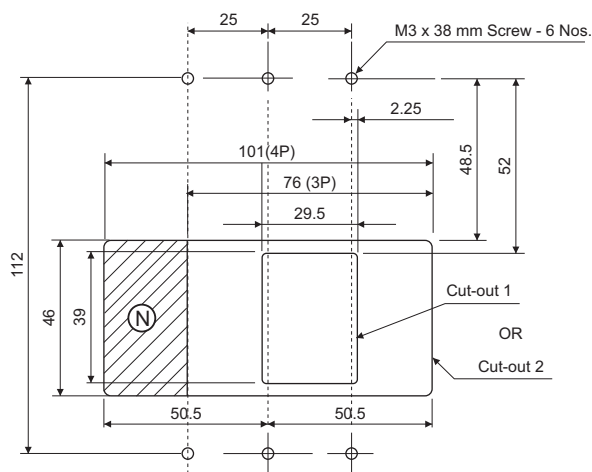
Link width (without spreader) : ≤ 32 mm
 Link width (with spreader) : 40 mm

Note: Spreaders are available as spare. It is recommended to use spreader links for enhancing termination capacity.

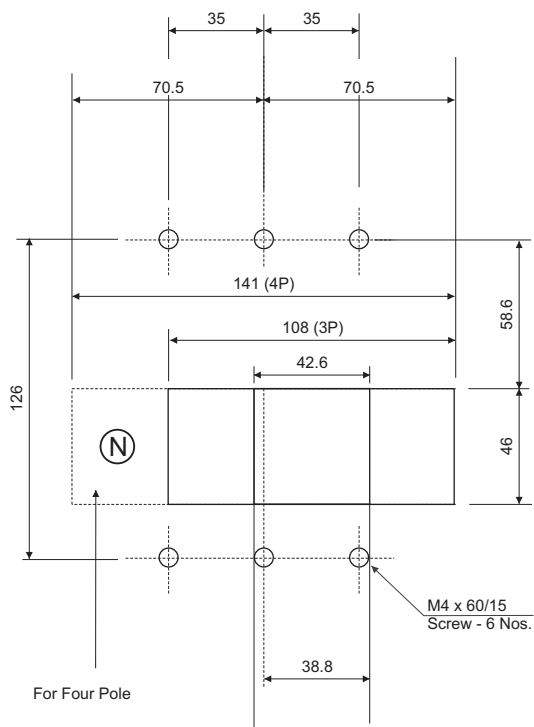
DY125U



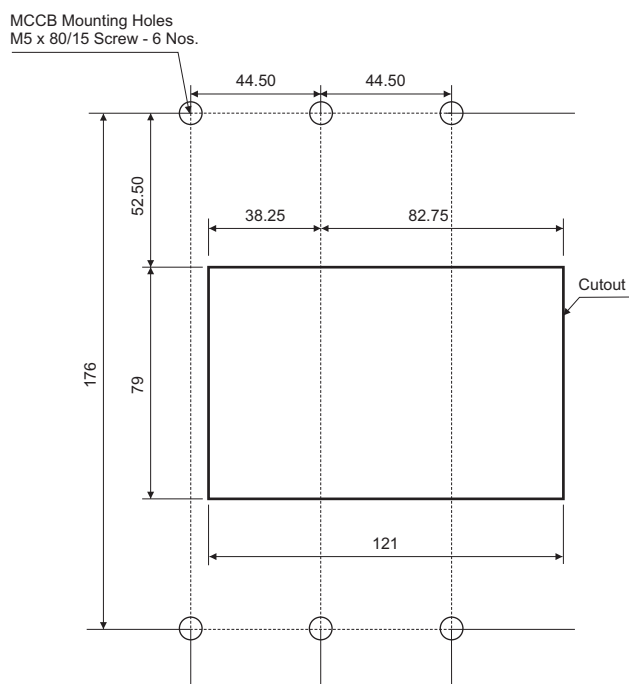
DU100D / DU125D / DU100H / DU125H



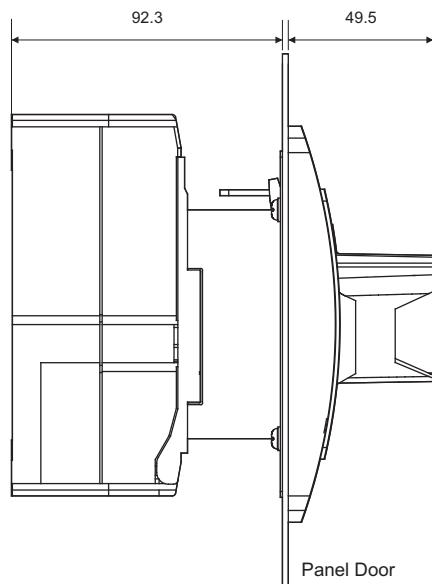
DU250C / DU250



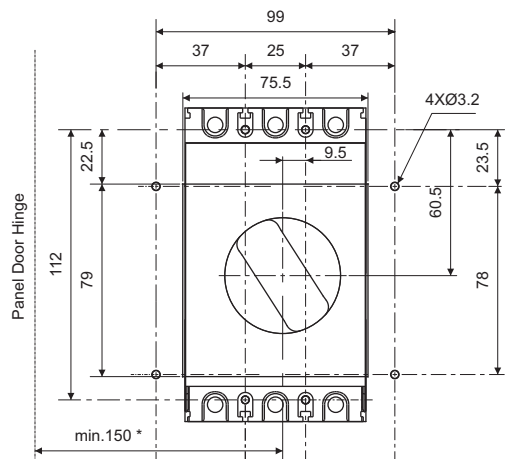
DU400N



Direct ROM (DY125U)

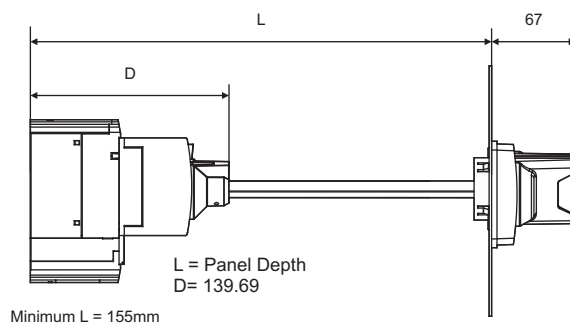


Panel Door Cut Out Dimensions

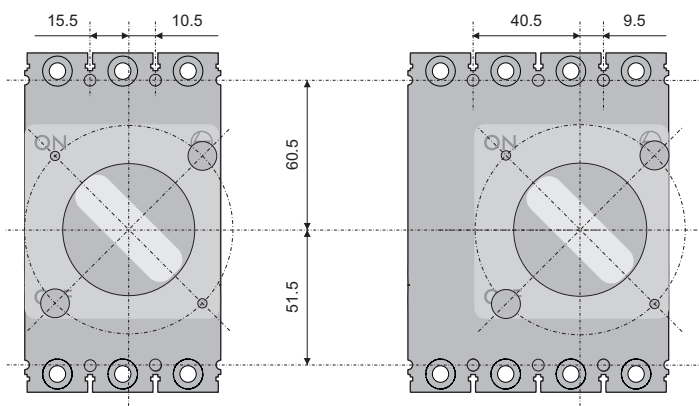


* Minimum hinge radius for Horizontal/Vertical MCCB installation

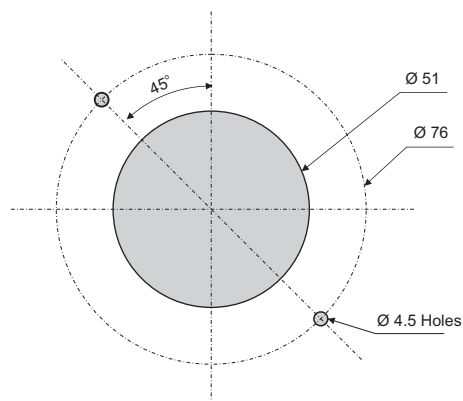
Extended ROM (DY125U)



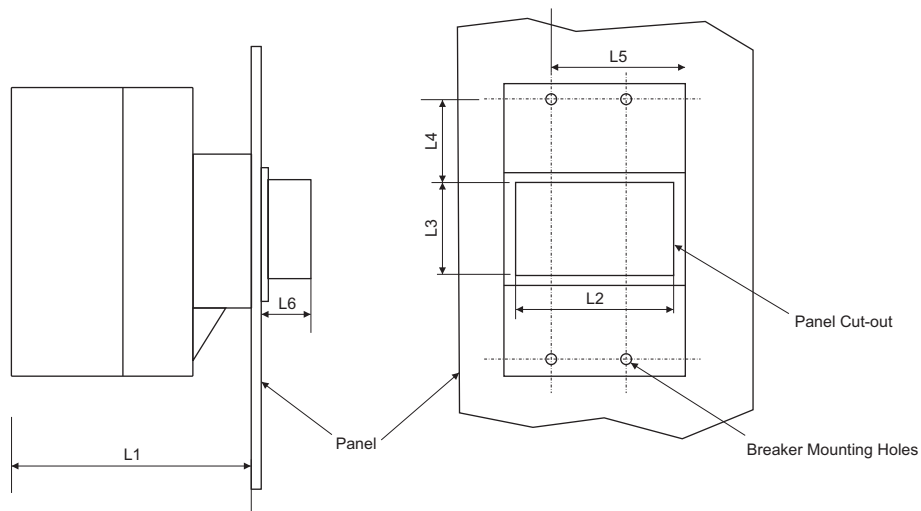
Vertical & Horizontal References with Regards to MCCB Mounting



Panel Cut Details as Viewed From the Front



All dimensions are in mm

Direct ROM**(DU100D / DU125D / DU100H / DU125H / DU250C / DU250 / DU400N)**

Type	L1	L2	L3	L4	L5	L6
DU100D/DU125D/DU100H/DU125H	96.5	58	52	43.5	37	85
DU250C/DU250	96.5	73	52	56.5	54	77
DU400N	145	121	87	41	82	95

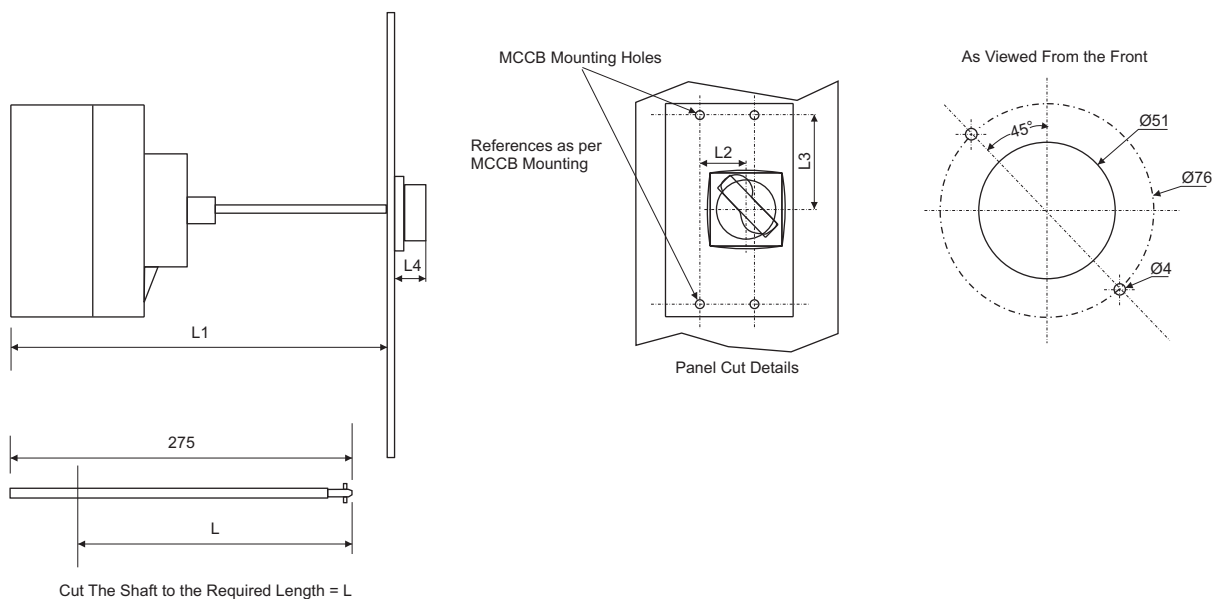
L1 = Mounting Depth

L2/L3 = Panel Cut-out

L4/L5 = Breaker Mounting Reference

L6 = Depth outside the panel

Note : For DU100/DU125U/DU100B Direct ROM dimensions please refer product insert

Extended ROM**(DU100D / DU125D / DU100H / DU125H / DU250C / DU250 / DU400)**

Cut The Shaft to the Required Length = L

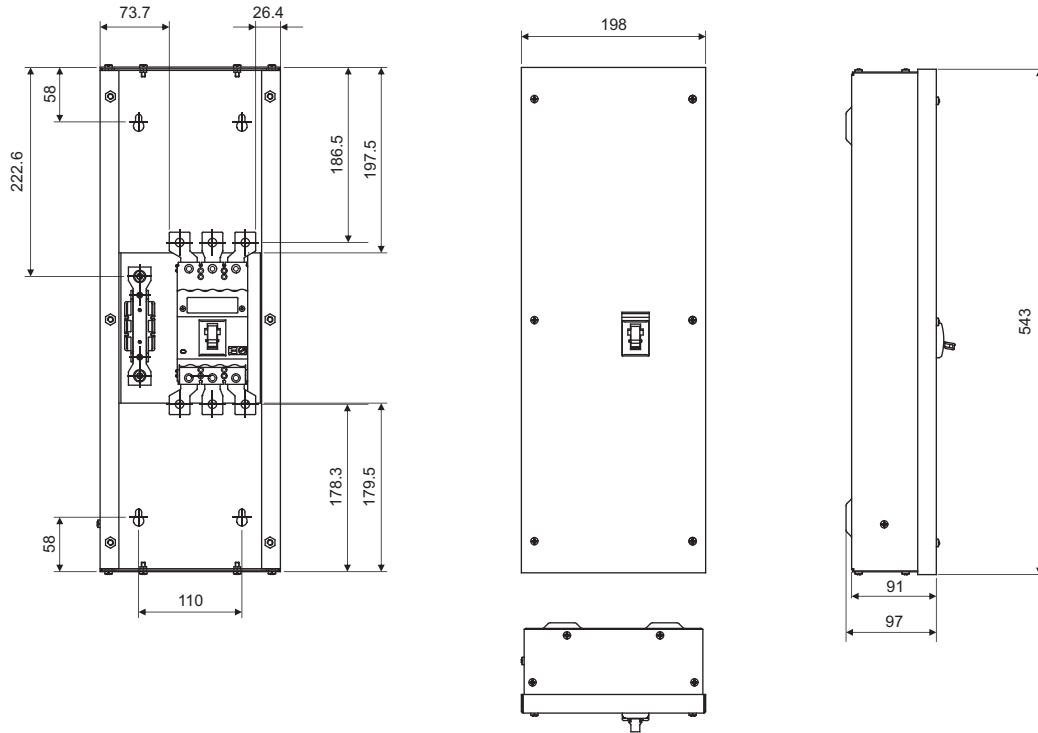
Type	L1	L	L2	L3
DU100D/DU125D/DU100H/DU125H	169	L1-119	7.5	69.5
DU250C/DU250	169	L1-119	24.5	81.7
DU400N	233	L1-183	39	93

L = Length of Shaft required for
Panel Depth L1 (mm)

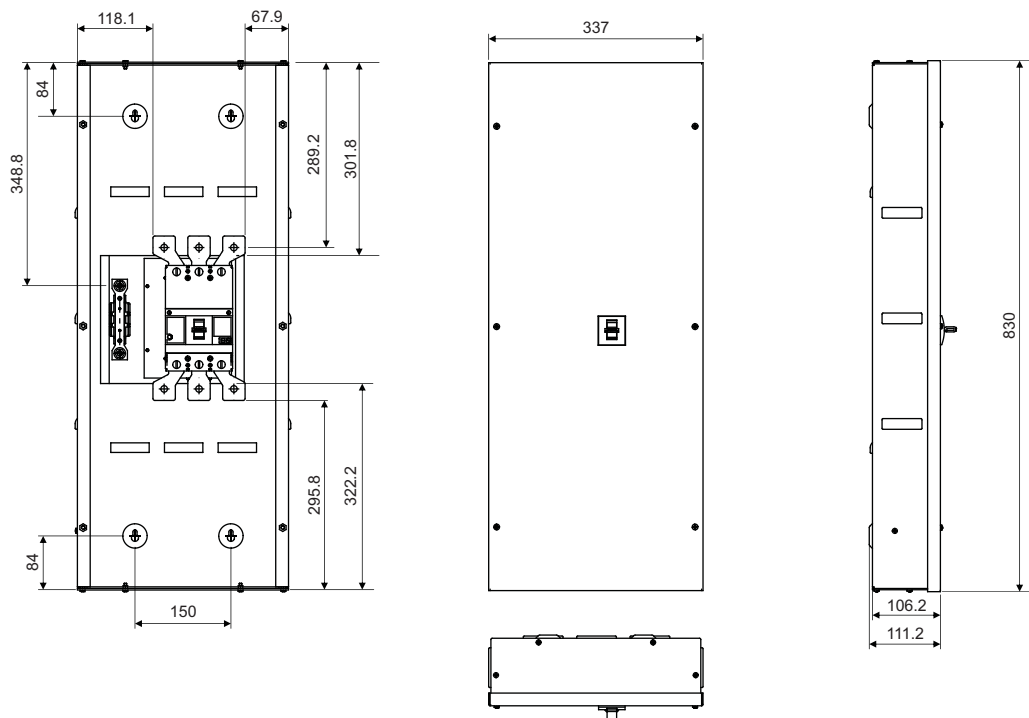
L1 = Min. Panel depth (mm)

L4 = Depth outside the panel

Size I Enclosure for DU100D/DU125D/DU100H/DU125H/DY125U



Size II Enclosure for DU250/DU250C



Ground Fault Modules are of Types GF1, GF2 and GF11. These modules are to be used with MCCBs for ground fault protection. The principle of operation is based on detection of the residual current in the system. They combine safety and versatility, conforming to the high performance standards, the characteristic of all E&A products.



Ground Fault Module GF1

GF1 is suitable upto 200A MCCBs



Ground Fault Module GF2

GF2 is suitable upto
200A to 400A MCCBs



Ground Fault Module GF11

GF11 is suitable upto 800A MCCBs

Features

- Compact in size
- Solid state design
- Built-in moulded CBCT for GF1 & GF2. External CTs are to be used for GF11
- Suitable for both 3 Phase 3 wire & 3 Phase 4 wire systems. In case of 3 phase 4 wire system, the natural cable/twisted link should also be passed through the CBCT along with the 3 Phase links / cables
- Built-in test facility
- Selection facility for nominal current rating (I_n)
- Earth fault setting is adjustable from 10% to 50% of set current
- Selectable trip times (100ms, 200ms)
- Manual reset for positive fault acknowledgment
- Potential free NO contact to trip MCCB (through 240V shunt release)
- Window dimensions suitable for Cable / Link connection in GF1 and GF2

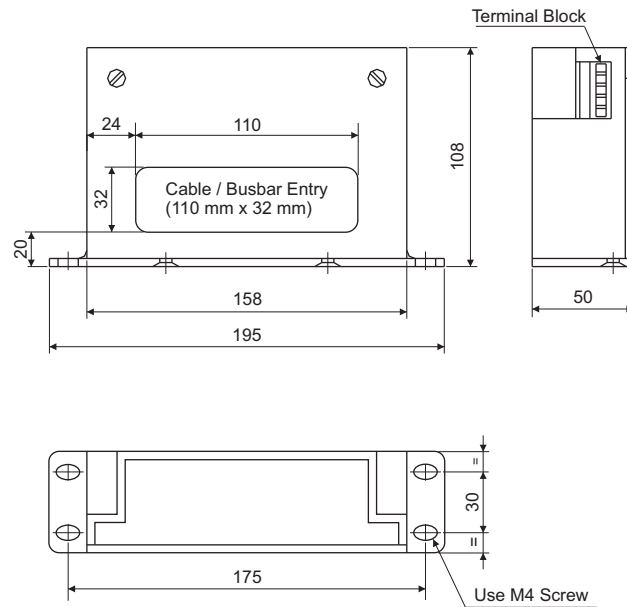
Note: MCCBs need to be fitted with 110V / 240V as shunt release for Ground Fault Module operation.

Technical Data

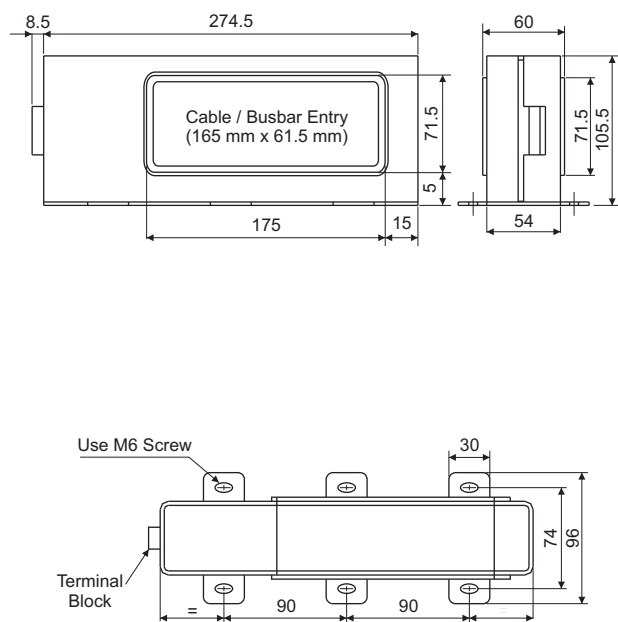
Specification	Type GF1 / GF2 / GF11
Current Setting Range, I_s ($I_s = x I_n$)	10% to 50% I_n in step of 10%
Auxiliary Supply	240V AC $\pm 20\%$
Time Delay (ms)	100 / 200ms Field selectable
Pick-up Accuracy	$\pm 10\% I_s$
Output Contact	1 NO contact manual reset type contact rating 5A 240V AC
Indication	a) Power on LED b) Trip LED (manual reset)
Operating Temperature	+10°C to +55°C
Insulation	2kV 50Hz for one minute across independent circuit 1kV 50Hz for one minute across open contacts
Mounting	Baseplate mounting type
Window for Cable / Busbar Entry (mm ²)	GF1 - 110 x 32 GF2 - 165 x 61.5
Weight (kg)	GF1 - 1.2, GF2 - 2.2, GF11 - 0.9

Note : Please check GF module window size & MCCB busbar width with spreaders / without spreaders before selection of GF Module.
Please contact nearest branch office for further information.

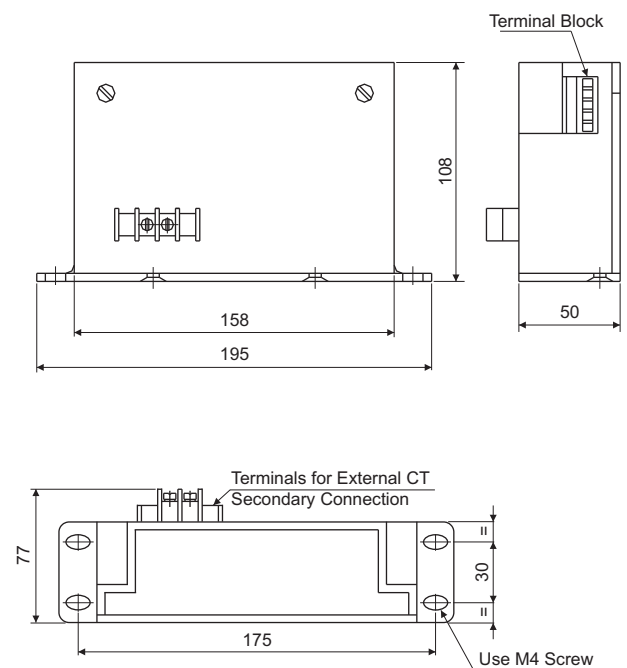
GF1



GF2



GF11



Get the Switchgear Training Edge!

Aimed at maximizing productivity, conserving energy, minimizing costs and enhancing safety, our Electrical & Automation training programmes have benefitted over 2.25 Lakh professionals in the last 32 years. These training programmes are highly beneficial as they provide right exposure and impart knowledge on selection, installation, maintenance and testing of Electrical & Automation Products.

So gain the advantage and go the extra mile with:

- 14 courses on contemporary topics
- Courses applicable to all switchgear brands
- Training Centers in Pune, Lucknow, Coonoor, Vadodara, Delhi & Kolkata
- Blend of theory and practical experience

The typical training programmes cover:

- Low Voltage & Medium Voltage Switchgear
- Switchboard Electrical Design
- AC Drives & Building Management Solutions
- Protective Relays & Earthing
- Power Quality Solutions

Please contact any of the training centres for participation and detailed training programme schedule.



Pune

L&T Electrical & Automation
Switchgear Training Centre,
T-156/157, MIDC
Bhosari, Pune - 411 026
Tel: 020 2712 0037 / 2712 0653
Fax: 020 2712 2933
E-mail: stc-pune@Lntebg.com



Lucknow

L&T Electrical & Automation
Switchgear Training Centre,
C - 6 & 7, UPSIDC
P. O. Sarojinagar, Lucknow - 226 008
Tel: 0522 247 6015 / 97944 54455
Fax: 0522 247 6015
E-mail: stc-lucknow@Lntebg.com



Coonoor

L&T Electrical & Automation
Switchgear Training Centre,
Ooty-Coonoor Main Road
Yellanahalli P.O., The Nilgiris - 643 243
Tel. : 0423 251 7107
Fax : 0423 251 7158
E-mail: stc-coonoor@Lntebg.com



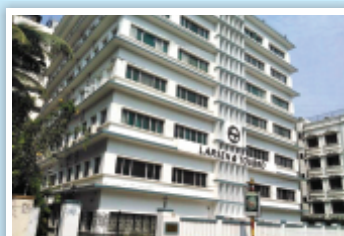
Vadodara

L&T Electrical & Automation
Switchgear TrAZaining Centre
Behind L&T Knowledge City,
Near Village Ankhol,
Vadodara - 390019
Tel: 0265 2457805
E-mail: stc-vadodara@Lntebg.com



Delhi

L&T Electrical & Automation
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32, Shivaji Marg,
Near Motinagar Metro Station,
New Delhi - 110015
Tel: 011 41419515 / 41419695 / 41419500
Fax: 011 41419600
E-mail: stc-delhi@Lntebg.com



Kolkata

L&T Electrical & Automation
Switchgear Training Centre
4th Floor, 3B, Shakespeare Sarani,
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Product improvement is a continuous process. For the latest information and special application, please contact any of our offices listed here.
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