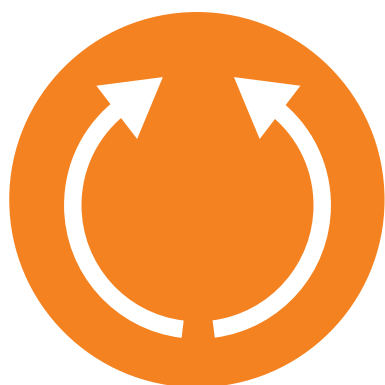
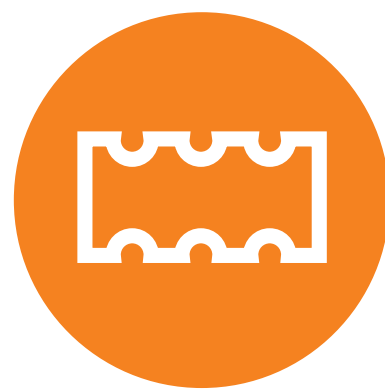


# Moulded case circuit breakers







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Protection Releases	2
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DN4



DN3



DN2

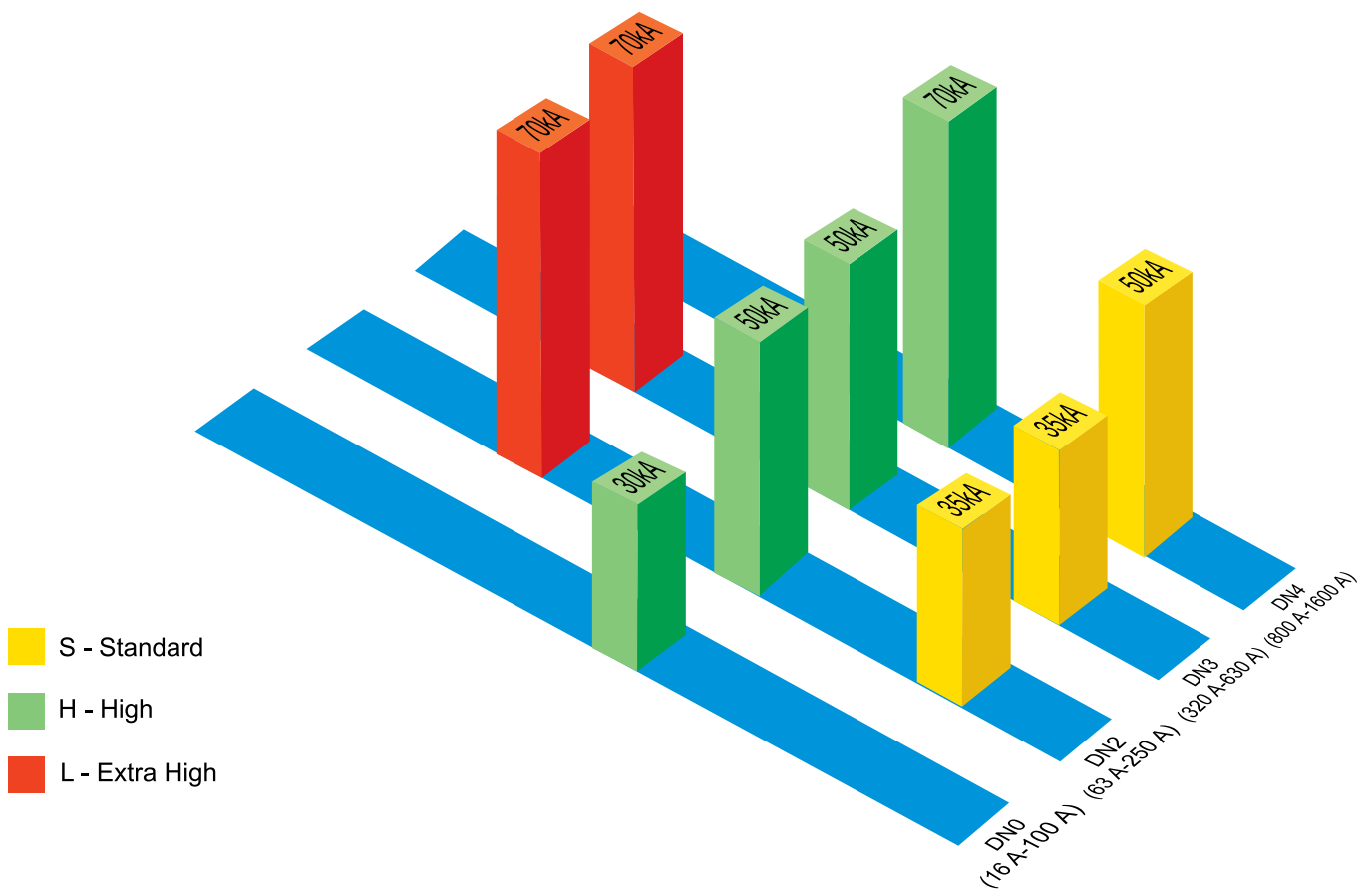


DN0



## NASLOV PODSKUPINE

DN0	
Rated Current	20, 25, 32, 40, 50, 63, 80, 100 A
Release	Thermal-Magnetic
DN2	
Rated Current	63, 80, 100, 125, 160, 200, 250 A
Release	Thermal-Magnetic
	40, 63, 100, 160, 250
	Microprocessor
DN3	
Rated Current	320, 400, 500, 630 A
Release	Thermal-Magnetic
	63, 160, 250, 400, 630 A
	Microprocessor
DN4	
Rated Current	800, 1000, 1250, 1600 A
Release	Microprocessor



## PROTECTION RELEASES



### Thermal-Magnetic Release

- Features of Thermal-Magnetic Release
- Adjustable protection overload settings
- Adjustable protection short circuit settings
- True RMS sensing
- No contact with live parts

Protection	Settings
Overload	80% - 100% I <sub>r</sub>
Short circuit*	3 - 6 I <sub>n</sub>
Earth fault	External



\* Setting from 6 - 10 I<sub>n</sub> available on request

### Microprocessor Release

- Features of RC10 Microprocessor Release
- Overload protection with
- Short circuit protection with selectable time delay
- Instantaneous over ride protection
- Earth fault protection with selectable time delay
- Port for release testing
- Push to trip button
- Power ON LED
- Self powered /
- Protection mode can be ON / OFF
- True RMS sensing



RC10		
In (A)		From 63 to 1600 A
Overload (Phase)		
Current setting, I <sub>r</sub> (I <sub>r</sub> = X I <sub>n</sub> )		0.4 to 1.0 in steps of 0.1
Time delay, t <sub>r</sub> (Inverse)		10 sec at 6 I <sub>r</sub>
Protection mode		On / Off
Overload (Neutral)		
Current setting, I <sub>n</sub> (I <sub>n1</sub> = X I <sub>r</sub> )		0.5 to 1.0 in steps of 0.25
		Inverse 10sec at 6 I <sub>n1</sub> / Fixed 200ms
		On / Off
Short Circuit		
Current setting, I <sub>s</sub> (I <sub>s</sub> = X I <sub>r</sub> )		1.5, 4, 6 & 8 I <sub>r</sub>
Time delay, t <sub>s</sub>		10 / 100 msec.
Protection mode		On / Off
Instantaneous Over ride		
Current setting, I <sub>p</sub>		12 I <sub>n</sub> upto 400 A
		8 I <sub>n</sub> for 630 to 1600 A
Earth Fault		
Current setting, I <sub>g</sub>		0.2 to 0.5 I <sub>n</sub> steps of 0.1
Time delay, t <sub>g</sub>		100 / 200 msec
Protection mode		On / Off



## PROTECTION RELEASE

### Microprocessor Release

#### Features of RC20 - Communication Capable

- 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<sup>2</sup>t protection
- Neutral protection
- Cold load protection
- User friendly navigation system
- Selfpowered
- MODBUS RTU protocol

RC20	
Rated Current In A	From 63 to 1600 A
Overload (Phase)	
Current setting (A), I <sub>r</sub> (I <sub>r</sub> = xI <sub>n</sub> )	0.4 to 1.0 in steps of 0.1
Current setting (A), I <sub>r</sub> (I <sub>r</sub> = xI <sub>n</sub> )	3, 6, 10, 15, 30 at 6 I <sub>r</sub>
Protection mode	On / Off
Preset trip alarm setting	0.8 to 1.0 I <sub>r</sub> in steps of 0.05
Thermal memory	On / Off
Overload (Neutral)	
Current setting (A), I <sub>r</sub>	50%, 75%, 100% I <sub>n</sub>
Time delay t <sub>n</sub> (s) at 6 I <sub>r</sub>	As per overload
Protection mode	On / Off
Preset trip alarm setting	Intr1 0.8 to 1.0 I <sub>r</sub> in steps of 0.05
Short Circuit	
Current setting (A), I <sub>s</sub>	1.5 to 8I <sub>r</sub> in steps of 0.1I <sub>r</sub>
Time delay t <sub>s</sub> (ms)	For Δ I <sup>2</sup> t OFF 20 to 200 in steps of 20 For Δ I <sup>2</sup> t ON 60 to 200 in steps of 20
Protection mode	On / Off
Preset trip alarm setting	0.8 to 1.0 times I <sub>s</sub> in steps of 0.05 I <sub>s</sub>
Cold load pickup	Enable / Disable
Instantaneous Over ride	
Current setting (A), I <sub>p</sub>	12I <sub>n</sub> for 400 A 8I <sub>n</sub> for 630 to 1600 A
Earth Fault	
Current setting (A), I <sub>g</sub>	0.2 to 0.5I <sub>n</sub> steps of 0.1I <sub>n</sub>
Time delay(ms), t <sub>g</sub>	0.1, 0.2, 0.5, 1, 3sec.
Preset trip alarm setting	0.8 to 1.0 I <sub>g</sub> in steps of 0.05
Protection mode	On / Off
Cold load pickup	Enable / Disable

## PROTECTION RELEASE

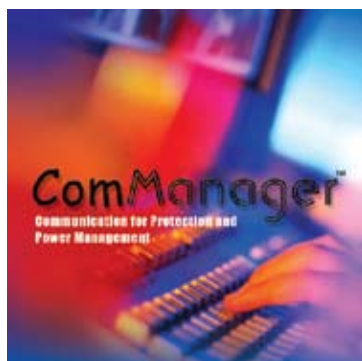


### Additional Features of RC20

Current unbalance	
Current setting (A)x In	10% to 100%In 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 current during last 5 trip
Trip history	upto 128 records
Trip counter record	Counts for total number of trips

### ComManager Software

ComManeger is a solution to control & flow in your electrical systems.



#### Salient Features Supports 32 devices

- User friendly Windows based software with GUI
- Robust networking
- Piracy protection through hardware lock
- Event recording
- Real time monitoring
- Historical trend of various parameters
- Snapshot of all parameters for all devices in the network
- Communication healthy signal on the frontend
- Complete data integrity

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



## STATE - OF - THE - ART TECHNOLOGY

### 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.

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.

### Mechanical Anti-reclosing:

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

Low watt loss:



### Positive Isolation:

The MCCB knob indicates the true position of the contacts.

### Double Insulation:

The internal accessories are housed in insulated casings to ensure the 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:

Marking ensures the use of superior engineering plastic, meeting all requirements of flammability and glow wire test.

## STATE - OF - THE - ART TECHNOLOGY

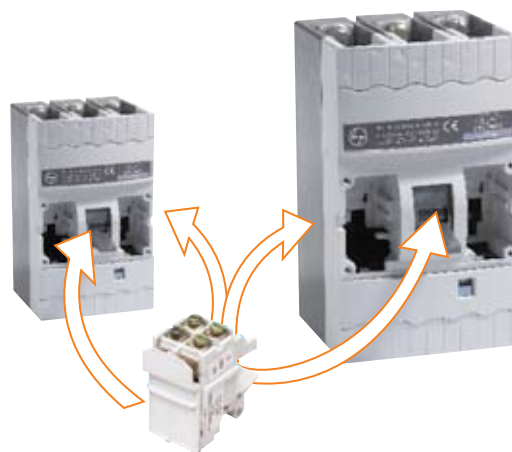


### Common Internal accessories:

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

### No side bias:

Internal accessories can be mounted on the either side.



### 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.

### Terminal shrouding:

Terminal shrouds cover spreader terminals preventing human contact with terminals.

### 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



## ACCESSORIES

### Internal Accessories

Range of MCCBs are offered with click-fit type, easily installable internal accessories. There is no need to open main cover and no live parts are accessed during installation. Any accessory can be fitted on any side enhancing flexibility.



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



MCCB with mid cover open & Internal accessories fitted.

### External Accessories

#### Rotary Operating Mechanism

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



#### Direct rotary handle ( MCCB mounted )

These versions are available for the entire family of MCCBs. These ROMs can be supplied with key lock for Dn2 and Dn3 frames.

#### Extended rotary handle ( Panel mounted )

- ROM mounts directly on MCCB without removal of midcover
- Door interlock in OFF condition with padlock feature
- Clear ON/OFF/TRIP indication
- Clear view of 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 +/- 3mm tolerance
- Keylock version available
- Door interlock in ON position, with defeat facility
- Auto restoration of door interlock



Extended rotary handle: Panel mounted

## ACCESSORIES



MCCB with Electrical Operating Mechanism

### Electrical Operating Mechanism

#### Features

- Clear ON / OFF / TRIP indication
- Cover and Carriage Interlock - EOM will not operate if
  - EOM cover is open
  - EOM is not properly fixed on MCCB
- This ensures safe and reliable operation of EOM
- Manual operation possible
- Padlock facility for locking in OFF position
- Easy access to the release even with EOM mounted

#### Applications

- Facilitates remote operation of MCCBs
- Facilitates use in process automation applications and auto change over schemes

Technical Specifications	
Operating Voltage	DN2 - MM (DN2 - 250), DN3 - MM (DN3 - 630)
Operating Voltage	24, 48 VDC, 240 VAC *
Operating Time	DN2 < 2.2 sec, DN3 < 3.3 sec

### Mechanical Interlock kit

#### Features

- For 3 Pole & 4 Pole versions
- Suitable for DN2 & DN3 frames



MIL with base plate

\* 240 V AC available on request



## NEW

### DNO

- Finger proof shrouding : safe to use.
- "Arc suction effect" arc chutes - High Breaking Capacity
- Overload adjustment from top
- Front "Push to Trip" buttons
- "Side by Side" mounting possible
- Knob designed for better grip
- Current rating on the knob
- Colour indication of ON/TRIP/OFF
- Lockable shroud on the knob to prevent unauthorised access
- Double insulation for internal accessories



## Accessories



### Auxiliary Contacts

- Shunt Release
- Trip Alarm Contacts
- U/V Release
- Auxiliary Contacts
- Aux. + Trip alarm contact



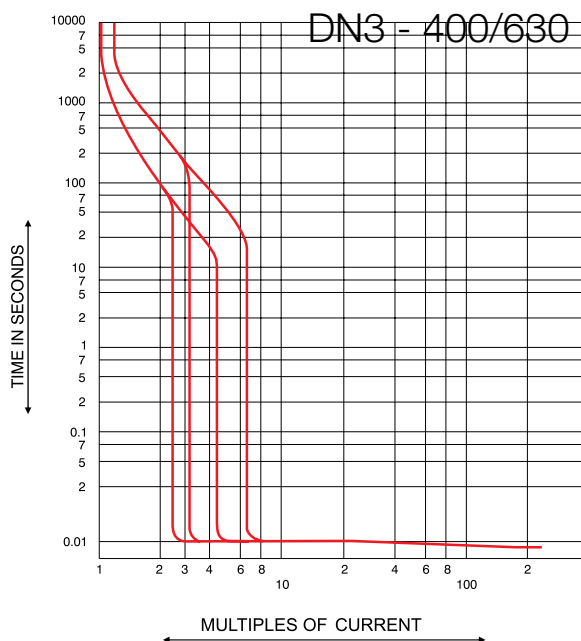
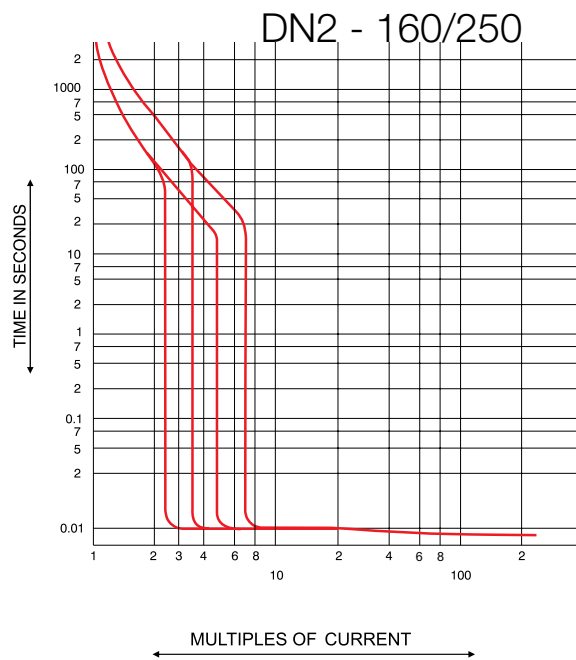
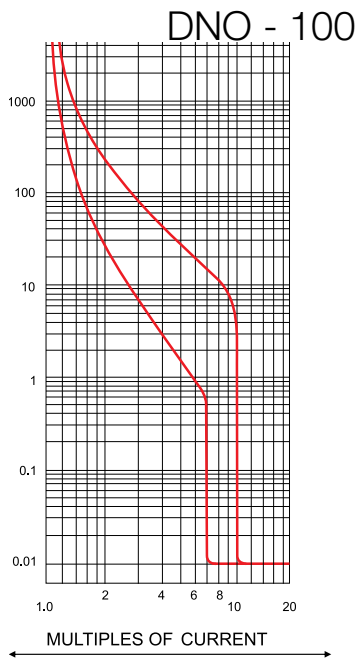
### Rotary Operating Mechanism

- Box Clamp
- Spreader Links
- Pad Lock
- Rotary Operating Mechanism

## TIME - CURRENT CHARACTERISTIC CURVES



Thermal-Magnetic Release

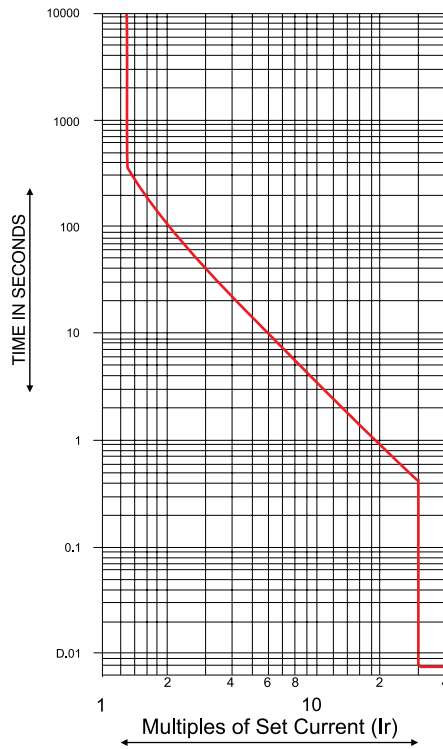




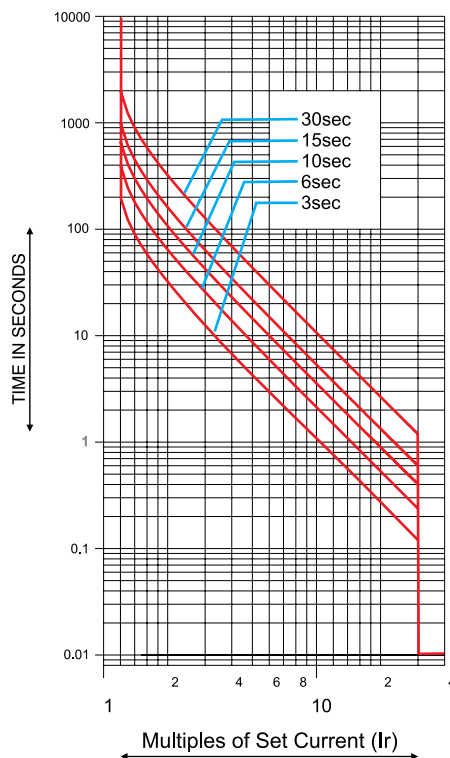
## TIME - CURRENT CHARACTERISTIC CURVES

Microprocessor Release

RC10



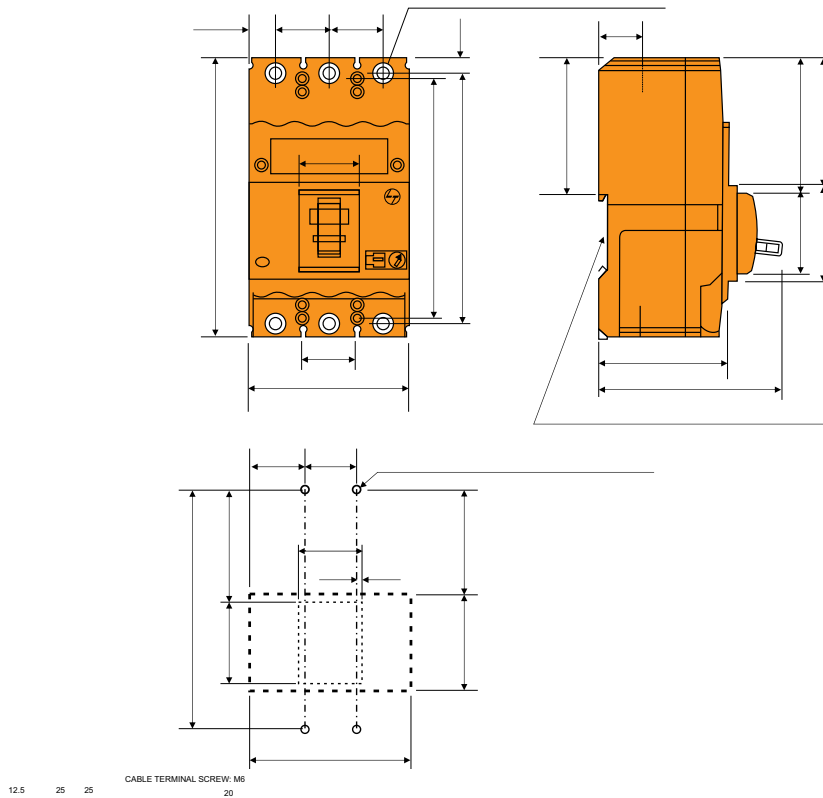
RC20



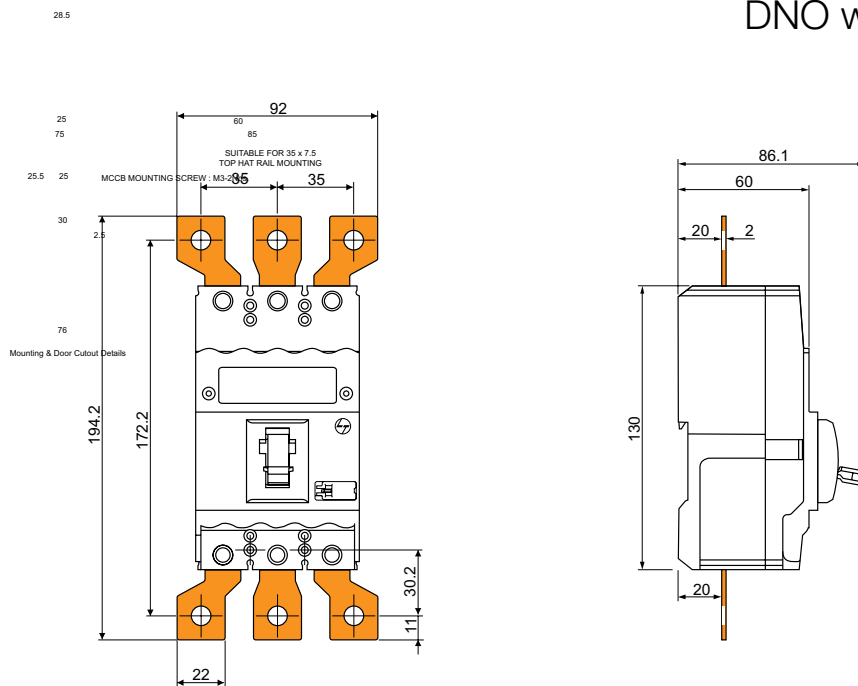
## OVERALL DIMENSIONS



DNO - 100



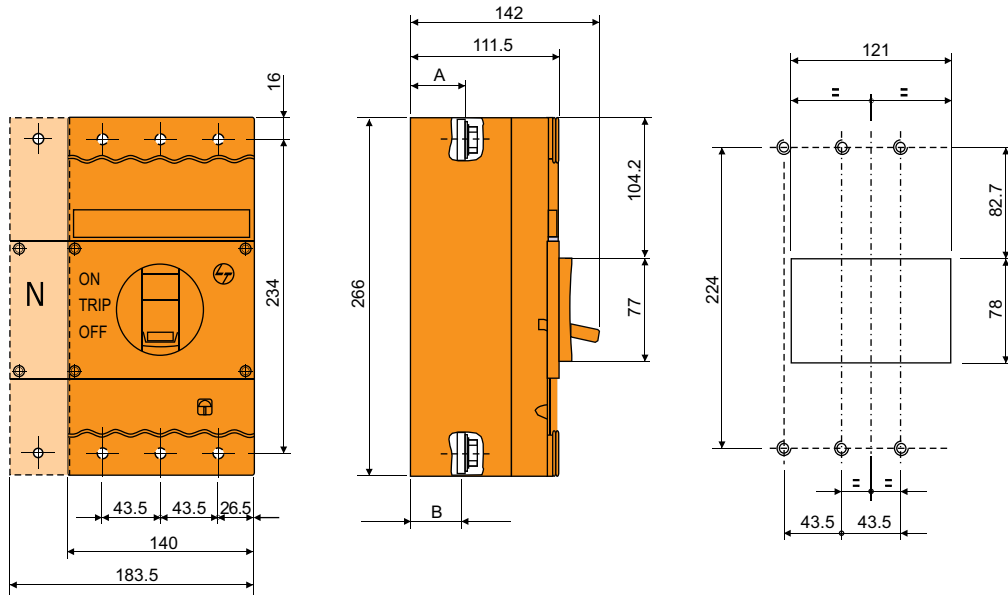
## DNO with Spreader Links





## OVERALL DIMENSIONS

DN2 - 160/250 MCCB

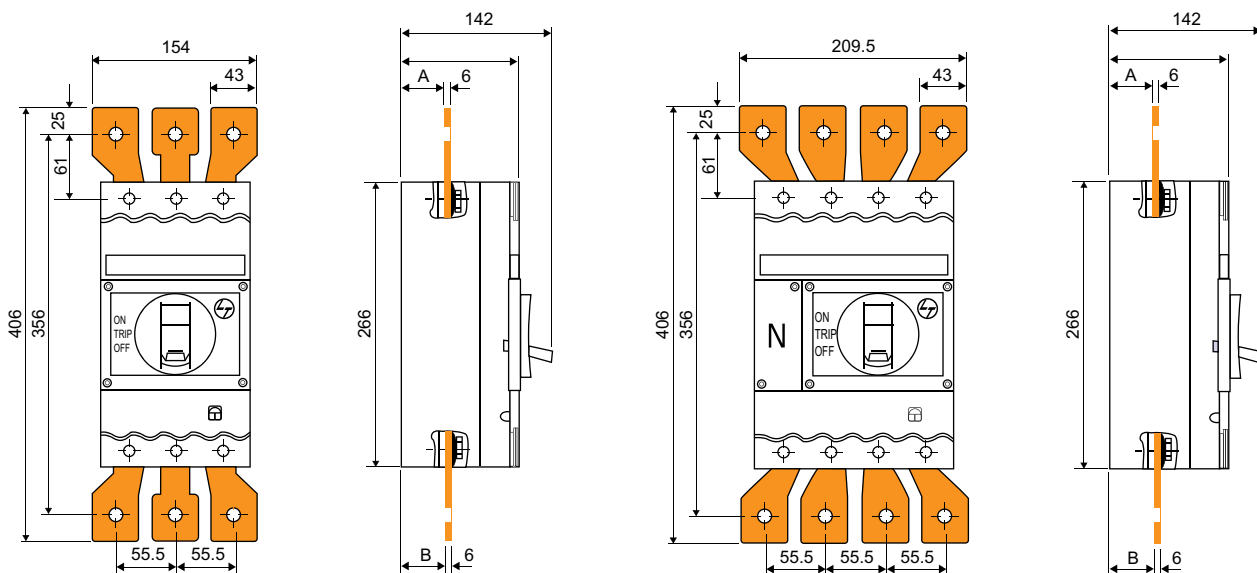


Terminal width = 28mm

Mounting & Door  
Cut-out Details

DN2 - 160/250 3P  
with Spreader Links

DN2 - 160/250 4P  
with Spreader Links

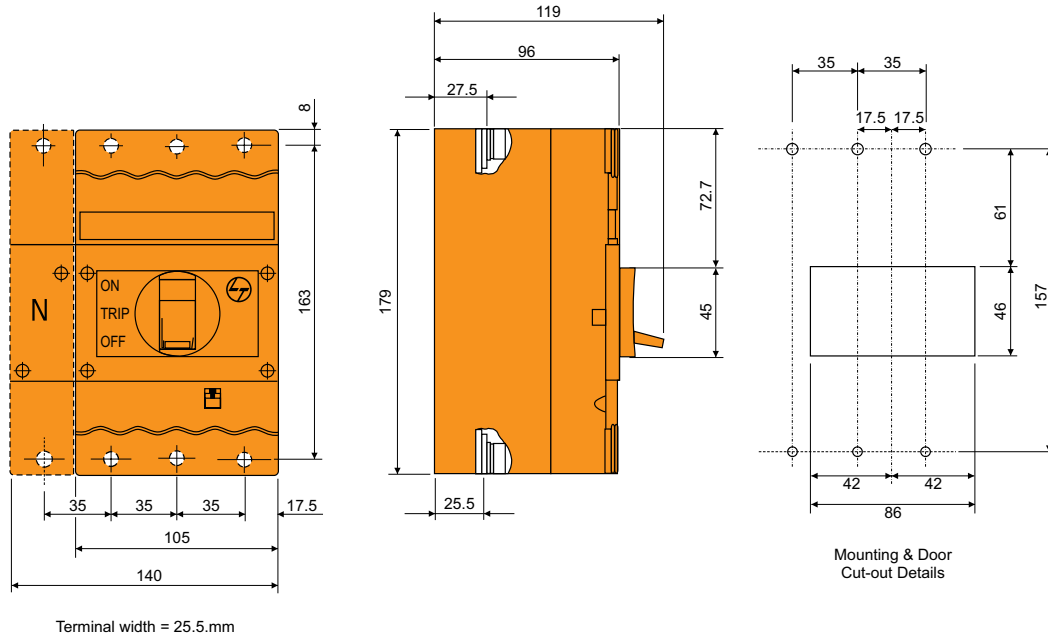


## OVERALL DIMENSIONS

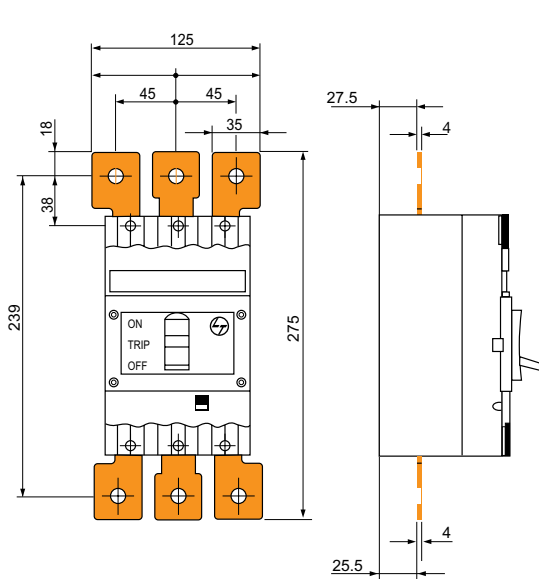


### DN3 - 400/630 MCCB

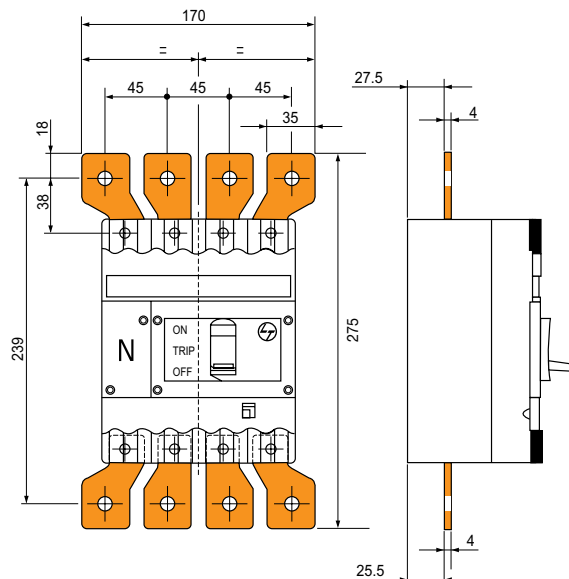
Type	A	B
DN3-400	39	37
DN3-630	41	38



### DN3 - 400/630 3P with Spreader Links



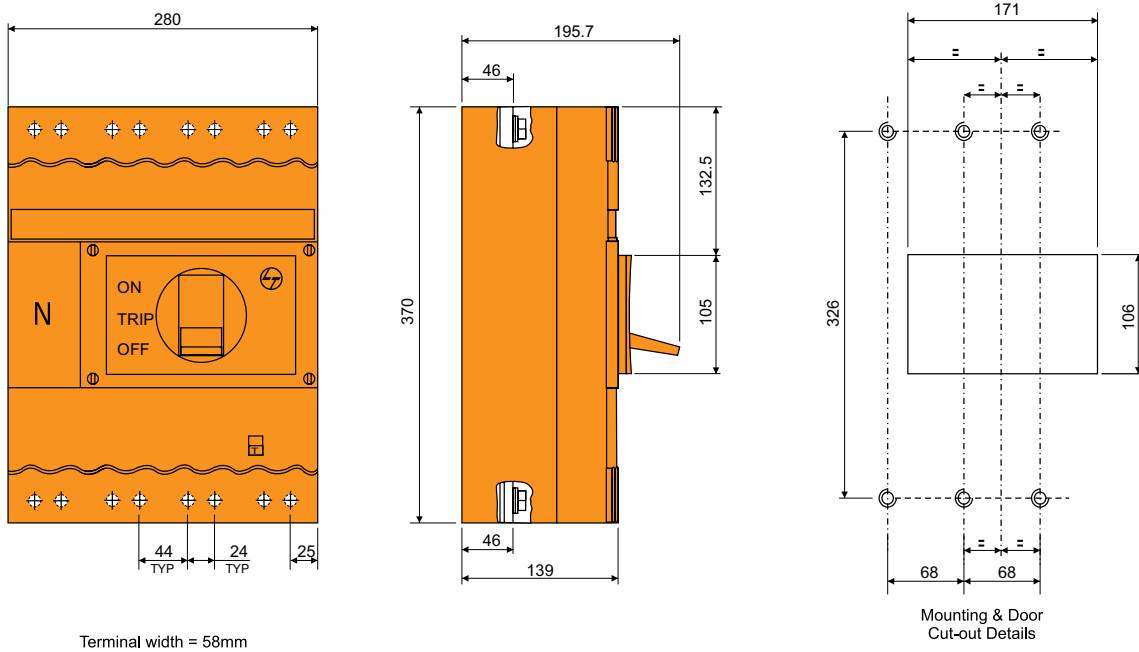
### DN3 - 400/630 4P with Spreader Links



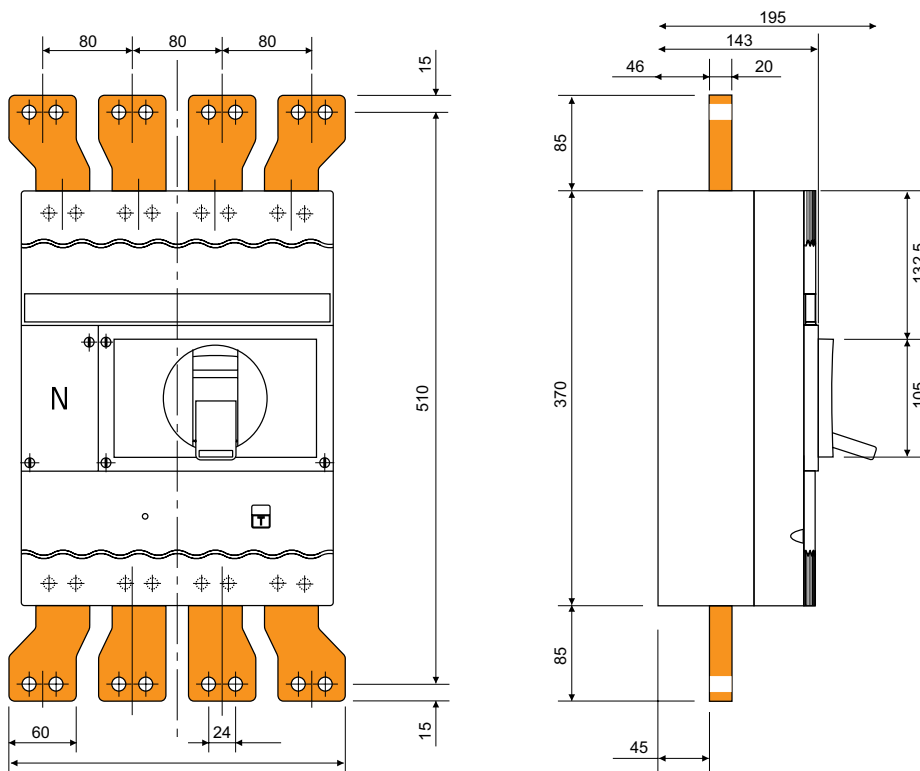


## OVERALL DIMENSIONS

DN4 - 800/1000/1250/1600 MCCB



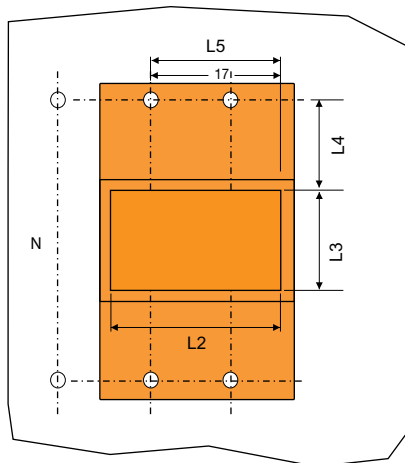
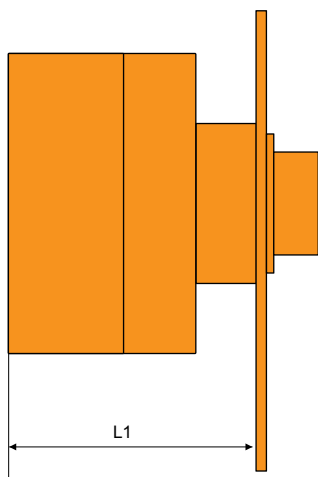
DN4 - 800/1000/1250/1600 with Spreader Links



## ROM DOOR CUT-OUT DETAILS



Direct ROM door cut-out detail

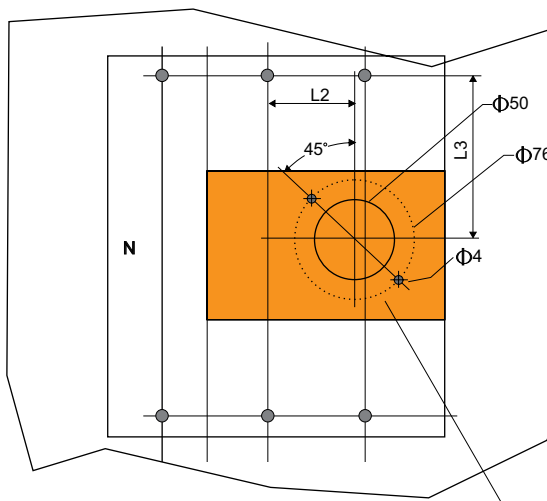
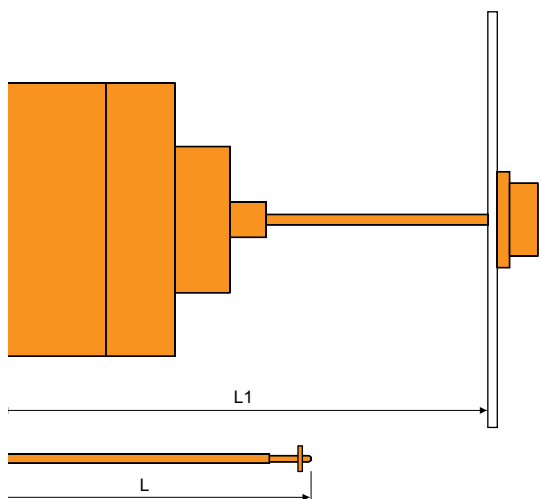


L1 = MOUNTING DEPTH  
 L2/L3 = PANEL CUT-OUT  
 L4/L5 = BREAKER MOUNTING REFER

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

REFER PANEL CUT DETAILS



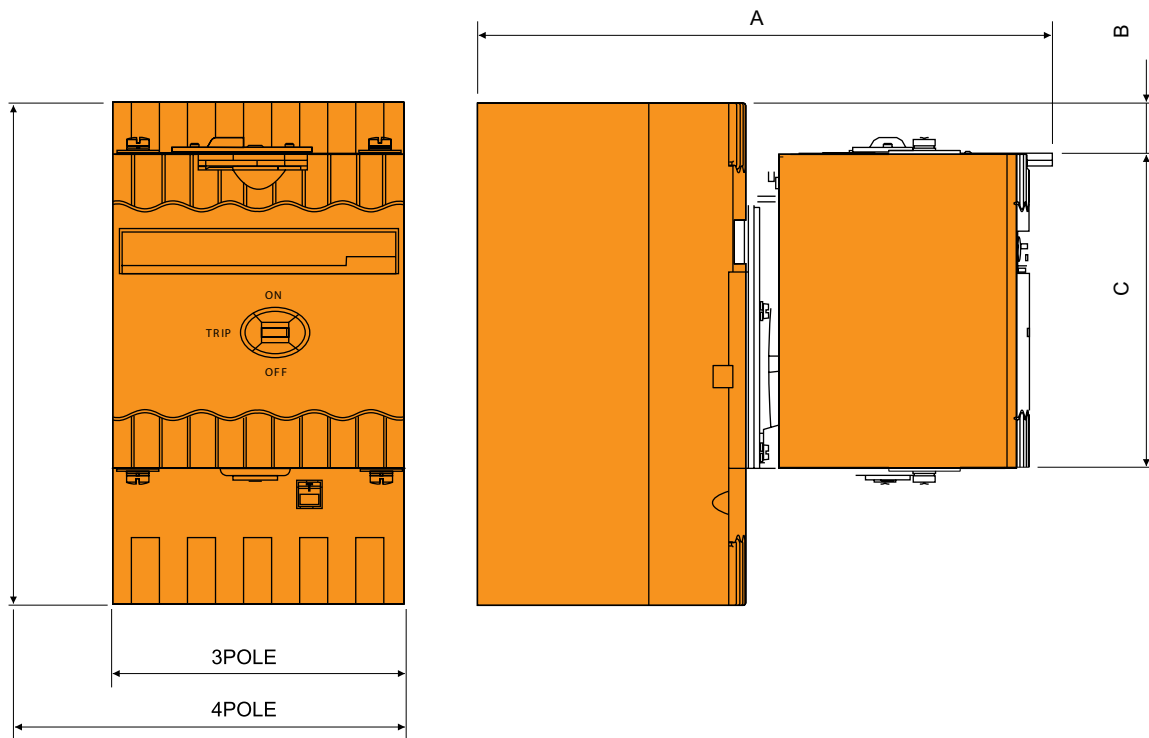
· LENGTH OF SHAFT REQUIRED FOR PANEL DEPTH L1

Type	L1	L2	L3	L4
DN0	160	L1-119	7.5	69.5
DN2	202	L1-152	27	84
DN3	233	L1-183	39	122
DN4	302	L1-252	69	170



## OVERALL DIMENSIONS

Overall Dimensions with EOM



Type	Dimensions in mm		
	A	B	C
For DN2 EOM	205	18	112.3
For DN3 EOM	226	46.5	147.3