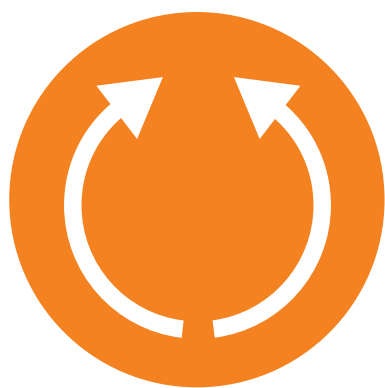
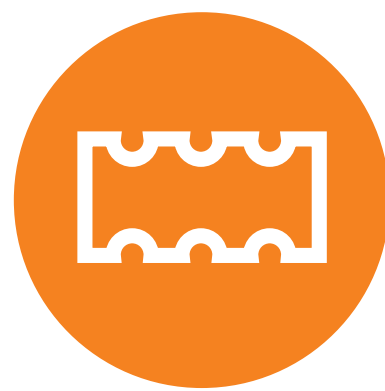


Moulded case circuit breakers





Range	1
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Widest Range	10
Time Current Characteristics	12
Overall Dimensions	14



SN4



SN3



SN2

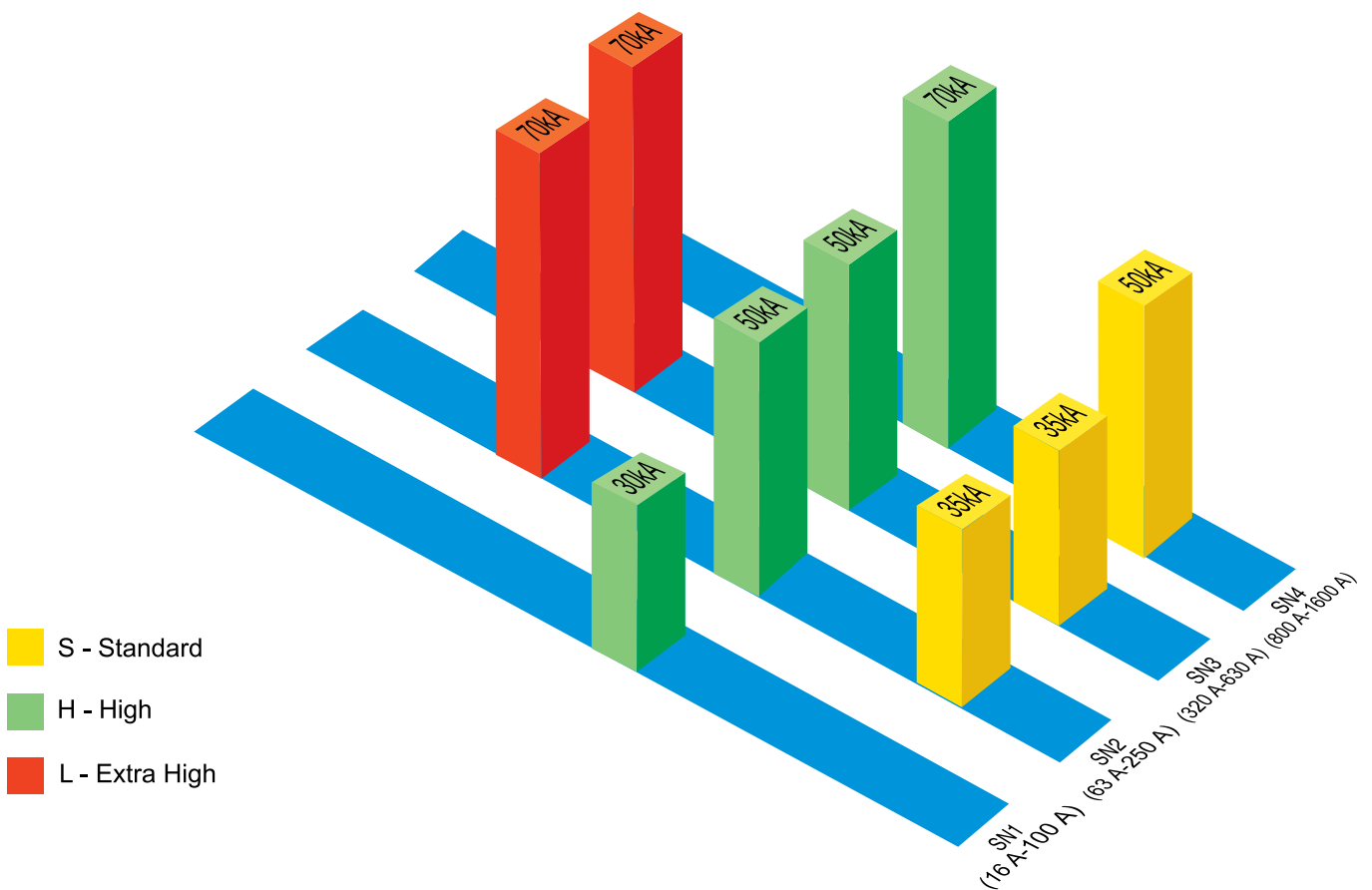


SN1



RANGE

SN1	
Rated Current	20, 25, 32, 40, 50, 63, 80, 100 A
Release	Thermal-Magnetic
SN2	
Rated Current	63, 80, 100, 125, 160, 200, 250 A
Release	Thermal-Magnetic
	40, 63, 100, 160, 250
	Microprocessor
SN3	
Rated Current	320, 400, 500, 630 A
Release	Thermal-Magnetic
	63, 160, 250, 400, 630 A
	Microprocessor
SN4	
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 _r
Short circuit*	3 - 6 I _n
Earth fault	External



* Setting from 6 - 10 I_n 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 _r (I _r = X I _n)		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 _n tr1 = X I _r)		0.5 to 1.0 in steps of 0.25
		Inverse 10 sec at 6 I _n tr1 / Fixed 200ms
		On / Off
	Short Circuit	
Current setting, I _s (I _s = X I _r)		1.5, 4, 6 & 8 I _r
Time delay, t _s		10 / 100 msec.
Protection mode		On / Off
	Instantaneous Over ride	
Current setting, I _p		12 I _n upto 400 A
		8 I _n for 630 to 1600 A
	Earth Fault	
Current setting, I _g		0.2 to 0.5 I _n in steps of 0.1
Time delay, t _g		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
- I²t 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), Ir (Ir = xIn)	0.4 to 1.0 in steps of 0.1
Current setting (A), Ir (Ir = xIn)	3, 6, 10, 15, 30 at 6 Ir
Protection mode	On / Off
Preset trip alarm setting	0.8 to 1.0 Ir in steps of 0.05
Thermal memory	On / Off
Overload (Neutral)	
Current setting (A), Ir	50%, 75%, 100% In
Time delay tn(s) at 6 Ir	As per overload
Protection mode	On / Off
Preset trip alarm setting	Intr 0.8 to 1.0 Ir in steps of 0.05
Short Circuit	
Current setting (A), Is	1.5 to 8Ir in steps of 0.1Ir
Time delay ts(ms)	For - I ² t OFF 20 to 200 in steps of 20 For - I ² t ON 60 to 200 in steps of 20
Protection mode	On / Off
Preset trip alarm setting	0.8 to 1.0 times Is in steps of 0.05 Is
Cold load pickup	Enable / Disable
Instantaneous Over ride	
Current setting (A), Ip	12In for 400 A 8In for 630 to 1600 A
Earth Fault	
Current setting (A), Ig	0.2 to 0.5In steps of 0.1In
Time delay(ms), tg	0.1, 0.2, 0.5, 1, 3sec.
Preset trip alarm setting	0.8 to 1.0 Ig in steps of 0.05
Protection mode	On / Off
Cold load pickup	Enable / Disable

PROTECTION RELEASE

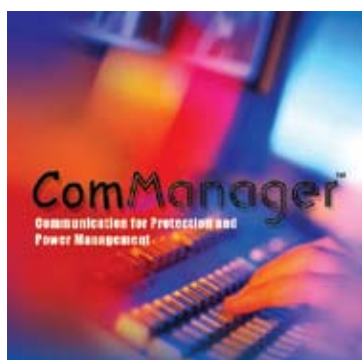


Additional Features of RC20

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

STATE - OF - THE - ART TECHNOLOGY

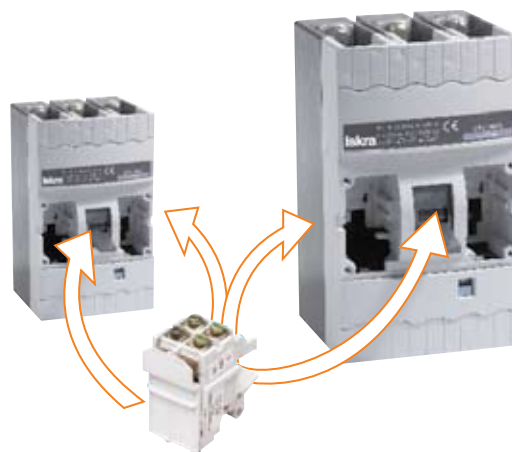


Common Internal accessories:

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 SN2 and SN3 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	SN2 - MM (SN2 - 250), SN3 - MM (SN3 - 630)
Operating Voltage	24, 48 VDC, 240 VAC
Operating Time	SN2 < 2.2 sec, SN3 < 3.3 sec

Mechanical Interlock kit

Features

- For 3 Pole & 4 Pole versions
- Suitable for SN2 & SN3 frames



MIL with base plate

MOULDED CASE CIRCUIT BRAKERS



TYPE				SN1-100	SN2-160/250	
No. of Poles				3	3/4	
Rated Current		I_n	A	16, 20, 25, 32, 40, 50, 63, 80, 100	63, 80, 100, 125, 160, 200, 250	
Rated Operational Voltage		U_e	V	415	415	
Rated Insulation Voltage		U_i	V	690	750	
Rated Impulse withstand Voltage		U_{imp}	kV	6	8	
Rated Frequency			Hz	50 / 60	50/60	
Reference Ambient Temperature			°C	40	40	
Utilisation Category				A	A	
Versions				Standard	Standard SN2-160S, 250S High SN2-160H, 250H Extra High SN2-160L, 250L	
Rated Ultimate S.C. Breaking Capacity [at 415 V AC, 50 Hz]		I_{cu}	kA	30	35 50 70	
Rated Service S.C. Breaking Capacity [at 415 V AC, 50 Hz]		I_{cs}	kA	50% of I_{cu}	100% of I_{cu}	
DC Breaking Capacity [at 250 V, L/R ± 15 msec]			kA	—	15 25 35	
Type of Release				Thermal-Magnetic	Thermal-Magnetic	
Current Rating		I_n	A	16, 20, 25, 32, 40, 50, 63, 80, 100	63, 80, 100, 125, 160, 200, 250	
Protection		Overload Instantaneous		Adjustable $0.8 - 1 I_n$, $9 I_n$	$0.8 - 1 I_n$, $3 - 6 I_n / 6 - 10 I_n$ Adjustable	
Terminal Capacity		Standard	[cables]	mm ²	35	95
			[link]	mm ²	16	25 x 5
		With Spreader Links	[cables]	mm ²	—	185
			[link]	mm ²	—	35 x 6
Box Clamp		[Cu. Cable]	mm ²	35	120	
Dimensions			W	mm	75	105 / 140
			H	mm	130	179
			D	mm	60	96
Weight (Unpacked)		3 / 4 Poles		Kg	0.725	2.5 / 3.3
Reference Standards				IEC 60947 - 2 / EN 60947 - 2 / IS 13947 - 2	IEC 60947 - 2 / EN 60947 - 2 / IS 13947 - 2	
ACCESSORIES	Internal	Auxiliary Contact			1C/O or 2C/O	1C/O or 2C/O
		Trip Alarm Contact			1C/O or 2C/O	1C/O
		Auxiliary & Trip Alarm Contact			1C/O + 1C/O	1C/O + 1C/O
		Shunt Release			240 - 415 V ac 50 / 60 Hz	110 - 415 V ac 50 / 60 Hz, 110 - 220 V dc
		Under Voltage Release			240 V ac 50 Hz	220 - 240 V ac 50 / 60 Hz
	External	Rotary Operating Mechanism			✓	✓
		Electrical Operating Mechanism			X	✓
		Earth Fault Release			✓	✓
		Mechanical Interlock			X	✓
		Plug-in / Draw-out unit			X	Plug-in unit
		Terminal Shrouds			✓	✓
		Spreader Links			✓	✓
		Box Clamp			✓	✓
		Key lock / Pad lock			✓	✓

Note: Any two internal accessories can be mounted at a time

MOULDED CASE CIRCUIT BRAKERS



SN3-400/630			SN4-800/1000		SN4-1250/1600	
3/4			3/4		3/4	
320, 400, 500, 630			800		1250	
415			415		415	
750			750		750	
8			8		8	
50 / 60			50 / 60		50 / 60	
40			40		40	
A			A		A	
Standard SN3- 400S, 630S	High SN3- 400H, 630H	Extra High SN3- 400L, 630L	Standard SN4- 800S, 1000S	High SN4- 800H, 1000H	Standard SN4- 1250S, 1600S	High SN4- 1250H, 1600S
35	50	70	50	70	50	70
100% of I_{cu}			100% of I_{cu}		100% of I_{cu}	
15	25	35	25	35	25	35
Thermal-Magnetic		Microprocessor	Microprocessor		Microprocessor	
320, 400, 500, 630		63, 160, 250, 400, 630	800, 1000		1250, 1600	
0.8 - $1I_n$ 3 - $6I_n$ / 6 - $10I_n$ Adjustable		For details go to page No. 2	For details go to page No. 2		For details go to page No. 2	
120			185		185	
27 x 15			2 x 40 x 15		2 x 40 x 15	
2 x 185			2x 300		2 x 300	
2 x 40 x 8			2 x 60 x 15		2 x 60 x 15	
240			—		—	
140 / 183.5			280		280	
266			370		370	
111.5			139		139	
5.5 / 7.2		6.0 / 7.8	15 / 16		15 / 16	
IEC 60947 - 2 / EN 60947 - 2 / IS 13947 - 2			IEC 60947 - 2 / EN 60947 - 2 / IS 13947 - 2		IEC 60947 - 2 / EN 60947 - 2 / IS 13947 - 2	
1C/O or 2C/O			1C/O or 2C/O		1C/O or 2C/O	
1C/O			1C/O		1C/O	
1C/O + 1C/O			1C/O + 1C/O		1C/O + 1C/O	
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	
220 - 240 V ac 50 / 60 Hz			220 - 240 V ac 50 / 60 Hz		220 - 240 V ac 50 / 60 Hz	
✓			✓		✓	
✓			✓		✓	
Inbuilt protection with Microprocessor release			Inbuilt protection with Microprocessor release		Inbuilt protection with Microprocessor release	
✓			X		X	
Draw - out unit			Draw - out unit		Draw - out unit	
✓			✓		✓	
✓			✓		✓	
✓			X		X	
X			X		X	



NEW

SN1

- 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

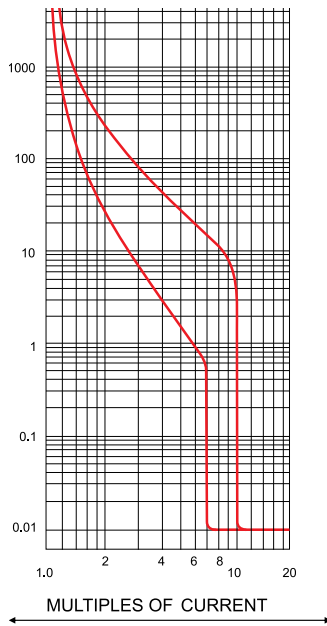
- Box Clamp
- Spreader Links
- Pad Lock
- Rotary Operating Mechanism

TIME - CURRENT CHARACTERISTIC CURVES

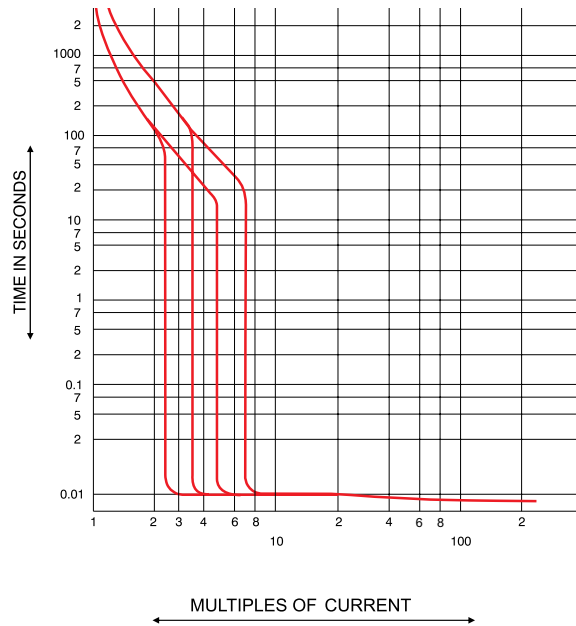


Thermal-Magnetic Release

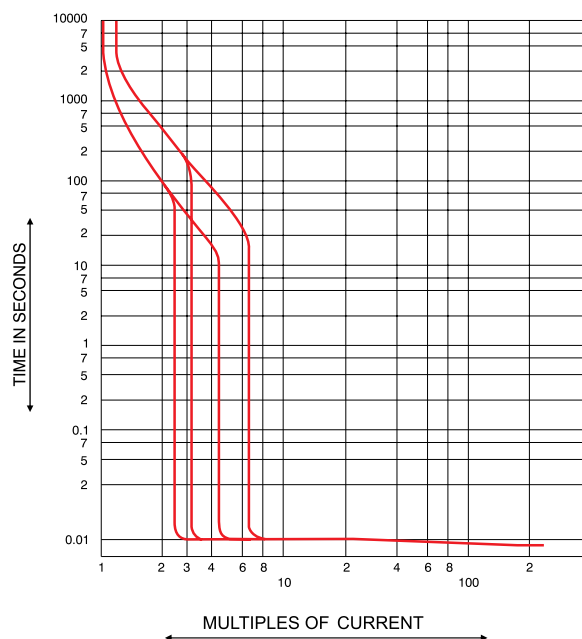
SN1 - 100



SN2 - 160/250



SN3 - 400/630

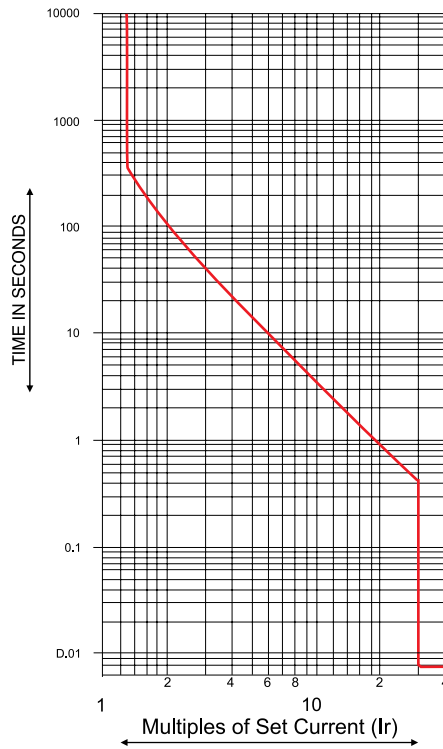




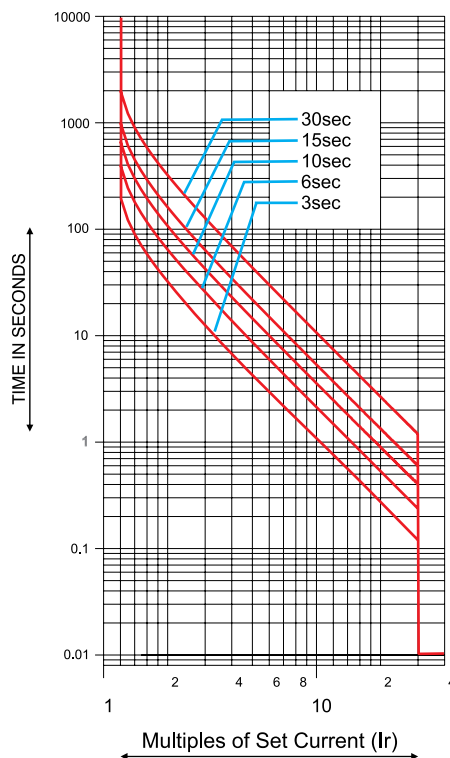
TIME - CURRENT CHARACTERISTIC CURVES

Microprocessor Release

RC10



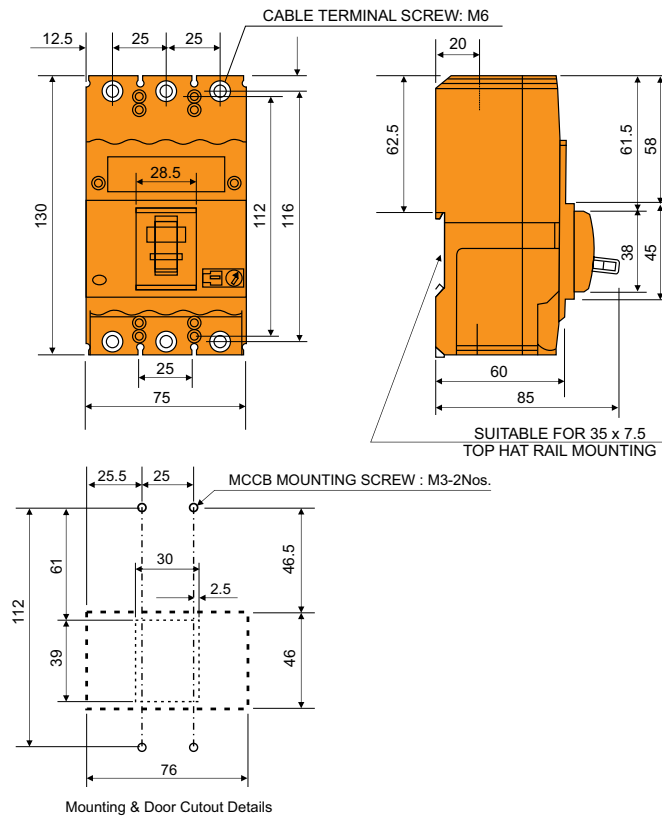
RC20



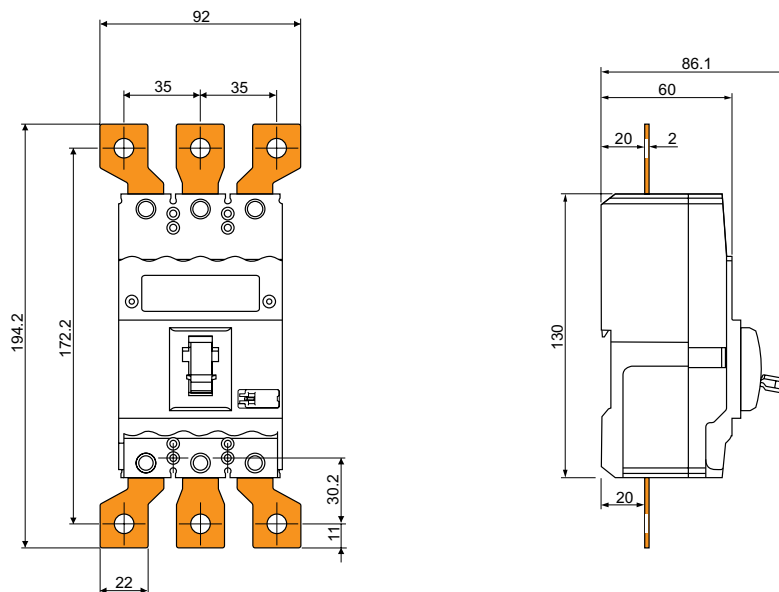
OVERALL DIMENSIONS



SN1 - 100



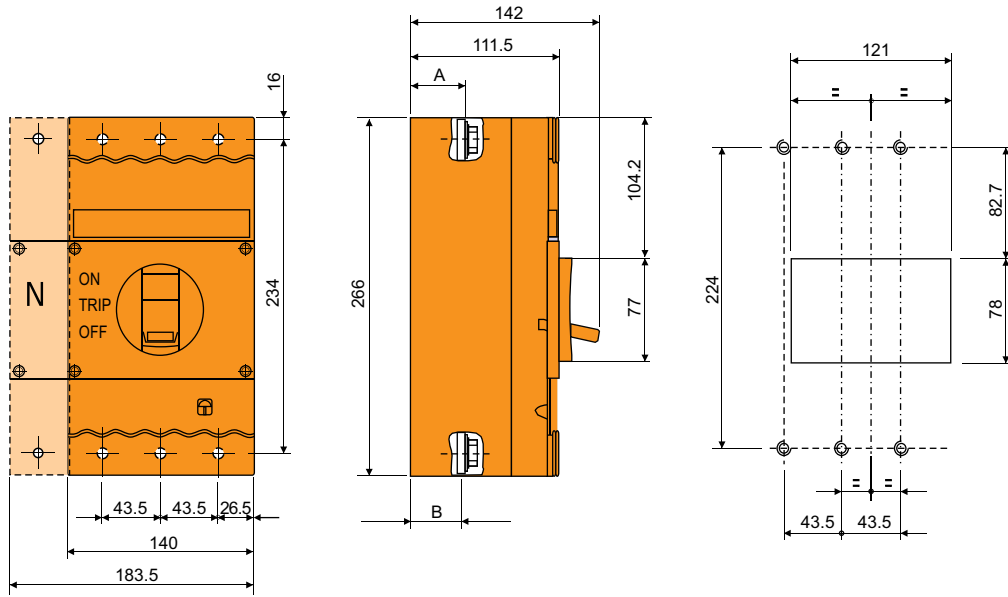
SN1 with Spreader Links





OVERALL DIMENSIONS

SN2 - 160/250 MCCB

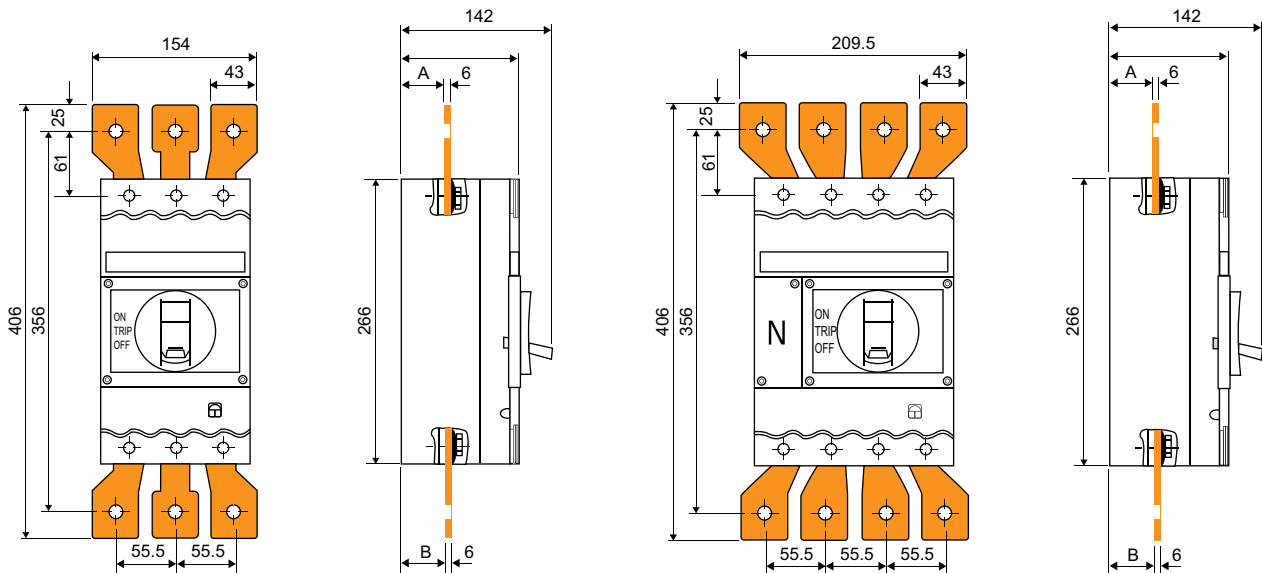


Terminal width = 28mm

Mounting & Door
Cut-out Details

SN2 - 160/250 3P
with Spreader Links

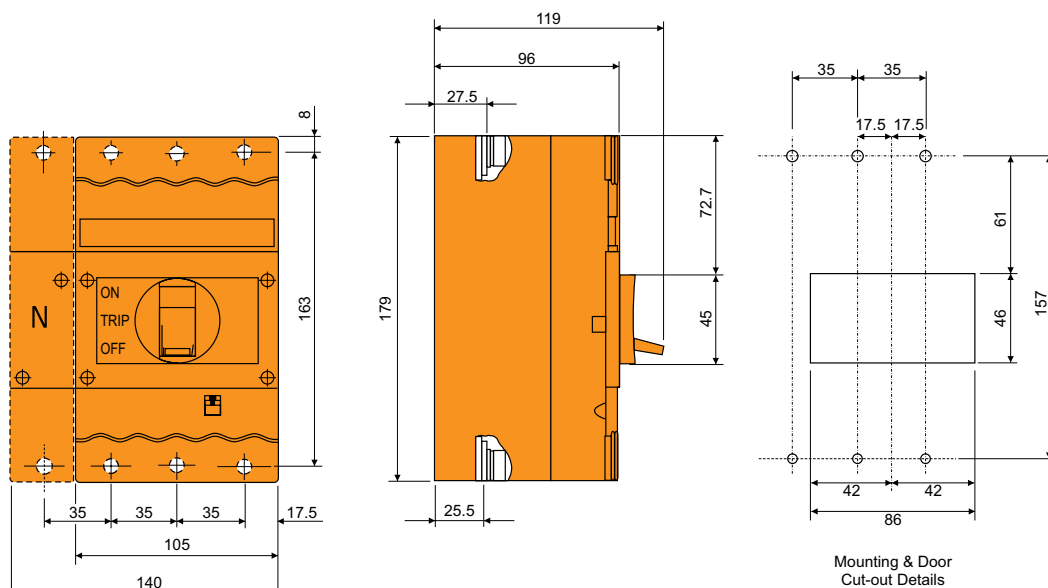
SN2 - 160/250 4P
with Spreader Links



OVERALL DIMENSIONS



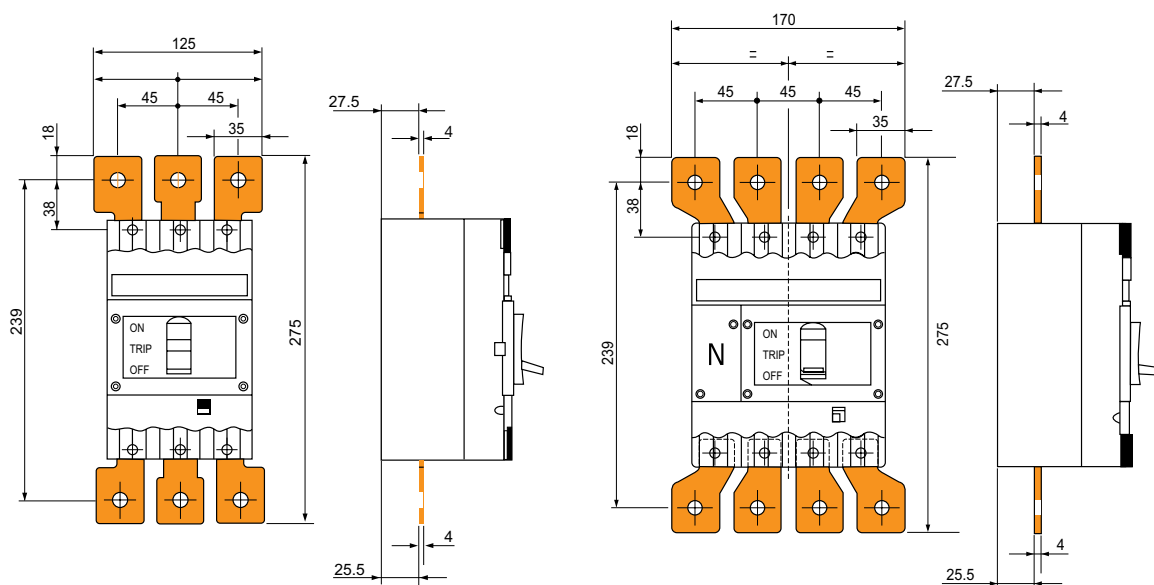
SN3 - 400/630 MCCB



Type	A	B
SN3-400	39	37
SN3-630	41	38

SN3 - 400/630 3P
with Spreader Links

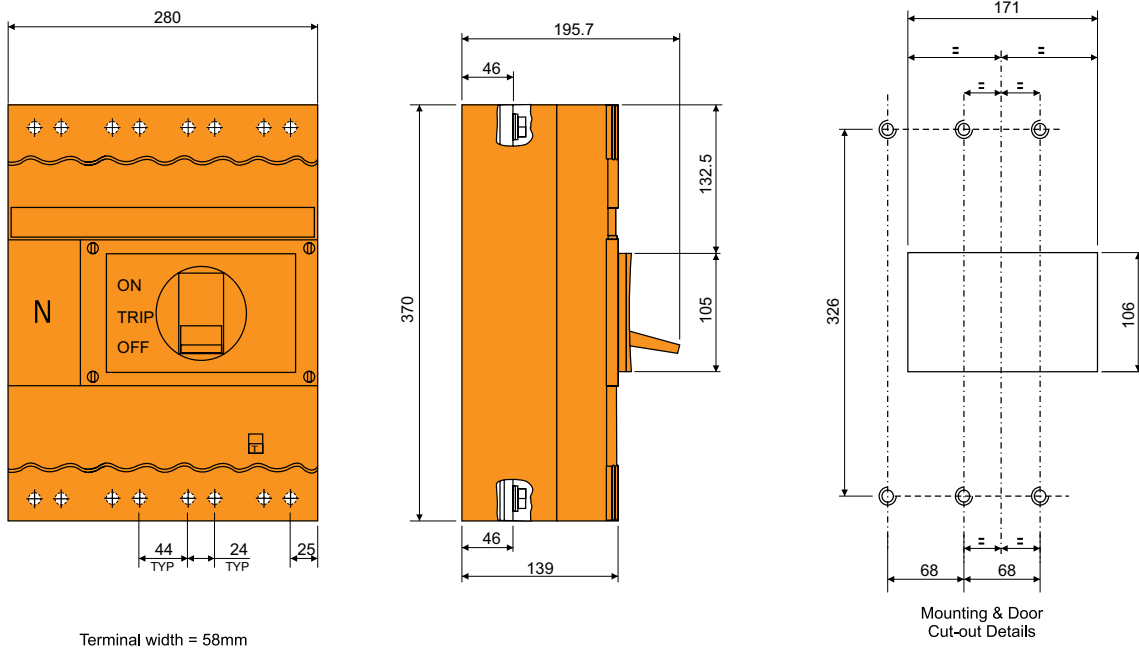
SN3 - 400/630 4P
with Spreader Links



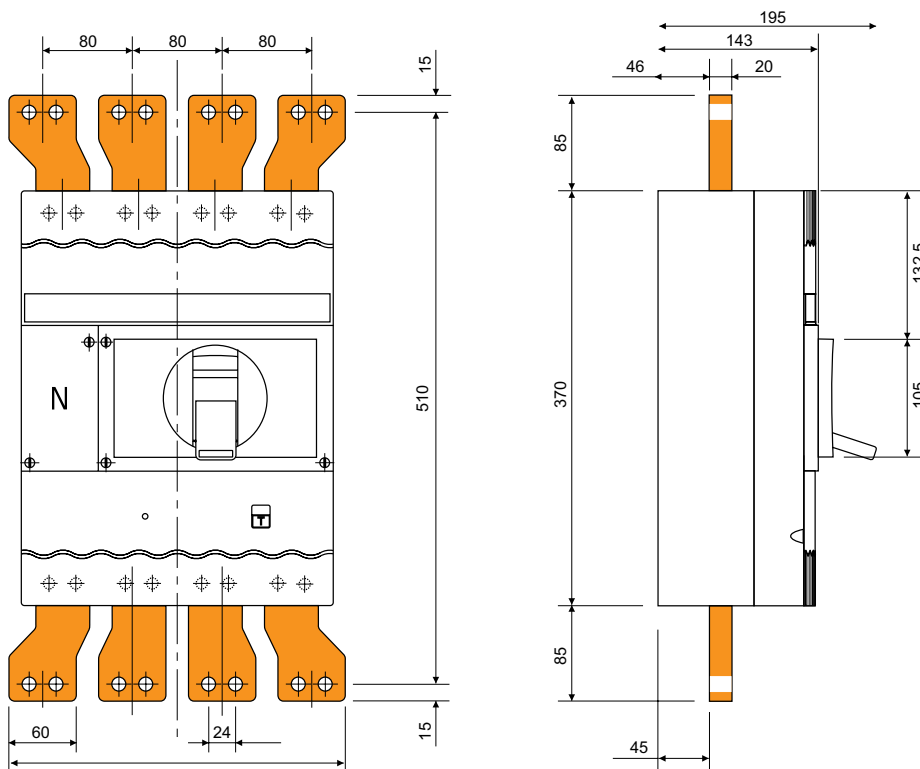


OVERALL DIMENSIONS

SN4 - 800/1000/1250/1600 MCCB



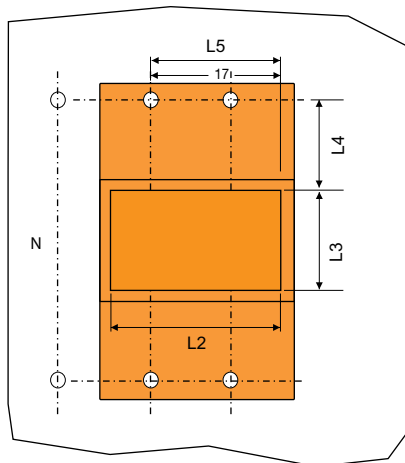
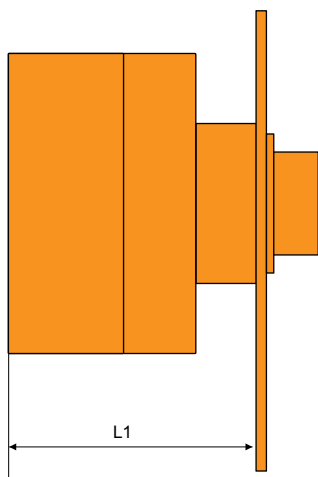
SN4 - 800/1000/1250/1600 with Spreader Links



ROM DOOR CUT-OUT DETAILS



Direct ROM door cut-out detail

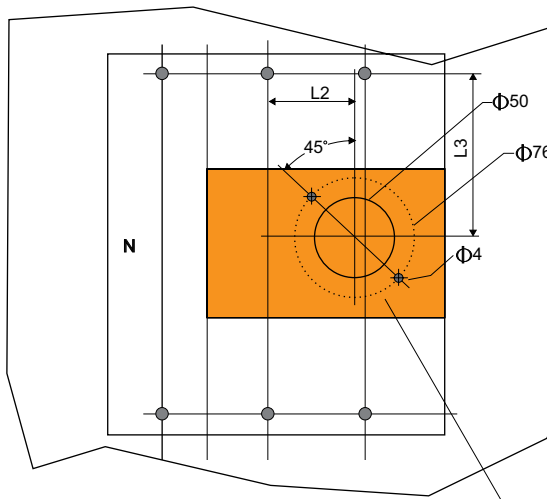
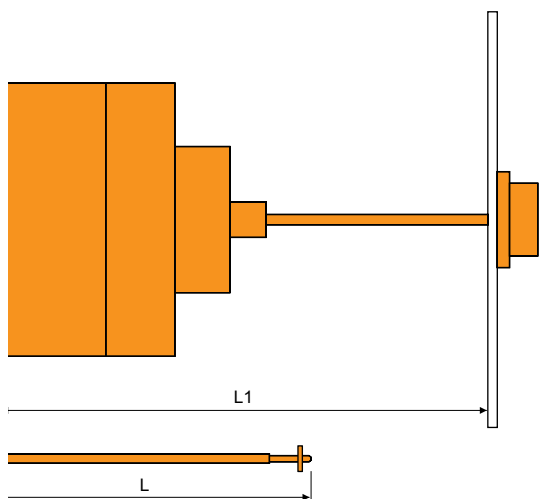


L1 = MOUNTING DEPTH
L2/L3 = PANEL CUT-OUT
L4/L5 = BREAKER MOUNTING REFER

Type	L1	L2	L3	L4	L5
SN1	96.5	58	52	44	37
SN2	122	96	63	53	66
SN3	156	121	87	78	82

Extended ROM door cut-out detail

REFER PANEL CUT DETAILS



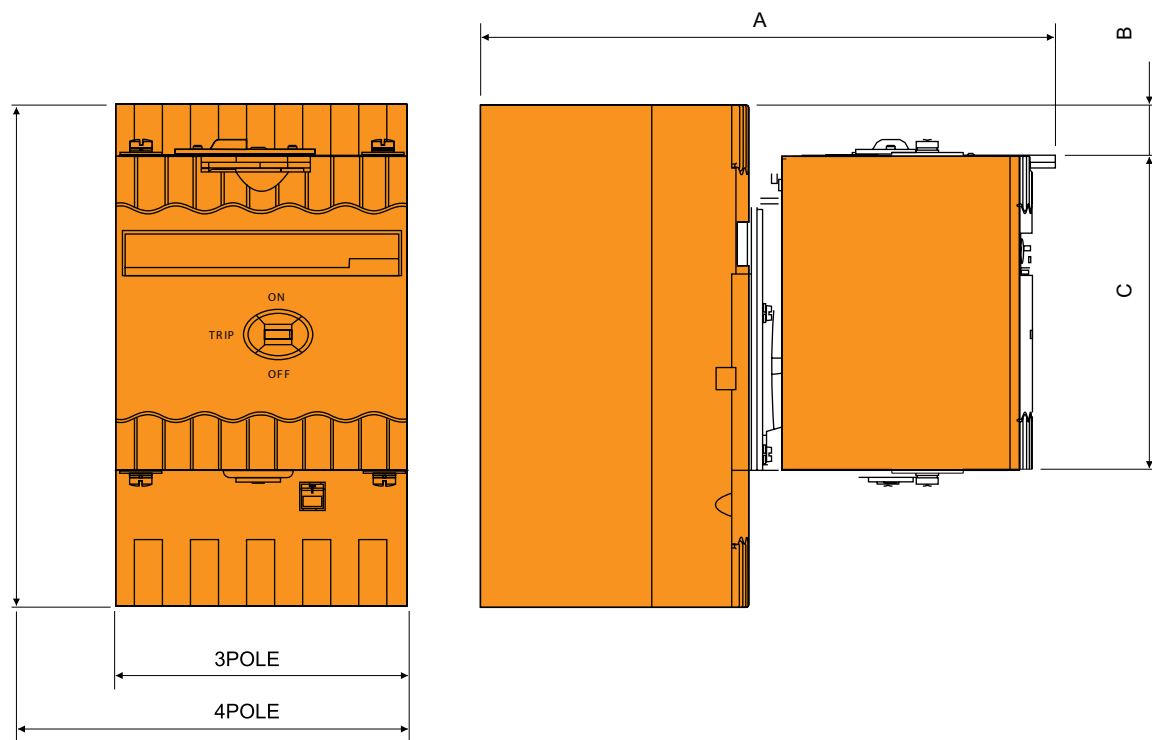
· LENGTH OF SHAFT REQUIRED FOR PANEL DEPTH L1

Type	L1	L2	L3	L4
SN1	160	L1-119	7.5	69.5
SN2	202	L1-152	27	84
SN3	233	L1-183	39	122
SN4	302	L1-252	69	170



OVERALL DIMENSIONS

Overall Dimensions with EOM



Type	Dimensions in mm		
	A	B	C
For SN2 EOM	205	18	112.3
For SN3 EOM	226	46.5	147.3



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