

A Spectrum of Benefits ...



C-line

Onload Changeover Switch

ABOUT US



Switchgear Factory, Mumbai



Switchgear Factory, Ahmednagar



Switchgear Factory, Vadodara

Larsen & Toubro is a technology-driven 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, a 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 five decades of experience in this field, the company today enjoys a leadership position in the Indian market with a growing international presence.

It offers a complete range of products including powergear, controlgear, industrial automation, building electricals & automation, reactive power management, energy meters, and protective relays. These products conform to Indian and International Standards.

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Standards & Approvals

C-line range of Changeover Switches comply with following standards



- **IEC 60947-1, EN 60947-1, IS/IEC 60947-1**
Low-voltage switchgear and controlgear, Part 1: General Rules
- **IEC 60947-3, EN 60947-3, IS/IEC 60947-3**
Low-voltage switchgear and controlgear, Part 3: Switches, disconnectors, switch-disconnectors and fuse combination units

Third party certificates (ERDA / CPRI) available for **C-line** range of changeover switches

NABL



NABL accreditation is a formal recognition of the technical competence of testing, calibration or medical laboratory for a specific task following ISO/IEC 17025:2005 Standard. Accredited laboratories have the responsibility of satisfying the criteria of laboratory accreditation at all times, which are verified during Surveillance and Reassessment visits by NABL. Further the accredited laboratories should prove their technical competence by satisfactory participation in recognized Proficiency Testing Programmes.

L&T's Switchgear Testing Lab is NABL accredited subject to continued satisfactory compliance to above standard & additional requirements of NABL.

All **C-line** range of Changeover switches are tested in L&T's NABL accredited Switchgear Testing Lab.

CE Marking



A CE marking is a European marking of conformity that indicates a product complies with the essential requirements of the applicable European laws or directives with respect to safety, health and environment and consumer protection. Generally, this conformity to the applicable directives is done through self-declaration and is required on products in the countries of the European Economic Area (EEA) to facilitate trade among the member countries. The manufacturer or their authorized representative established in the EEA is responsible for affixing the CE marking to their product. The CE marking provides a means for a manufacturer to demonstrate that a product complies with a common set of laws required by all countries in the EEA to allow free movement of trade with in the EEA countries.

L&T's **C-line** range of Changeover switches conform to the Low voltage directive 73/23/EEC as amended by directive 93/68/EEC, provided it is used in the application for which it is made and is installed and maintained in accordance with professional practices with relevant installation standards and operating instructions.

RoHS Compliance



As a green initiatives, Larsen & Toubro understands the requirements of the RoHS directive. The directive restricts the use of hazardous substances in electrical and electronic equipment and bans electrical equipment containing more than permitted levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBS) and polybrominated diphenyl ether (PBDE) flame retardants.

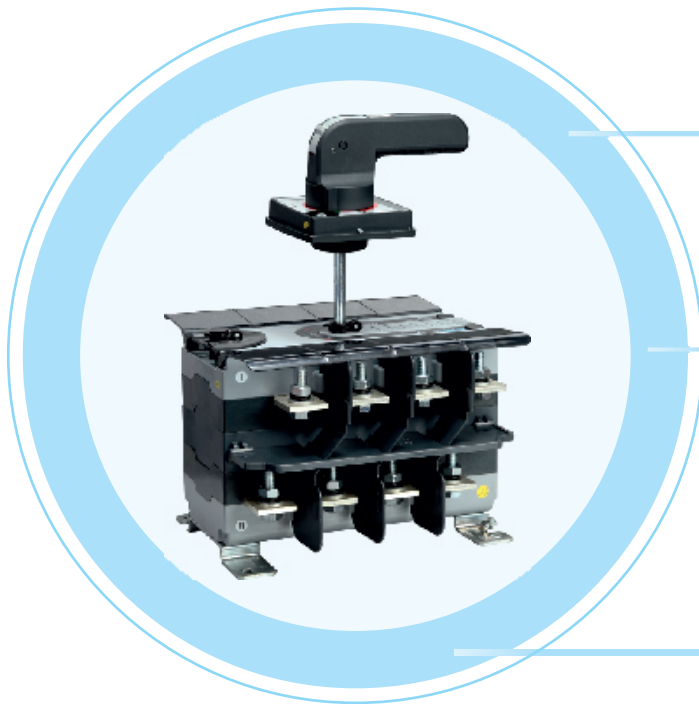


Overview

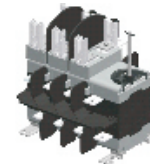
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C-line Changeover Switches

C-Line offers you a unique series of changeover Switches combining compactness with high performance & Customer convenience, thus, making C-line a state-of-the-art product in changeover technology. The C-line range covers ratings from 63 A to 2000 A in 6 frame sizes. These changeover switches are available in open execution, Sheet steel enclosure, fused version (suitable for DIN type fuse - link) and motorised version.



SS Enclosure inclusive of cable gland box



Field-convertible fuse changeover switch



Motorised changeover switch

Basic function of Changeover Switches

Onload Changeover S-D has 3 stable positions as defined below

POSITION I

Switch is in ON position with normal supply available at the outgoing terminals.

POSITION O

Switch is in OFF position and outgoing terminals are isolated from both supplies (normal and alternate supplies)

POSITION II

Switch is in ON position with alternate supply available at the outgoing terminals.

Onload Changeover S-D consists of two separate sets of terminals for incoming supplies and a set of output terminals to connect the common load. Thus, changeover switch ensures continuity of supply to the load by alternating between normal and alternate supply.

Superior Performance

Higher short-time withstand Capacity

Contact system is of double break, knife type having self wiping action with electrodynamic compensation. This ensures reliable performance during normal as well as short circuit fault conditions, offering higher short-time withstand rating.

Higher life

C-line switch offers high electrical and mechanical life in compact frame sizes. The electrical and mechanical life are two times the requirement of the standard.

Total flexibility of connection

Factory fitted external shorting links can be easily removed and fitted on the other side as required at site (125 A to 2000 A). This gives more flexibility at the time of installation.

Maximum termination capacity

The C-line range provides generous terminal capacity in its compact size, facilitating aluminium termination.

Higher ground clearance

Higher ground clearance between terminals and mounting base plate ensures adequate clearance even after connecting cables. This eliminates the possibility of phase to ground flash over.

Total safety

C-line Changeover Switch provides complete safety by providing terminal shrouds, source separator and inter-phase barriers.

Product Range

Onload Changeover S-Ds are available from 63 A to 2000 A. The range is covered through 6 frames as shown below.

Frame No.	Ratings (A)		
I	63	100	
II	125	160	200
III	250	315	
IV	400	630	
V	630	800	1000
VI	1250	1600	2000*

*Available on request.

Versions

C-line Changeovers are available in open execution, Sheet steel enclosure, fused version and motorised version.



Changeover S-D suitable for open execution

Changeover S-D, which can be commissioned in panels are of open execution type and provide IP20 protection from front.



Onload changeover S-D in SS enclosures

Onload Changeover S-Ds are available in sheet steel enclosure with adequate space for cable terminations so that additional cable entry boxes are not required. Cable gland plates are also provided with the switch. Enclosure provides IP54 protection.



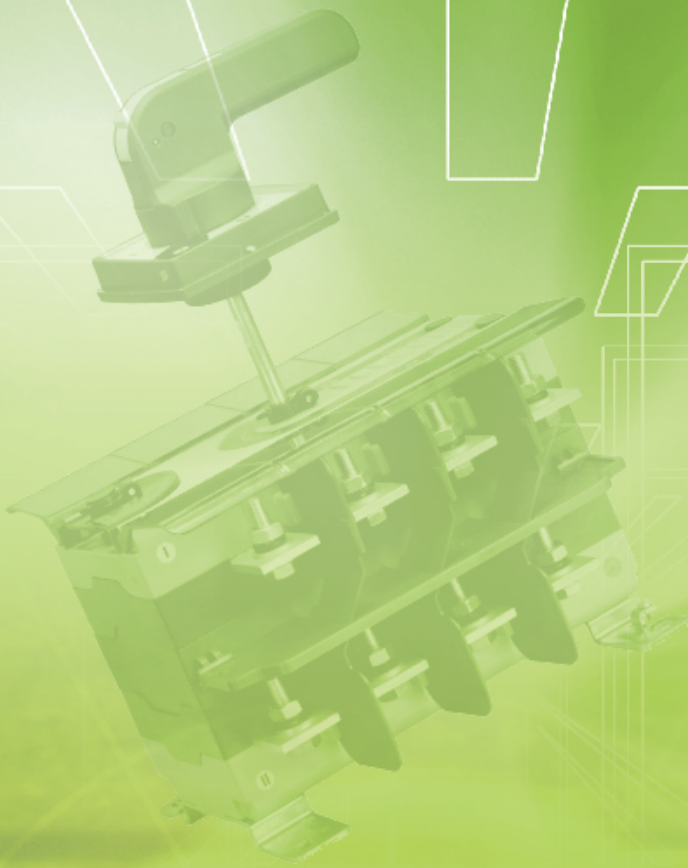
Changeover S-D suitable for HRC fuses

The Changeover S-Ds for open execution can be easily converted to fused version at site by using fuse conversion kit. It provides the benefits of overload and short circuit protection through the fastest switching device-fuse, and is suitable for cylindrical & knife type (DIN) fuse links. Use of L&T HF & HN fuse links reduces watt loss.



Motorised Changeover S-D

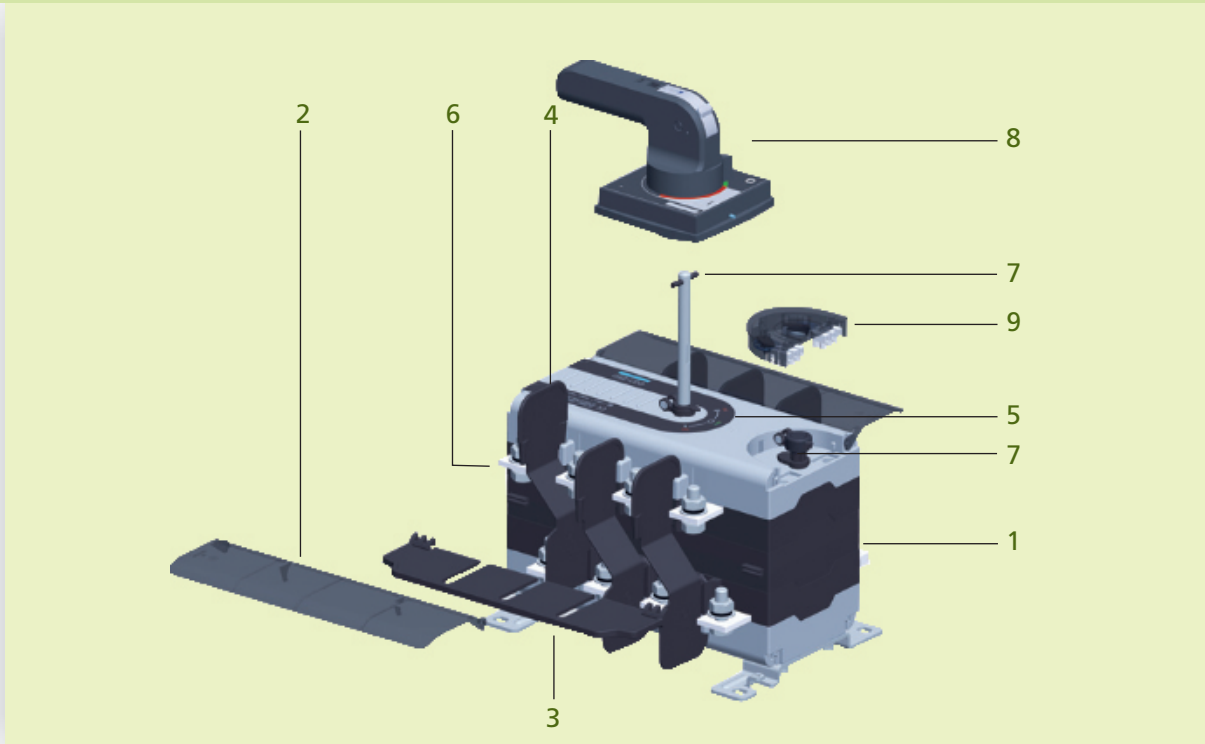
Onload changeover S-Ds are available in motorised version with control voltage 240 V ac. The manual changeover S-Ds can also be easily converted to motorised version at site by using electrically operated mechanism (EOM) kit without changing panel dimension (125 A to 2000 A).



Product Data

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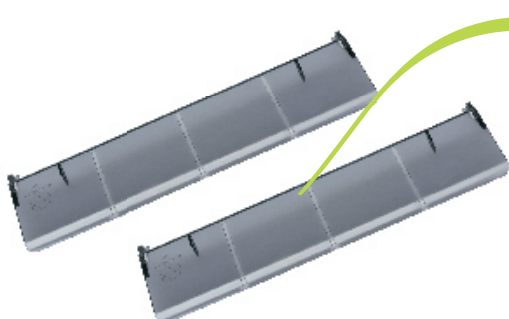
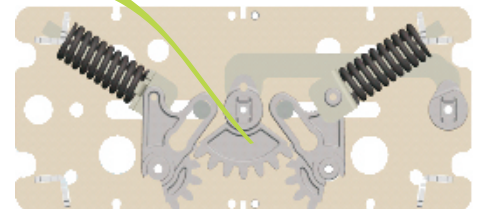
Manual Changeover Product Feature



1. Mechanism

A single, compact and modular mechanism cassette operates two Switch-Disconnectors and provides mechanical interlocking between them.

The use of patented, self interlocked and dual dead center mechanism in C-line range provides higher reliability for changeover function.

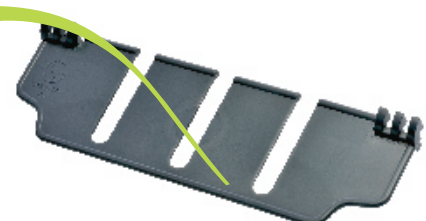


2. Terminal shroud

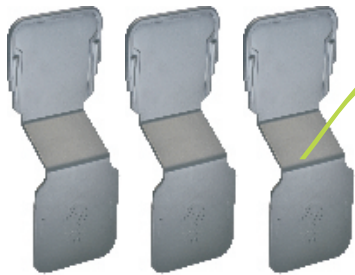
These shrouds provide complete touch proof design and prevent accidental touching of live terminals. They are click fit type. Due to hinge type design terminal shrouds, it can be turned by 90 degree, hence terminals can be inspected without removing these shrouds.

3. Source separator

Source separator is used to isolate two incoming supplies and to eliminate possibility of flash over between two supplies due to accidental falling of external objects.



Manual Changeover Product Feature



4. Inter-phase barriers

Inter-phase barriers are provided for additional safety to eliminate possibility of inter-phase short-circuit.

5. Positive ON / OFF indication of S-Ds

The C-line Changeover S-D indicates true position of contacts.



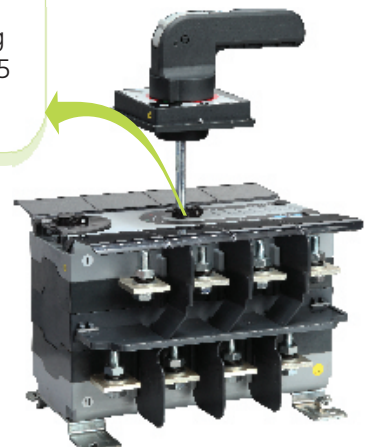
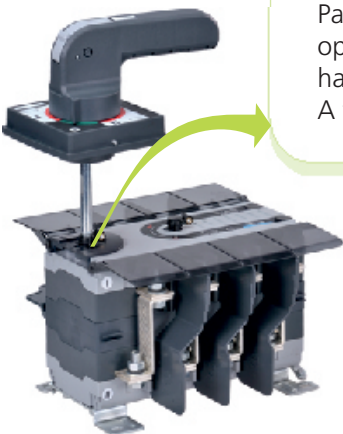
6. Staggered terminals

The C-line Changeover S-Ds are designed to have staggered terminal arrangement for top and bottom S-Ds. It provides clear access to all terminals from the front, ensuring ease of termination.

All terminal joints can be easily inspected without the need of removing termination of top S-D.

7. Interchangeable dual shaft position with site convertibility

Patented dual dead center mechanism enables the user to option between central or side shaft positions for operating handle. This can be easily converted on site as required (125 A to 1000 A).



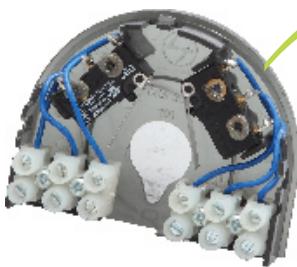
Manual Changeover Product Feature

8. Handle

The C-line Changeover Switch has a unique flip-able operating handle for ratings 400 Amp and above which enables user to operate the switch with two hands. The handle also offers the following.

features:

- Provision for Padlocking in OFF position with three Padlocks of Ø5 to Ø7
- Defeat feature in both ON states and auto restoration of panel door
- IP54 with extended type operating handle



9. Auxiliary contact kit

It consists two sets of changeover contacts one for each S-D. This kit is pre-wired with terminal blocks and can be fitted at the site without increasing overall dimension.

Sheet steel enclosure

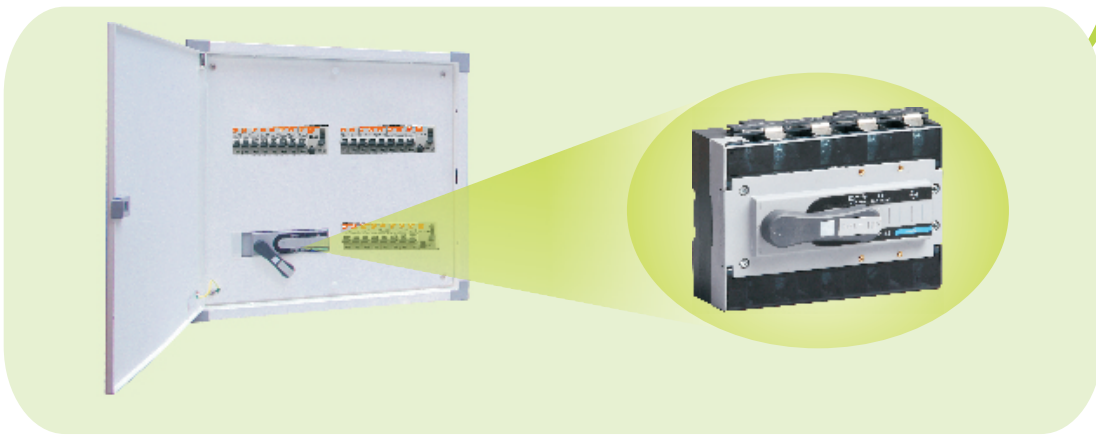
The C-line changeover switch in Sheet Steel enclosure consists of cable gland box by default.



Manual Changeover Product Feature

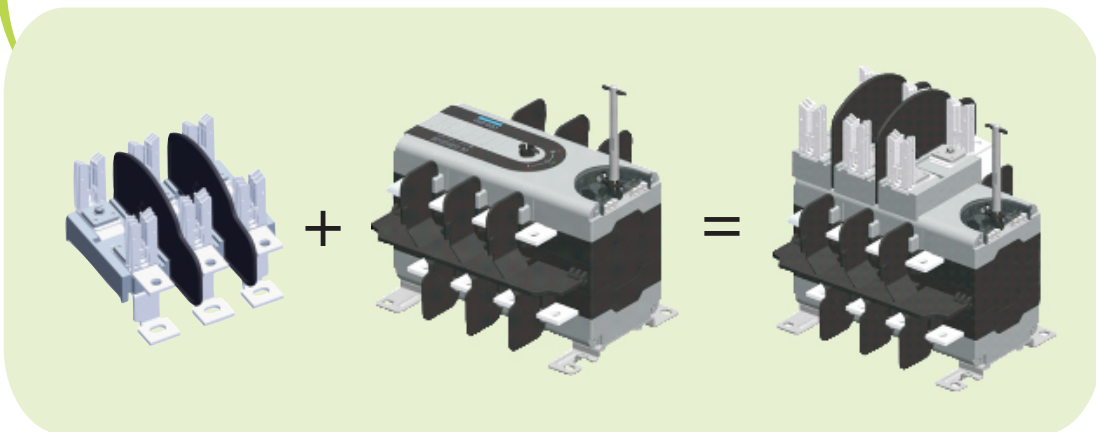
Changeover Switch with Direct Handle

Compact direct handle 63 A and 100 A changeover switch suitable for double door DB. It occupies only 10 Mod space (45 x 140 cut-out).



Fuse Changeover Switch

The C-line Changeover S-Ds for open execution can be easily converted to fused version at site by using fuse conversion kit with no load line biasing. It provides the benefits of overload and short circuit protection through the fastest switching device-fuse, and is suitable for cylindrical & knife type (DIN) fuse links.



Technical Specifications of Manual Changeover



Rating (A)		Unit	Frame 1		Frame 2	
			63 A	100 A	125 A	160 A
Reference Standards						
Type designation			CO1 - 63	CO1 - 100	CO2 - 125	CO2 - 160
No. of Poles			4 Pole	4 Pole	4 Pole	4 Pole
Rated operational voltage (U _e)		(V)	415	415	415	415
Rated frequency		(Hz)	50 / 60	50 / 60	50 / 60	50 / 60
Rated impulse withstand voltage (U _{imp})		(kV)	8	8	12	12
Pollution degree			3	3	3	3
Conventional free air thermal current, I _{th} at 40°C		(A)	63	100	125	160
Conventional enclosed thermal current, I _{the} at 40°C		(A)	63	100	125	160
Rated operational current, I _e AC-21A [#] / AC-22A [#] / AC-23A		(A)	63	100	125	160
Rated operational power for AC-23A*		(kW)	37	50	65	85
Rated breaking capacity for AC-23A		(A)	504	800	1000	1280
Rated making capacity for AC-23A		(A)	630	1000	1250	1600
Short time withstand, I _{cw}	1 sec	(kA rms)	4	5	8	8
	0.2 sec	(kA rms)	7	10	18	18
Short-circuit making capacity, I _{cm}		(kA peak)	5.9	7.7	14	14
Endurance (category A)	Mechanical	(O-I-O-II-O cycle)	20000	20000	16000	16000
	Electrical	(O-I-O-II-O cycle)	3000	3000	2000	2000
Type and size of fuse	DIN/Cylin [▲]		14 x 51 [▲]	NA	000	00
Rated fused short-circuit current at 415 V, 50/60 Hz	DIN/Cylin [▲]	(kA rms)	80 [▲]		100	100
Termination Capacity						
Maximum Al. cable with lug		(sq mm)	25	25	95	95
Maximum link width		(mm)	16	16	30	30
Maximum link thickness		(mm)	2	2.5	5	5
Termination tightening torque		(N-m)	4.5	4.5	10	10
Operating torque center / side operating		(N-m)	4.5	4.5	10 / 13	10 / 13
Weight (without accessories)		(Kg)	2	2.5	4	4

*These values are for 4 pole squirrel cage induction motors and are provided only for guidance and may vary as per the motor manufacturer

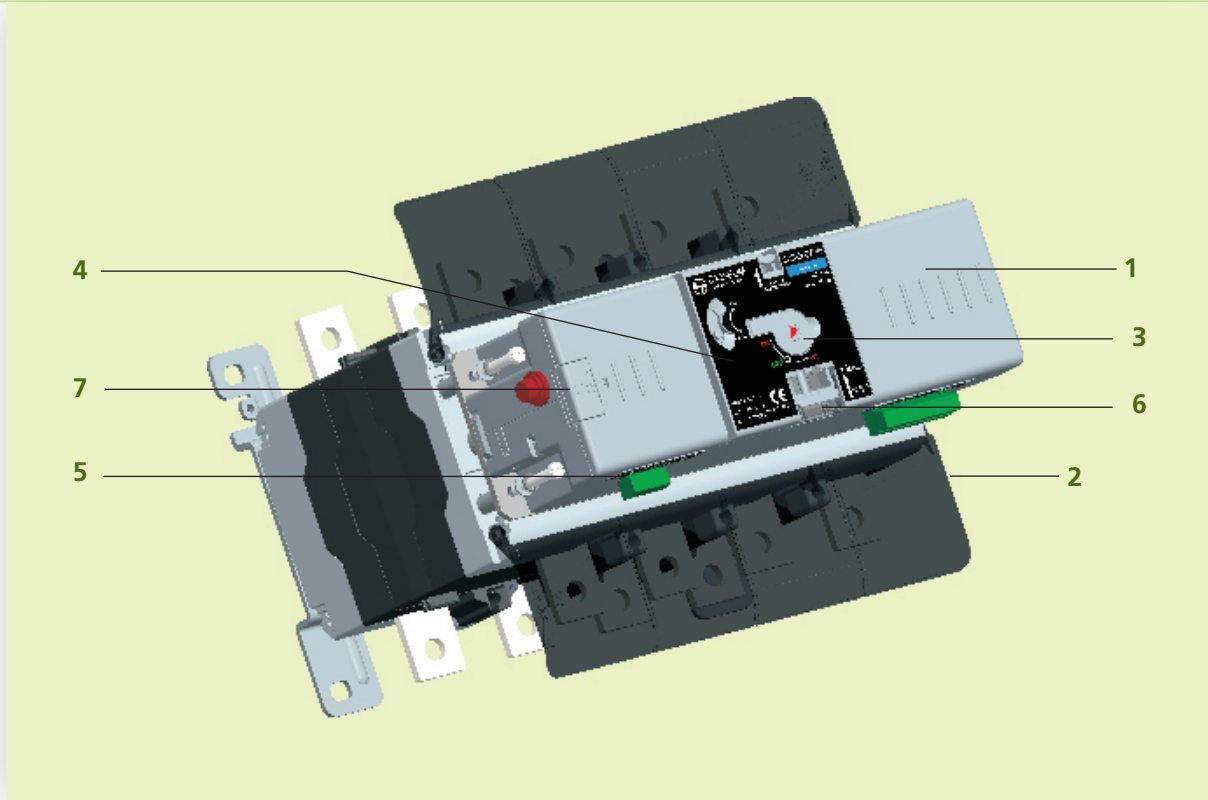
Rated operational current, I_e AC-21A / AC-22A

▲ Type cylindrical fuse



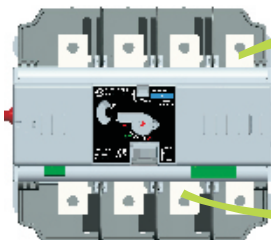
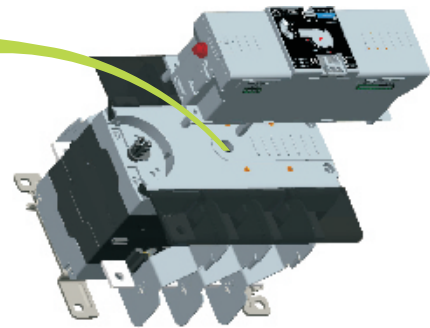
Frame 3		Frame 4		Frame 5			Frame 6			
200 A	250 A	315 A	400 A	630 A	630 A	800 A	1000 A	1250 A	1600 A	2000 A
IS / IEC 60947-3, EN 60947-3										
CO2 - 200	CO3 - 250	CO3 - 315	CO4 - 400	CO4 - 630	CO5 - 630	CO5 - 800	CO5 - 1000	CO6 - 1250	CO6 - 1600	CO6 - 2000
4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole
415	415	415	415	415	415	415	415	415	415	415
50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
12	12	12	12	12	12	12	12	12	12	12
3	3	3	3	3	3	3	3	3	3	3
200	250	315	400	630	630	800	1000	1250	1600	2000
200	250	315	400	630	630	800	1000	1250	1600	2000
200	250	315	400	630	630	800	1000	1250	1600*/1250	2000*/1250
100	132	160	225	315	315	400	450	710	710	710
1600	2000	2520	3200	5040	5040	6400	8000	10000	10000	10000
2000	2500	3150	4000	6300	6300	8000	10000	12500	12500	12500
10	16	18	22	26	35	50	50	50	50	50
18	28	28	35	35	70	85	85	85	85	85
17	32	36	46	55	73.5	105	105	105	105	105
16000	16000	16000	10000	10000	10000	10000	10000	10000	10000	10000
2000	2000	2000	2000	2000	2000	1000	1000	1000	1000	500
00	1	1	2	NA	3	3	NA	NA	NA	NA
100	100	100	100		100	100				
150	185	240	2 x 300	2 x 300	2 x 400	2 x 400	2 x 400	2 x 12 x 63	4 x 8 x 50	3 x 10 x 100
30	40	40	50	50	60	60	60	80	80	100
6	8	8	8	2 x 8	2 x 10	2 x 10	2 x 10	3 x 12	3 x 12	3 x 12
20	20	20	27	27	35	35	35	55	55	55
10 / 13	20 / 25	20 / 25	28 / 32	28 / 32	30 / 40	30 / 40	30 / 40	55	55	55
4.5	6.5	7	14	14.5	20	22	22	52	57	75

Motorised Changeover Product Features



1. Site mountable

Motorised kit (EOM) can be mounted over the manual changeover switch directly at site without any change in the panel area.



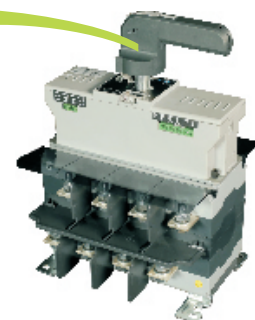
2. Clear termination access

Motorised kit (EOM) fits well within the body of the manual changeover switch, enabling clear access to the terminals even after mounting the motorised kit.

3. Manual override

Manual operation of motorised changeover switch is also feasible through the manual override feature.

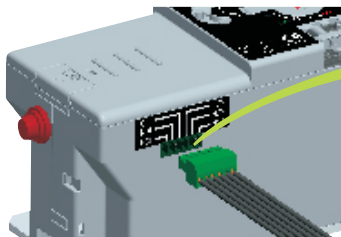
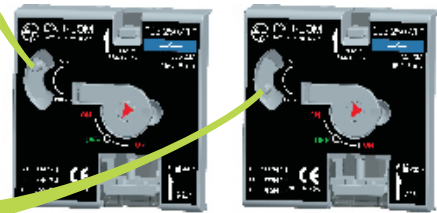
As a safety feature, the control supply of motorised kit (EOM) is automatically cut off during the insertion of handle.



Motorised Changeover Product Features

4. Manual and Auto mode selection

The selector switch enables/disables the control supply to motorised changeover switch. Electrical operation is possible only in auto mode while manual mode allows the user to operate the motorised changeover switch manually using the handle safely by cut-off of control supply to motorised changeover switch.

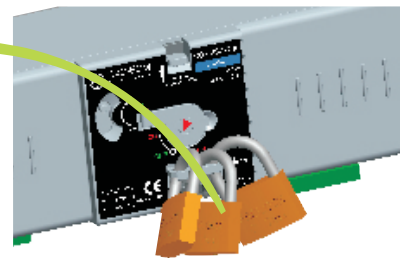


5. Auxiliary contacts

It consists two sets of changeover contacts one for each S-D. It is prewired and prefitted in motorised changeover switch.

6. Pad locking

Provision for padlocking in OFF position with three padlocks of Ø5 to Ø7. Padlocking possible in both auto and manual mode.

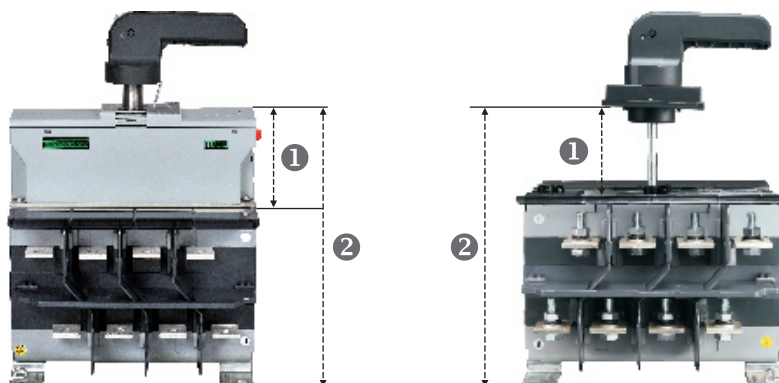


7. Fuse protection

Inbuilt glass fuse of 5 x 20 size protects the motorised kit (EOM) during abnormalities. Also, spare fuse holder has been provided for storage of fuse.

Compact design

No change in H x W x D of motorised changeover switch and manual changeover switch



Automatic Source Transfer Solution



Illuminated Push button assembly with Wire harness



UV/OV based AST Controller with Wire Harness

- Option of controlling Motorised Changeover through Illuminated push button or UV/OV relay
- Sensing of three-phase voltage controls
- Protects against under voltage and over voltage
- Option of programming of minimum voltage, maximum voltage and time delay



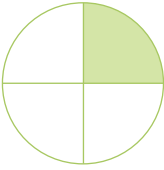



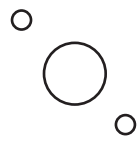
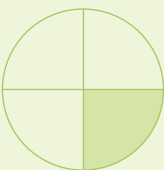

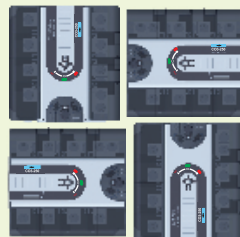

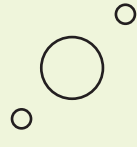
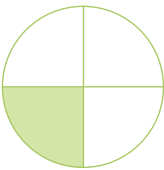
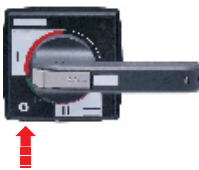
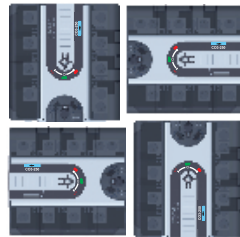

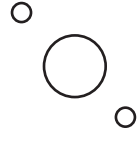
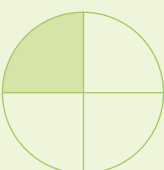



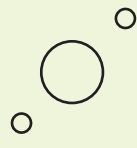
AuxC-1000L Controller with Wire Harness

- Option of sensing : Three-phase, two-phase or single-phase voltage controls
- Option of Measuring : Phase-phase voltage and/or phase-neutral voltage control
- Protects against under voltage, over voltage, phase loss, asymmetry, under frequency, over frequency, with independent enable and delay Voltage thresholds with programmable hysteresis
- RS-232 serial interface for set-up, remote control and supervision
- 6 programmable digital inputs & relay outputs (5NO + 1 C/O)

Universal Mounting for Manual Changeover Range

C-line manual changeover range also offers a distinctive feature to mount COSD in different quadrants. This feature aids mounting flexibility.

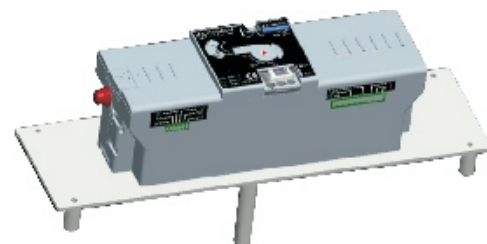
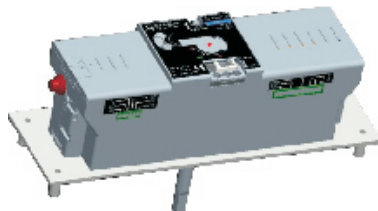
Operating Quadrant chart (Seen from front of the door)

Sr. No.	Operating Quadrant	Handle (OFF) Position	Switch Orientation	Shaft Position	Door Cut-out
1					
2					
3					
4					

Technical Specifications of Motorised Kit



Rating (A)		Unit	Frame 2 125 to 200
Reference Standards			
Rated frequency		(Hz)	50
Rated control voltage		(V)	240 V ac
Control voltage range		(%)	85% - 110%
Pollution degree			3
Operating temperature		(°C)	-5 to + 55
Ingress protection (from front)			IP 30
Max. current at 240 V ac		(A)	2
Operating time (min)	O-I / I-O	(sec)	0.5
	I-II / II-I	(sec)	1.4
Black out time		(sec)	1.4
Control glass fuse current rating	(240 V ac)	(A)	1.25
Dimensions of motorised kit	Width	(mm)	210
	Height	(mm)	84
	Depth	(mm)	94



Frame 3	Frame 4	Frame 5	Frame 6
250 & 315	400 & 630	630 to 1000	1250 to 2000
IS/IEC 60947-3, IEC 60947- 3, EN60947-3			
50	50	50	50
240 V ac	240 V ac	240 V ac	240 V ac
85% - 110%	85% - 110%	85% - 110%	85% - 110%
3	3	3	3
-5 to + 55	-5 to + 55	-5 to + 55	-5 to + 55
IP 30	IP 30	IP 30	IP 30
2	2	2	2
0.6	0.7	0.7	0.7
1.4	1.4	1.4	1.4
1.4	1.4	1.4	1.4
1	1.25	1.25	1.25
260	310	380	274
84	84	84	108
94	94	94	118

Ordering Information



Inclusive of cable gland box

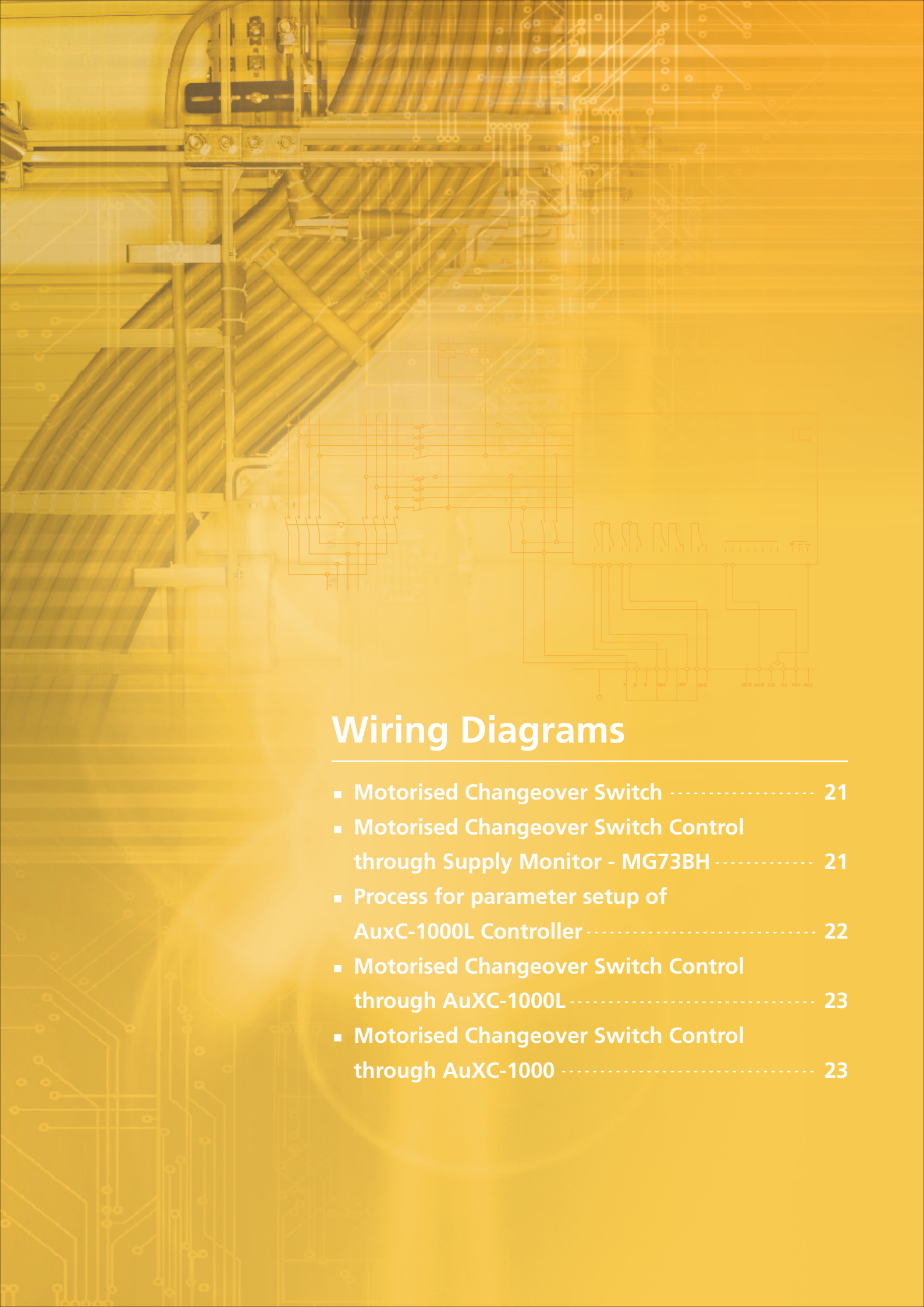
Frame	Rating (A)	Manual open execution version	Manual SS enclosure version	Fuse mountable kit	Motorised Open Execution Version	Motorised Kit (EOM)
Control Voltage		–	–	–	240 V ac	240 V ac
I	63 A	CO106300000	CO106300S00	CX106300OCO	–	–
		CO106300OOD*				
	100 A	CO110000000	CO110000S00	–	–	
		CO110000OOD*				
II	125 A	CO212500000	CO212500S00	CX212500ODO	CK90161B000	–
	160 A	CO216000000	CO216000S00	CX216000ODO	CK90162B000	
	200 A	CO220000000	CO220000S00	CX220000ODO	CK90163B000	
III	250 A	CO325000000	CO325000S00	CX325000ODO	CK90164B000	–
	315 A	CO331500000	CO331500S00	CX331500ODO	CK90165B000	
IV	400 A	CO440000000	CO440000S00	CX440000ODO	CK90166B000	–
	630 A	CO463000000	CO463000S00	–	CK90167B000	
V	630 A	CO563000000	–	CX563000ODO	CK90168B000	–
	800 A	CO580000000	CO580000S00	CX580000ODO	CK90169B000	
	1000 A	CO510000000	CO510000S00	–	CK90170B000	
VI	1250 A	CO612500000	–	–	CK90081B000	–
	1600 A	CO616000000	–	–	CK90082B000	
	2000 A	CO620000000	–	–	CK90083B000	

* Direct Handle Version



Frame	Rating (A)	Auxiliary contact for manual version (2 sets of changeover contact)	Operating handle suitable for		Operating push button assembly with Wire harness 240 V ac	UV/OV based AST Controller with Wire harness 240 V ac	AuXC 1000L controller with Wire harness
			Manual version	Motorised version			
I	63 A, 100 A	CX100020000	CX100010000	–	–	–	–
II	125 A, 160 A, 200 A	CX200020000	CX300010000	CK903740000	CK901950000	CK901920000	Wire harness CK900990000
III	250 A, 315 A	CX300020000	CX300010000				
IV	400 A, 630 A	CX400020000	CX400010000#	CK903780000			
V	800 A, 100 0A	CX500020000	CX500010000#				
VI	1250 A, 1600 A, 2000 A	CX600020000	CX600010000#	CK906450000			AuXC 1000L controller ST800240000

Flip-able Operating Handle

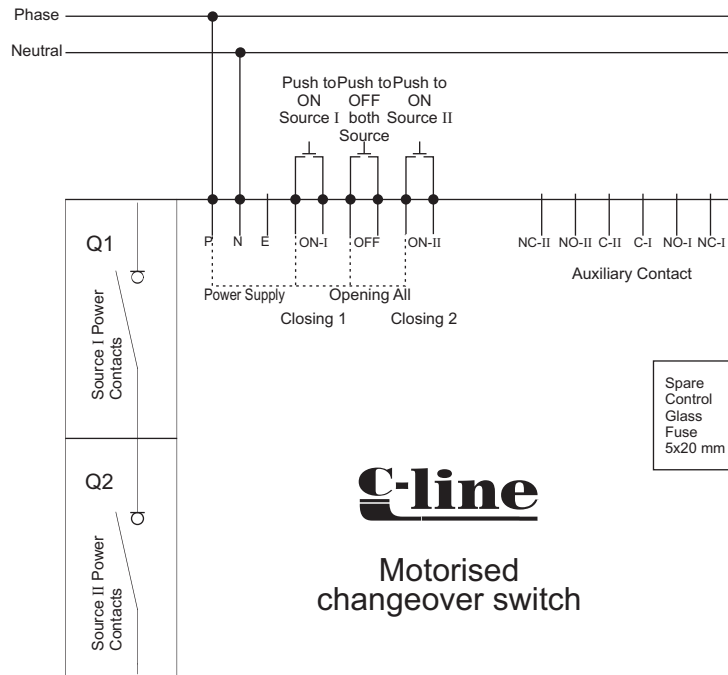


Wiring Diagrams

- Motorised Changeover Switch 21
- Motorised Changeover Switch Control
through Supply Monitor - MG73BH 21
- Process for parameter setup of
AuxC-1000L Controller 22
- Motorised Changeover Switch Control
through AuXC-1000L 23
- Motorised Changeover Switch Control
through AuXC-1000 23

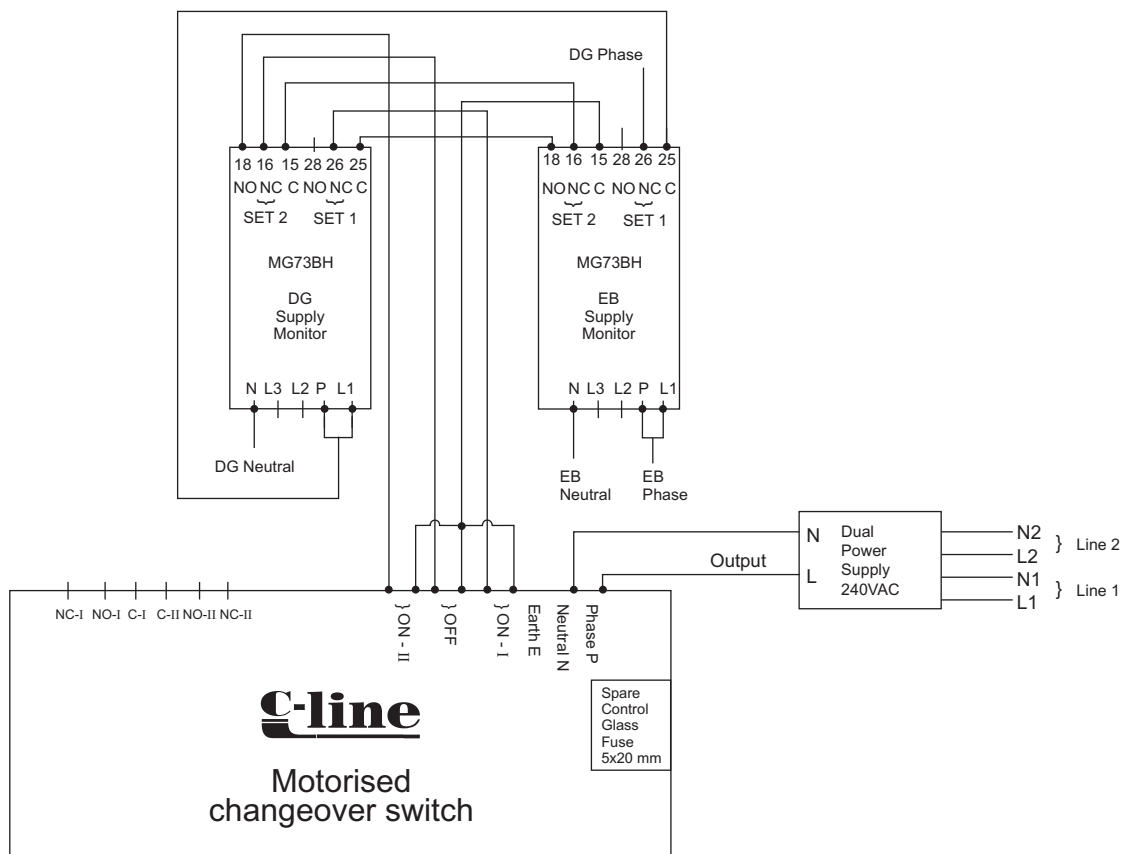
Wiring Diagrams

Motorised Changeover Switch



⚠ Do not push source I and source II push button together

Control of Motorised Changeover Switch through Supply Monitor - MG73BH



AuxC-1000L Controller



Process for Parameters Setup

- To access parameter setup, starting with the unit in OFF-RESET mode, press the A and D keys together for five consecutive seconds. MENU SETUP text will appear on the display, wait a few seconds or press key D to access the menu
- The display will show the code of the first parameter P1.01, i.e. menu P1, parameter 01
- Press keys A and B to scroll the parameters of the same menu
- Press keys E and F to browse the different menus
- Press keys C to switch between the code and the value of the parameter
- By moving to another parameter or quitting, the menu the setting will be stored automatically
- Press key D to quit parameters setup
- Press keys E and F simultaneously to go back to the default setting of the parameter
- If no keys are pressed for more than 2 minutes, the unit exits setup automatically without storing the changes

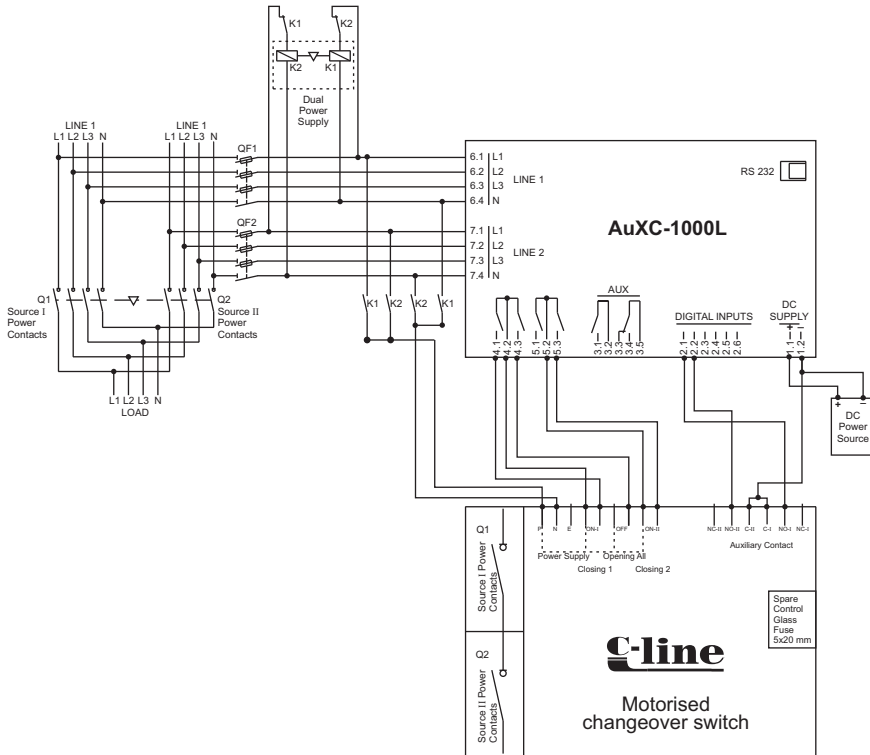
Key parameter to be set as per connection diagram

Connection Terminal	Parameter code	Default Setting	Compatible Setting for C-line Motorised Changeover	Description
2.1	P5.1.1	Fb.1	Fb.1	Line 1 Changeover switch closed (Feedback 1). Auxiliary contact informing the Auxc1000L of the open/closed status of line 1 changeover switch.
2.2	P5.2.1	Fb.2	Fb.2	Line 2 Changeover switch closed (Feedback 2). Auxiliary contact informing the Auxc1000L of the open/closed status of line 2 changeover switch.
4.1	P6.1.1	OP.1	CL.1	Line 1 Changeover switch close control (Close 1). AuXC 1000L internal contact which closes to command the closing of line 1 changeover switch. It is a Pules and will be released when the operation is completed.
4.3	P6.2.1	CL.1	OP.A	Open control for both lines (Open All). Used to set Motorised Changeover Switch to neutral position, with both lines open.
5.3	P6.4.1	CL.2	CL.2	Line 2 Changeover switch close control (Close 2). AuXC 1000L internal contact which closes to command the closing of line 2 changeover switch. It is a Pules and will be released when the operation is completed.

Note: Please refer AuXC-1000L product manual for further programing details.

Wiring Diagrams

Control of Motorised Changeover Switch through AuXC-1000L



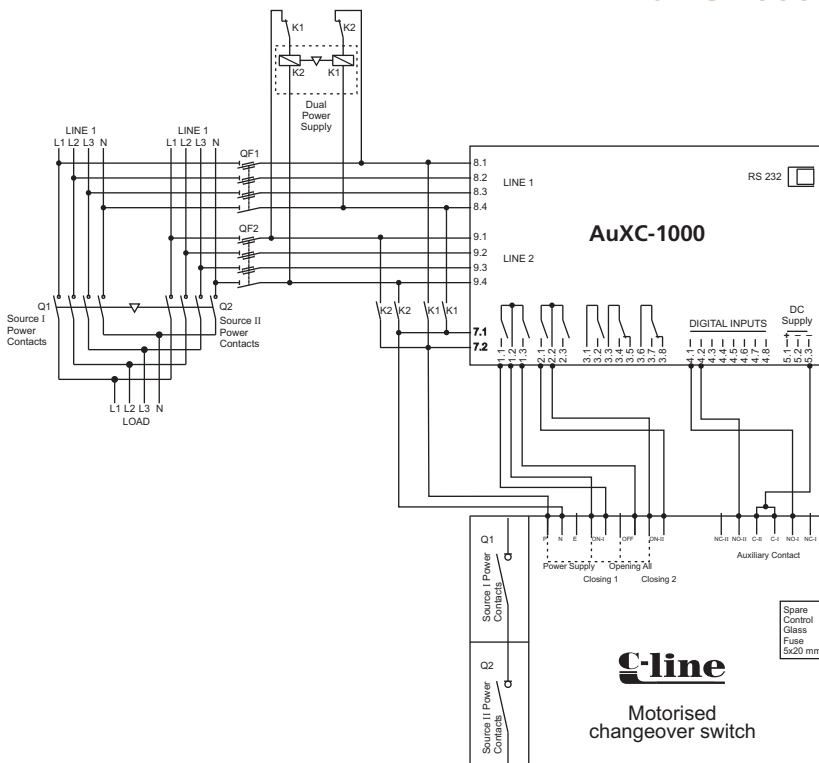
Parameter setting for the wiring diagram in picture.

Terminal	Parameter code	Setting
4.1	P6.1.1	CL.1
4.3	P6.2.1	OP.A
5.3	P6.4.1	CL.2
2.1	P5.1.1	Fb.1
2.2	P5.2.1	Fb.2

	Changeover switch (Q1, Q2)
	Contactors
	Mechanical Interlocking
	HRC Fuse

Note: Please refer AuXC-1000L product manual for programming details.

Control of Motorised Changeover Switch through AuXC-1000



Parameter setting for the wiring diagram in picture.

Terminal	Parameter code	Setting
1.1	P6.01	CL.1
1.3	P6.02	OP.A
2.1	P6.03	CL.2
4.1	P5.01	Fb.1
4.2	P5.02	Fb.2

	Changeover switch (Q1, Q2)
	Contactors
	Mechanical Interlocking
	HRC Fuse

Note: Please refer AuXC-1000 product manual for programming details.

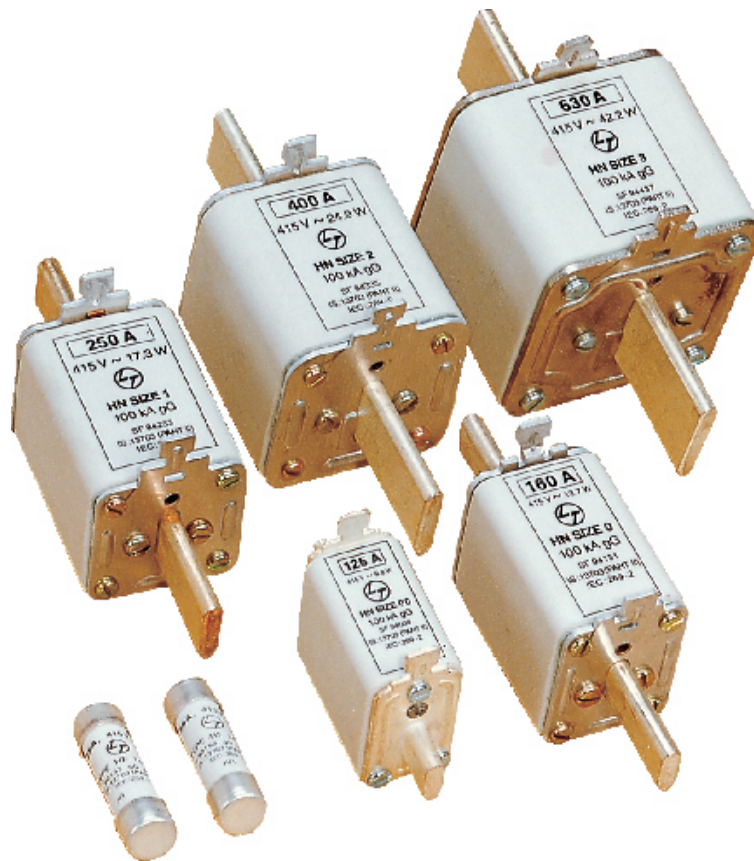
Characteristic Curves

■ HRC Fuse-link Details	25
■ Time-Current Characteristics of Type HF Fuse-links	26
■ Cut-off Current Characteristics of Type HF Fuse-links	26
■ Time-Current Characteristics of Type HN Fuse-links	27
■ Cut-off Current Characteristics of Type HN Fuse-links	27

HRC Fuse-link Details

Features

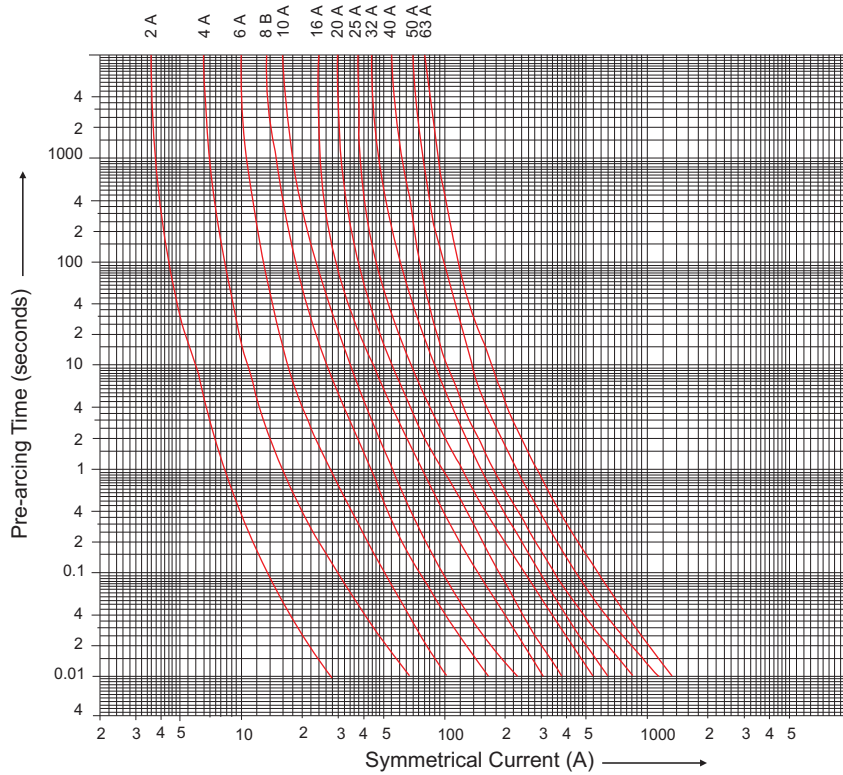
- Conform to IEC 60269-2, IS 13703 part 2
- Range: 2 A to 800 A, 415 V, AC 50 Hz
- Type: HF Cylindrical (2 A to 63 A) & HN DIN (63 A to 800 A)
- High breaking capacity: 80 kA for type HF and 100 kA for type HN



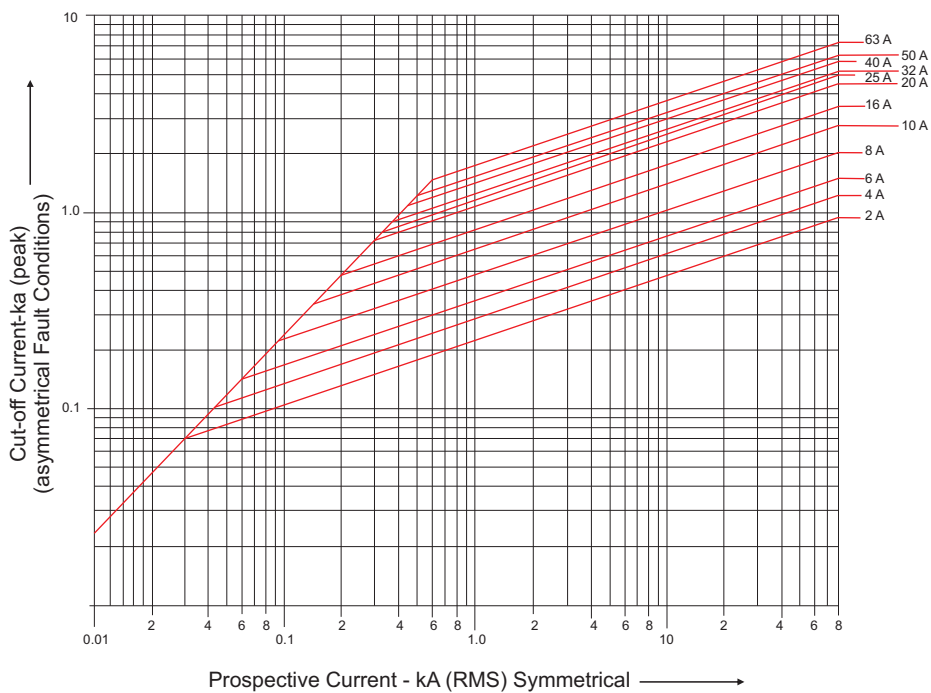
Frame	Rating (A)	Fuse mountable kit	Suitable fuse-link type	Fuse-link Size
I	63	CO Frame 1 63 A	HF	14 x 51 Cylindrical
II	125	CO Frame 2 125 A	HN	Size 000
	160	CO Frame 2 160 A		Size 00
	200	CO Frame 2 200 A		Size 00
III	250	CO Frame 3 250 A		Size 1
	315	CO Frame 3 315 A		Size 1
IV	400	CO Frame 4 400 A		Size 2
V	630	CO Frame 5 630 A		Size 3
	800	CO Frame 5 800 A		Size 3

Characteristic Curves

HRC Fuse-link Type HF Time-Current Characteristics

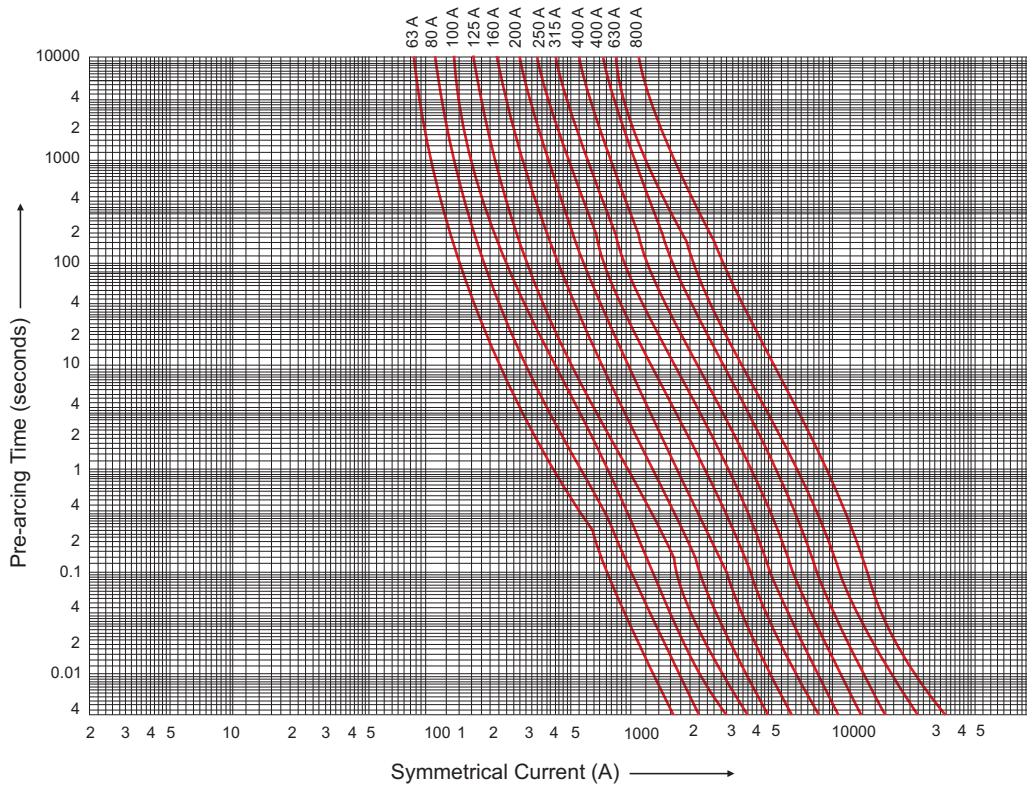


Cut-off Current Characteristics

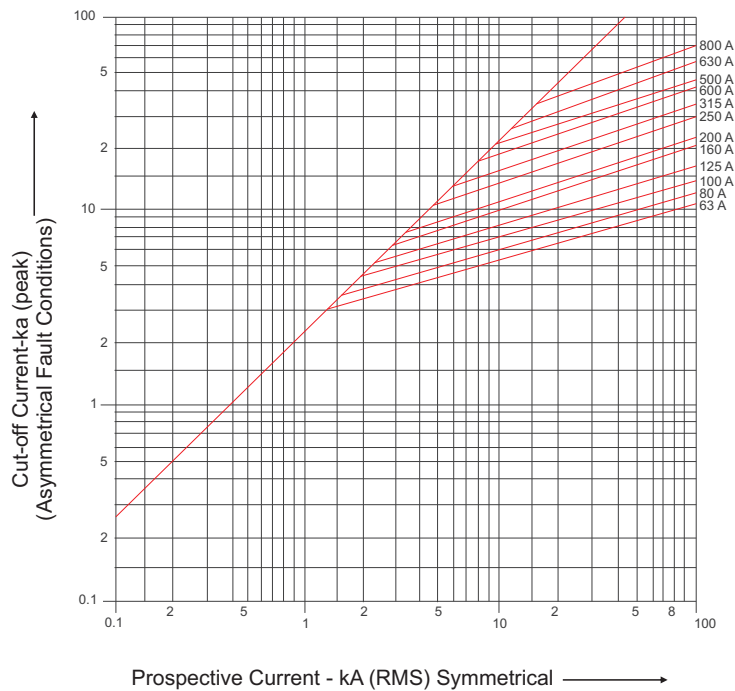


Characteristic Curves

HRC Fuse-link Type HN Time-Current Characteristics



Cut-off Current Characteristics



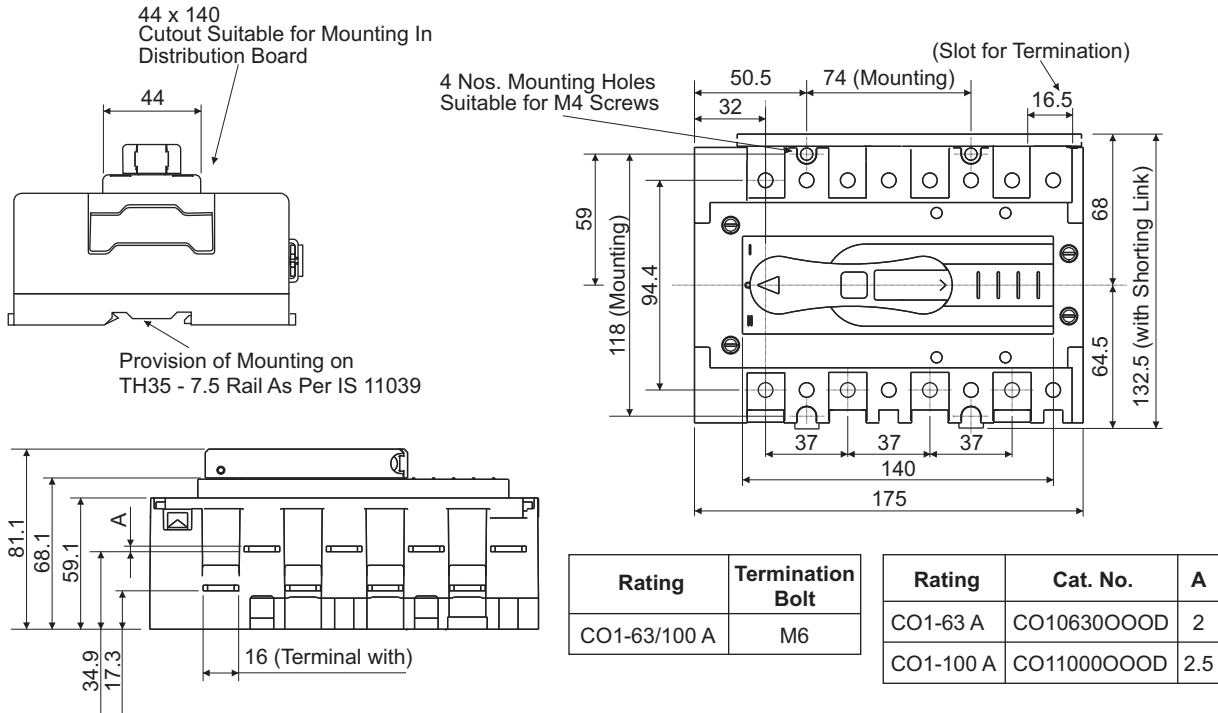
Dimensions

- **Dimensions of Open Execution Manual Changeover Switch** 29
- **Dimensions of Manual Changeover Switch in Sheet Steel Enclosure** 35
- **Dimensions of Manual Fuse Changeover Switch** 38
- **Dimensions of Motorised Changeover Switch** 41
- **Dimensions of Auto Source Transfer Switch Controller : AuXC-1000 & AuXC-1000L** 43

Dimensions

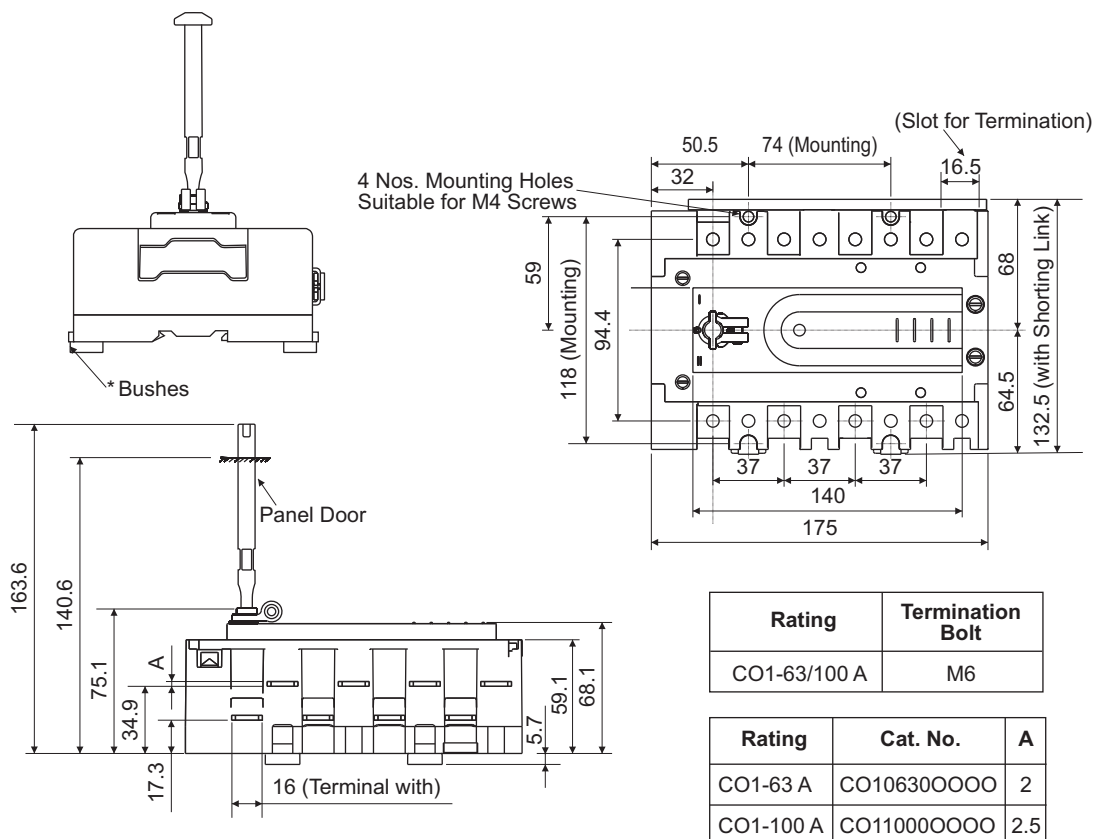
CO1-63/100

Open Execution with Direct Handle Manual Changeover Switch



CO1-63/100

Open Execution with Extended Handle Manual Changeover Switch



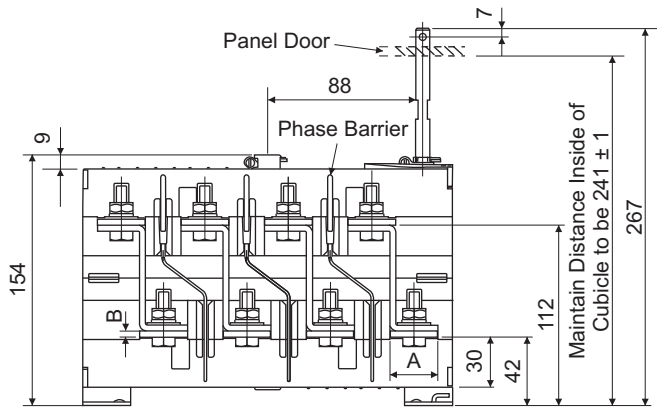
All dimensions are in mm

* Assemble bushes for higher ground clearance.

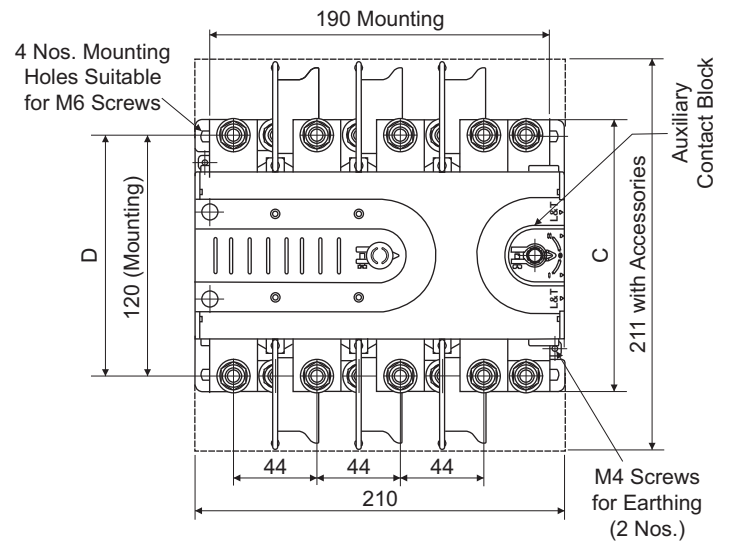
Dimensions

CO2-125/160/200

Open Execution with Extended Handle Manual Changeover Switch

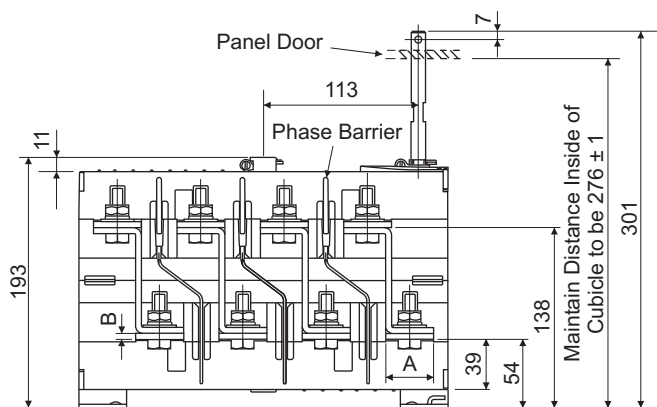


Rating	A	B	C	D	E
CO2-125	22	3	138	121	220
CO2-160	22	3	138	121	203
CO2-200	26	5	150	121	204

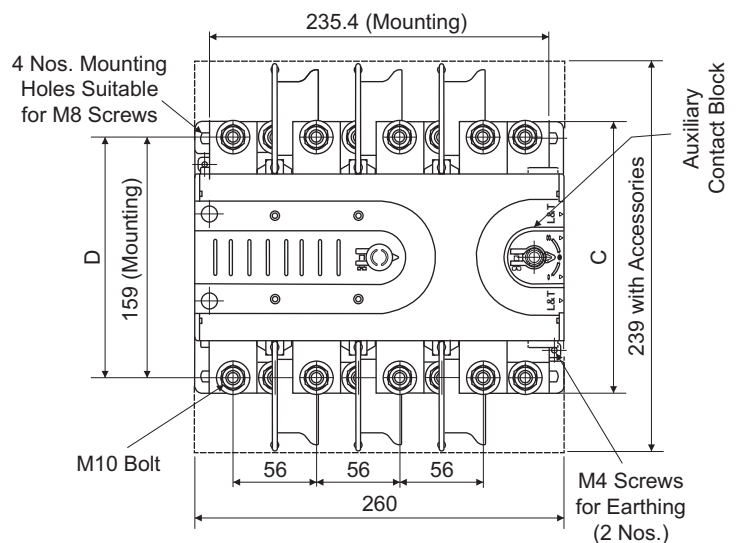


CO3-250/315

Open Execution with Extended Handle Manual Changeover Switch



Rating	A	B	C	D
CO3-250	29	4.5	182	156
CO3-315	35	5	198	164

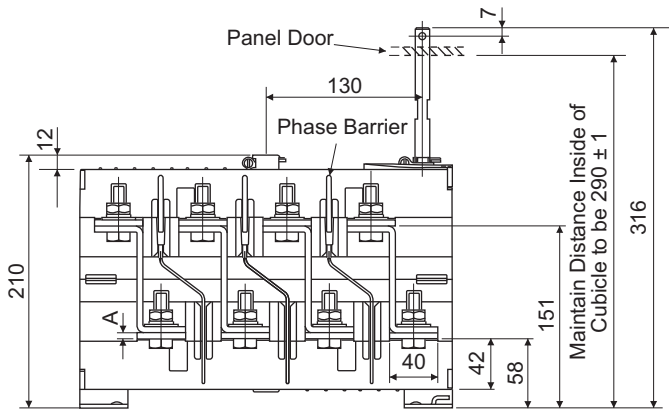


All dimensions are in mm

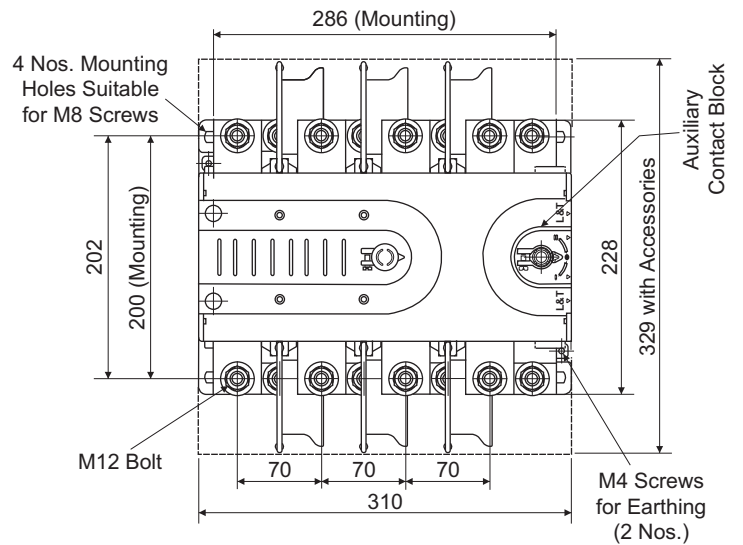
Dimensions

CO4-400/630

Open Execution with Extended Handle Manual Changeover Switch

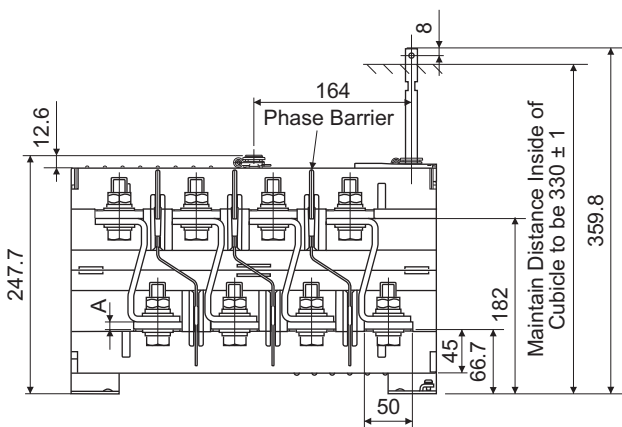


Rating	A
CO4-400	5
CO4-630	6

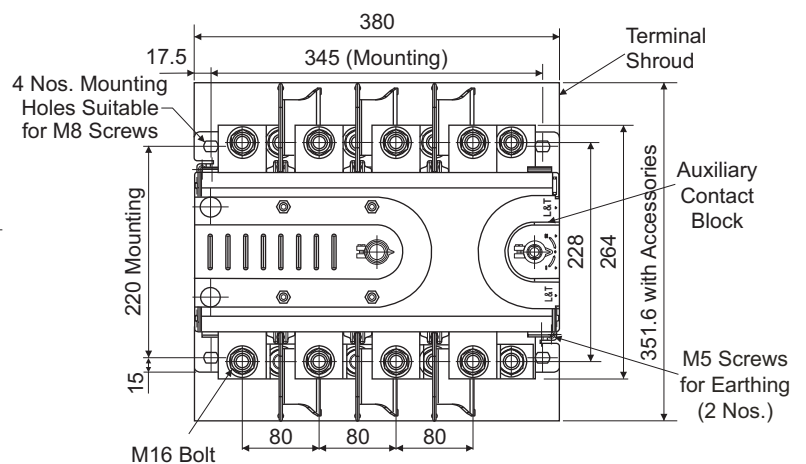


CO5-630/800/1000

Open Execution with Extended Handle Manual Changeover Switch



Rating	A
CO5-630	6
CO5-800	8
CO5-1000	8

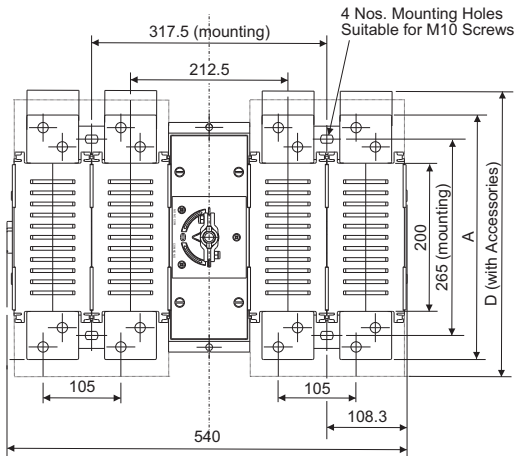


All dimensions are in mm

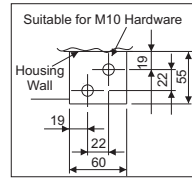
Dimensions

CO6-1250/1600

Open Execution with Extended Handle Manual Changeover Switch with center operation

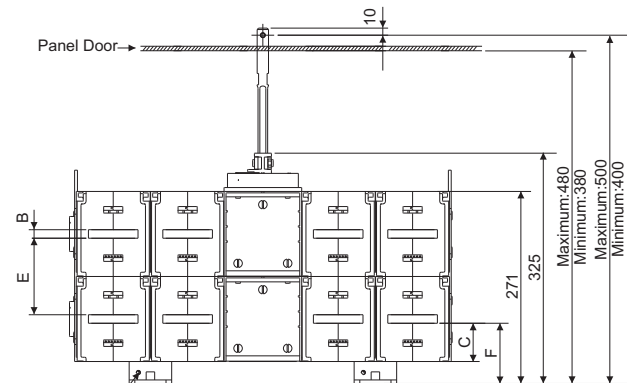
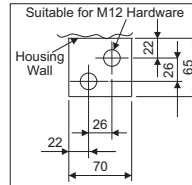


1250A Terminal Arrangement



Type Designation	Terminal Screws	Tightening Torque
CO6-1250	M10 Hexagonal Head Bolt	20 N-m
CO6-1600	M12 Hexagonal Head Bolt	27 N-m

1600A Terminal Arrangement

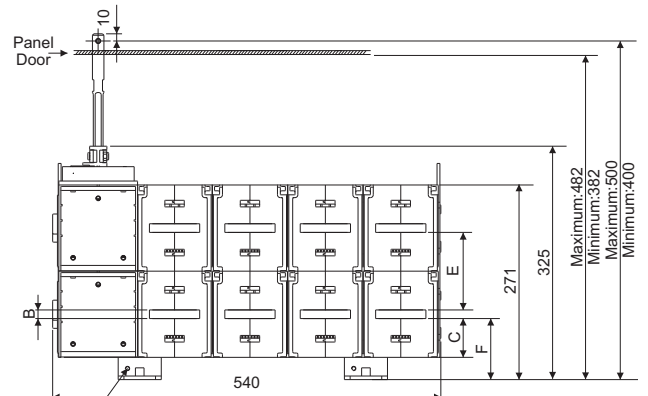
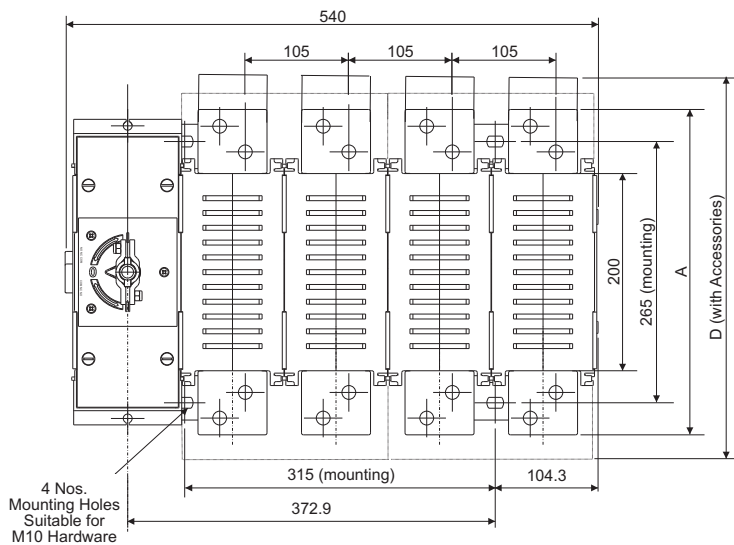


Tapped Hole Suitable for M5 Screw for Earthing (25 Sq. mm Cable Lug)

Cat. No.	Rating	A	B	C	D	E	F
CO612500000	1250A	310	8	56	339	112	87
CO616000000	1600A	330	12	54	347	108	85

CO6-1250/1600

Open Execution with Extended Handle Manual Changeover Switch with side operation



Tapped Hole Suitable for M5 Screw for Earthing (25 Sq. mm Cable Lug)

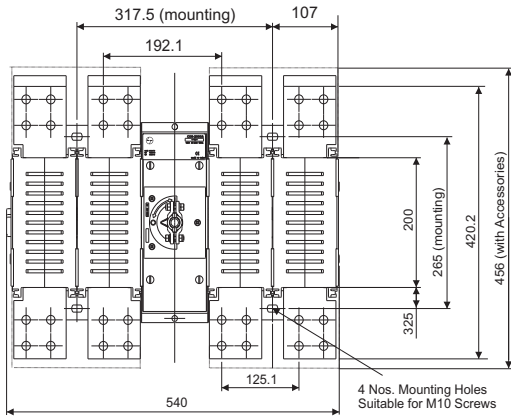
Cat. No.	Rating	A	B	C	D	E	F
CO612500000	1250A	310	8	56	339	112	87
CO616000000	1600A	330	12	54	347	108	85

All dimensions are in mm

Dimensions

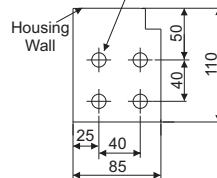
CO6-2000

Open Execution with Extended Handle Manual Changeover Switch with center operation

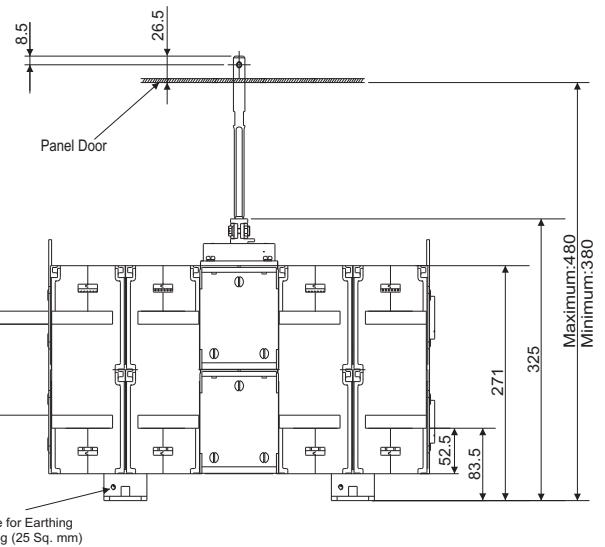


Terminal Arrangement

Suitable for M12 Hardware

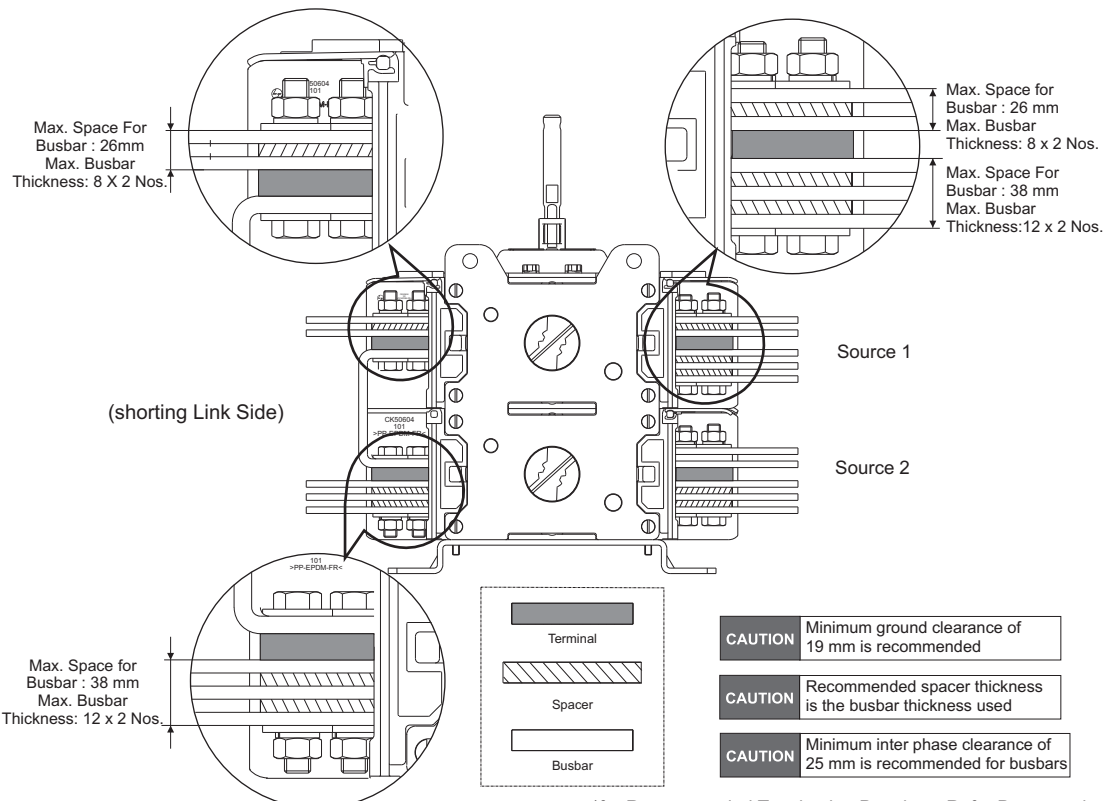


Type Designation	Terminal Screws	Tightening Torque
COS-2000	M12 Hexagonal Head Bolt	27 N-m



CO6-2000A

Termination of 100 mm Bus Bar



All dimensions are in mm

*for Recommended Termination Practices, Refer Page number 34

Dimensions

Recommended termination practices for busbar width 60-80 mm with diagonal hole configuration

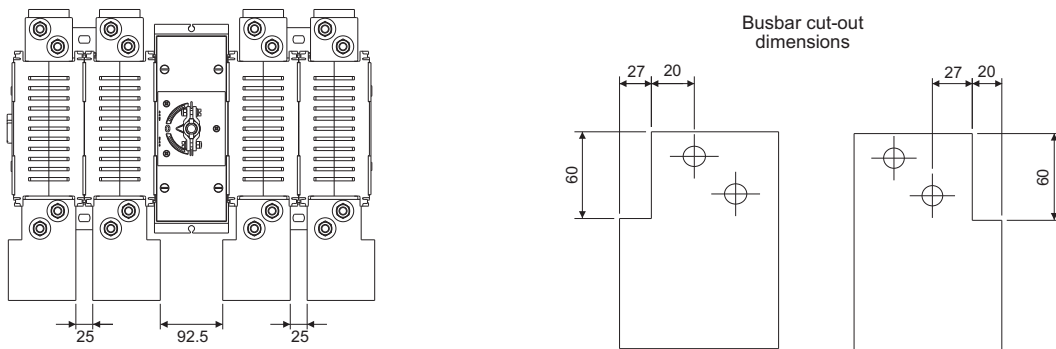
Busbar sizes as per standard

Busbar	1250 A	1600 A	2000 A
Cu	80 x 5 x 2nos	100 x 5 x 2nos	100 x 5 x 3nos
*Al	63 x 12 x 2nos	50 x 8 x 4nos	100 x 10 x 3nos

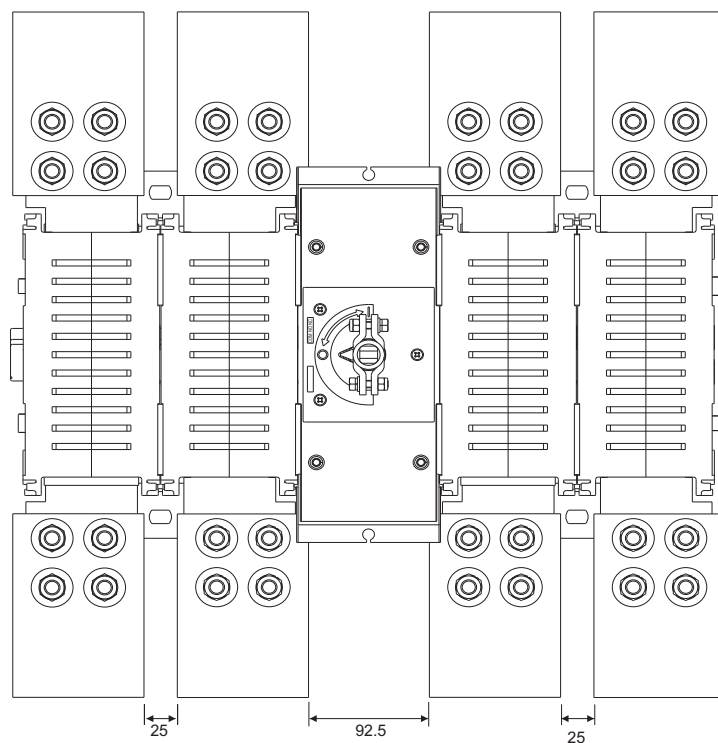
*For Aluminium termination as per standard:
 1250A: Factory fitted hardware to be used,
 1600/2000A: Bolt length of 85 mm to be used.

- Note: 1. Different configurations of busbars can be used maintaining minimum cross section areas as specified in the table
 2. Factory supplied bolt length caters to the copper bus bar termination as per standard. in case of different configurations & cross section areas, bolt of higher length may be required.

Termination of 100 mm Bus Bar 1600 A



CO6-1600 A Termination of 100 mm Bus Bar

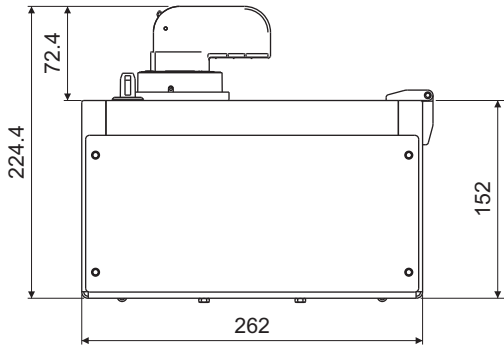


Direct termination of 100 mm bus bar possible in case of 2000 A.

All dimensions are in mm

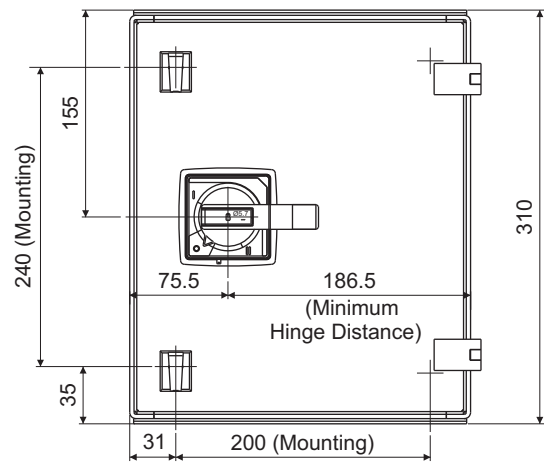
Dimensions

CO1-63/100 Manual Changeover Switch In Sheet Steel Enclosure

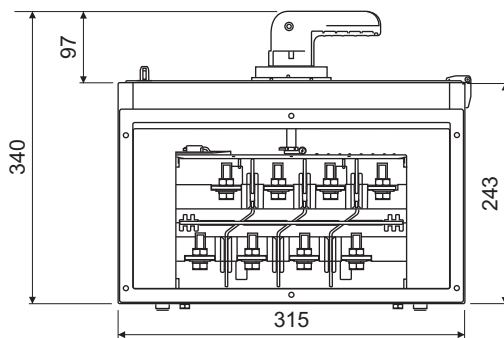


Rating	Termination Bolt
CO1-63/100 A	M6

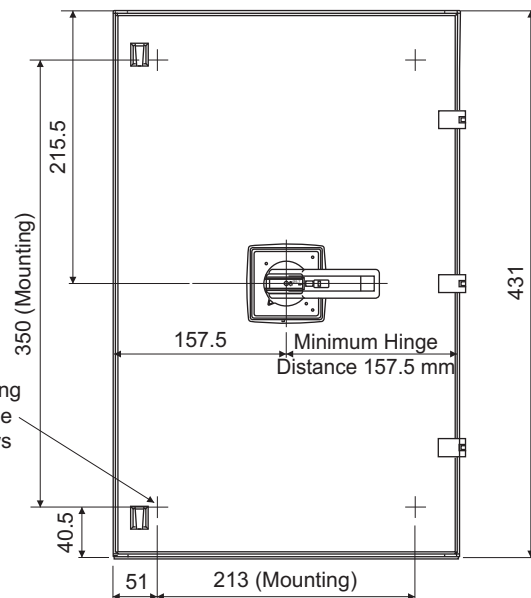
Rating	Cat. No.
CO1-63 A	CO10630OSOO
CO1-100 A	CO11000OSOO



CO2-125/160/200 Manual Changeover Switch In Sheet Steel Enclosure



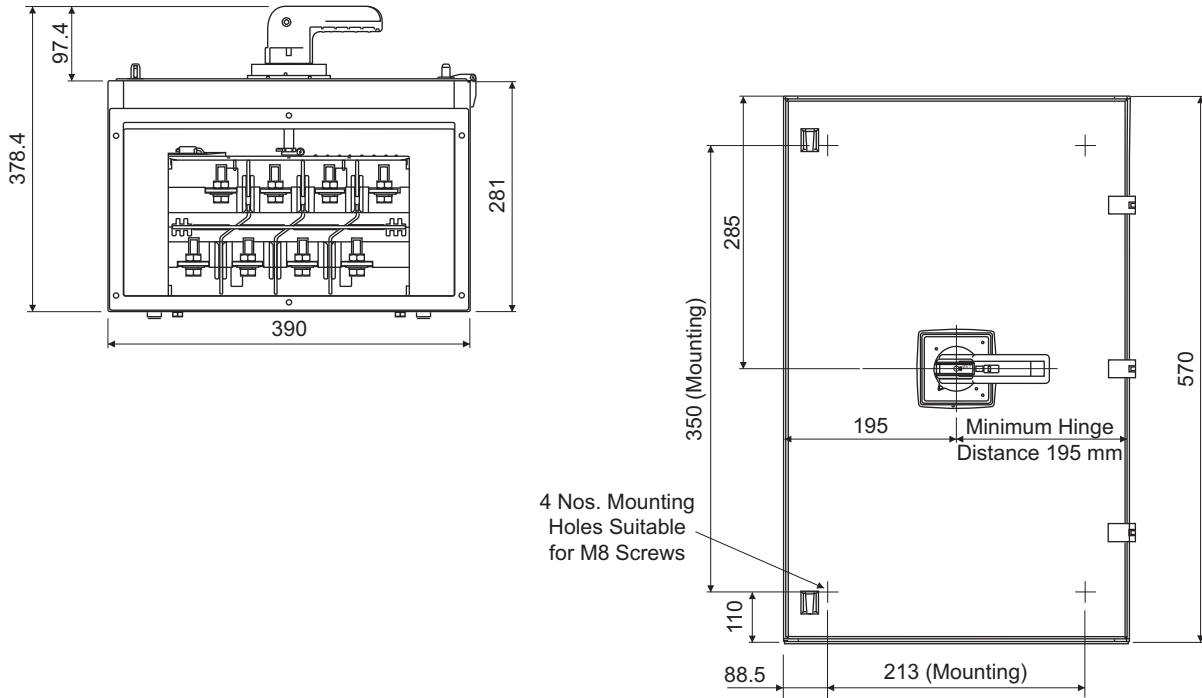
4 Nos. Mounting Holes Suitable for M8 Screws



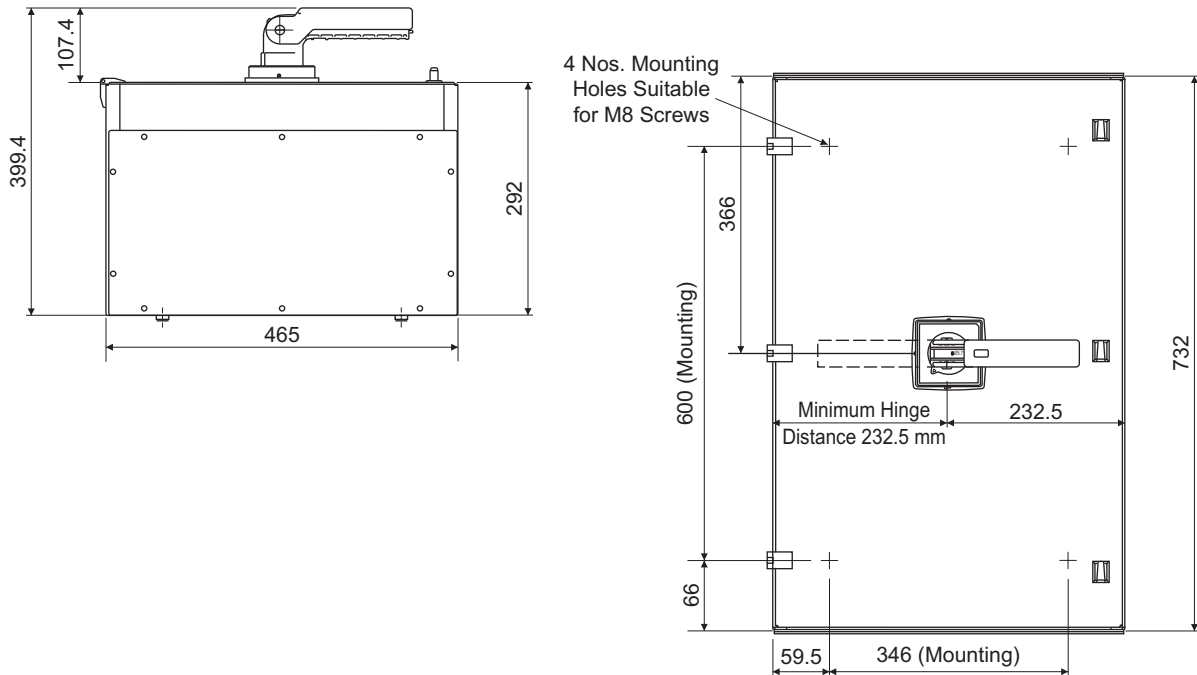
All dimensions are in mm

Dimensions

CO3-250/315 Manual Changeover Switch In Sheet Steel Enclosure



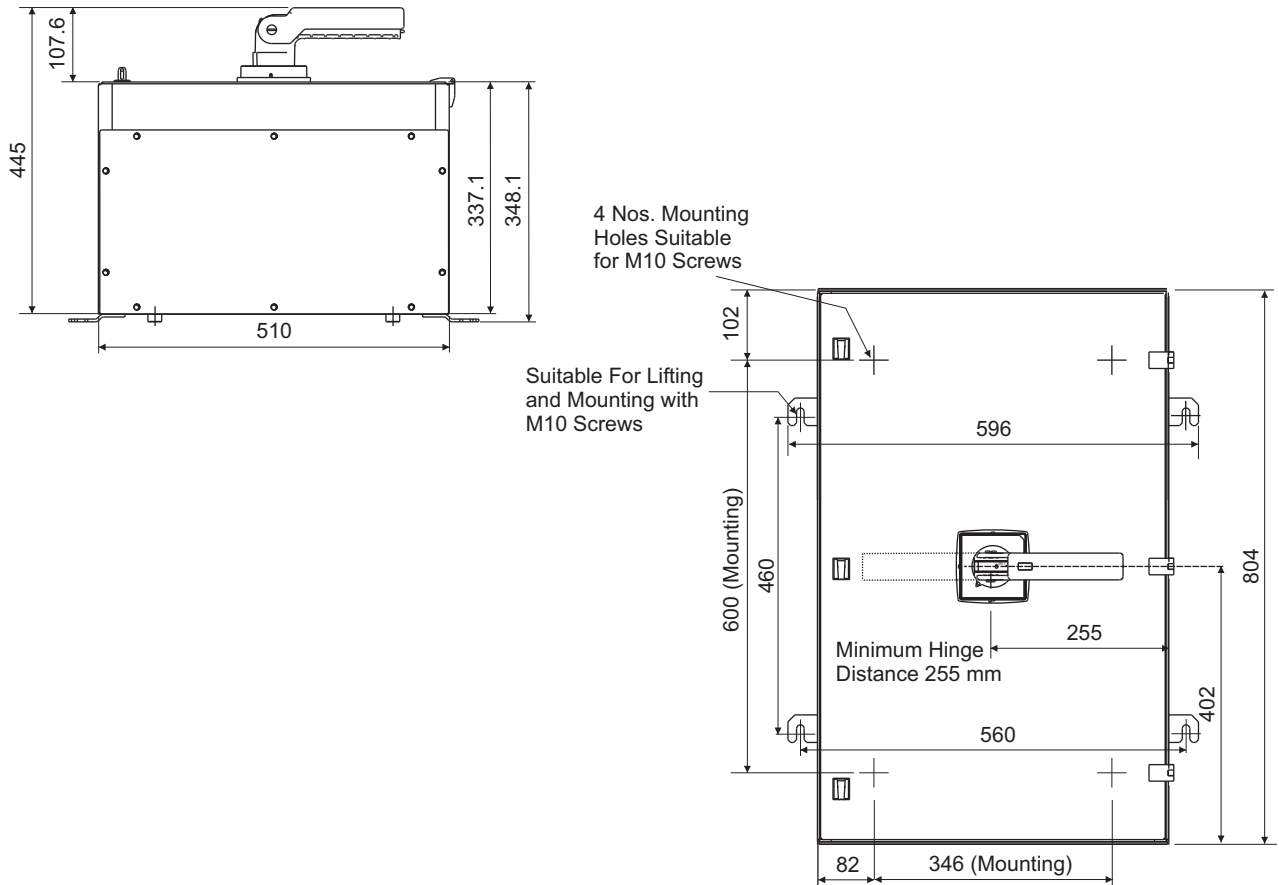
CO4-400/630 Manual Changeover Switch In Sheet Steel Enclosure



All dimensions are in mm

Dimensions

CO5-800/1000 Manual Changeover Switch In Sheet Steel Enclosure

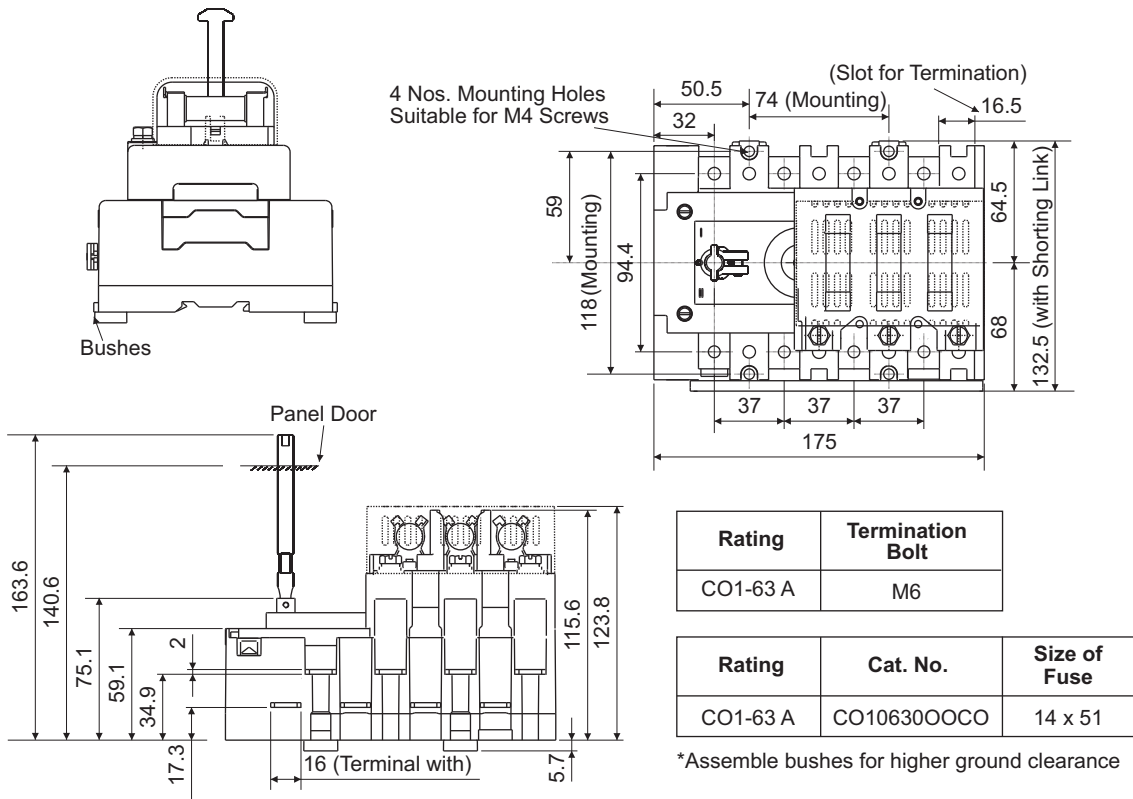


Rating	Cat. No.
CO5-800	CO58000OSOO
CO5-1000	CO51000OSOO

Dimensions

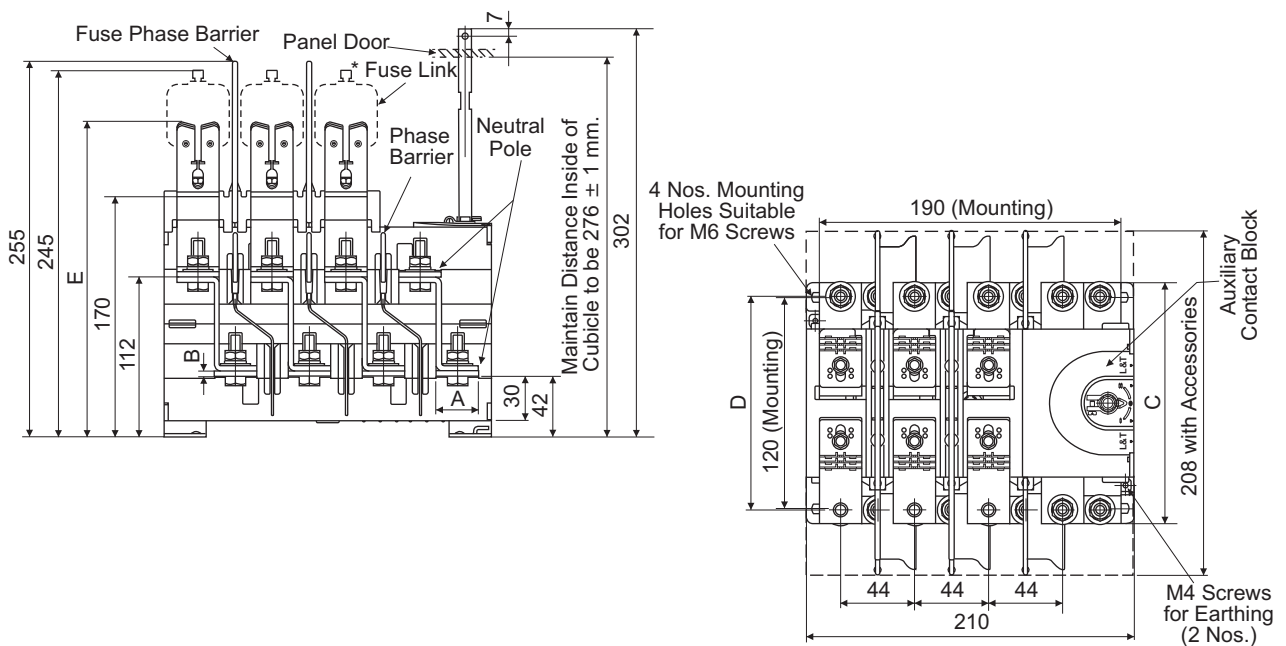
CO1-63

Fuse Changeover Switch (Suitable for Cylindrical Type Fuse Link)



CO2-125/160/200

Fuse Changeover Switch (Suitable for DIN Type Fuse Link)

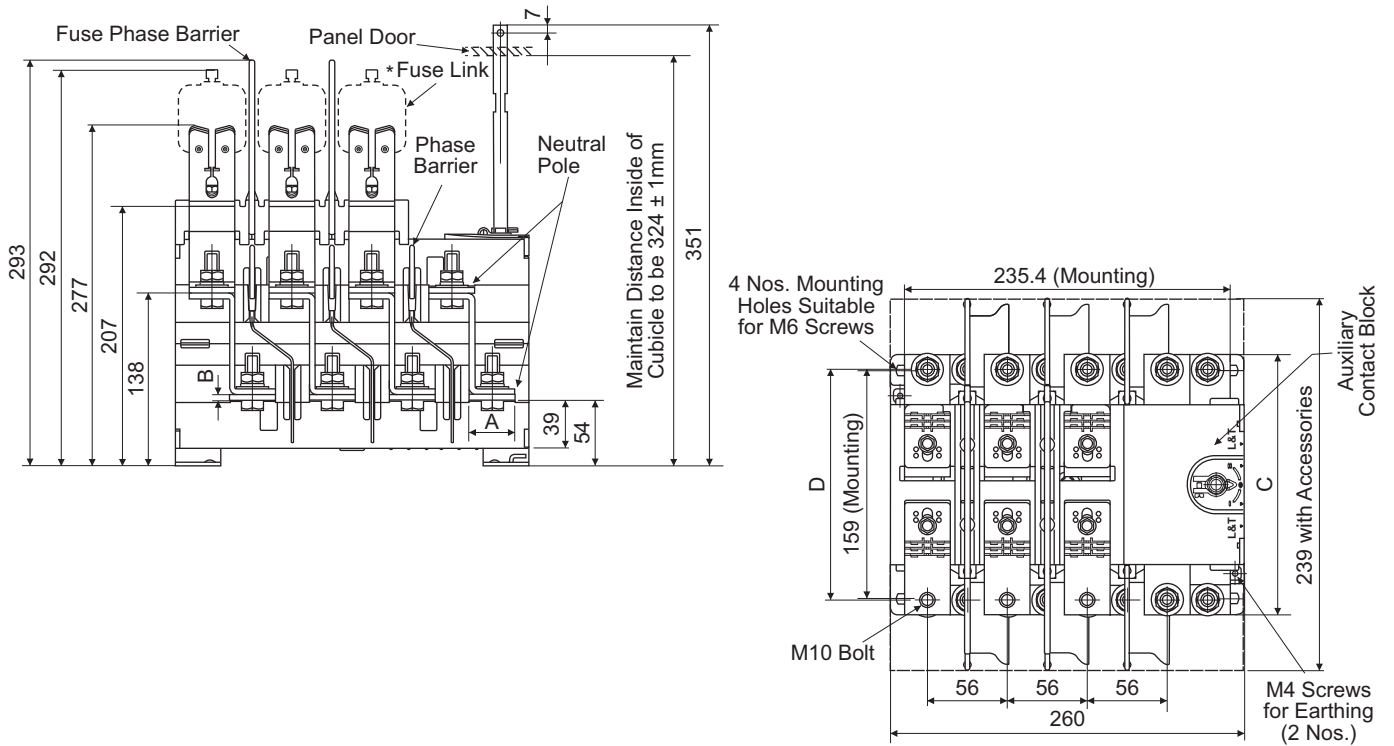


All dimensions are in mm

Dimensions

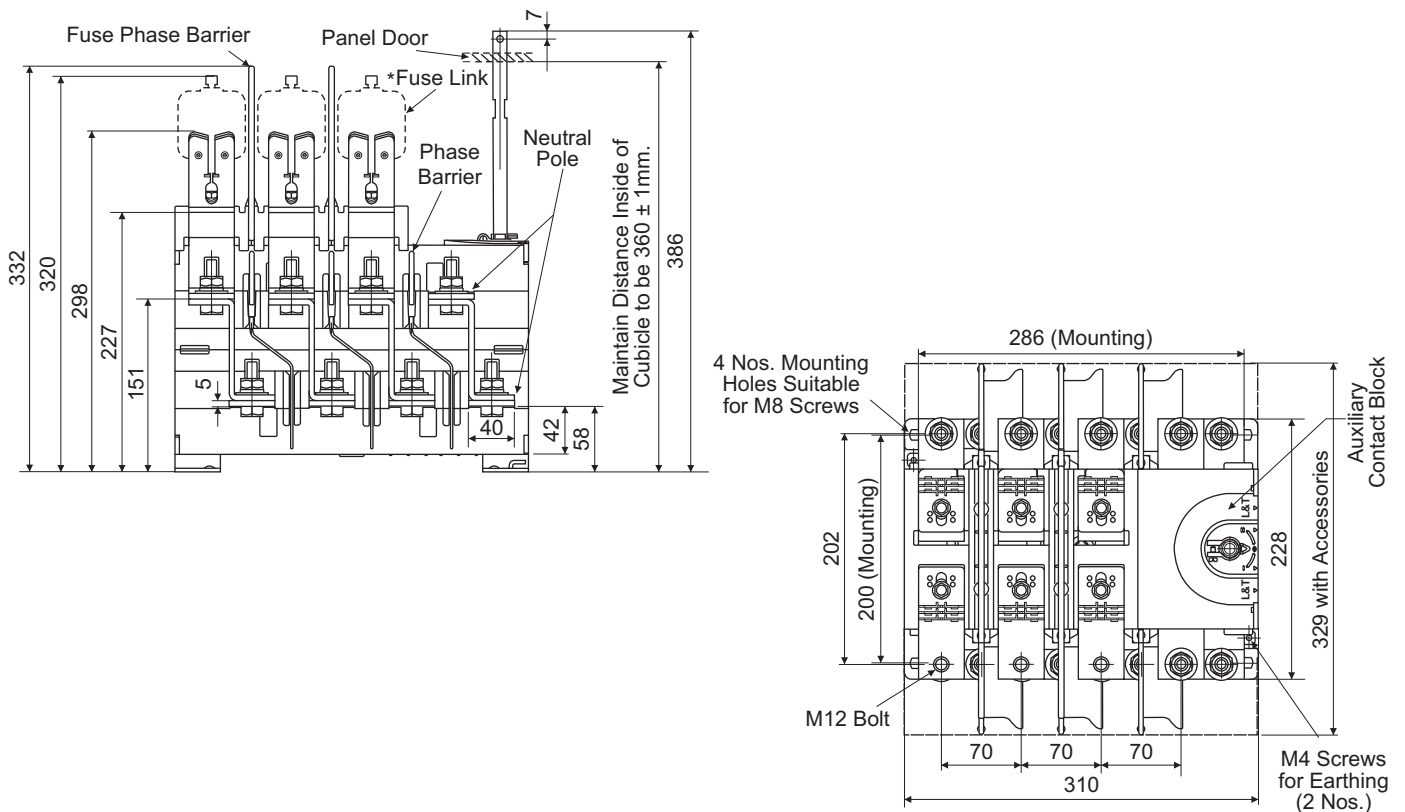
CO3-250/315

Fuse Changeover Switch (Suitable for DIN Type Fuse Link)



CO4-400

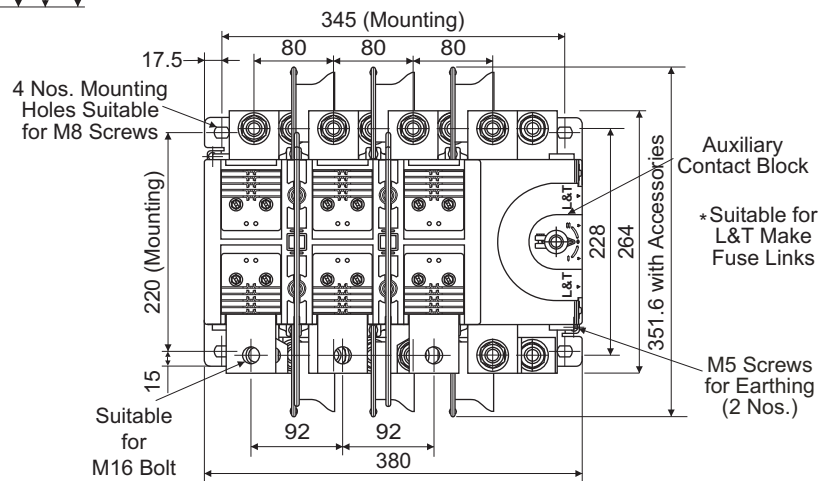
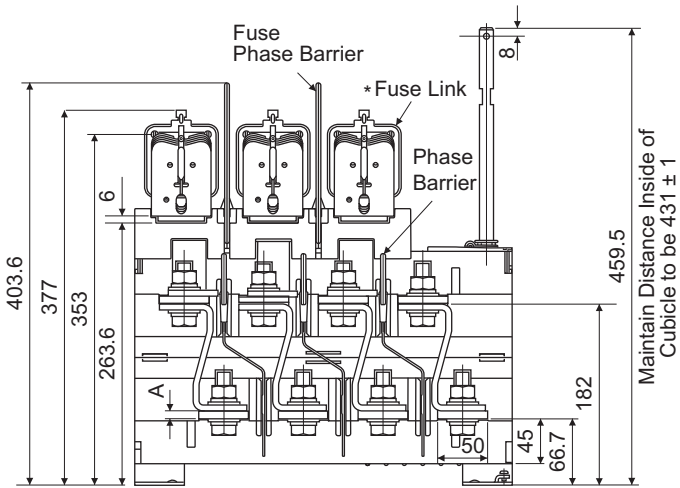
Fuse Changeover Switch (Suitable for DIN Type Fuse Link)



All dimensions are in mm

Dimensions

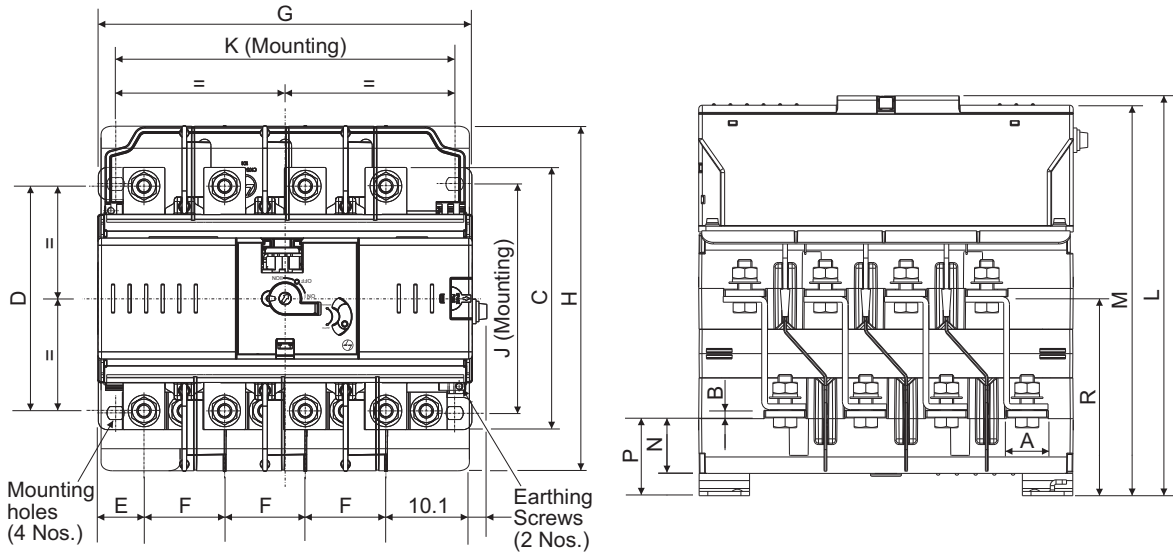
CO5-630/800 Fuse Changeover Switch (Suitable for DIN Type Fuse Link)



All dimensions are in mm

Dimensions

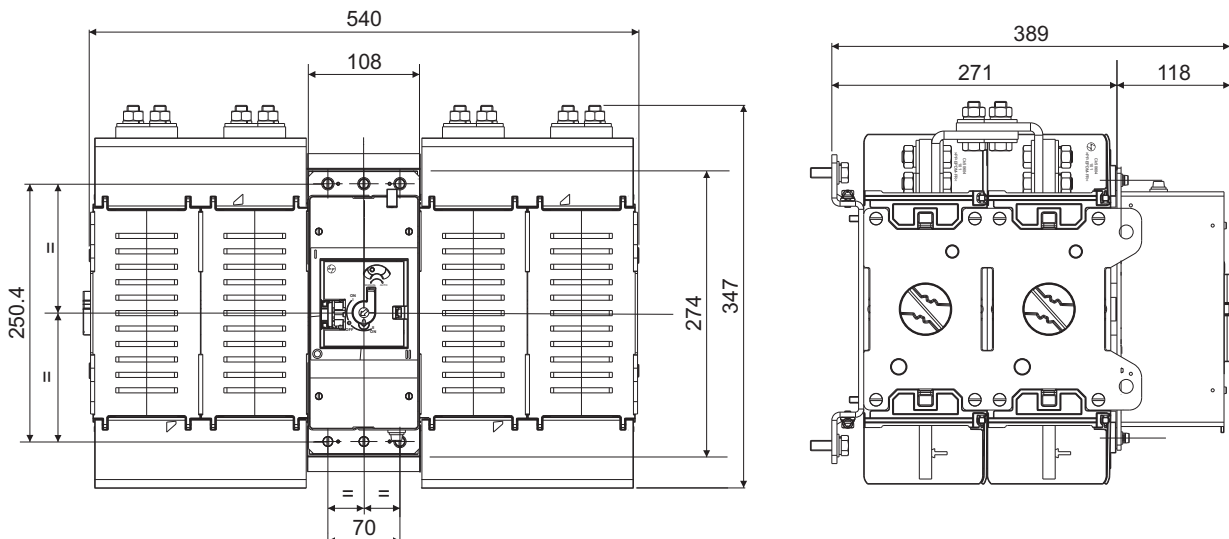
CO2 to CO5 (125-1000A) Motorised Changeover Switch



Rating (A)	Frame		A	B	C	D	E	F	G	H	J	K
	CO	EOM										
125	CO2	CX2	22	3	138	121	28	44	210	211	120	190
160			22	3	138	121	28	44	210	211	120	190
200			26	5	150	121	28	44	210	211	120	190
250	CO3	CX3	29	4.5	182	156	32	56	260	239	159	235.4
315			35	5	198	164	32	56	260	239	159	235.4
400	CO4	CX4	40	5	228	202	32.3	70	310	329	200	286
630			40	6	228	202	32.3	70	310	329	200	286
630	CO5	CX5	50	6	264	228	-	80	380	351.6	220	345
800			50	8	264	228	-	80	380	351.6	220	345
1000			50	8	264	228	-	80	380	351.6	220	345

Frame		L	M	N	P	R	Mounting Hole Size	Earthing Screw Size
CO	EOM							
CO2	CX2	240.3	234.3	30	42	112	M6	M4
CO3	CX3	277.2	271.2	39	54	138	M8	M4
CO4	CX4	293.7	287.7	42	58	151	M8	M4
CO5	CX5	330.9	324.9	45	66.7	182	M8	M5

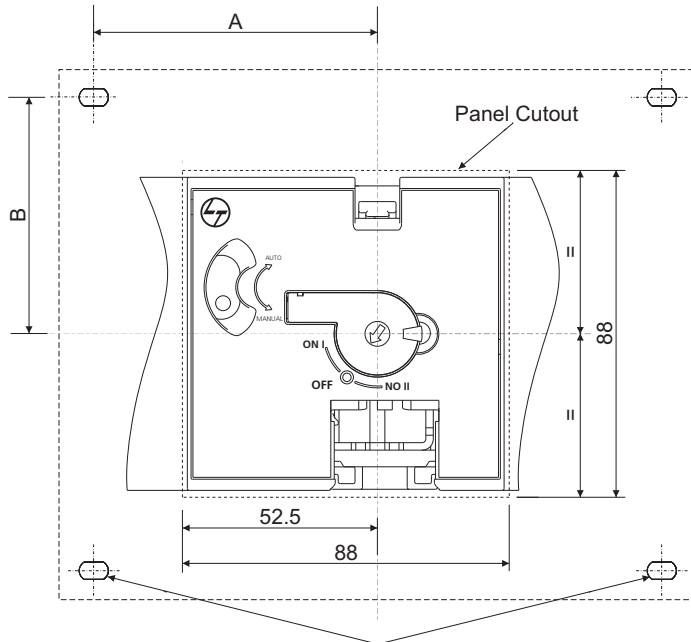
CO6-1250/1600/2000 Motorised Changeover Switch



All dimensions are in mm

Dimensions

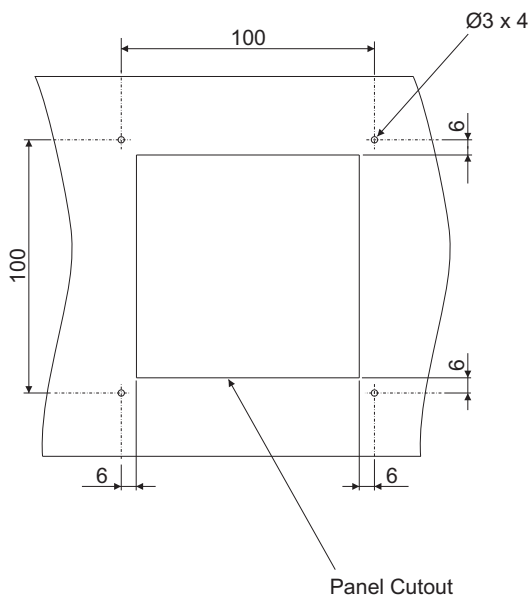
Panel Cutout Motorised Changeover Switch



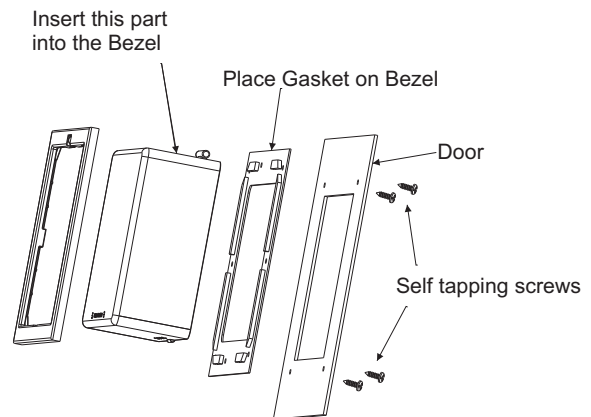
Mounting Holes of Respective Changeover Switch

Type	A	B
CO2 with CX2	95	60
CO3 with CX3	117.7	79.5
CO4 with CX4	143	100
CO5 with CX5	172.5	110

Drilling Plan for Mounting Bezel* Motorised Changeover Switch



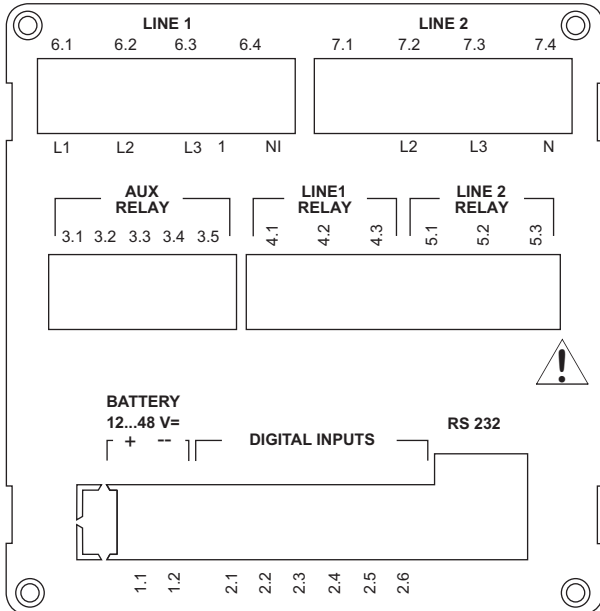
Bezel Assembly



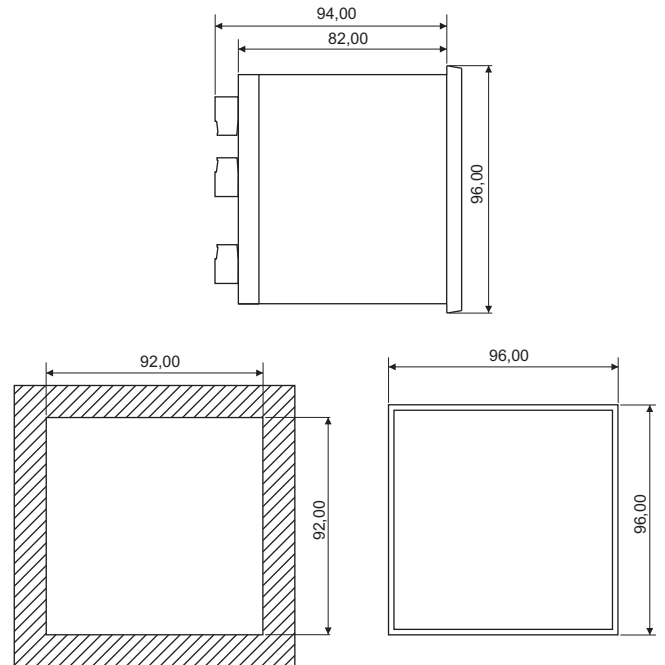
*Available with standard product.

Dimensions

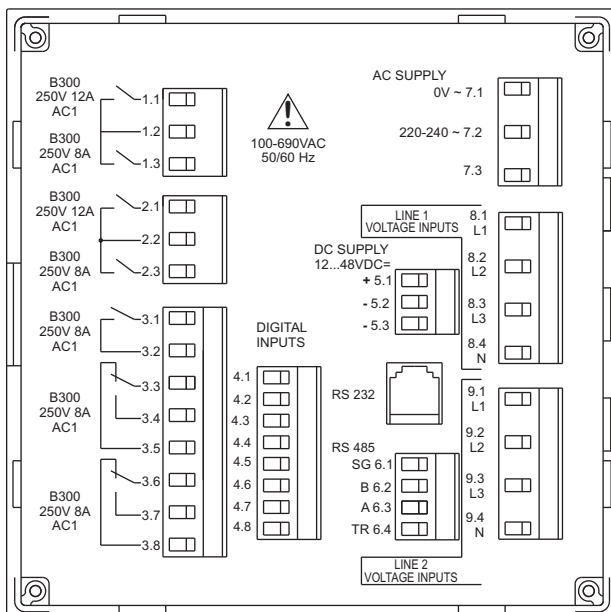
AuXC-1000L Rear Terminal Connections



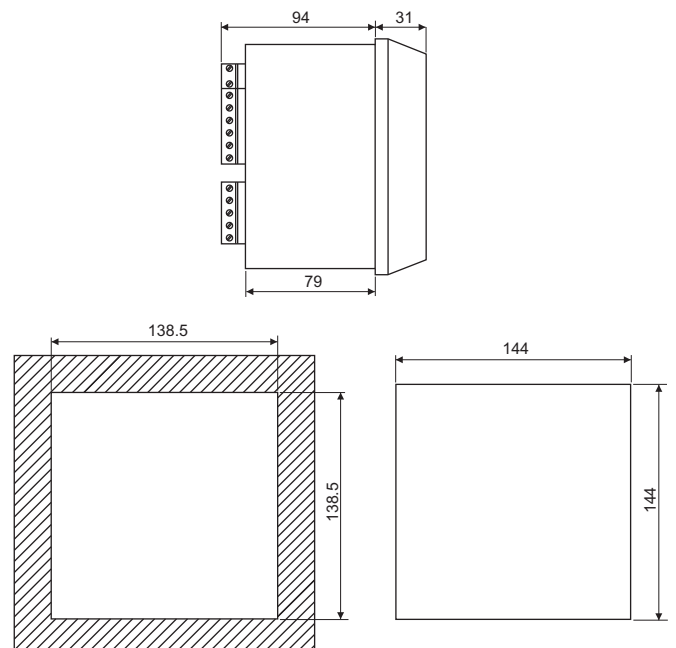
AuXC-1000L Panel cut-out



AuXC-1000 Rear Terminal Connections



AuXC-1000 Panel cut-out



All dimensions are in mm

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



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