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MSX moulded case circuit breaker

Technical data

TYPE			MSX 160c		MSX 250c		MSX 125		MSX 160 - MSX 250		MSXE 160 - MSXE 250	
												
Standard			**IEC EN 60947-2**		**IEC EN 60947-2**		**IEC EN 60947-2**		**IEC EN 60947-2**		**IEC EN 60947-2**	
Rated current (In)		**(A)**	25, 40, 63, 80, 100, 125, 160		160, 250		20, 32, 50, 63, 100, 125		125, 160, 250		40, 125, 160, 250	
Utilization category			A		A		A		A		A	
Number of poles			3.3+N		3.3+N		3.4		3.3+N,4		3.3+N,4	
Rated frequency		**(Hz)**	50/60		50/60		50/60		50/60		50/60	
Rated operating voltage (Ui)		**(V)**	525 AC - 250 DC		525 AC - 250 DC		690 AC - 250 DC		690 AC - 250 DC		690 AC	
Rated impulse withstand voltage (Uimp)		**(kV)**	8		8		8		8		8	
Overvoltage category			IV		IV		IV		IV		IV	
Rated insulation voltage (Ui)		**(V)**	690		800		800		800		800	
Rated breaking capacity (Icu)												
Alternating current	**220/240V**	**(kA)**	25	35	25	35	50	85	65	85	65	85
	400/415V	**(kA)**	**16**	**25**	**16**	**25**	**36**	**65**	**36**	**65**	**36**	**65**
	440V	**(kA)**	10	15	10	15	25	50	25	50	25	50
	525V	**(kA)**	6	7.5	6	7.5	22	25	25	25	25	25
	690V	**(kA)**	-	-	-	-	6	6	7.5	7.5	7.5	7.5
Direct current	**250V**	**(kA)**	13	20	13	15	25	40	40	40	-	-
Service breaking capacity (Ics)												
Alternating current	**220/240V**	**(kA)**	13	18	13	27	50	85	65	85	65	85
	400/415V	**(kA)**	8	13	8	19	36/30	36/33	36	36	36	36
	440V	**(kA)**	5	7.5	5	12	25	25	25	25	25	25
	525V	**(kA)**	3	4	3	6	22	22	25	25	25	25
	690V	**(kA)**	-	-	-	-	6	6	7.5	7.5	7.5	7.5
Direct current	**250V**	**(kA)**	7	10	7	12	19	40	40	40	-	-
Type of protection			Adjustable thermal Fixed magnetic		Adjustable thermal Fixed magnetic		Adjustable thermal Adjustable magnetic		Adjustable thermal Adjustable magnetic		Electronic LSI	
Versions			Fixed		Fixed		Fixed Plug-in		Fixed Plug-in		Fixed Plug-in[1]	
Mounting on DIN rail by means of the accessory			yes		yes		yes		yes		no	
Mounting position			any		any		any		any		any	
Upline/downline power supply			yes		yes		yes		yes		yes	
Terminals	**Front for cables (FW)**		■ (20A÷100A)		-		□		-		-	
	Front (FC)		■ (125-160A)		■		■		■		■	
	Front extended (FB)		□ (63÷160A)		□		□		□		□	
	Front extended spread terminals (FB)		□ (63÷160A)		□		-		-		-	
	Rear (RC)		□ (63÷160A)		□		□		□		□	
Electrical life (415 V AC)		**(No. cycles)**	14,000 (≤125A) 10,000 (160 A)		6,000		30,000		20,000 (MSX 160) 10,000 (MSX 250)		10,000	
Mechanical life		**(No. cycles)**	20,000		18,000		30,000		30,000		30,000	
Can be equipped with motor operator			no		yes		yes		yes		yes	
Interlock type			-		Lever / Cable		Lever / Cable		Lever / Cable		Lever / Cable	
Operating temperature		**(°C)**	-5 +65		-5 +65		-5 +65		-5 +65		-5 +65	
Reference temperature		**(°C)**	50		50		50		50		40	
Storage temperature		**(°C)**	-20 +60		-20 +60		-20 +60		-20 +60		-20 +60	
Relative humidity			45%÷85%		45%÷85%		45%÷85%		45%÷85%		45%÷85%	
Dimensions	**Width (3P / 4P)**	**(mm)**	75 / 100		105 / 140		90 / 120		105 / 140		105 / 140	
	Height	**(mm)**	130		165		155		165		165	
	Depth	**(mm)**	68		68		68		68		103	
Weight (3P / 4P)		**(kg)**	0.8 / 1		1.5 / 1.9		1.1 / 1.4		1.5 / 1.9		2.3 / 3.1	

Key:
■supplied as standard
□ optional
-not available

[1] max 225A
[2] max 536a

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MSX 400		MSXE 400 - MSXE 630		MSXE 1000		MSXE 1250	MSXE 1600
							
IEC EN 60947-2		**IEC EN 60947-2**		**IEC EN 60947-2**		**IEC EN 60947-2**	**IEC EN 60947-2**
400		400, 630		800	1000	1250	1600
A		B (MSXE 400) A (MSXE 630)		B	A	B	B
3.3+N,4		3.3+N,4		3.4		3.4	3.4
50/60		50/60		50/60		50/60	50/60
690 AC - 250 DC		690 AC		690 AC		690 AC	690 AC
8		8		8		8	8
IV		IV		IV		IV	IV
800		800		800		800	800
50	85	50	85	85	85	85	85
36	**50**	**36**	**50**	**50**	**50**	**50**	**50**
30	45	25	45	50	45	45	45
22	30	15	30	30	30	30	30
15	20	10	20	20	20	20	20
40	40	-	-	-	-	-	-
50	85	50	85	85	65	65	65
36	50	36	50	50	38	38	38
30	45	25	45	50	34	34	34
22	30	15	30	30	23	23	23
15	15	10	15	20	15	15	15
40	40	-	-	-	-	-	-
Adjustable thermal Adjustable magnetic		Electronic LSI Electronic LSIG		Electronic LSI Electronic LSIG		Electronic LSI Electronic LSIG	Electronic LSI Electronic LSIG
Fixed Plug-in		Fixed Plug-in[2]		Fixed, Plug-in	Fixed	Fixed	Fixed
no		no		no		no	no
any		any		any		any	any
yes		yes		yes		yes	yes
-		-		-	-	-	-
■		■		■	-	-	-
□		□		□	■	■	■
□		□		-	-	-	-
□		□		□	□	■	■
4,500		4,500		4,000		4,000	2,000
15,000		15,000		10,000		5,000	5,000
yes		yes		yes		yes	yes
Lever / Cable		Lever / Cable		Lever / Cable		Cable	Cable
-5 +65		-5 +65		-5 +65		-5 +65	-5 +65
50		40		40		40	40
-20 +60		-20 +60		-20 +60		-20 +60	-20 +60
45%÷85%		45%÷85%		45%÷85%		45%÷85%	45%÷85%
140 / 185		140 / 185		210 / 280		210 / 280	210 / 280
260		260		273		370	370
103		103		103		120	140
4.3 / 5.6		4.3 / 5.7 (MSXE 400) 5 / 6.5 (MSXE 630)		9.1 / 12.3	11 / 14.8	19.8 / 25	27 / 35

Switch disconnector MSXM

Technical data

TYPE		MSXM 160c	MSXM 250c	MSXM 400 - MSXM 630
				
Standard		**IEC EN 60947-3**	**IEC EN 60947-3**	**IEC EN 60947-3**
Rated uninterrupted current (Iu)	**(A)**	160	250	400, 630
Utilization category		AC-23A DC-22A	AC-23A DC-22A	AC-23A DC-22A
Number of poles		3.4	3.4	3.4
Rated frequency	**(Hz)**	50/60	50/60	50/60
Rated operating voltage (Ui)	**(V)**	690 AC - 250 DC	690 AC - 250 DC	690 AC - 250 DC
Rated impulse withstand voltage (Uimp)	**(kV)**	8	8	8
Overvoltage category		IV	IV	IV
Rated insulation voltage (Ui)	**(V)**	690	800	800
Rated short-circuit making capacity (Icm)	**(kA)**	2.8	6	9
Brief allowable rated current for 0.3s (Icw)	**(kA)**	2	3	5
Versions	**(kA)**	Fixed	Fixed	Fixed Plug-in[1]
Mounting on DIN rail by means of the accessory		yes	yes	no
Mounting position		any	any	any
Upline/downline power supply		yes	yes	yes
Terminals	**Front for cables (FW)**	-	-	-
	Front (FC)	■	■	■
	Front extended (FB)	□	□	□
	Front extended spread terminals (FB)	□	□	□
	Rear (RC)	□	□	□
Electrical life (415 V AC)	**(No. cycles)**	10,000	6,000	4,500
Mechanical life	**(No. cycles)**	20,000	18,000	15,000
Can be equipped with motor operator		no	yes	yes
Interlock type		-	Lever / Cable	Lever / Cable
Operating temperature	**(°C)**	-5 +65	-5 +65	-5 +65
Reference temperature	**(°C)**	50	50	50
Storage temperature	**(°C)**	-20 +60	-20 +60	-20 +60
Relative humidity		45%÷85%	45%÷85%	45%÷85%
Dimensions	**Width (3P / 4P)**	75 / 100	105 / 140	140 / 185
	Height	130	165	260
	Depth	68	68	103
	Weight (3P / 4P)	0.7 / 0.9	1.5 / 1.9	4.2 / 5.6 (MSXM 400) 4.4 / 5.8 (MSXM 630)

Key:
■supplied as standard
□ optional
-not available

[1] max 536A

For technical information contact the Technical Assistance Service or visit gewiss.com

	MSXM 1000		MSXM 1250	MSXM 1600
				
IEC EN 60947-3			**IEC EN 60947-3**	**IEC EN 60947-3**
800		1000	1250	1600
AC-23A DC-22A			AC-23A DC-22A	AC-23A DC-22A
3.4			3.4	3.4
50/60			50/60	50/60
690 AC - 250 DC			690 AC - 250 DC	690 AC - 250 DC
8			8	8
IV			IV	IV
800			800	800
17			32	45
10			15	20
Fixed, Plug-in		Fixed	Fixed	Fixed
no			no	no
any			any	any
yes			yes	yes
-		-	-	-
■		-	-	-
□		■	■	■
-		-	-	-
□		□	-	■
4,000			4,000	2,000
10,000			5,000	5,000
yes			yes	yes
Lever / Cable			Cable	Cable
-5 +65			-5 +65	-5 +65
50			50	50
-20 +60			-20 +60	-20 +60
45%÷85%			45%÷85%	45%÷85%
210 / 280			210 / 280	210 / 280
273			370	370
103			120	140
8.5 / 11.5		10.4 / 14	18.2 / 23.4	24.9 / 32.9

Thermal magnetic MCCB + RCD MSXD

Technical data

TYPE			MSXD 125		MSXD 160 - MSXD 250	
						
Standard			**IEC 60947-1 IEC 60947-2 IEC 60755**		**IEC 60947-1 IEC 60947-2 IEC 60755**	
Rated current (In)		**(A)**	20, 32, 50, 63, 100, 125		160, 250	
Utilization category			A		A	
Number of poles			3P+N		3P+N	
Rated frequency		**(Hz)**	50/60		50/60	
Rated operating voltage (Ui)		**(V)**	525 AC		525 AC	
Rated impulse withstand voltage (Uimp)		**(kV)**	8		8	
Overvoltage category			IV		IV	
Rated insulation voltage (Ui)		**(V)**	525		525	
Rated breaking capacity (Icu)						
Alternating current	**220/240V**	**(kA)**	35	50	35	65
	0/415V	**(kA)**	**25**	**36**	**25**	**36**
	0V	**(kA)**	15	25	15	25
	525V	**(kA)**	8	22	10	25
Service breaking capacity (Ics)						
Alternating current	**220/240V**	**(kA)**	27	50	27	65
	0/415V	**(kA)**	19	36/30	19	36
	0V	**(kA)**	12	25	12	25
	525V	**(kA)**	6	22	7.5	25
Type of protection			Adjustable thermal Fixed magnetic		Adjustable thermal Fixed magnetic	
Versions			Fixed		Fixed	
Mounting on DIN rail by means of the accessory			yes		yes	
Mounting position			any		any	
Upline/downline power supply			yes		yes	
Terminals	**Front for cables (FW)**		□		-	
	Front (FC)		■		■	
	Front extended (FB)		□		□	
	Front extended spread terminals (FB)		-		-	
	Rear (RC)		□		□	
Electrical life (415 V AC)		**(No. cycles)**	30,000		10,000	
Mechanical life		**(No. cycles)**	30,000		10,000	
Can be equipped with motor operator			yes		yes	
Interlock type			-		-	
Operating temperature		**(°C)**	-5 +65		-5 +65	
Reference temperature		**(°C)**	50		50	
Storage temperature		**(°C)**	-20 +60		-20 +60	
Relative humidity			45%÷85%		45%÷85%	
Dimensions	**Width (3P / 4P)**	**(mm)**	120		140	
	Height	**(mm)**	155		165	
	Depth	**(mm)**	68		68	
Weight (3P / 4P)		**(kg)**	1.4		1.9	

Key:
■supplied as standard
□ optional
-not available

For technical information contact the Technical Assistance Service or visit gewiss.com

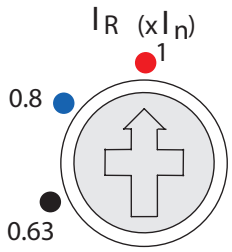
COMPACT MCCB WITH THERMAL AND MAGNETIC PROTECTION MSX 160c - MSX 250c

3 Pole MCCB

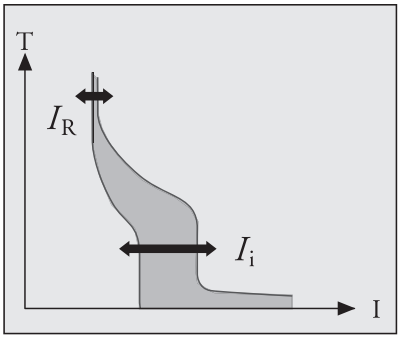
MCCB Adjustment Dial

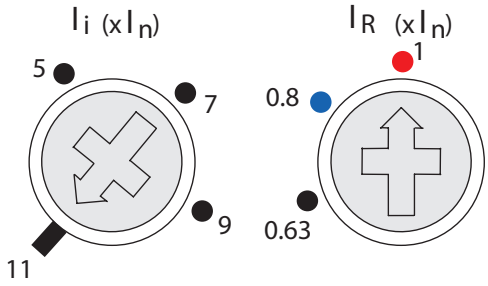
The MSXc range is available in 2 frame sizes, 160A and 250A. Interrupting capacities of 16kA and 25kA are offered in 3 and 4 pole versions.
160A MCCBs are extremely compact in size (W75 H130 D68) and offer space saving solutions for electrical power distribution where the installation size is critical.
160A models have adjustable thermal and fixed magnetic settings. 250A MCCBs have adjustable thermal and adjustable magnetic settings.

ADJUSTMENT DIALS



MSX 160c MCCB Adjusting Dials





MSX 250c MCCB Adjusting Dials

- I_R is the thermal element adjustment dial and is used to set the rated current to match the conductor rating.
  I_R can be set between 0.63 and 1.0 times I_n.
- I_i is the magnetic element adjustment dial and is used to set the short circuit tripping threshold to suit the application. It is fixed on 160A frame.

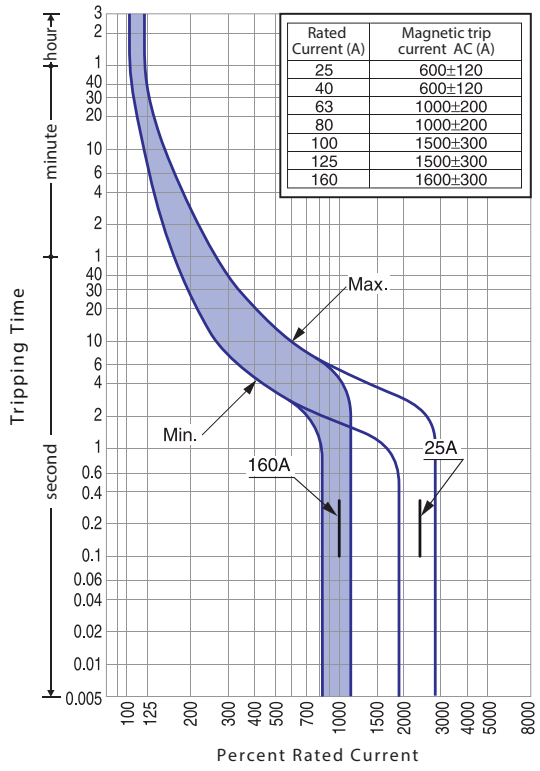
Models, ratings and settings

Model	Breaking capacity	Rated current I_n (A)	Magnetic trip current I_i (A)
MSX 160c	16 kA	25, 40	600
		63, 80	1000
		100, 125	1500
		160	1600
	25 kA	25, 40	600
		63, 80	1000
		100, 125	1500
		160	1600
MSX 250c	16 kA	160	5 - 13 x In
		250	5 - 11 x In
	25 kA	160	5 - 13 x In
		250	5 - 11 x In

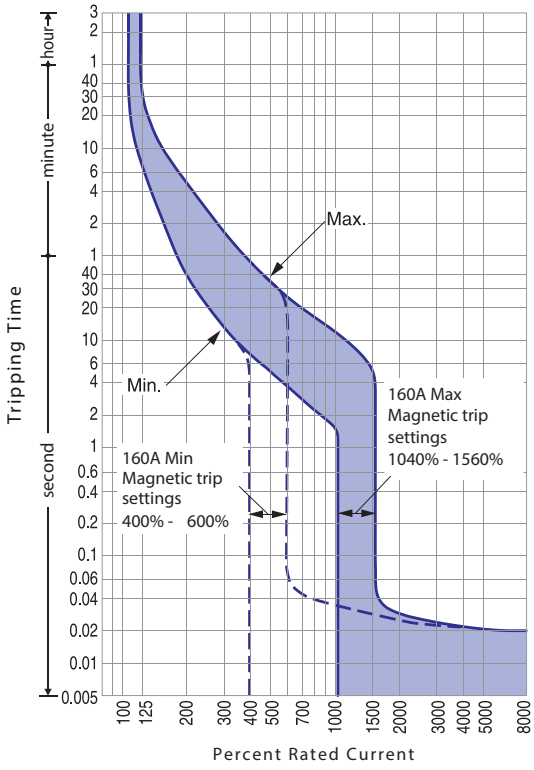
Magnetic trip tolerance +/-20%

Time/Current Characteristics

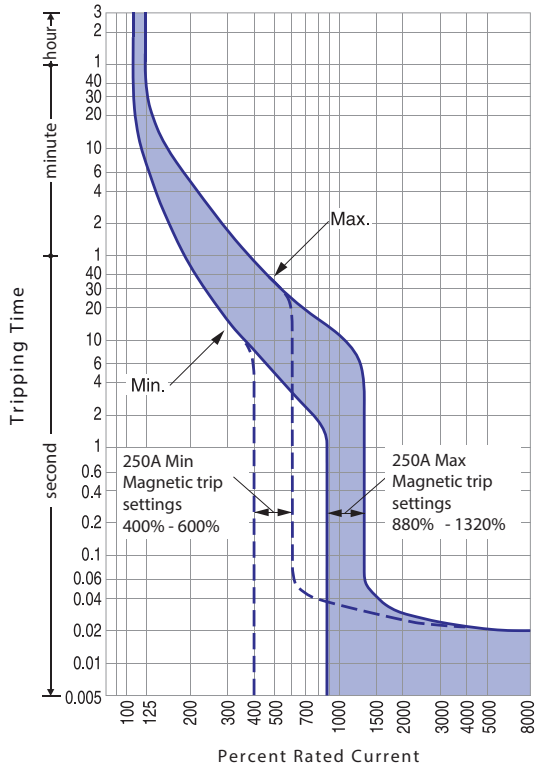
MSX 160c



MSX 250c (160A)

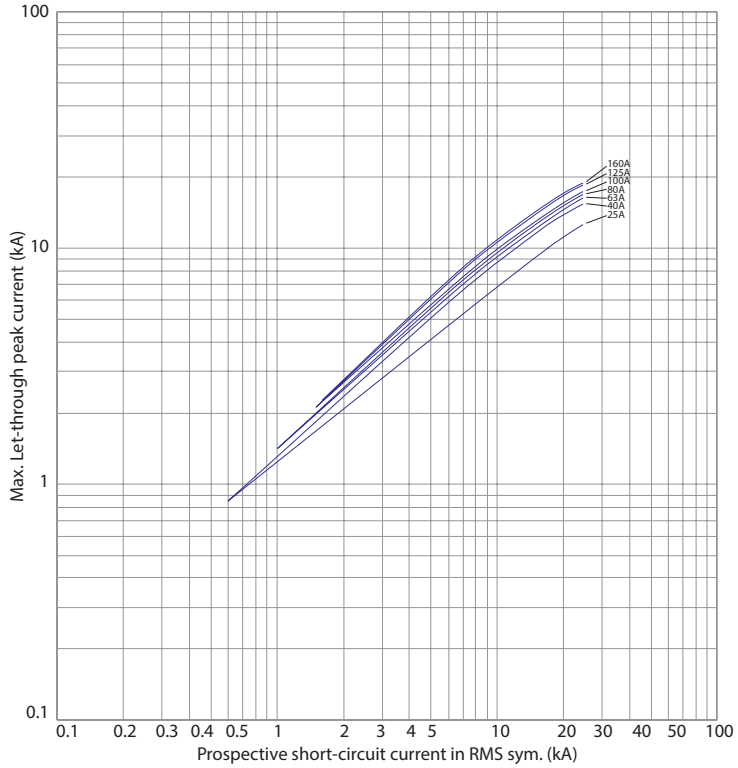


MSX 250c (250A)

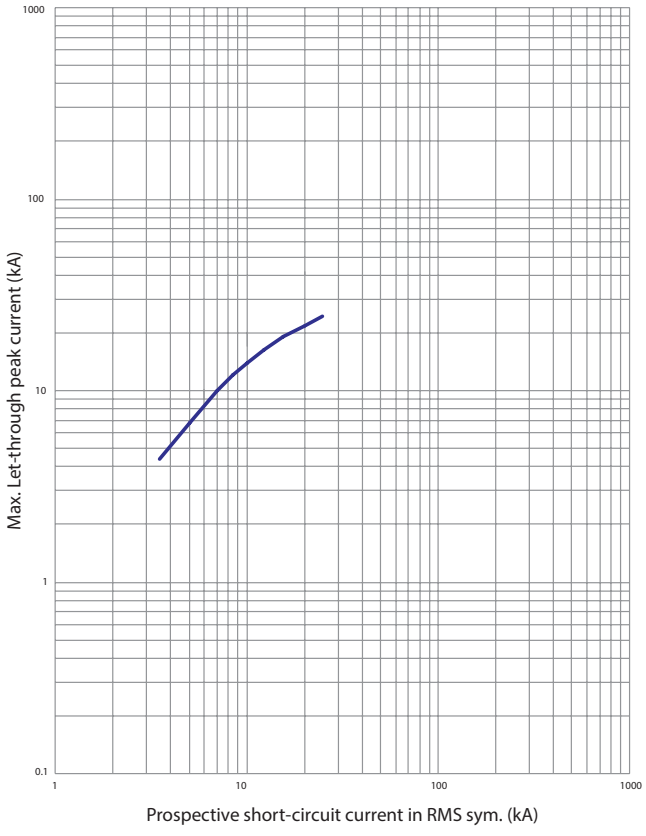


Peak Current Characteristics

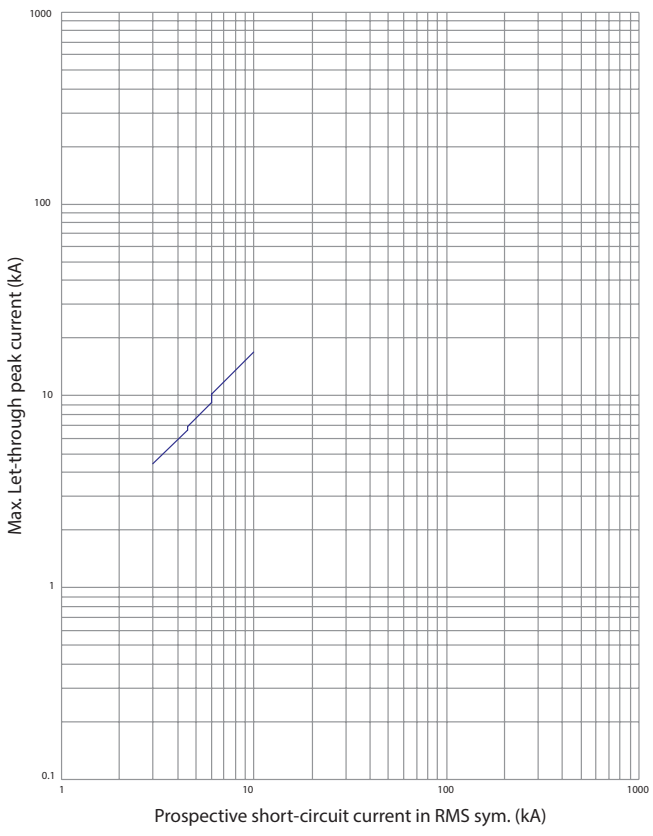
MSX 160c at 400/415V AC



MSX 250c at 400/415V AC



MSX 250c at 440V AC



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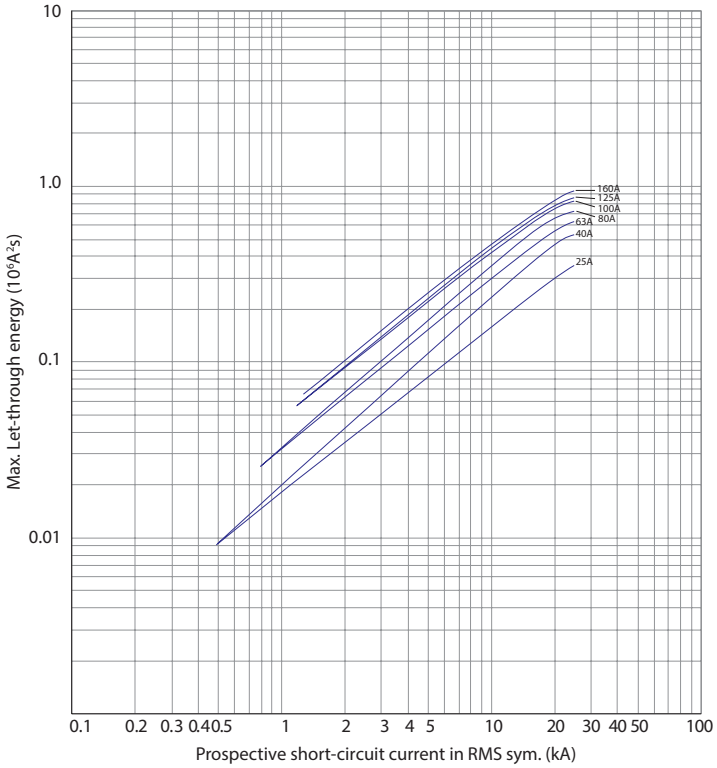
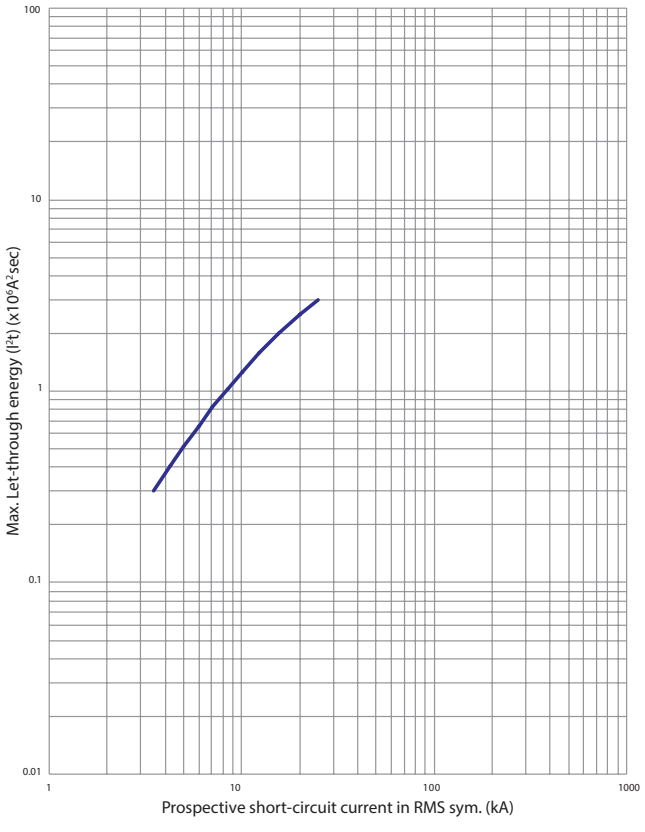
Specific Let-Through Energy Characteristics

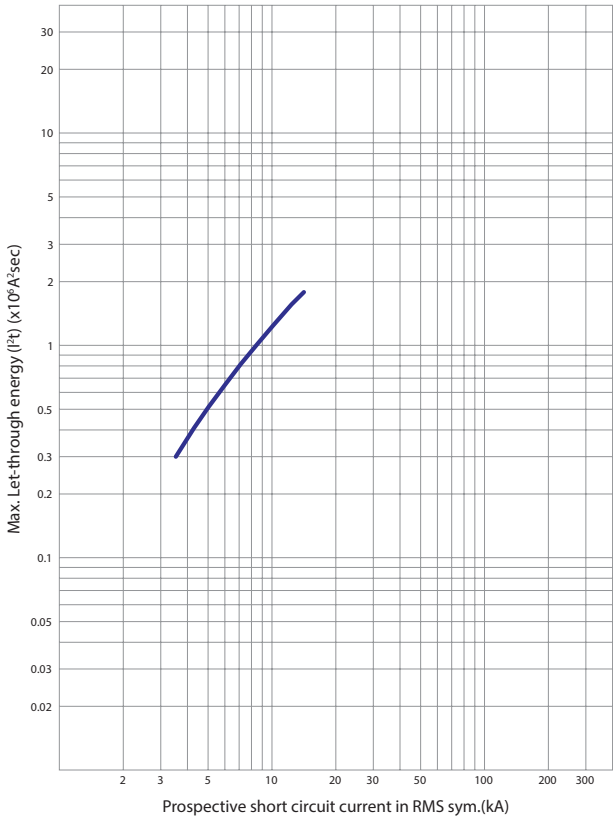
MSX 160c at 400/415V AC



MSX 250c at 400/415V AC



MSX 250c at 440V AC



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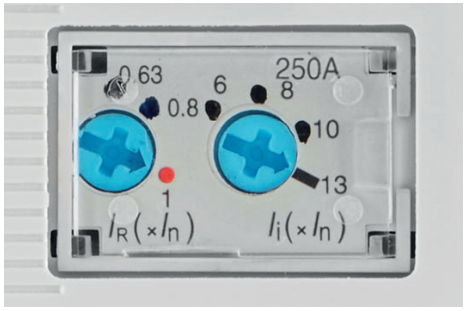
MCCB WITH THERMAL AND MAGNETIC PROTECTION MSX 125 - MSX 160 - MSX 250 - MSX 400

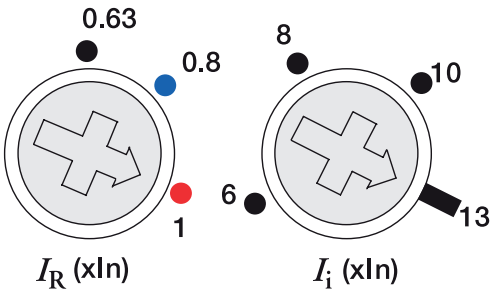
3 Pole MCCB

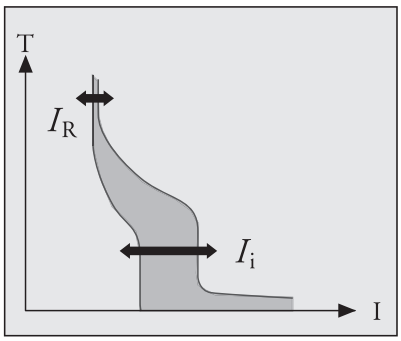


MCCB Adjustment Dial

All standard 3 pole and 4 pole thermal magnetic models have adjustable thermal and adjustable magnetic characteristics.
An adjustable magnetic characteristic allows short-circuit protection to be matched to the load and supply characteristics, for example motor inrush currents or generator short-circuit currents.
Lowering the short-circuit tripping threshold can allow a higher earth-loop impedance in an installation and provide end-of-cable protection with the correct disconnection times.

ADJUSTABLE DIALS





- I_R is the thermal element adjustment dial and is used to set the rated current to match the conductor rating.
  I_R can be set between 0.63 and 1.0 times I_n.
- I_i is the magnetic element adjustment dial and is used to set the short circuit tripping threshold to suit the application.
  I_i Can be set to the values shown in the table below:

Models, ratings and settings

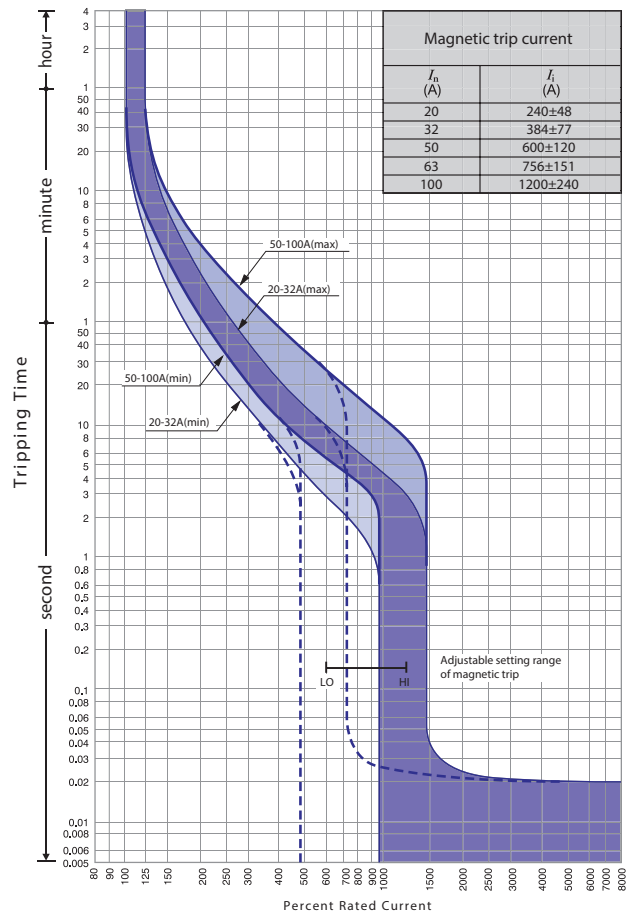
Model	Breaking capacity	Rated current I_n (A)	Magnetic trip current I_i (A)
MSX 125	36 kA	20, 32, 50, 63, 100	6 – 12 xIn
		125	6 – 10 xIn
	65 kA	20, 32, 50, 63, 100	6 – 12 xIn
		125	6 – 10 xIn
MSX 160	36 kA	160	6 – 13 xIn
	65 kA	160	6 – 13 xIn
MSX 250	36 kA	250	6 – 10 xIn
	65 kA	250	6 – 10 xIn
MSX 400	36 kA	400	6 – 12 xIn
	65 kA	400	6 – 12 xIn

MOTOR PROTECTION

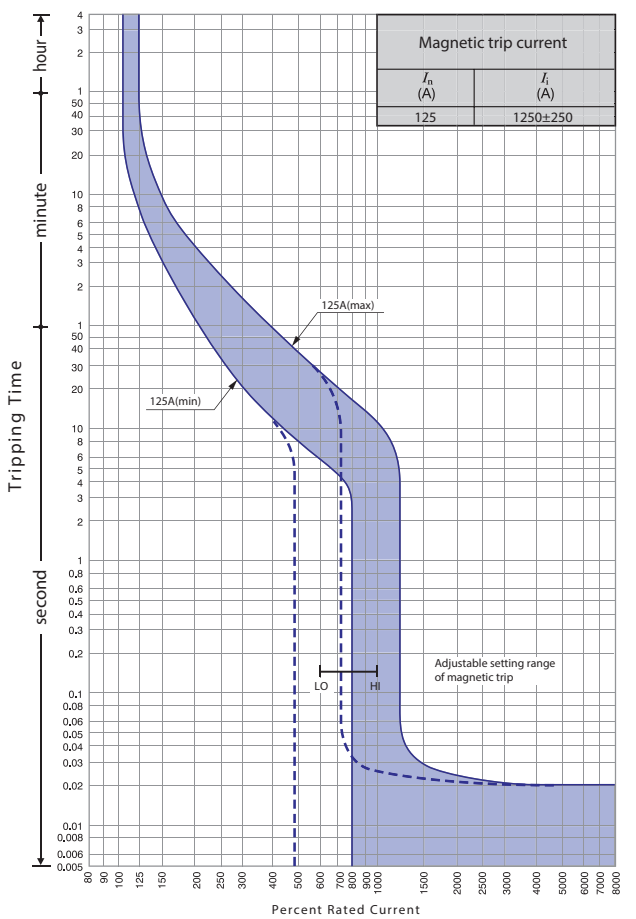
MCCBs feeding motors are often only required to provide protection from short-circuits. Overload protection is provided by a dedicated thermal or electronic overload relay. MCCBs without thermal protection elements are available for this application. Four pole MCCBs with magnetic trip only have protection on the neutral pole as standard.

Time/Current Characteristics

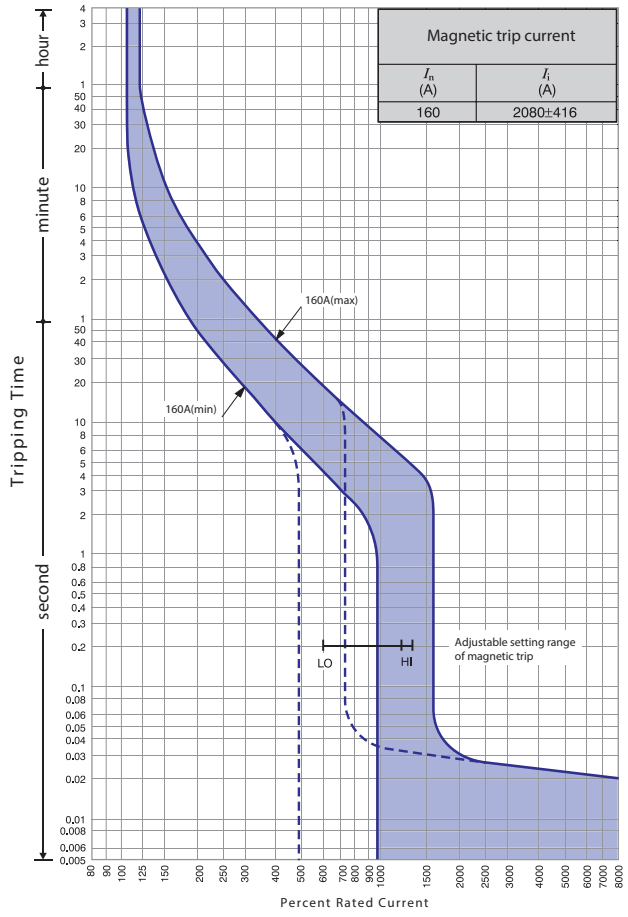
MSX 125 (from 20A to 100A)



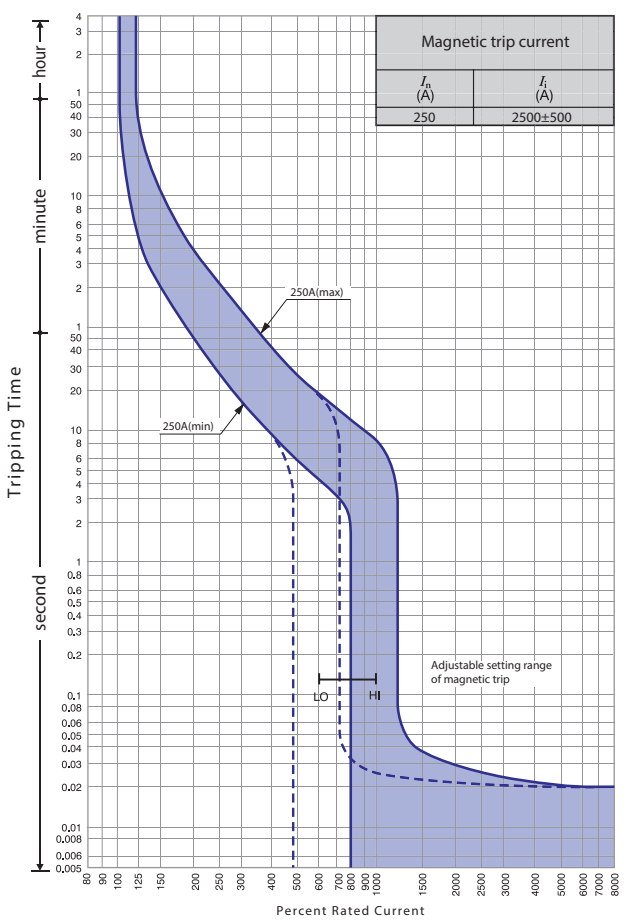
MSX 125 (125A)



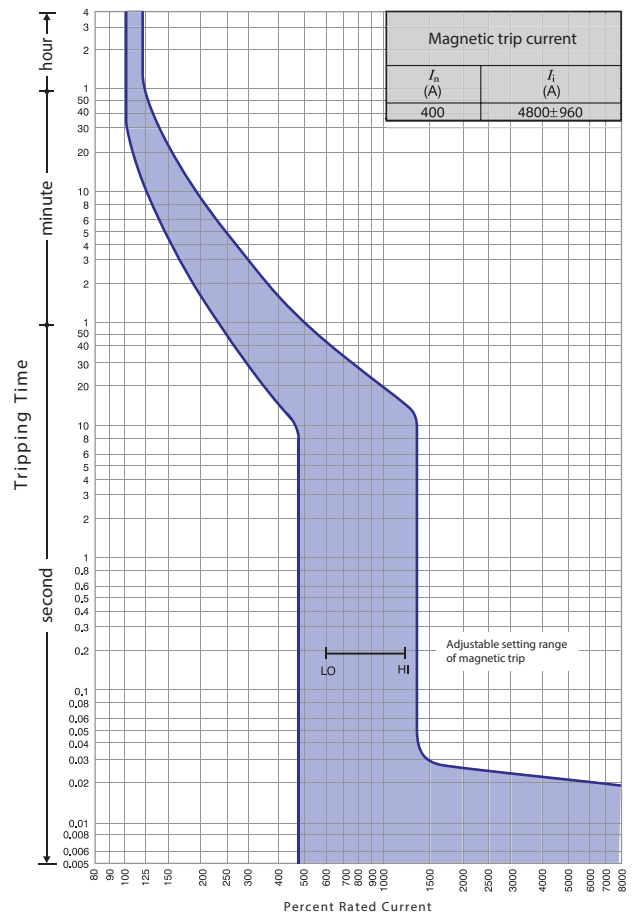
MSX 160



MSX 250

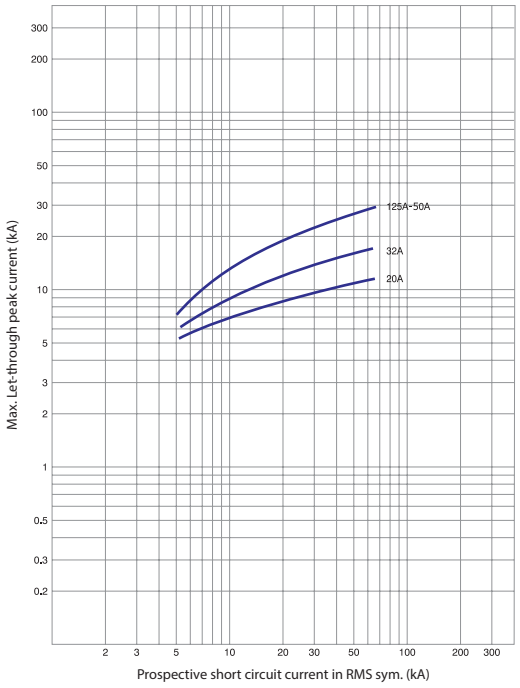


MSX 400

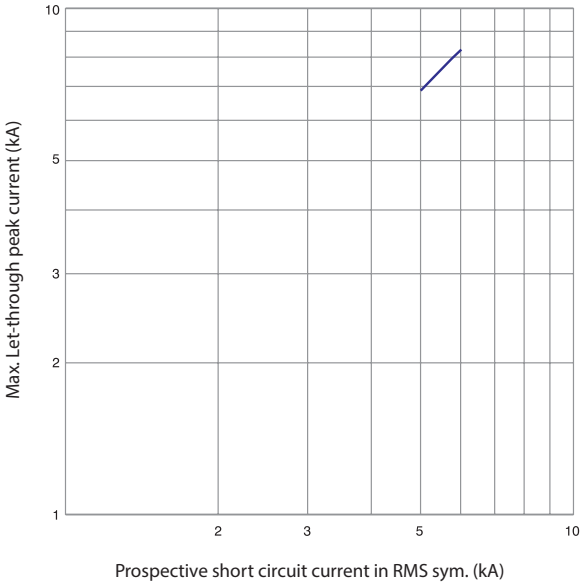

Magnetic trip current
I_n (A)
I_i (A)
400
4800±960
Tripping Time
hour
minute
second
Adjustable setting range of magnetic trip
LO
HI
Percent Rated Current

Peak Current Characteristics

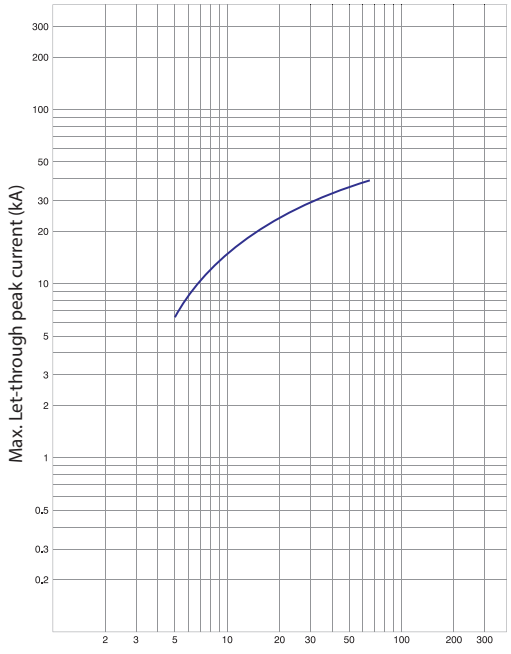
MSX 125 at 400/415/440V AC



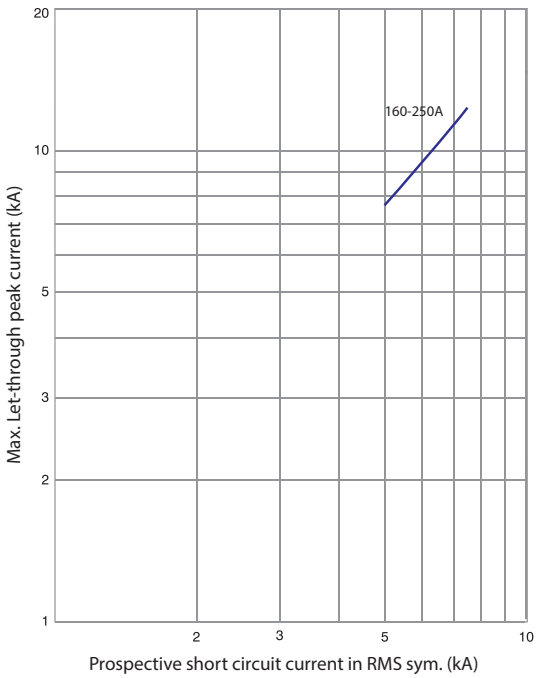
MSX 125 at 690V AC



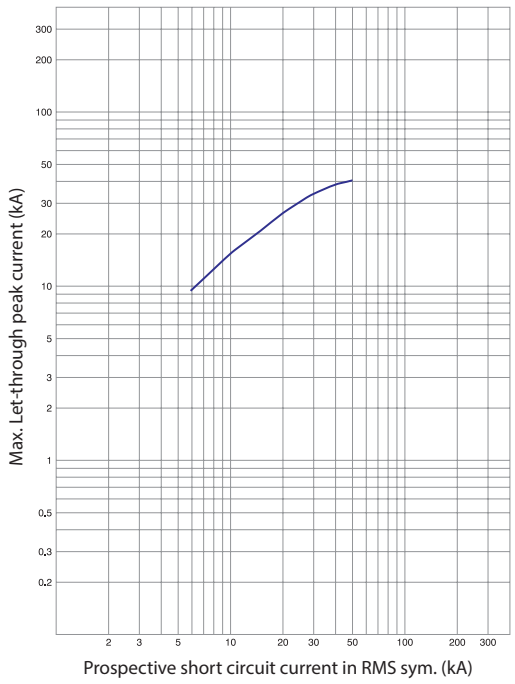
MSX 160, MSX 250 at 400/415/440V AC



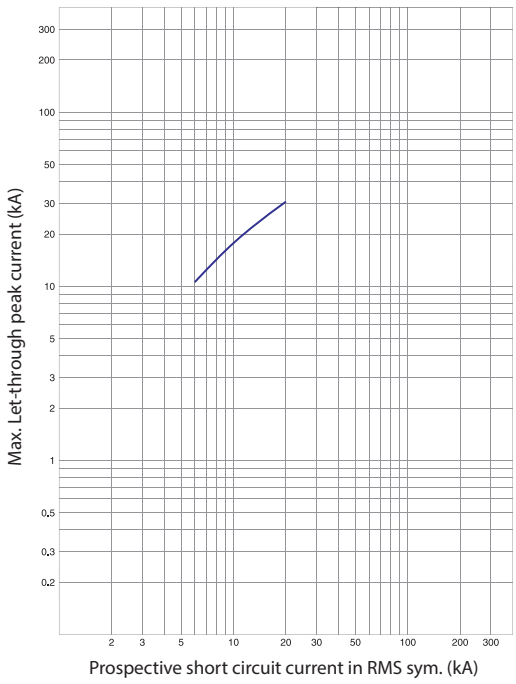
MSX 160, MSX 250 at 690V AC



MSX 400 at 400/415/440V AC

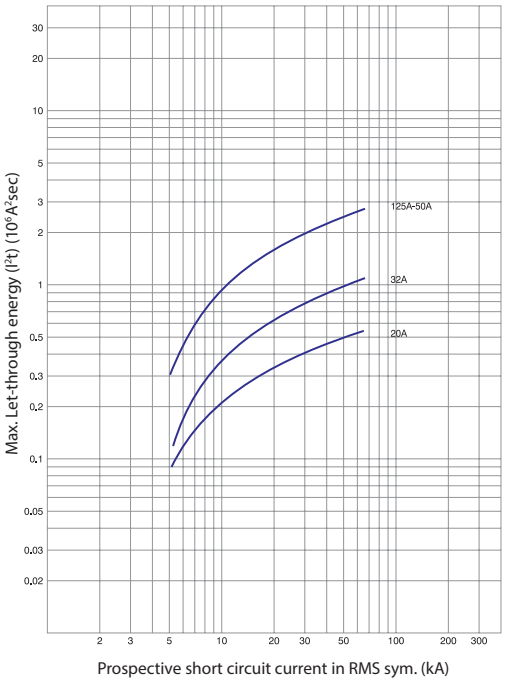


MSX 400 at 690V AC

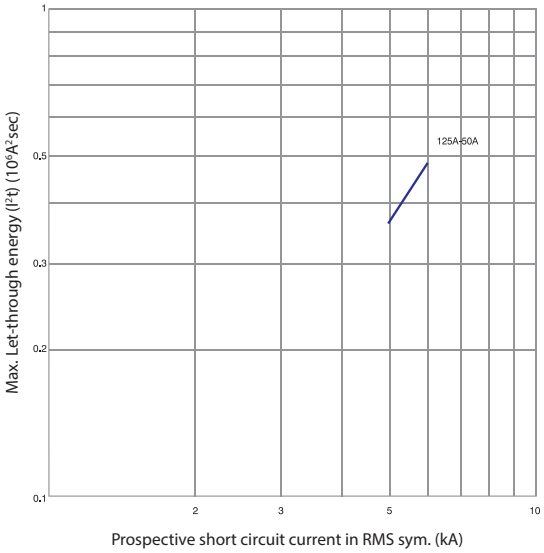


Specific Let-Through Energy Characteristics

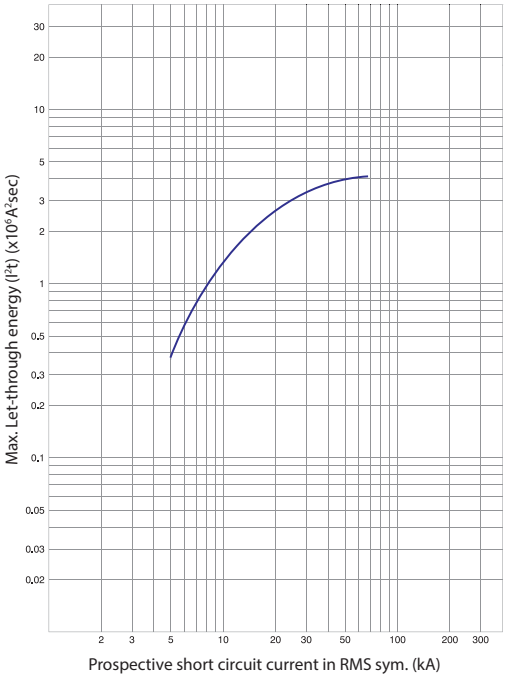
MSX 125 at 400/415/440V AC



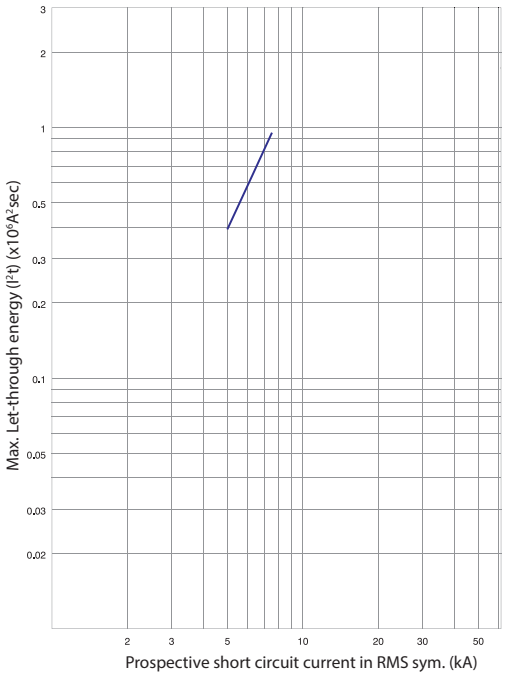
MSX 125 at 690V AC



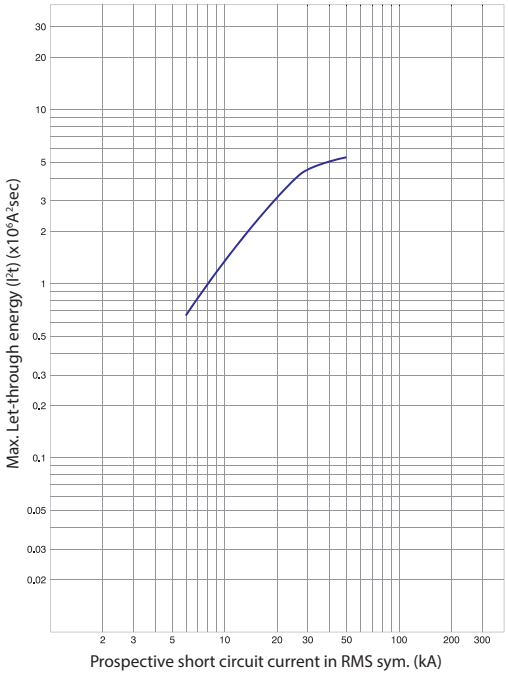
MSX 160, MSX 250 at 400/415/440V AC



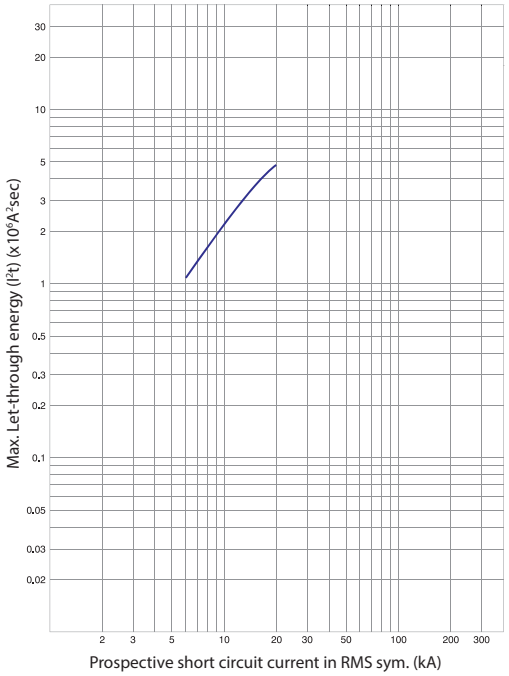
MSX 160, MSX 250 at 690V AC



MSX 400 at 400/415/440V AC



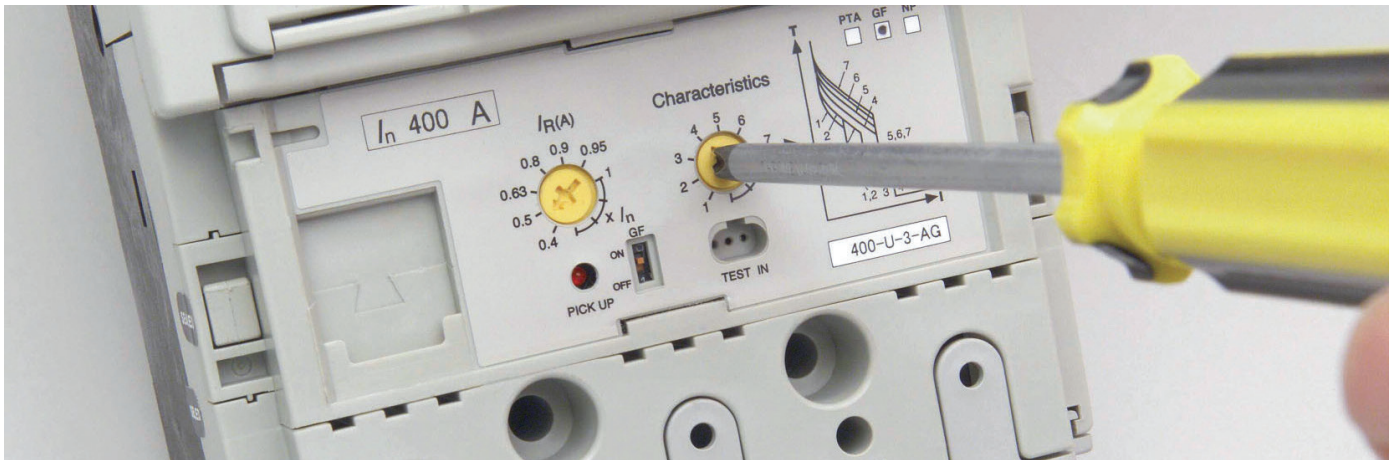
MSX 400 at 690V AC

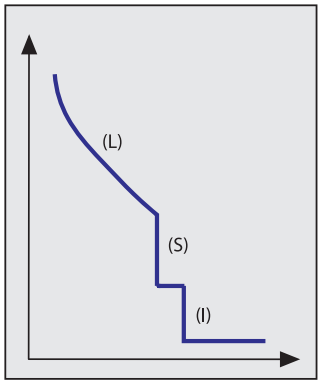


MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

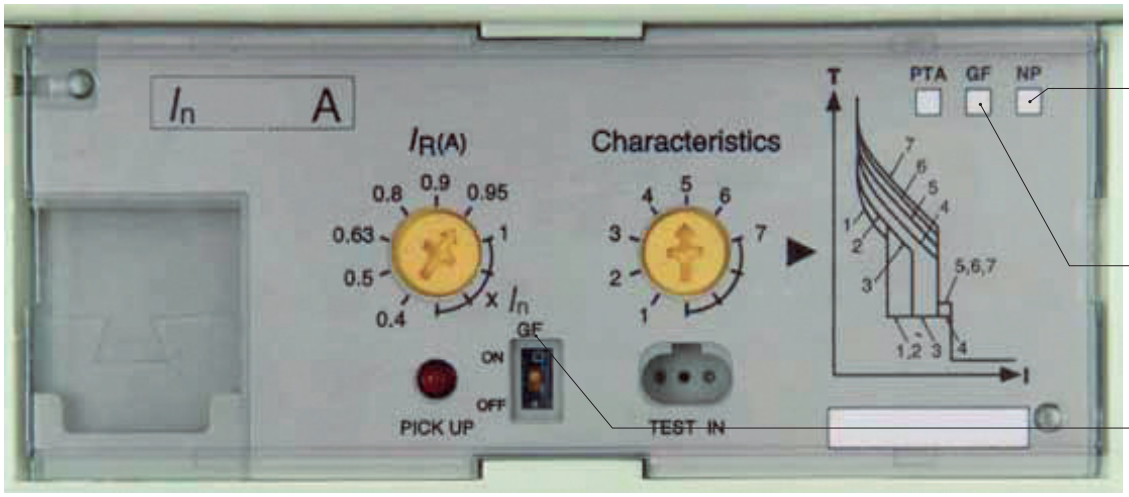
MSXE MCCBs from 250A frame to 1600A frame are available with electronic protection units. Current ratings, In, of 40A, 125A, 160A, 250A, 400A, 630A, 800A, 1000A, 1250A and 1600A are available. These offer great f lexibility as their characteristics can be set to suit a wide range of application conditions.
Overload protection can be set between 0.4 and 1.0 times I_n.





Electronic Protection Characteristic

Every electronic protection unit includes overload protection (L), delayed short-circuit protection (S) and instantaneous protection (I) as standard.



Neutral protection (NP) is present if this box is filled

Ground fault trip (GF) is present if this box is filled

DIP switch to enable ground fault trip

Ground Fault Trip (GF)

This function trips the MCCB after time delay, t_g, if the ground fault current exceeds the preset threshold, I_g.
Ground fault protection can be enabled and disabled by operating a DIP switch on the electronic protection unit. An external current transformer is necessary if the ground fault trip function is required on a 3 pole MCCB, in a 3 phase, 4 wire system.
The ground fault trip function is available from 400A to 1600A.

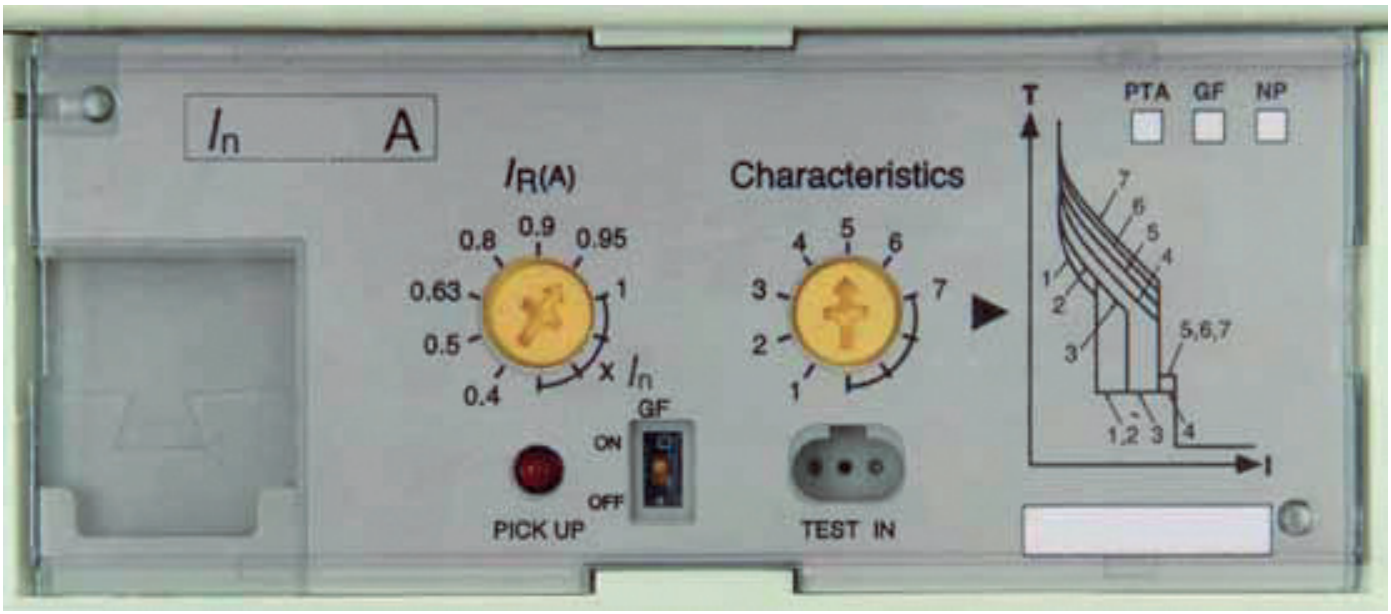
Neutral Protection (NP)

Neutral protection (available only for 4P versions) can be adjusted at 100% or 50% from 400A frame to 1600A frame.

MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

ADJUSTMENT DIALS



The left adjustment dial sets the rated current to match the conductor rating. The right adjustment dial selects one of seven preset characteristics on 400A, 800A, 1250A and 1600A models, and one of six preset characteristics on 630A and 1000A models, and one of 5 preset characteristics on 250A model.
The effects of the left adjustment dial (labelled I_R (A)), and the right adjustment dial (labelled Characteristics) are detailed in the tables shown underneath each time / current graph.

Tolerances of Characteristics

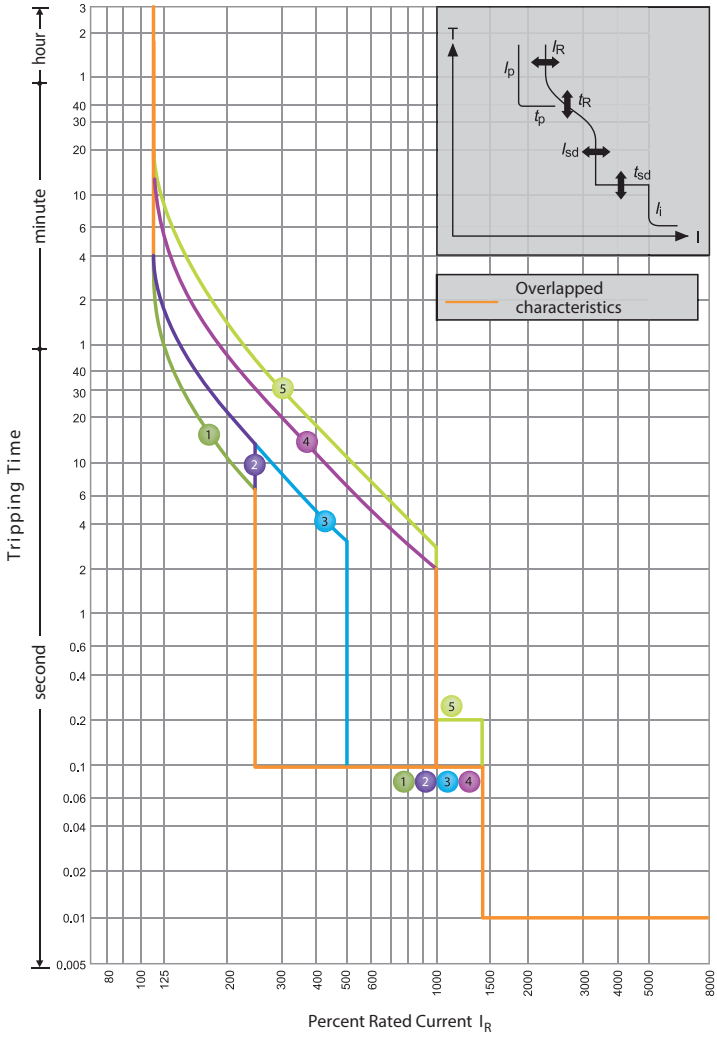
Characteristics		Tolerance
Long Time Delay (L)	I_R	Tripping when (I_R 1.05) < load current ≦ (I_R 1.25)
	t_R	± 20%
Short Time Delay (S)	I_{sd}	± 15%
	t_{sd}	Total clearing time +50ms, resettable time -20ms
Instantaneous (I)	I_i	± 20%
Ground Fault Trip (GF)	I_g	± 15%
	t_g	Total clearing time +50ms, resettable time -20ms
Neutral Protection (NP)	I_N	Tripping when (I_N 1.05) < load current ≦ (I_N 1.3)

MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

Time/Current Characteristics

MSXE 160, MSXE 250



I_n = 250A; 160A; 125A; 40A[1]

I_R (A)		xIn	0.4	0.5	0.63	0.8	0.9	0.95	1.0
Characteristics		No.	1	2	3	4	5		
L	t_R (s)		11	21	21	5	7.5		
			at 200% x I_R			at 600% x I_R			
S	I_{sd} xI_R		2.5		5	10			
	t_{sd} (s)		0.1				0.2		
I	I_i xI_R		14 (Max: 13 x I_n) [2]						
NP	I_N xI_R		1.0 [3]						
	t_N (s)		$t_N = t_R$						

Note

[1] For Plug-in (PM), max. setting for I_R should be less than 225A. When I_n=250A, I_R should be I_n 0.9 or less.

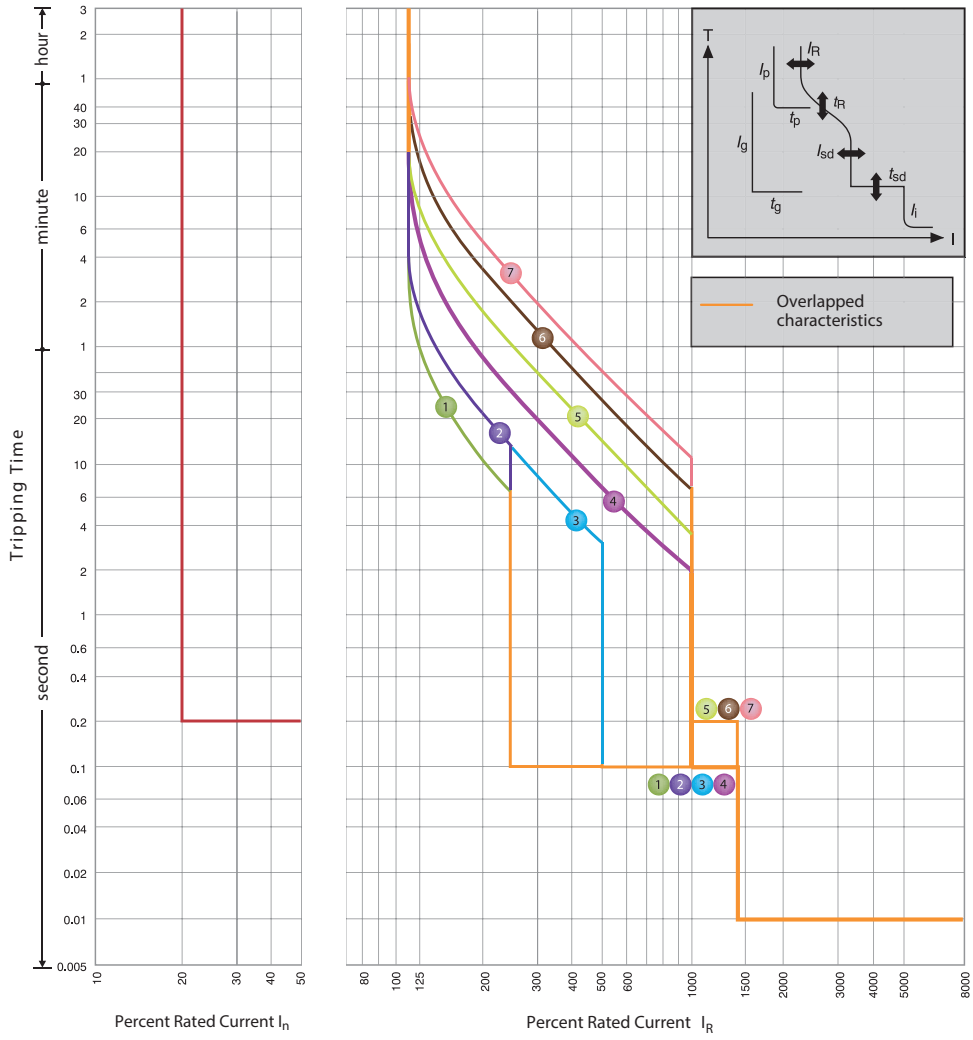
[2] I_i max. = 13 x I_n.

[3] Characteristic of neutral protection (t_N vs. I_N) is identical to characteristic of phase protection (t_R vs. I_R).

MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

MSXE 400



I_n = 400A

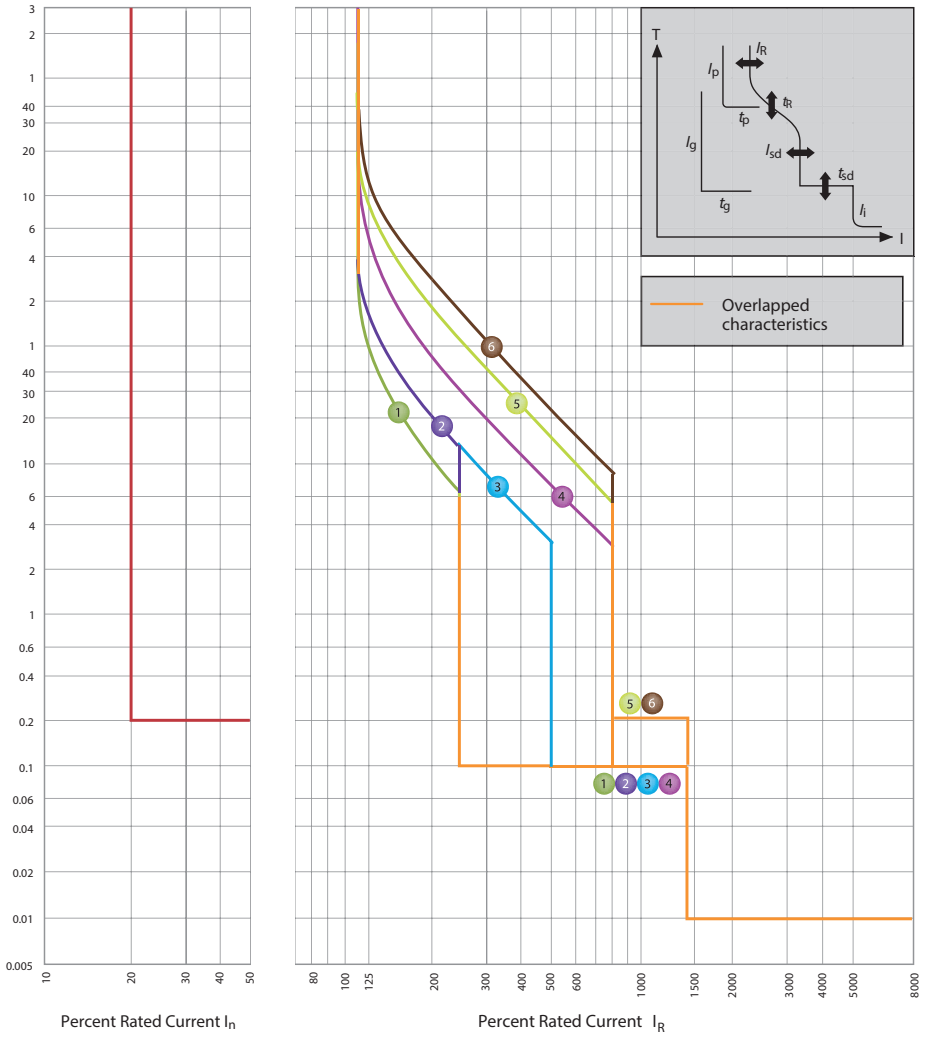
I_R (A)		xIn	0.4	0.5	0.63	0.8	0.9	0.95	1.0
Characteristics		No.	1	2	3	4	5	6	7
L	t_R (s)		11	21	21	5	10	19	29
			at 200% x I_R			at 600% x I_R			
S	I_{sd} xI_R		2.5		5	10			
	t_{sd} (s)		0.1				0.2		
I	I_i xI_R		14 (Max: 13 x I_n) (1)						
GF	I_N xI_n		0.2						
	t_N (s)		0.2						
NP	I_N xI_R		1.0/0.5 (2)						
	t_N (s)		$t_N = t_R$						

Note

(1) I_i max. = 13 x I_n

(2) 1.0 x I_R or 0.5 x I_R can be selected. Characteristic of neutral protection (t_N vs. I_n) is identical to characteristic of phase protection (t_R vs. I_R).

MSXE 630



I_n = 630A

I_R (A)		xIn	0.4	0.5	0.63	0.8	0.85	0.9	0.95	1.0
Characteristics		No.	1	2	3	4	5	6		
L	t_R (s)		11	21	21	5	10	16		
			at 200% x I_R			at 600% x I_R				
S	I_{sd} xI_R		2.5		5	8				
	t_{sd} (s)		0.1				0.2			
I	I_i xI_R		14 (Max: 10 x I_n) (1)							
GF	I_N xI_n		0.2							
	t_N (s)		0.2							
NP	I_N xI_R		1.0/0.5 (2)							
	t_N (s)		$t_N = t_R$							

Note

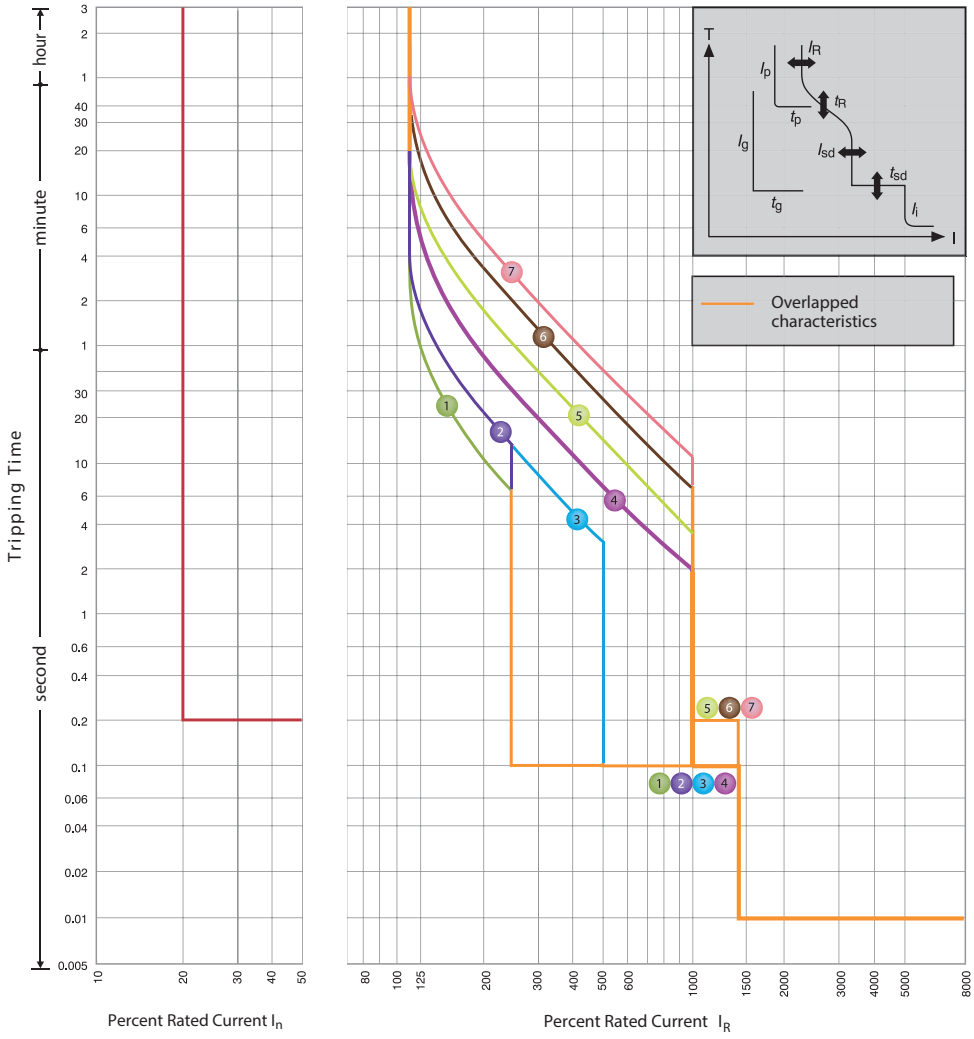
(1) I_i max. = 10 x I_n

(2) 1.0 x I_R or 0.5 x I_R can be selected. Characteristic of neutral protection (t_N vs. I_n) is identical to characteristic of phase protection (t_R vs. I_R).

MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

MSXE 1000 (800A)



I_n = 800A

I_R (A)		xIn	0.4	0.5	0.63	0.8	0.9	0.95	1.0
Characteristics		No.	1	2	3	4	5	6	7
L	t_R (s)		11	21	21	5	10	19	29
			at 200% x I_R			at 600% x I_R			
S	I_{sd} xI_R		2.5		5	10			
	t_{sd} (s)		0.1				0.2		
I	I_i xI_R		14 (Max: 12 x I_n) (1)						
GF	I_N xI_n		0.2						
	t_N (s)		0.2						
NP	I_N xI_R		1.0/0.5 (2)						
	t_N (s)		$t_N = t_R$						

Note

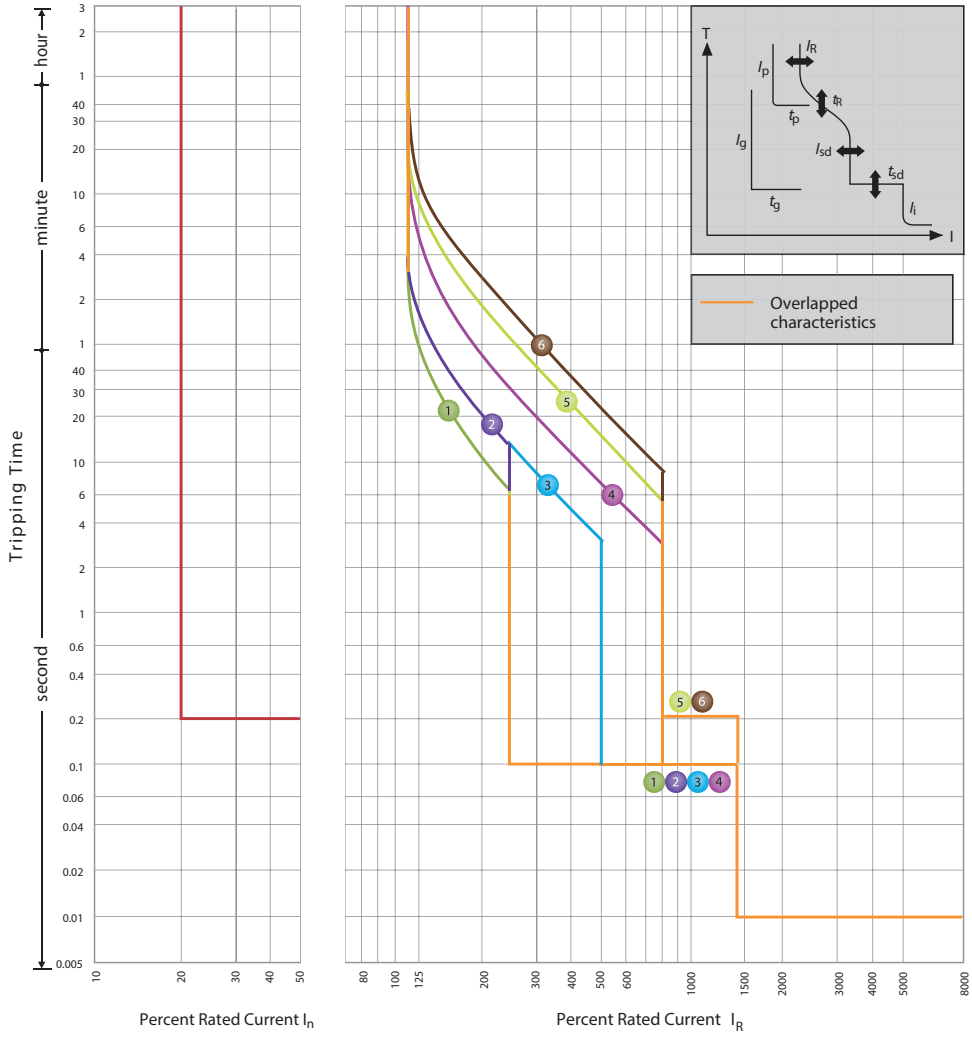
(1) I_i max. = 12 x I_n

(2) 1.0 x I_R or 0.5 x I_R can be selected. Characteristic of neutral protection (t_N vs. I_n) is identical to characteristic of phase protection (t_R vs. I_R).

MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

MSXE 1000 (1000A)



I_n = 1000A

I_R (A)		xIn	0.4	0.5	0.63	0.8	0.9	0.95	1.0
Characteristics		No.	1	2	3	4	5	6	
L	t_R (s)		11	21	21	5	10	16	
			at 200% x I_R			at 600% x I_R			
S	I_{sd} x I_R		2.5		5	8			
	t_{sd} (s)		0.1				0.2		
I	I_i x I_R		14 (Max: 10 x I_n) (1)						
GF	I_N x I_n		0.2						
	t_N (s)		0.2						
NP	I_N x I_R		1.0/0.5 (2)						
	t_N (s)		$t_N = t_R$						

Note

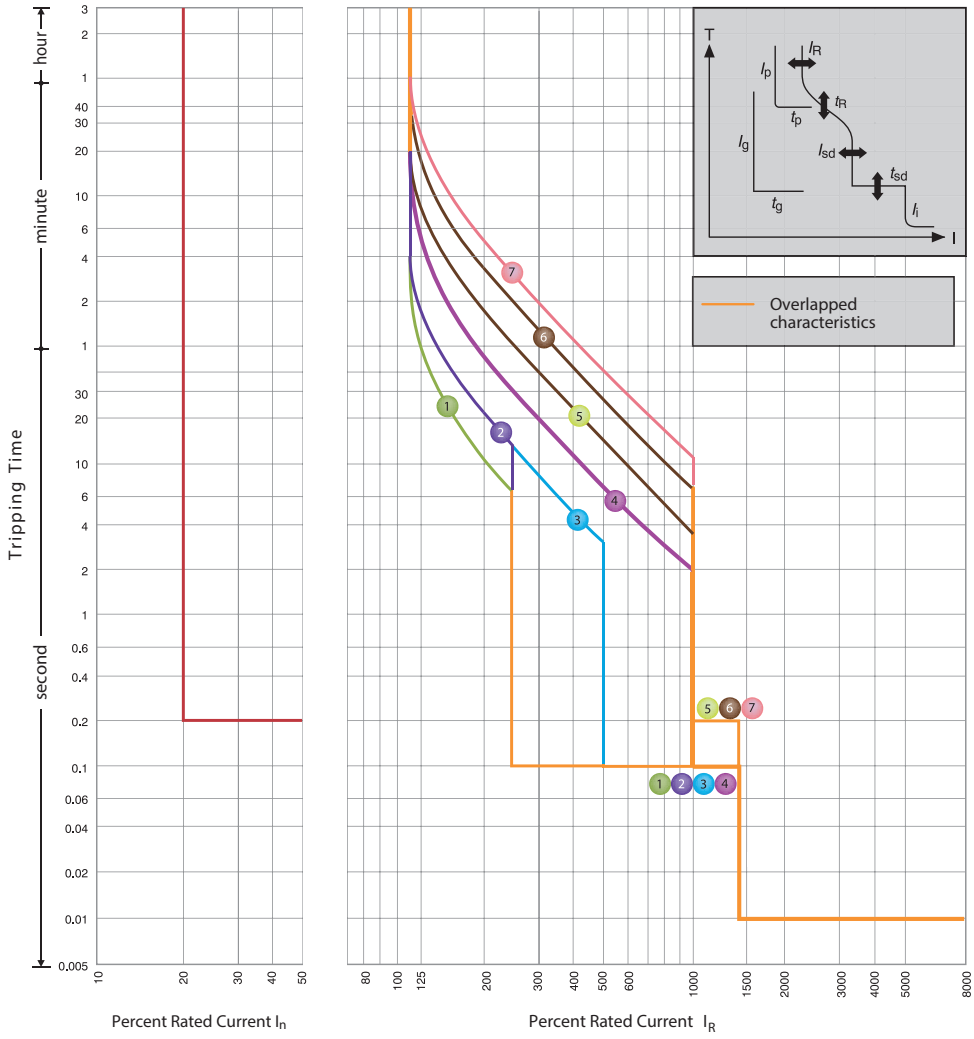
(1) I_i max. = 10 x I_n

(2) 1.0 x I_R or 0.5 x I_R can be selected. Characteristic of neutral protection (t_N vs. I_n) is identical to characteristic of phase protection (t_R vs. I_R).

MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

MSXE 1250



I_n = 1250A

I_R (A)		xIn	0.4	0.5	0.63	0.8	0.9	0.95	1.0
Characteristics		No.	1	2	3	4	5	6	7
L	t_R (s)		11	21	21	5	10	19	29
			at 200% x I_R			at 600% x I_R			
S	I_{sd} xI_R		2.5		5	10			
	t_{sd} (s)		0.1				0.2		
I	I_i xI_R		14 (Max: 12 x I_n) (1)						
GF	I_N xI_n		0.2						
	t_N (s)		0.2						
NP	I_N xI_R		1.0/0.5 (2)						
	t_N (s)		$t_N = t_R$						

Note

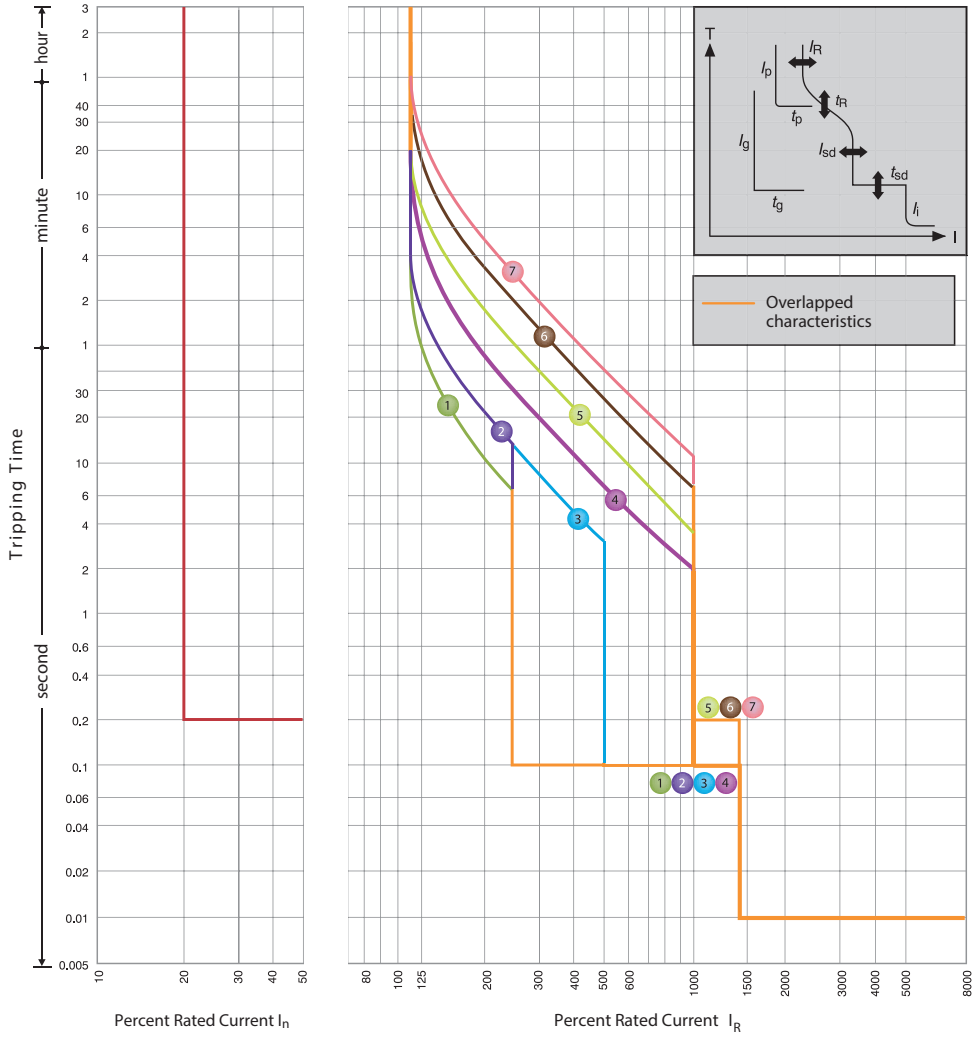
(1) I_i max. = 12 x I_n

(2) 1.0 x I_R or 0.5 x I_R can be selected. Characteristic of neutral protection (t_N vs. I_n) is identical to characteristic of phase protection (t_R vs. I_R).

MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

MSXE 1600



I_n = 1600A

I_R (A)		xIn	0.4	0.5	0.63	0.8	0.9	0.95	1.0
Characteristics		No.	1	2	3	4	5	6	7
L	t_R (s)		11	21	21	5	10	19	29
			at 200% x I_R			at 600% x I_R			
S	I_{sd} xI_R		2.5		5	10			
	t_{sd} (s)		0.1				0.2		
I	I_i xI_R		14 (Max: 12 x I_n) [1]						
GF	I_N xI_n		0.2						
	t_N (s)		0.2						
NP	I_N xI_R		1.0/0.5 [2]						
	t_N (s)		$t_N = t_R$						

Note

[1] I_i max. = 12 x I_n

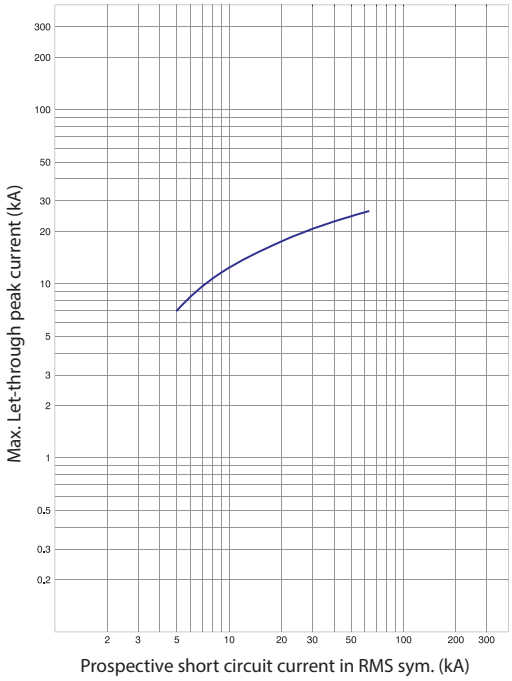
[2] 1.0 x I_R or 0.5 x I_R can be selected. Characteristic of neutral protection (t_N vs. I_n) is identical to characteristic of phase protection (t_R vs. I_R).

MCCB WITH ELECTRONIC PROTECTION

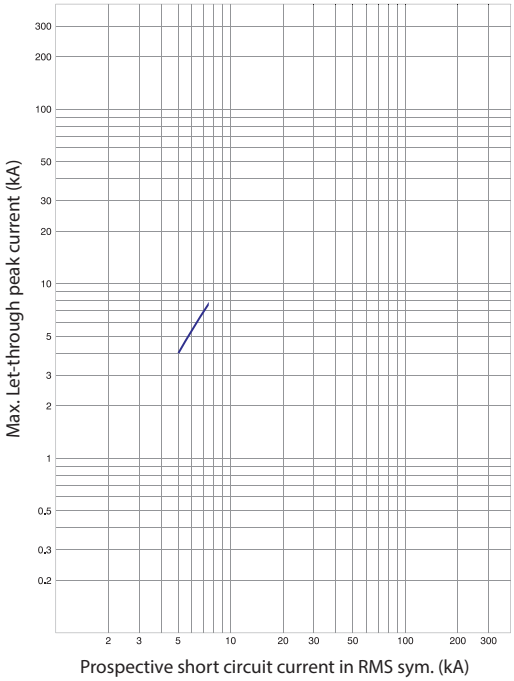
MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

Peak Current Characteristics

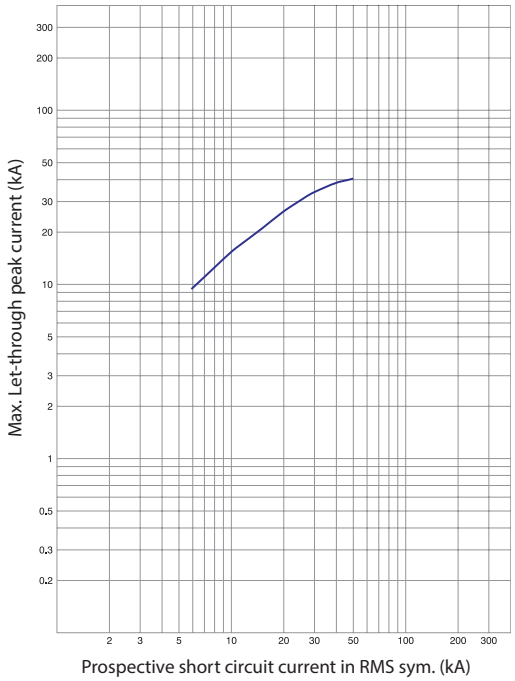
MSXE 160, MSXE 250 at 400/415/440V AC.



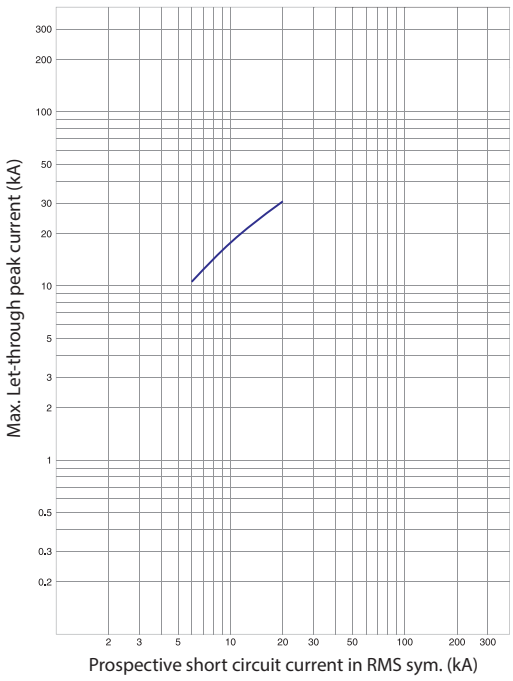
MSXE 160, MSXE 250 at 690V AC



MSXE 400 at 400/415/440V AC



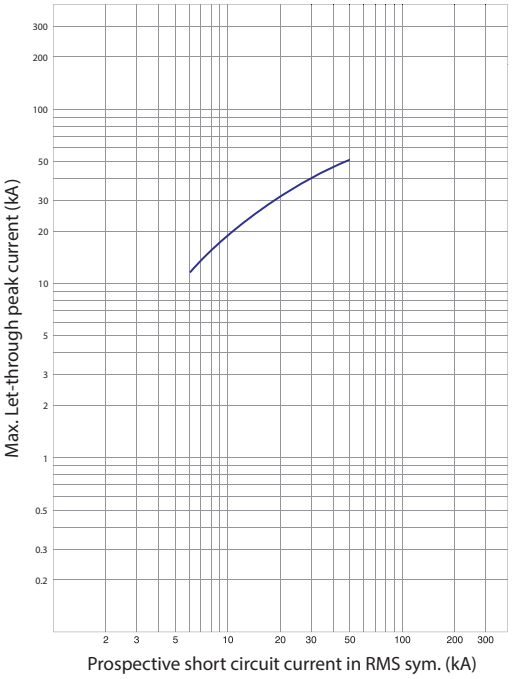
MSXE 400 at 690V AC



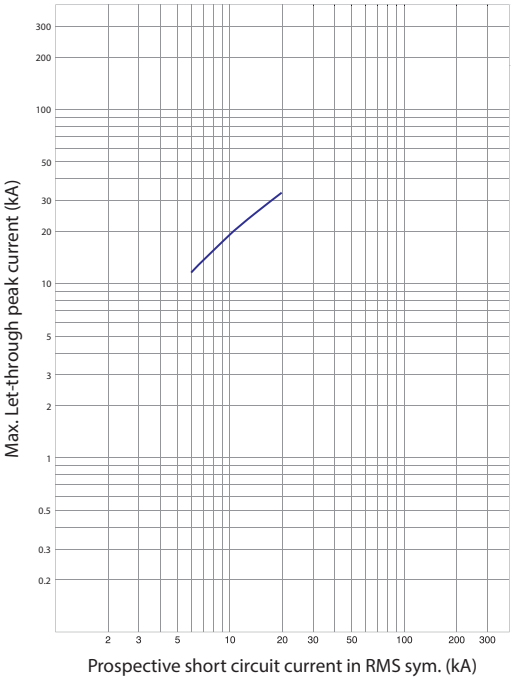
MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

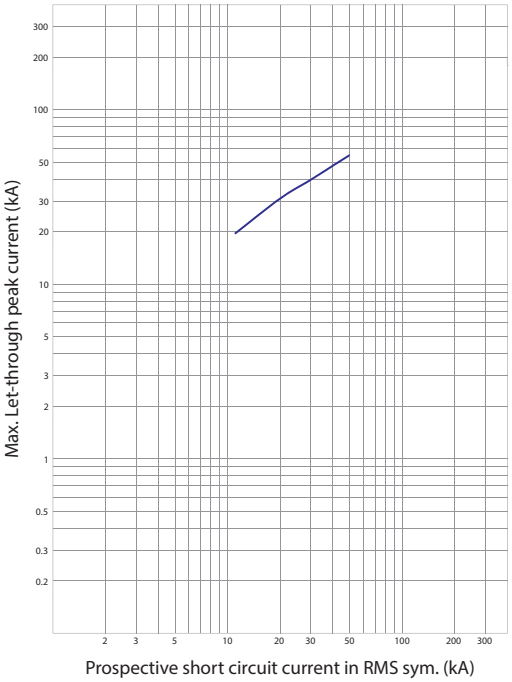
MSXE 630 at 400/415/440V AC



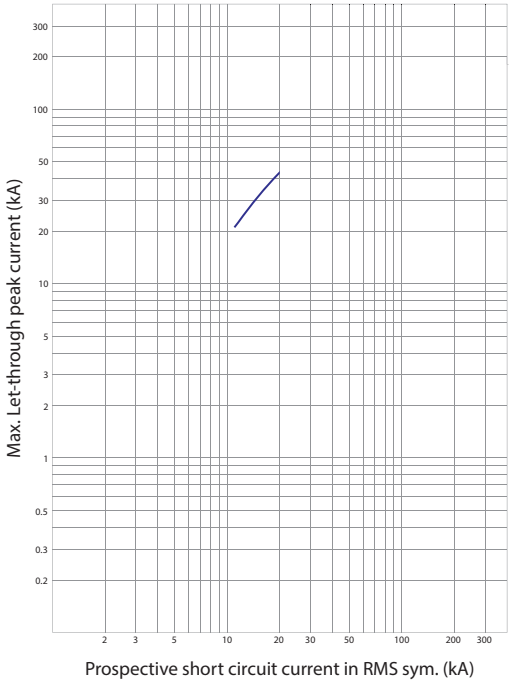
MSXE 630 at 690V AC



MSXE 1000 (800A) at 400/415/440V AC



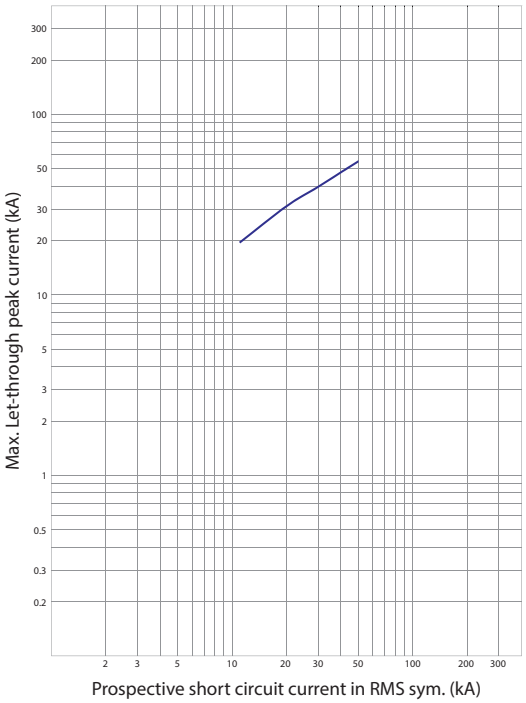
MSX 1000 (800A) at 690V AC



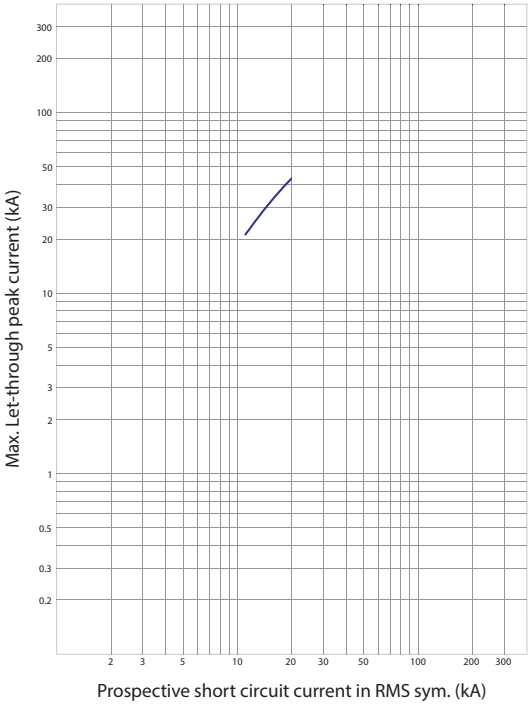
MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

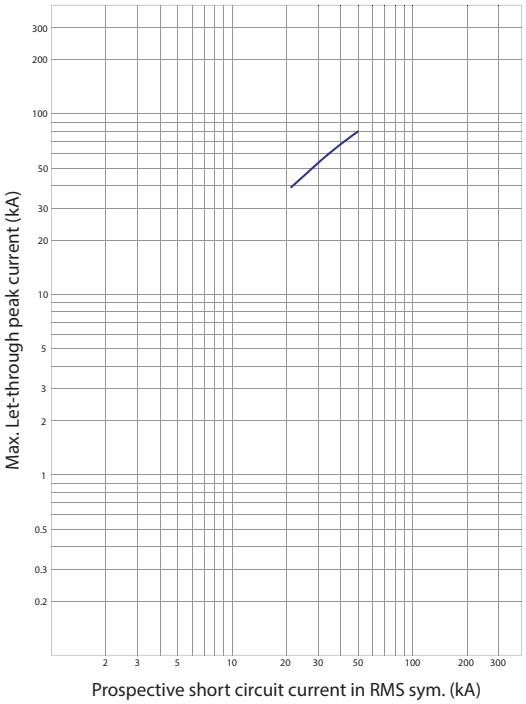
MSXE 1000 (1000A) at 400/415/440V AC



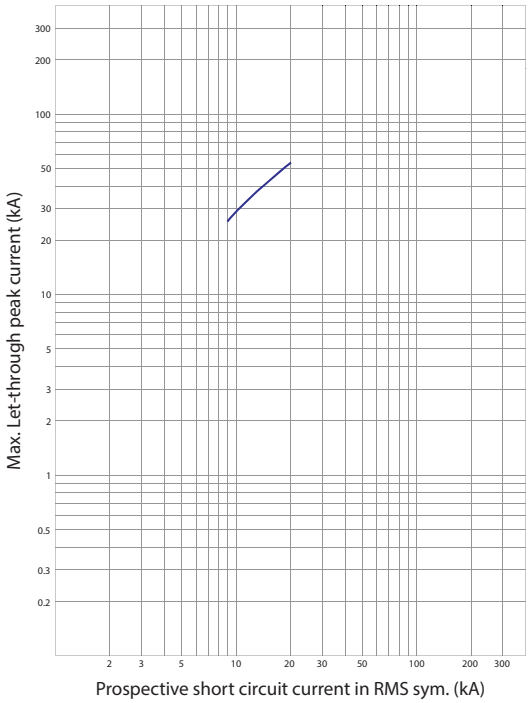
MSXE 1000 (1000A) at 690V AC



MSXE 1250 at 400/415/440V AC



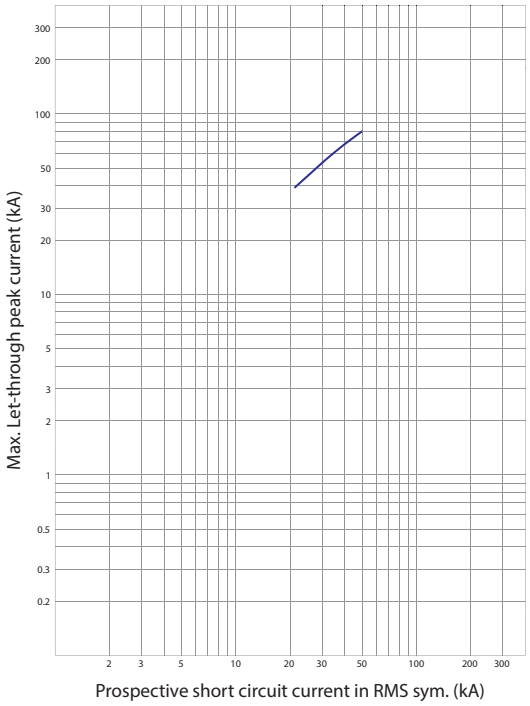
MSX 1250 at 690V AC



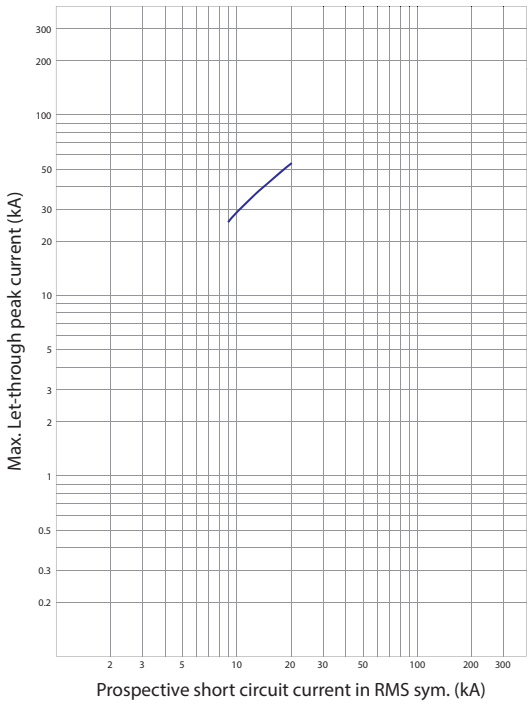
MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

MSXE 1600 a 400/415/440V A

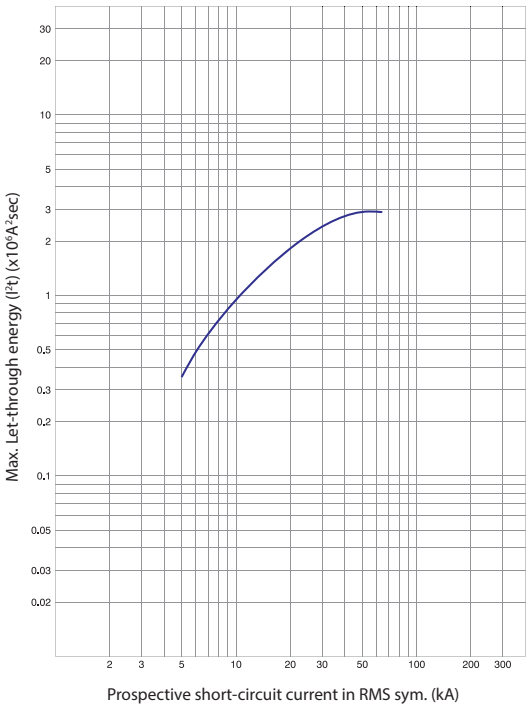


MSXE 1600 at 690V AC

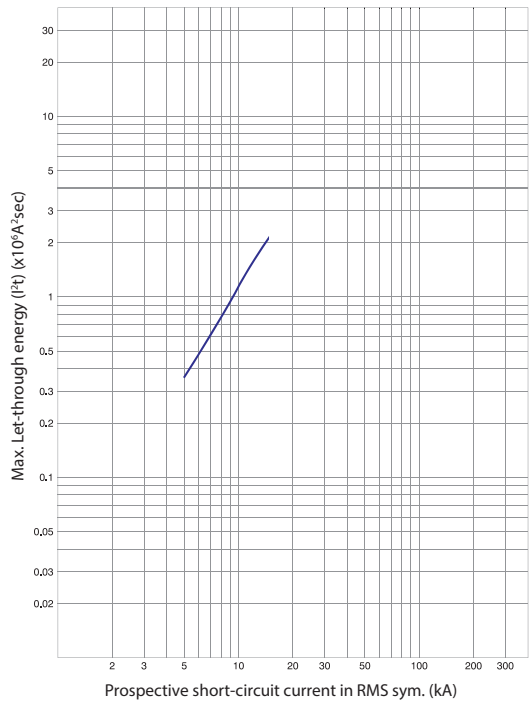


Specific Let-Through Energy Characteristics

MSXE 160, MSXE 250 at 400/415/440V AC



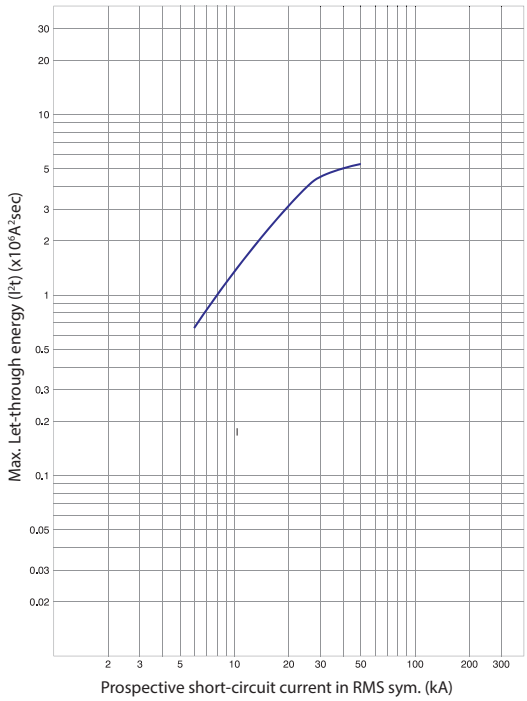
MSXE 160, MSXE 250 at 690V AC



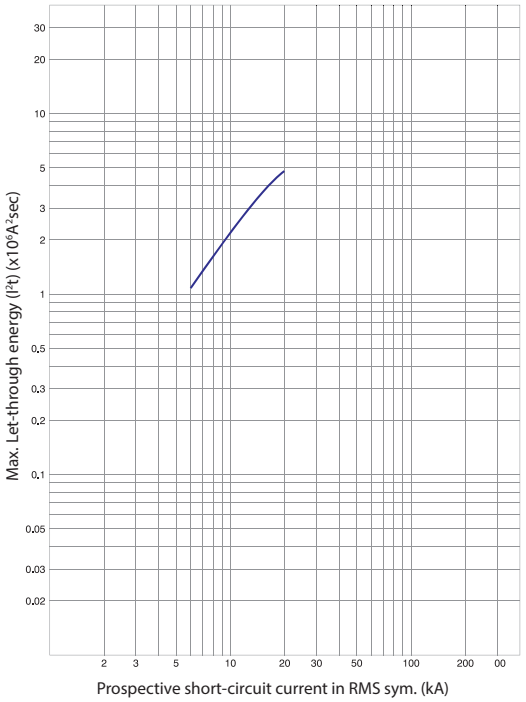
MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

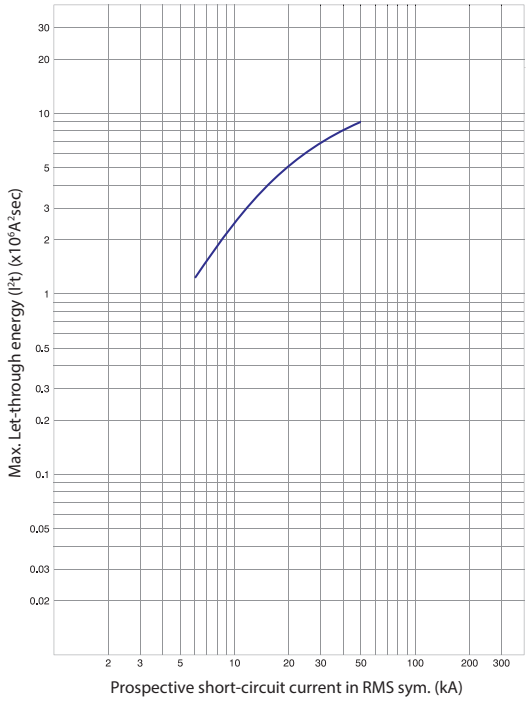
MSXE 400 at 400/415/440V AC



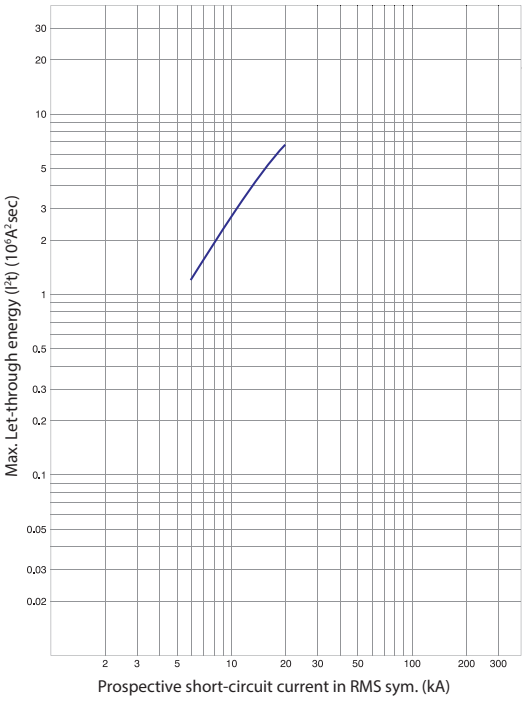
MSXE 400 a 690V AC



MSXE 630 a 400/415/440V AC



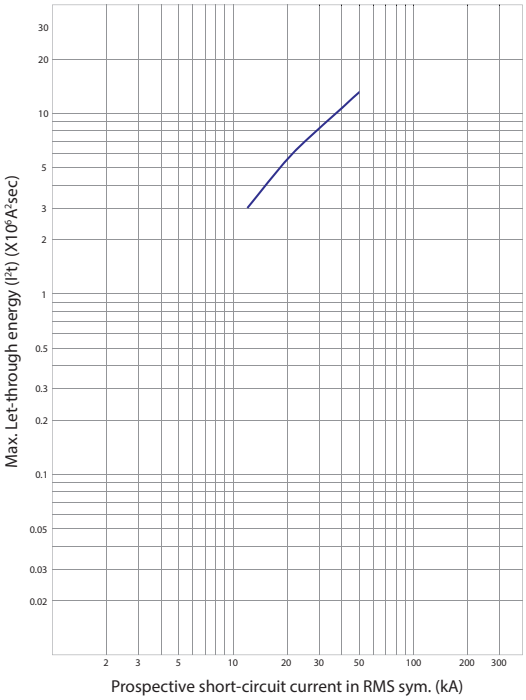
MSXE 630 a 690V AC



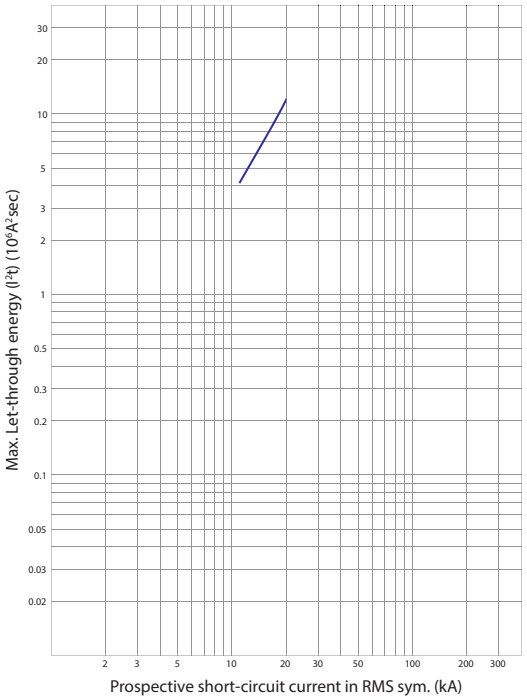
MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

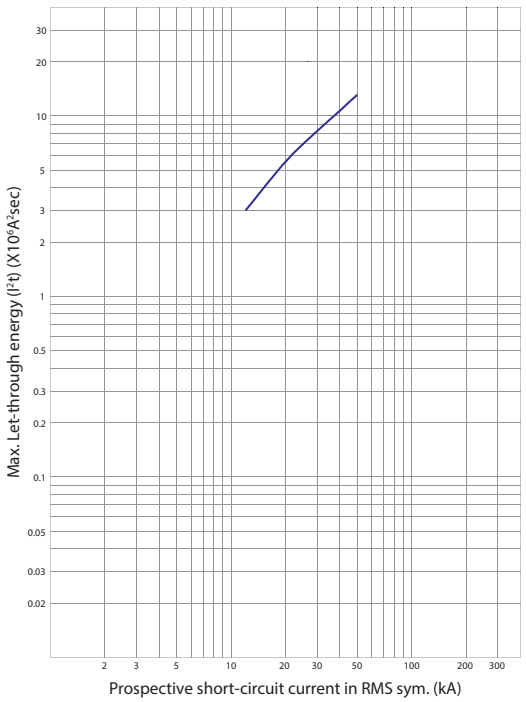
MSXE 1000 (800A) at 400/415/440V AC



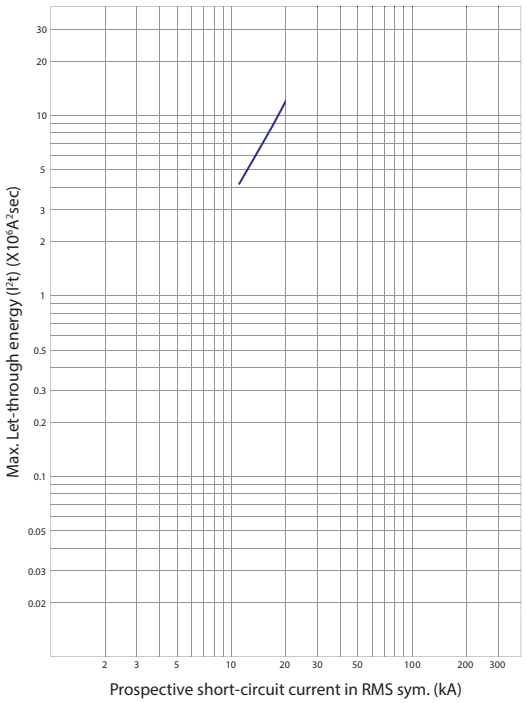
MSXE 1000 (800A) at 690V AC



MSXE 1000 (1000A) at 400/415/440V AC



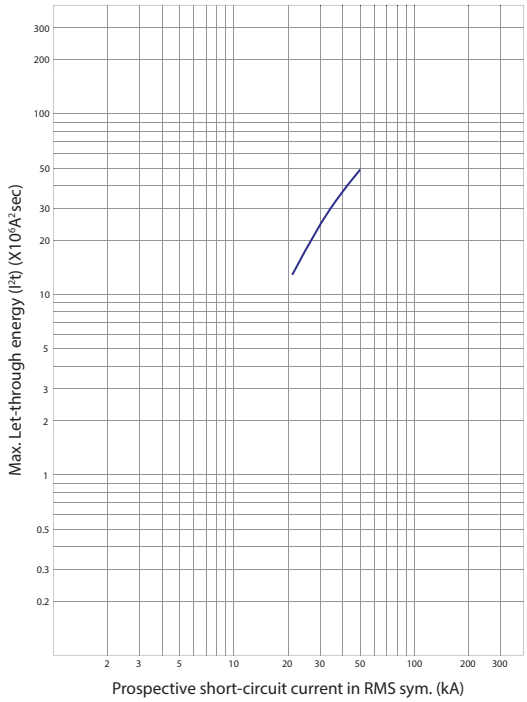
MSXE 1000 (1000A) at 690V AC



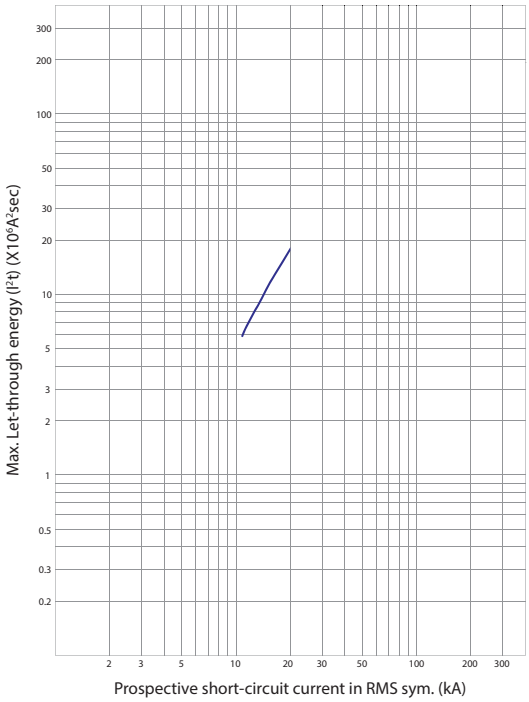
MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

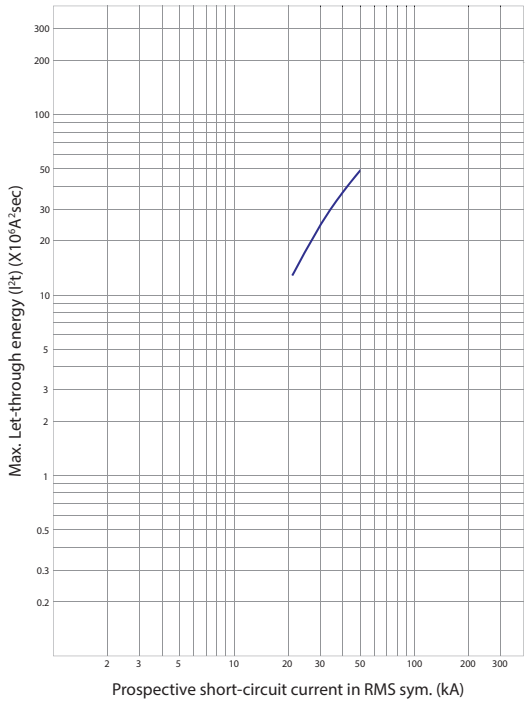
MSXE 1250 at 400/415/440V AC



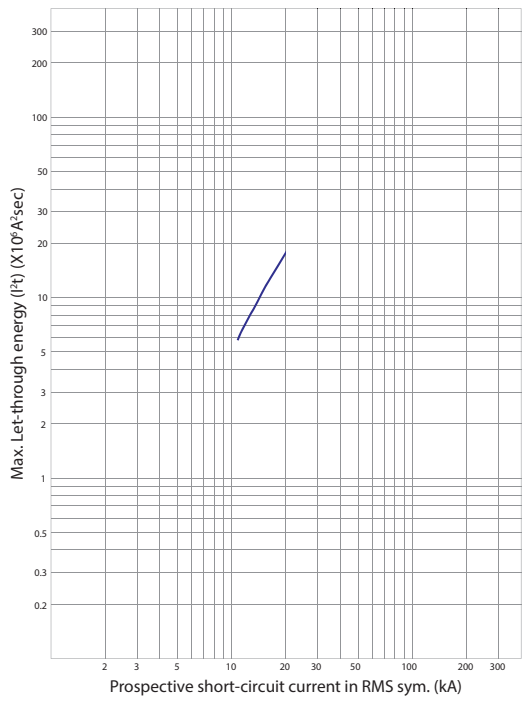
MSXE 1250 at 690V AC



MSXE 1600 at 400/415/440V AC



MSXE 1600 at 690V AC



MCCB WITH RESIDUAL CURRENT PROTECTION MSXD 125 - MSXD 160 - MSXD 250

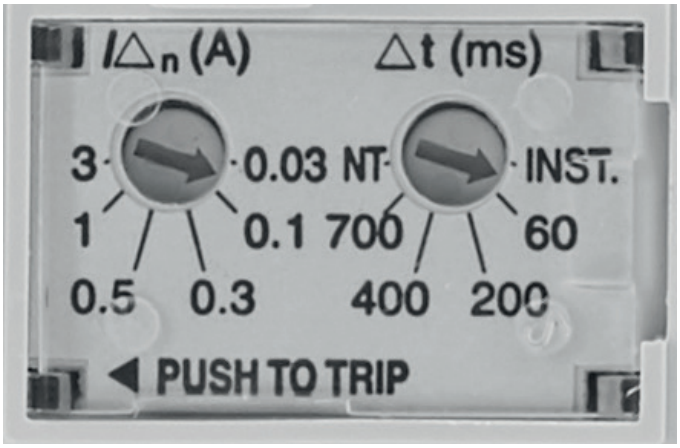
MCCB with residual current protection

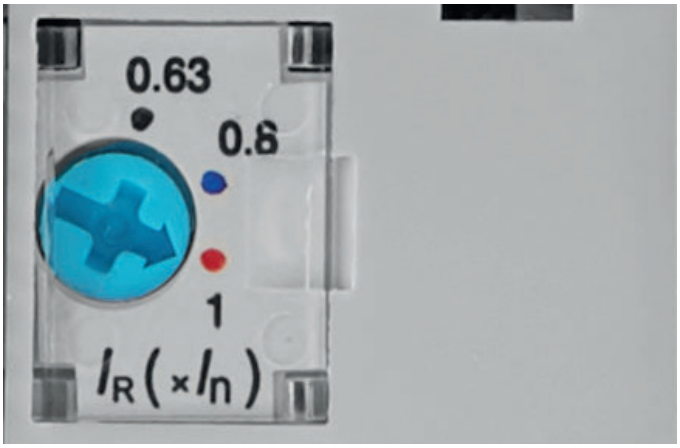
MSXD Test Button, Trip Indicator, Power LED and Adjustment Dial

MSXD circuit breakers with residual current protection have the same dimensions, the same points for mounting and the same overload/short-circuit performances of equivalent frames MSX MCCBs.

MSXD range is available in two frame sizes with interrupting capacities of 25kA and 36kA; the first size in available with rated current from 20A to 125A, the second size is available with rated current from 160A to 250A. Every size is offered with adjustable thermal and fixed magnetic protection characteristics.

ADJUSTMENT DIALS





$I\Delta_n$ (A) is the adjustable tripping threshold for residual current (earth leakage) protection.
It can be set between 30mA and 3A.
Available settings are shown below:

Δ_t (ms) is a time delay which is introduced to the residual current (earth leakage) protection characteristic. Available settings are shown below.
It can also be set to 0 (max. actual tripping time is 40ms) or NT (No Trip - tripping time = ∞).
The maximum breaking time at each setting is shown in brackets.
Note that if $I\Delta_t$ is set at 30mA, Δ_t defaults to 0.

I_R(A) is the adjustable tripping threshold for overload protection. It can be set between 0.63 and 1.0 times /n. Available /n ratings are shown below:

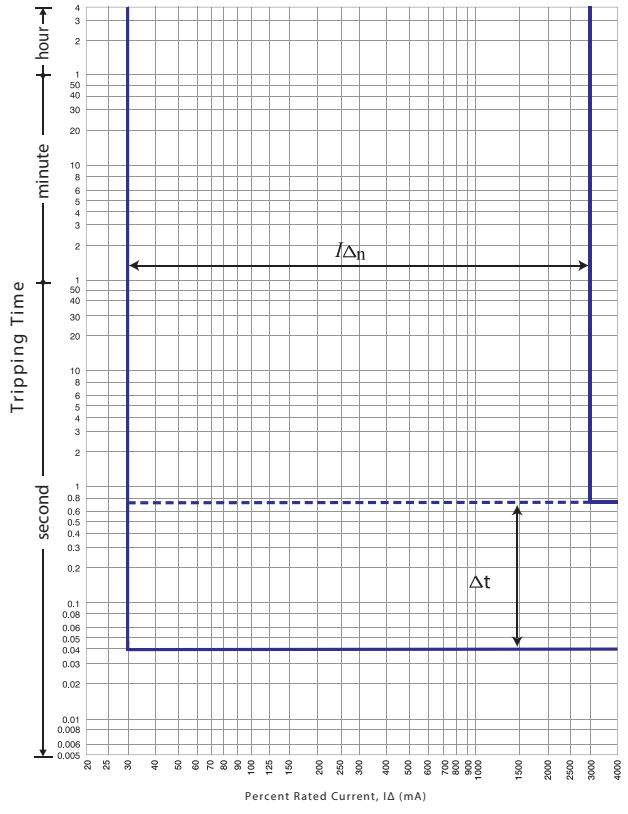
I_i is the tripping threshold for short-circuit protection.
It is fixed at the values shown below:

Models, ratings and settings

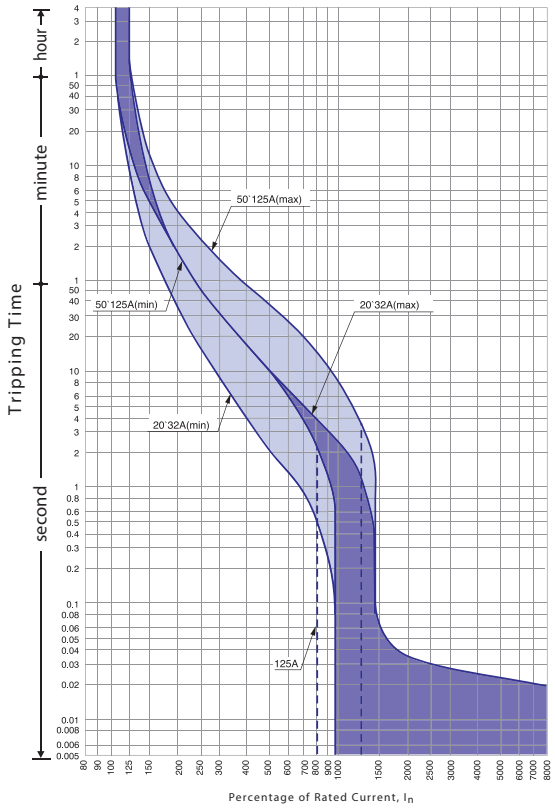
Model	Breaking capacity	IΔn (A)	Δt (ms)	Rated current I_n (A)	Magnetic trip current I_i (A)
MSXD 125	25 kA	0.03, 0.1, 0.3, 0.5, 1, 3	0 (40), 60 (195), 200 (365), 400 (620), 700 (950), NT ∞	20, 32, 50, 63, 100	12 x In
				125	10 x In
	36 kA	0.03, 0.1, 0.3, 0.5, 1, 3	0 (40), 60 (195), 200 (365), 400 (620), 700 (950), NT ∞	20, 32, 50, 63, 100	12 x In
				125	10 x In
MSXD 160 MSXD 250	25 kA	0.03, 0.1, 0.3, 0.5, 1, 3	0 (40), 60 (195), 200 (365), 400 (620), 700 (950), NT ∞	160	13 x In
				250	10 x In
	36 kA	0.03, 0.1, 0.3, 0.5, 1, 3	0 (40), 60 (195), 200 (365), 400 (620), 700 (950), NT ∞	160	13 x In
				250	10 x In

Time/Current Characteristics

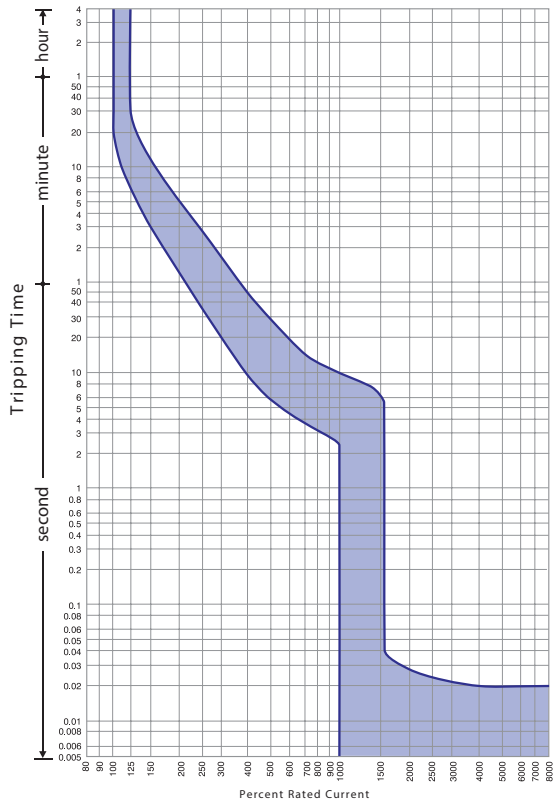
MSXD 125, MSXD 160, MSXD 250



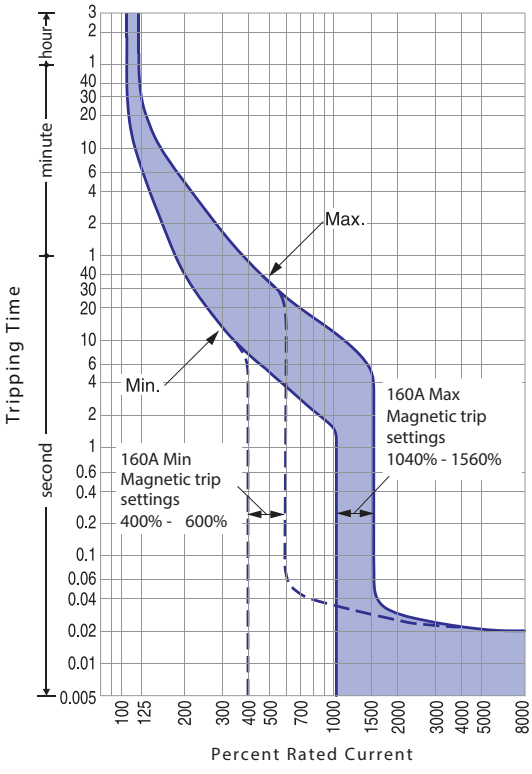
MSXD 125



MSXD 160

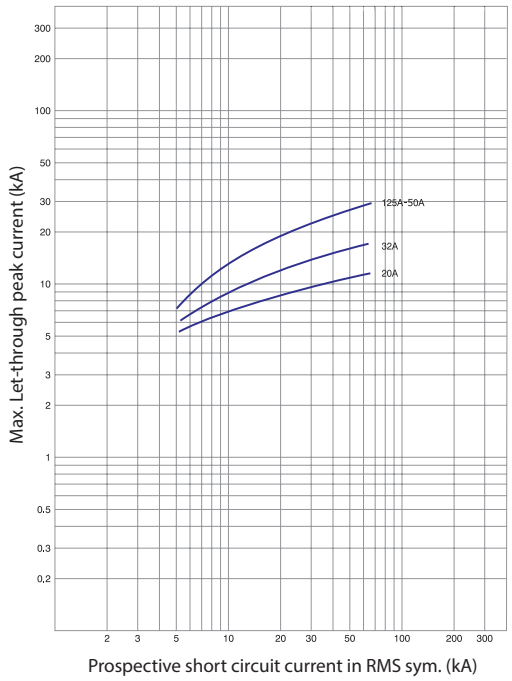


MSXD 250

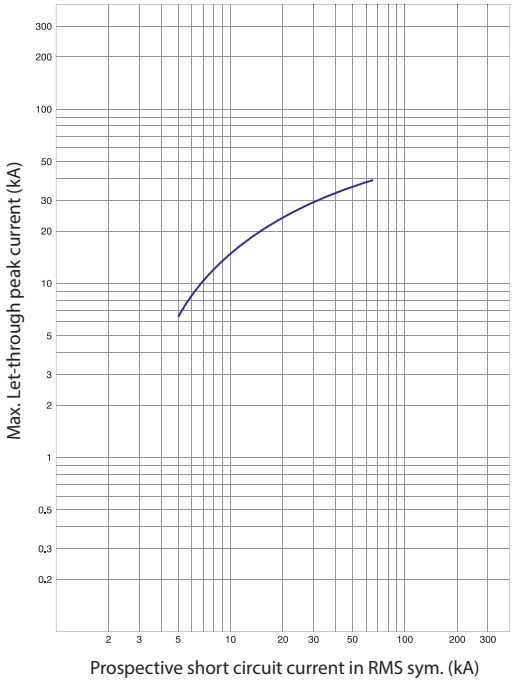


Peak Current Characteristics

MSXD 125 at 400/415/440V AC

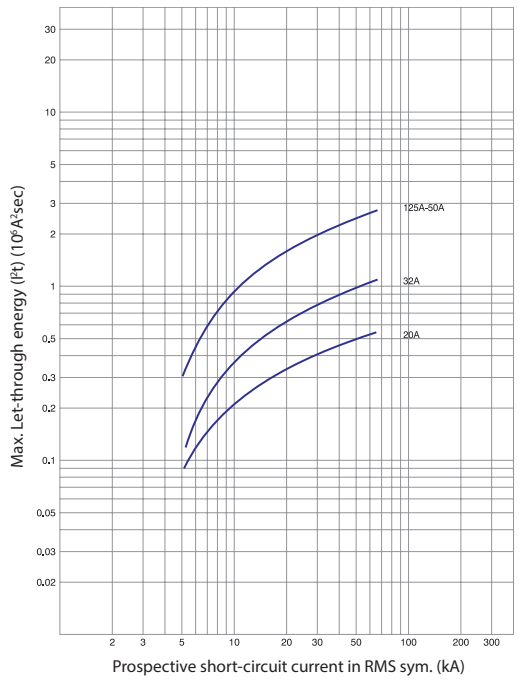


MSXD 160, MSXD 250 at 400/415/440V AC

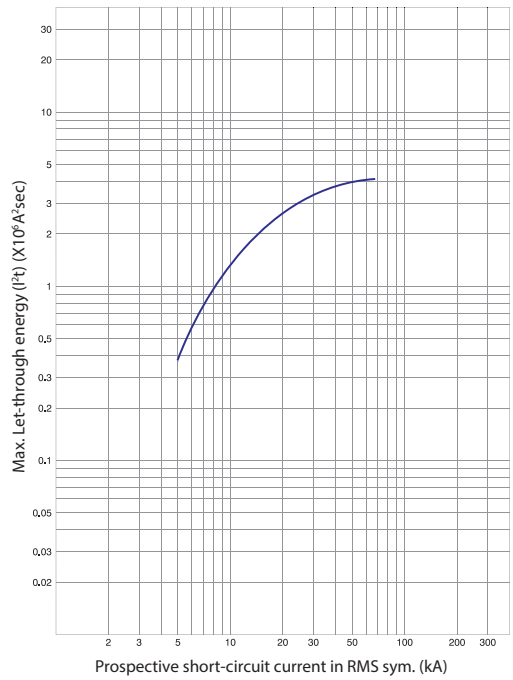


Specific Let-Through Energy Characteristics

MSXD 125 at 400/415/440V AC



MSXD 160, MSXD 250 at 400/415/440V AC

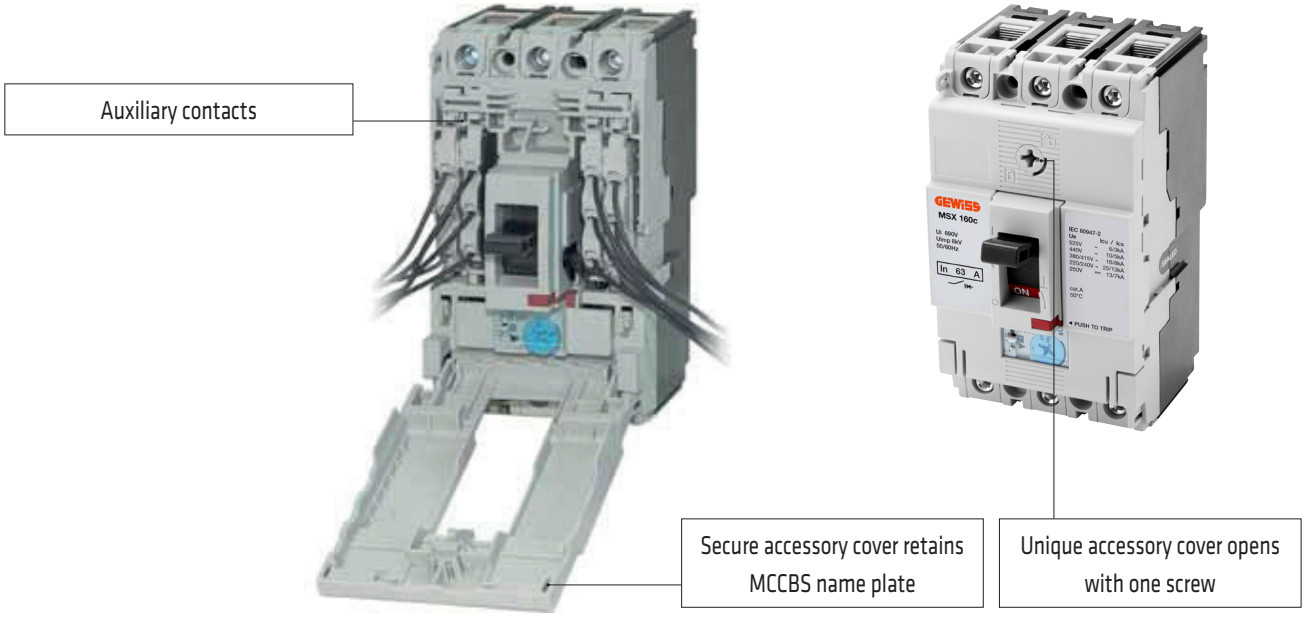


COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Electrical control accessories for MSX 160c and MSX 250c range are designed with the installer in mind.
Auxiliary contacts of open/closed position, fault indicator switch, shunt trip and undervoltage releases are of modular design and convenient to use.



Undervoltage release UV

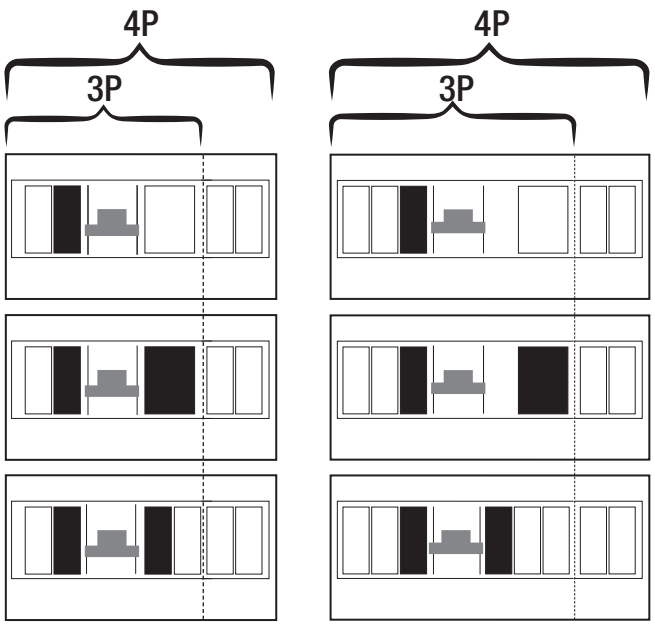
Shunt trip release SH

Auxiliary contact of open/closed position AX

Auxiliary contact of fault indicator switch AL

Valid/Maximum Accessory Combinations

MSX/M 160c **MSX/M 250c**



- **Auxiliary contact of open/closed position (AX)**
- **Auxiliary contact of fault indicator switch (AL)**
- **Shunt trip release (SH)**
- **Undervoltage release (UV)**

For technical information contact the Technical Assistance Service or visit gewiss.com

COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Rated values of auxiliary contact of open/closed postion (AX) and fault indicator switch (AL)

Type of breaker	Rated value of voltage and current of auxiliary contacts						
	AC			DC			Minimum load
	Voltage (V)	Current (A)		Voltage (V)	Current (A)		
		Resistive load	Inductive load ①		Resistive load	Inductive load ①	
MSX/M 160c MSX/M 250c	480	-	-	250	-	-	15V c.c. 100mA
	250	3	2	125	0,5	0,05	
	125	3	2	30	3	2	

NOTE:
① The inductive load means power factor of no smaller than 0.4 and time constant of no larger than 7 ms.

Operation of auxiliary contacts

Switch	Breaker status	[ON]	[OFF]	[TRIP]
Auxiliary contact of open/closed position AX		11/AXc-14/AXa "Closed" 11/AXc-12/AXb "Open"	11/AXc-14/AXa "Open" 11/AXc-12/AXb "Closed"	11/AXc-14/AXa "Open" 11/AXc-12/AXb "Closed"
Auxiliary contact of fault indicator switch AL		91/ALc-94/ALa "Open" 91/ALc-92/ALb "Closed"	91/ALc-94/ALa "Open" 91/ALc-92/ALb "Closed"	91/ALc-94/ALa "Closed" 91/ALc-92/ALb "Open"

Rated values of shunt trip releases

Type of breaker	Peak exciting current, A		
	AC voltage (V)		DC voltage (V)
	200-240	380-450	24
MSX/M 160c MSX/M 250c	0.014	0.0065	0.03

NOTE:
The permissible voltage range is from 85% to 110% of the rated voltage for AC or 75 % to 125 % thereof for DC.
Ensure that the voltage does not drop or exceed the permissible voltage range when SHT is actuated.
Breaker contacts usually start opening within 30 ms after the rated voltage is applied to the breaker.

Rated values of undervoltage releases (instantaneous type)

Type of breaker	Power supply capacity, VA		Exciting current, mA
	AC voltage (V)		DC voltage (V)
	200-240	380-450	24
MSX/M 160c MSX/M 250c	1.5	2.3	23

Rated values of undervoltage releases with time delay

Time delays: 500±300 msec.

Type of breaker	Power supply capacity, VA	Exciting current, mA
	AC voltage (V)	DC voltage (V)
	200-240	24
MSX/M 160c MSX/M 250c	2.5	22

NOTE: UV releases are installed on the right hand side of the breaker.

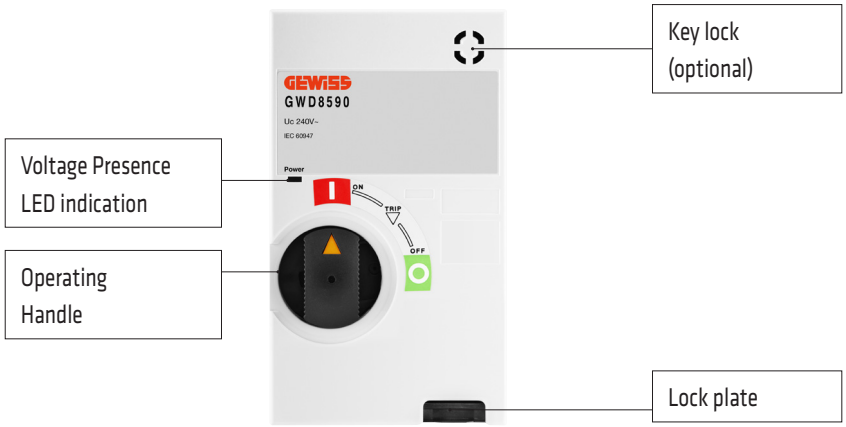
For technical information contact the Technical Assistance Service or visit gewiss.com

COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

MOTOR OPERATOR

Motor operators for MSX/M 250c



Features	
Installation and Removal Ease	Simply rotate two knobs allows the motor operator to be installed on or removed from the breaker.
High-speed, Stable Actuation	The quick operating time makes it possible to use the motor operators for synchronized closing of breakers.
Silent Operation	Motor operator uses a direct drive system, providing operational silence.
"Lock-in Off" Capability	This capability allows the breaker to be padlocked in the OFF state. Up to three padlocks with a 5 mm hasp diameter can be used. Padlocks are not supplied.

Ratings and Specifications		
Type of breaker		MSX/M 250c
Rated operational voltage ①		230-240V c.a. 24 V c.c.
Peak steady-state/ starting current, A ②	**AC230-240V**	3.5/7
	DC24V	18/26
Operation method		Motor driven (direct drive system)
Operating times at rated voltage	**ON**	0.1
	OFF/RESET	0.1 ③ ④
Operating switch ratings		100V 0.1A (Open voltage/current: 44 V/4 mA) ⑤
Power supply required		300VA or higher
Dielectric withstand voltage (for one minute)		AC1500V (AC 1000 V for DC 24/48 V)
Weight		1.4kg

Notes:

① Permissible operating range is 85 to 110%.

② The currents shown are the maximum values at the maximum rated operational voltage.

③ The operating time is the value when the rated operational voltage is supplied.
Allow a longer time for the motor operator to complete the operation.

④ The motor operator is of a short time duty. Do not subject it to more than 10 continuous ON-OFF operations. If this occurs, allow the motor operator to cool for at least 15 minutes.

⑤ When the rated operational voltage is DC24V the open voltage will be DC22V.

MOTOR OPERATOR

Electrical Control Using Motorised Operation

Motorized Operation

The motor operator has an input-signal self-hold circuit: closing the ON or OFF switch (see circuit diagrams shown below) momentarily allows activating the motor operator. To reset the tripped breaker to the OFF position, close the OFF (RESET) switch.
The voltage presence LED indication is on when the power is supplied to the motor operator.

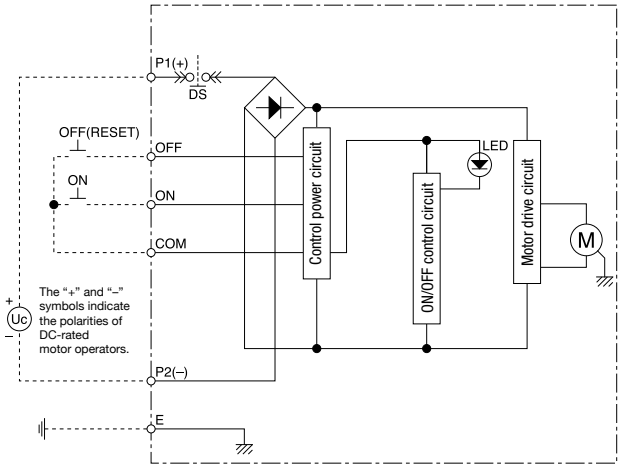
Manual Operation

Pull the operating handle out. Rotating the handle counter clockwise turns ON the breaker and clockwise turns OFF or resets the breaker.

Operation Precaution

1. Ensure that the actual operation voltage ranges from 85% to 110% of the rated one.
2. Use operation switches whose ratings and power capacity is as specified in the "Ratings and Specifications" table on the previous page.
3. Use noise filters if the control power supply of the motor operator is shared by peripheral devices. Otherwise, power supply noise may cause malfunction of the peripheral devices.

Control Circuit Diagrams of Motor Operators



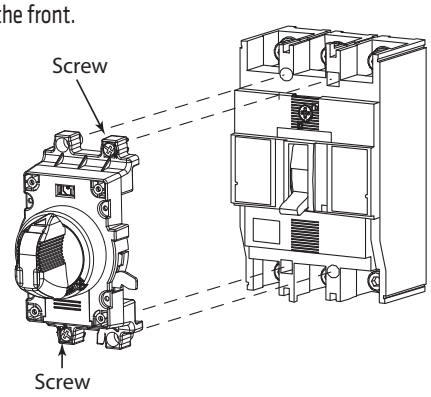
COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION AND COMPACT SWITCH-DISCONNECTORS

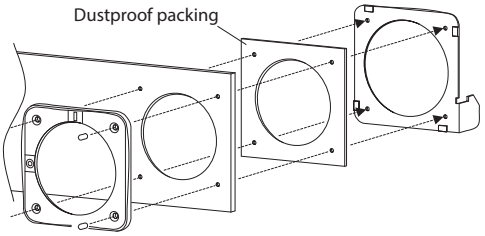
MSX/M 160c - MSX/M 250c

ROTARY HANDLES AND LOCKING DEVICES

Direct rotary handle for MSX/M 160c and MSX/M 250c

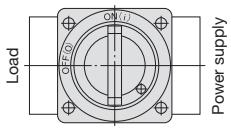
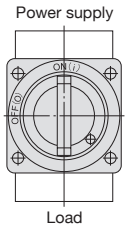
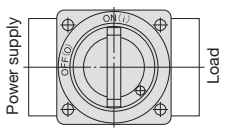
This external operating handle is used to operate a circuit breaker mounted just behind a compartment door with the door closed. The operating mechanism and handle are mounted directly onto the circuit breaker. The handle protrudes through a cut-out in the door. A mould flange is supplied with the handle, covering panel cut-out from the front.





Breaker Mounting Direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction.
The upper supply type is standard.

Right power supply type	Upper power supply type (standard)	Left power supply type
		

Panel Lock Mechanism

This external operating handle keeps the panel door locked when in the 'ON' position.
The handle is turned to the 'RESET/OPEN COVER' position to open the panel door.
The release knob enables the panel door to be opened with the handle in the 'ON' position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.

Safety interlock (Standard)

The safety interlock prevents the breaker from turning ON as long as the panel is open.
This interlock can be released using the hook lever.

Handle Lock Mechanism

This Mechanism allows the breaker to be padlock in the OFF position.
Padlocks are not supplied.
Up to three padlocks can be installed.

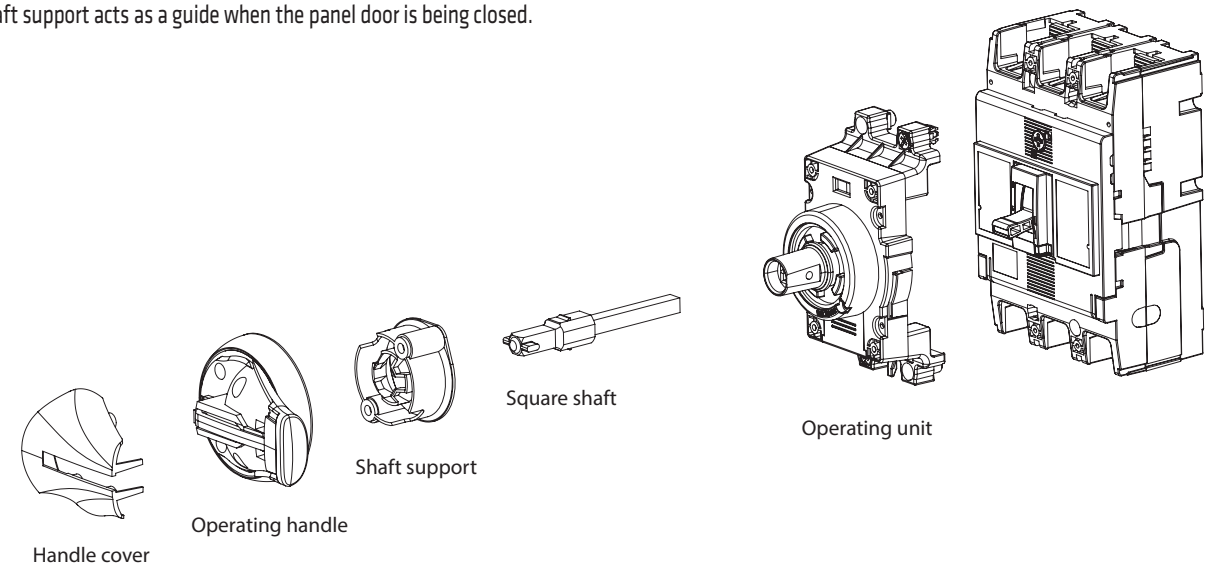
Padlock dimensions (mm)

A	Diameter
13 min	Ø 5.5-8

ROTARY HANDLES AND LOCKING DEVICES

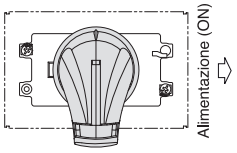
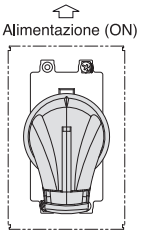
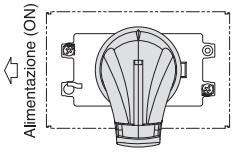
Extended rotary handle for MSX/M 160c and MSX/M 250c

The door mounted operating handle allows breakers installed in control centers or switchboards to be manually operated from outside and complies with IEC 6020-1.
It consists of an operating mechanism that is mounted on the breaker, a handle that is mounted on the door and a shaft that transmits the turning force from the handle to the operating unit.
The shaft support acts as a guide when the panel door is being closed.



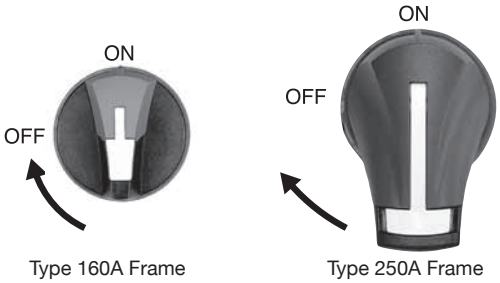
Breaker Mounting Direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction.

Horizontal mounting / ON to move the breaker handle right	Vertical mounting / ON to move the breaker handle up	Horizontal mounting / ON to move the breaker handle left
		

Operating Direction of Handles

Rotate the operating handle clockwise to turn the breaker on.



Rotate clockwise to turn the breaker ON

ROTARY HANDLES AND LOCKING DEVICES

Panel Lock Mechanism

The external operating handle keeps the panel door locked when in the 'ON' position.
The handle is turned to the OFF position to open the panel door.
The release button enables the panel door to be opened with the handle in the "ON' position. To release: push the release button on the side of the operating handle with a flat-bladed screwdriver.

Toggle Lock Mechanism

This Mechanism allows the breaker to be padlock in the OFF position.
Padlocks are not supplied.
Up to three padlocks can be installed.

Type 160A Frame

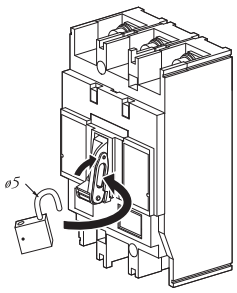
Type 250A Frame

Type 160A Frame

Type 250A Frame

Locking Devices

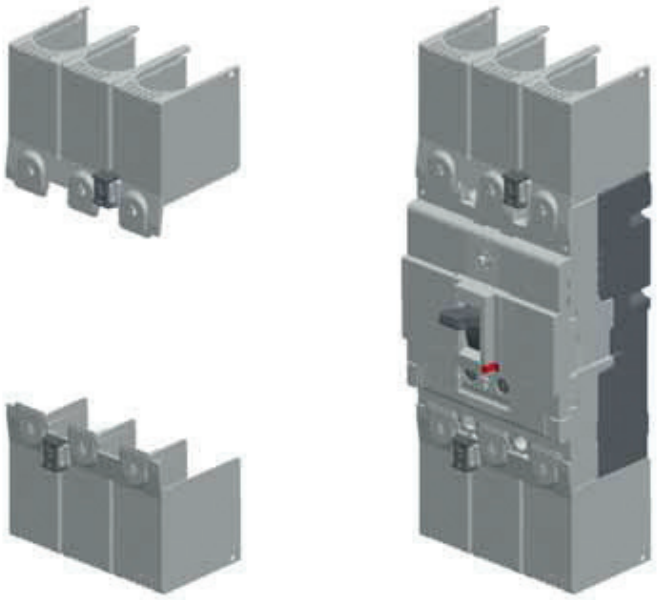
Toggle locking devices allow MCCB's to be locked ON or OFF using up to three padlocks.
Locking devices for 160A and 250A frame models accept padlocks with a 5mm hasp diameter.



INSULATION ACCESSORIES

Terminal Covers for Front Connection

Terminal covers for front connection are suitable for covering the exposed live parts of conductors terminated on the MCCB.



Terminal Cover for Front Connection

Terminal covers for Rear Connection

Terminal covers for rear connection are available for 160A to 250A frame models and may be used on MCCBs fitted with rear connections (RC). They prevent access to the terminals from the front and top.

Terminal Cover for Rear Connection

Terminal cover lock option is available to lock and seal front and rear terminal covers on to MCCB.

INSULATION ACCESSORIES

Interpole Barriers

Interpole barriers provide maximum insulation between phases at the terminals of the MCCB. They cannot be fitted at the same time as any of the terminal covers. Interpole barriers for use on one end of the MCCB are supplied as standard.
Additional interpole barriers can be ordered individually. All interpole barriers can easily be fitted to either end of an MCCB.

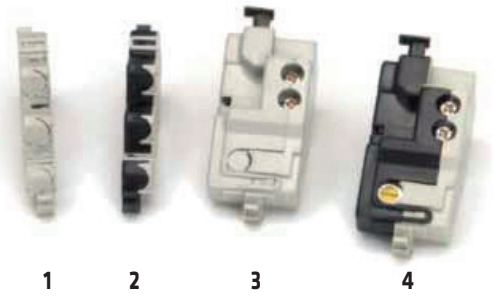
MCCB fitted with Interpole Barriers at both ends

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

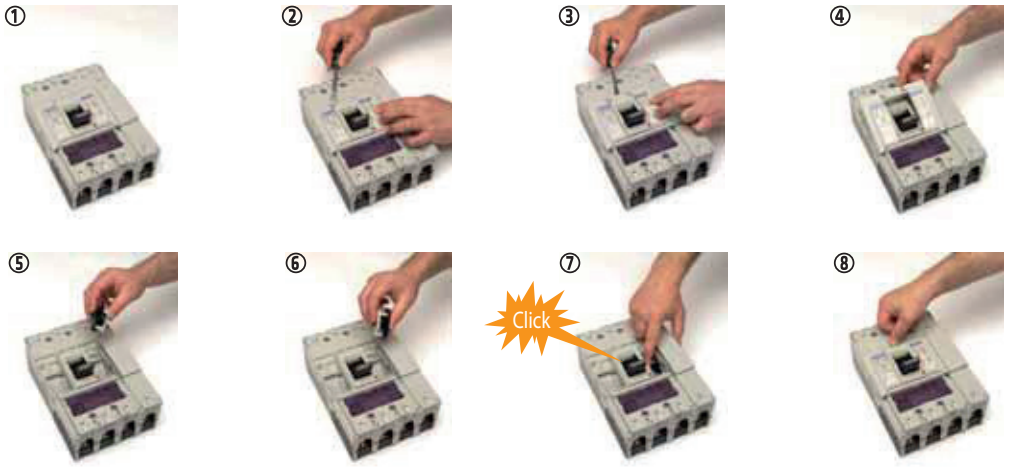
Electrical control accessories for MSX range are designed with the installer in mind.
Auxiliary contacts of open/closed position, fault indicator switch, shunt trip and undervoltage releases are of modular design and convenient to use.



1 Auxiliary contact of open/closed position (AX)
2 Auxiliary contact of fault indicator switch (AL)
3 Shunt trip release (SH)
4 Undervoltage release (UV)

- All auxiliary contacts are common up to 1600A.
  Shunt trip releases are split between two sizes: 125÷1000A and 1250÷1600A.
  Undervoltage releases are split between two sizes: 125÷630A and 800÷1600A.
- All accessories are endurance tested to the same level as MCCBs.
- Internal accessories are easily field-installable.
- All accessories are individually packaged and are supplied with fitting instructions.
- Control wiring is terminated on the accessory screw terminal.

Operations for the installation of internal accessories



Easy field-Installation of Accessories

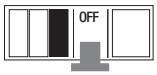
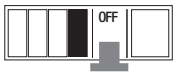
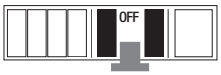
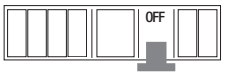
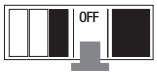
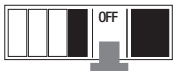
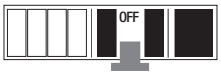
- Internal accessory can be simply plugged into position.
- No tools are required for this, except a screwdriver to lift the MCCB front cover clips.
- Accessories fit with a firm click when installed correctly.
- Colour coding of accessories helps identification and installation.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Valid Maximum Accessory Combinations

125A ÷ 250A	400A - 630A	800A - 1000A	1250A - 1600A
MSX 125 MSXD 125 * MSX/E 160 MSXD 160 * MSX/E 250 MSXD 250 *	MSX/E/M 400 MSXE/M 630	MSXE/M 1000	MSXE/M 1250 MSXE/M 1600
			
			

Auxiliary contact of open/closed position (AX)

Auxiliary contact of fault indicator switch (AL)

Shunt trip release (SH)

Undervoltage release (UV)

NOTE

- **It is not possible to install a shunt trip and an undervoltage release in an MCCB as they occupy the same location. Undervoltage release can provide remote tripping if necessary by wiring a normally closed contact or pushbutton in series with the protected supply.**
- **Undervoltage releases with time delays require an external time delay controller which clips to the side of the MCCB.**

* **Shunt trip and undervoltage releases cannot be installed in this model.**

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

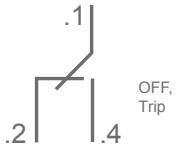
MSX - MSXD - MSXE - MSXM

SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Auxiliary contacts

Auxiliary contact of open/closed position (AX)

Auxiliary contact of open/closed position indicates the ON or OFF status of circuit breaker when manually open or tripped by means a changeover switch with 3 terminals.
Auxiliary contacts of open/closed position are colour coded grey.
The cable capacity of the terminals is 0.5 to 1.25mm^2, bare cable.
Auxiliary contact of open/closed position meets the requirements of IEC 61058-1.



Terminal Designations

Auxiliary contact of fault indicator switch (AL)

Auxiliary contact of fault indicator switch indicates the TRIP status of circuit breaker by means a changeover switch with 3 terminals.
Auxiliary contacts of fault indicator switch are colour coded grey and black.
The cable capacity of the terminals is 0.5 to 1.25mm^2, bare cable.
Auxiliary contact of fault indicator switch meets the requirements of IEC 61058-1.

Terminal Designations

Rated value of voltage and current of auxiliary contacts

Voltage (V)	AC		Voltage (V)	DC		Minimum Load
	Current (A)			Current (A)		
	Resistive Load	Inductive Load		Resistive Load	Inductive Load	
440	-	-	250	-	-	100mA at 15V DC.
240	3	2	125	0.4	0.05	
110	3	2	30	3	2	

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Opening releases

Shunt trip release (SH)

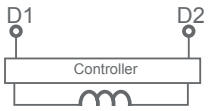
Shunt trip release allows a circuit breaker to be tripped remotely on the application of the rated coil voltage across the shunt trip release terminals. Shunt trip releases have continuously rated coils and are suitable for use in electrical interlocking applications. The MCCB contacts and toggle will move to the tripped position when the shunt trip is operated.
The permissible voltage range is 85% to 110% for AC or 75% to 125% for DC.
The cable capacity of the terminals is 0.5 to 1.25mm², bare cable.
Shunt trip releases are colour coded grey.

Terminal Designations

Rated values			
Rated Voltage (V)	**Voltage AC**		**Voltage DC**
	200-240	380-450	24
Excitation Current (A)	0.014	0.0065	0.03

Undervoltage release (UV)

Undervoltage release will trip the circuit breaker automatically when the voltage applied to the terminals of the undervoltage coil drops to between 70% and 35% of its voltage rating. The undervoltage release prevents the circuit breaker being closed unless a voltage corresponding to at least 85% of its voltage rating is applied across the terminals of the undervoltage coil.
The MCCB contacts and toggle will move to the tripped position when the under-voltage trip operates. Undervoltage releases with AC operating voltages are available with 500ms time delays. Time-delay units are fitted to the outside of MCCBs.
The cable capacity of the terminals is 0.5 to 1.25mm², bare cable.
Undervoltage releases are colour coded grey and black.



Terminal Designations

Rated values			
	Power supply capacity (VA)		**Excitation current (mA)**
MCCB Model	**Voltage AC**		**Voltage DC**
	200-240	**380-450**	**24**
MSX 125 MSX/E 160 MSX/E 250 MSX/E/M 400 MSXE/M 630	2.8	2.3	23
MCCB Model	**Voltage AC**		**Voltage DC**
	200-240	**380-415**	**24**
MSXE/M 1000 MSXE/M 1250 MSXE/M 1600	2.9	2.1	29

TERMINAL BLOCK (FOR INTERNAL ACCESSORIES)

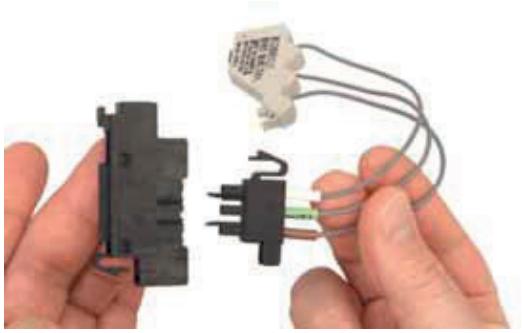
Terminal Block for Plug-in MCCBs

The terminal block for a plug-in MCCB consists of:

• a male section pre-fitted with 3 cables with which clips easily to the back of the MCCB

• a female section with 3 user terminals which clips easily into the plug-in base.

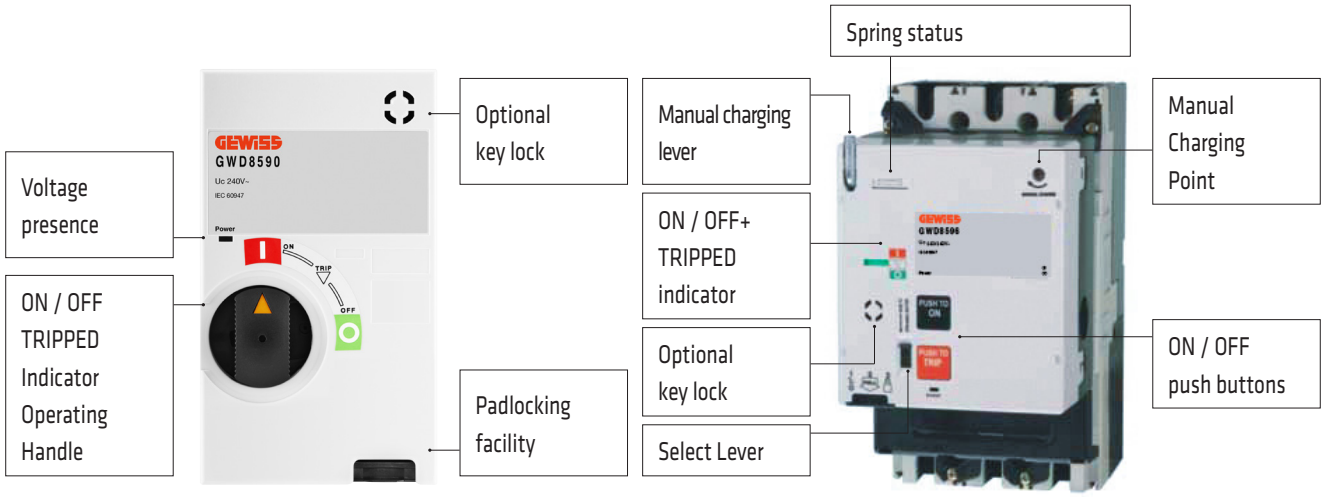
Up to 4 terminal blocks can be installed on a 125A, 160A or 250A frame MCCB. Up to 5 terminal blocks can be installed on a 400A to 800A frame MCCB.



Terminal Block for Plug-in MCCBs

MOTOR OPERATOR

Motor operators for MCCBs up 1000A

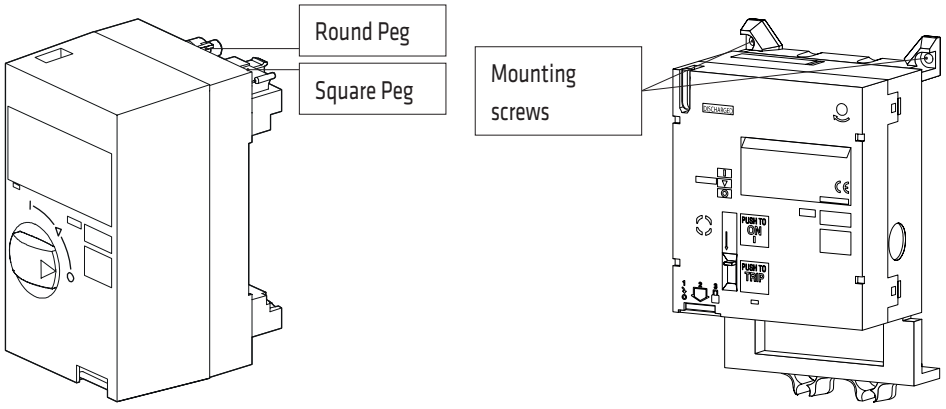


Motor Operator for 125A and 250A Frame MCCB's

Motor Operator for 400A/630A and 1000A Frame MCCB's

Motor operators provide the possibility of opening and closing an MCCB on application of electrical control signals.
Motor operators are extremely reliable, having been designed to endure the same switching duty as the host MCCB.

- Easy field-installation.
- Fast operation (100ms).
- Positive contact indication.
- Padlocking facility as standard (Maximum 3, hasp diameter 8mm).
- Versions available with automatic reset function.
- Voltage presence indication.



Motor Operator for 125A and 250A frame MCCB's

Motor Operator for 400A/630A and 1000A Frame MCCB's

Motor operators for 125A and 250A frame are mounted on the front of the breaker. They can be rapidly fitted by locating the round pegs and square pegs on the motor into corresponding round and square holes on the breaker. It takes less than 10 seconds to secure the motor to the MCCB. Two levers securely lock the motor into position. No tools are needed to fit the motor operator.
400A frame to 1000A frame motor operators are held in place with mounting screws. They can be installed easily in the field.

MOTOR OPERATOR

Indication of ON, OFF or TRIPPED Status

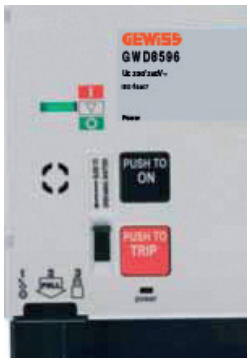
The handle of 125A and 250A frame motor operators has dual functions:

1. Indication of ON, OFF or TRIPPED status as shown in the photographs below;
2. Manual operation when handle is pulled out. The supply to electrical control circuits inside the motor operator is cut when the handle is pulled out.

MCCB on

MCCB off

MCCB tripped



Motor operators from 400A to 1000A frame MCCBs incorporate a mechanical flag which indicates the ON, OFF and TRIPPED status of the MCCB. They can be manually charged using the lever provided.

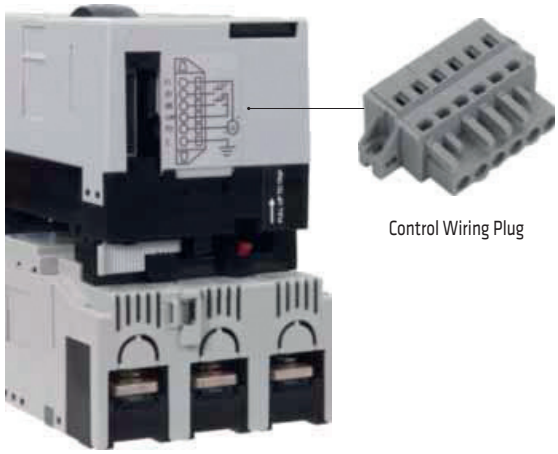
Ratings and Specifications

MCCB frame		125A	160A-250A	400A-630A	800A-1000A
MCCB model		MSX/D 125	MSX/E/D 160	MSX/E 400	MSXE 1000
		-	MSX/E/D 250	MSXE 630	-
Operating current/ Starting current Peak value (A)	**100-110 V AC**	-		ON ---/2.3 OFF, RESET 1.4/3.7	ON ---/2.2 OFF, RESET 1.7/3.5
	200-220 V AC	3.5/7		ON ---/2.3 OFF, RESET 1.1/3.5	ON ---/2.2 OFF, RESET 1.3/3.5
	230-240 V AC	18/26		ON ---/7.2 OFF, RESET 3.9/8.1	ON ---/12 OFF, RESET 6.0/11.5
	24V DC	-		ON ---/7.2 OFF/RESET 2.0/5.1	ON ---/7 OFF, RESET 3.2/6.5
Operating method		Direct drive		Spring charging	Spring charging
Operating time (s)	**ON**	0.1		0.1	0.1
	OFF	0.1		1.5	1.5
	RESET	0.1		1.5	1.5
Operating switch rating		100V, 0.1 A, Opening voltage 44V, current 4mA		100V, 0.1 A, Opening voltage 48V, current 1mA	
Power supply required		300VA minimum		300VA minimum	300VA minimum
Dielectric properties (1 min)		1500 V AC (1000V AC for 24V DC and 48V DC motors)			
Weight		1.4 kg		3.5kg	3.5kg

Note: Operating times shown in the above table apply only when the rated operational voltage is supplied to the motor operator.
The voltage supplied to the motor operator must be within the range of 85% and 110% of the rated operating voltage.

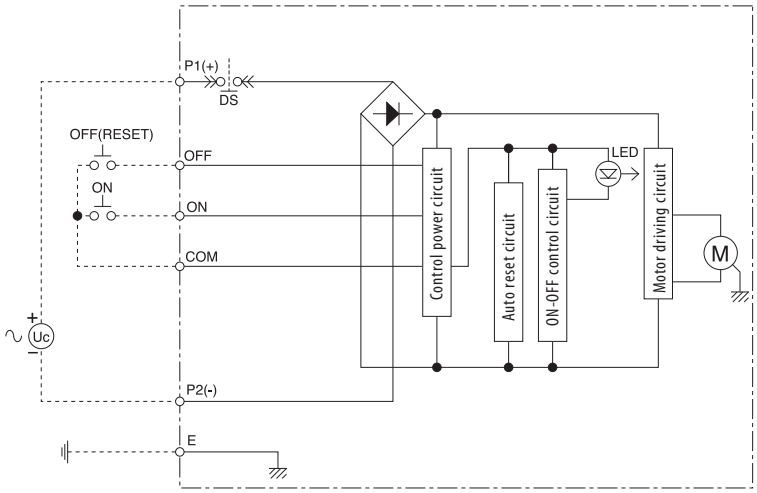
MOTOR OPERATOR

Motor Operator Control Circuits



Control Wiring Plug

MCCB and Motor Operator Showing Control Wiring Socket



Control circuit for Motor Operators

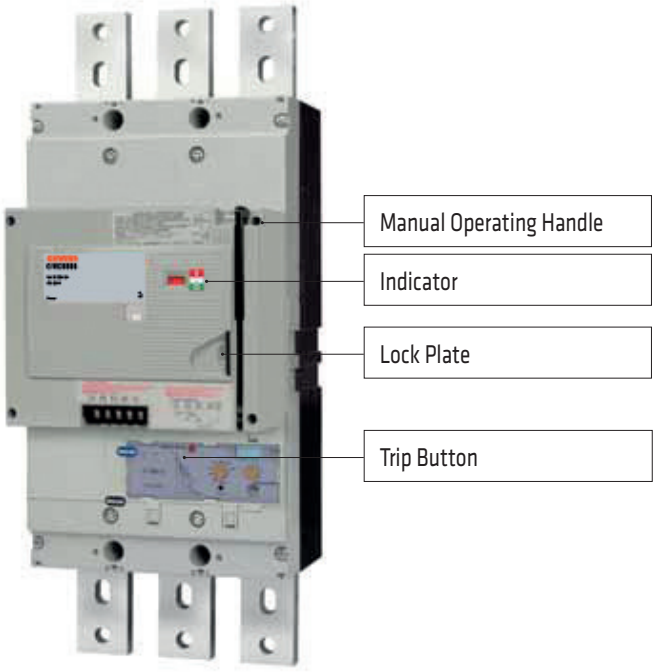
The motor operator incorporates a self-hold circuit for the closing and opening signals. Therefore a momentary (over 50msec.) open or close signal will ensure a complete operation. When the breaker trips, the breaker is reset by applying a signal to the OFF terminals of the motor.
When an undervoltage release UV is used with a motor operator, design the control circuit so that the undervoltage release UV is energised before a reset or close signal is sent to the motor operator. A 40ms time delay in the reset and close signals is sufficient to allow the undervoltage release UV to energise.
When a shunt trip release is used with a motor operator, design the control circuit so that the shunt trip release is de-energised before a reset or close signal is sent to the motor operator.
When a mechanical interlock is used with motor operators, design the control circuit to provide electrical interlocking between the motor operators. The electrical interlocking should prevent a close signal being sent to a motor operator unless the other motor operator and circuit breaker are in the OFF position.

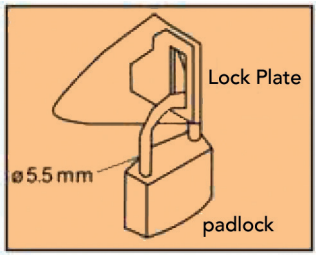
MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

MOTOR OPERATOR

Motor operators for MCCBs 1250A and 1600A





The breaker can be padlocked in the "OFF" position by pulling out the lock plate, and locking it with a padlock. When the breaker is "ON", the lock plate cannot be pulled out. Up to three lock can be used. Padlock not supplied.

Positive Contact Indication

- Colour coding indicates the true position of the contacts clearly: ON (red), OFF (green), TRIP (white).

Easy Maintenance

- Breaker mounting, removal, and even setting changes can be done without removing the motor operator.

Manual ON/OFF Operation with One Stroke

Fast Closing Operation

- Closing in 60ms or less.

The closing time remains constant over repeated operations.

Ratings and Specifications

MCCB frame			1250A - 1600A
MCCB model			MSXE/M 1250
			MSXE/M 1600
Lock in "OFF" position (standard)			■
Manual Trip Button			■
Operating current/ Inrush current (A)	230-240V c.a.	ON ①	-/1.2
		OFF, RESET ①	1.0/3.2
	24V c.c.	ON	-/4.5
		OFF, RESET	4.0/12.0
Type of operation			Spring Charged
Operating Time(s)	ON (Maximum values)		0.06
	OFF, RESET ②		3
Control Switch Ratings			250V, 5A
Power Source Capacity (VA)			300VA
Dielectric withstand voltage The value in brackets for 24V DC			AC1500V (AC500V)
Weight (kg)			6.4

NOTE

① Maximum values at AC230V, 50Hz

② Maximum values at the rated operating voltages

MOTOR OPERATOR

Motorised Operation

ON CONTROL

When the ON switch is closed, the latch release coil (LRC) is excited and the closing spring is released. The breaker quickly closes and goes into ON status.
When the closing spring is released, the limit switch (LS) is opened and the LRC is de-excited.

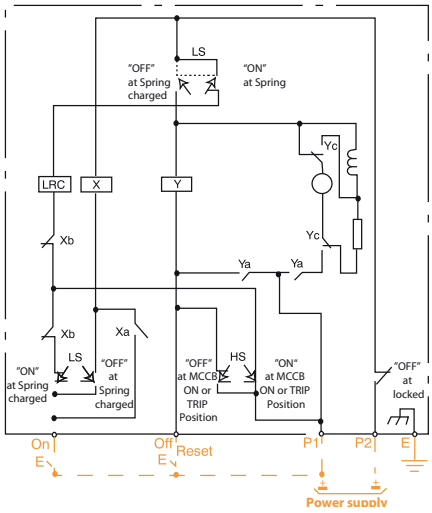
OFF CONTROL

When the off switch is closed, self-hold control relay (Y) is activated and motor (M) operates to charge the closing spring.
The breaker changes to OFF status.

RESET CONTROL

When the breaker is in TRIP status, closing the OFF switch activates self-hold control relay (Y) and starts motor (M). Motor (M) charges the closing spring and resets the breaker.

Connect Circuit AC and DC



X: Anti-pumping relay
Y: OFF signal self-holding relay
LRC: Latch release coil (closing coil)
M : Motor
m : Field coil
HS : Breaker handle position switch

Note: Customer wiring shown in orange

Manual Operation

ON, OFF (RESET)

The breaker can be opened (OFF or reset) and closed (ON) alternately by pulling theoperating lever down in one fullstroke. ON/OFF operation ofthe breaker is possible withoutcharging or releasing theclosing spring.

EMERGENCY TRIP

Opening the breaker (OFF) using the motor operator takes up to 3 seconds. If a remote emergency off function is necessary, incorporate the shunt trip device (SHT) or the undervoltage trip device (UVT) into the breaker.

PRECAUTIONS REGARDING USAGE

• If using the UVT option, be sure to reset the UVT before closing the breaker.
• The motor operator must be supplied with voltage within the following range:
DC: 75-110% of rated voltage
AC: 85-100% of rated voltage
Operation at low voltage may burn out the motor.

Anti-pumping Function

When the breaker is turned ON and the closing spring is released, self-hold control relay X is active. Xa-contact is held closed, and Xb-contact is opened.
While the ON switch is closed, latch release coil (LRC) will not be excited even if the OFF switch is closed or an automatic reset circuit is being used.
Pumping is thus prevented.

Automatic Charge/discharge Function

If the breaker is closed manually (ON) while the power source is on, the handle switch (HS) induces automatic release of the closing spring. Likewise, if the breaker is opened manually (OFF), the springs are automatically charged. If the breaker is opened or closed while the power source is off, later when the power source is turned on, the closing spring will automatically be charged or discharged to match the ON/OFF status of the breaker.
This automatic charge/discharge function is necessary to prepare the closing mechanism for the next ON/OFF operation.
The sound of the charging or discharging of the spring should not be mistaken for a malfunction.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

ROTARY HANDLES AND LOCKING DEVICES

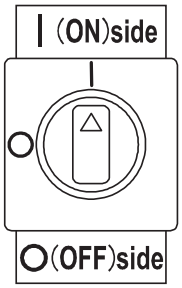
Direct and extended rotary handles are extremely reliable, having been designed to endure the same switching duty as the host MCCB.

Safety Features

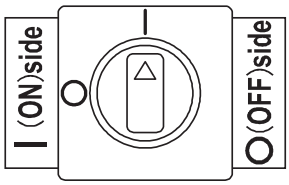
- Door interlock mechanism with override facility included as standard
- Degree of protection: IP55
- Locks OFF with up to 3 padlocks (8mm hasps)
- Available in red for extended rotary handles
- A trip can be performed with the external operating handle fitted to the MCCB

Orientation

To switch the breaker from OFF to ON the external operating handle is rotated through 90 degrees in a clockwise direction.
The ON (I) and OFF (O) indication of the external operating handle can be re-oriented in steps of 90 degrees with respect to the operating mechanism.
This allows the indication position to remain the same whether the breaker is mounted vertically (right side up or upside down) or horizontally (on its left side or on its right side). The hole cut-out dimensions for a panel or door will remain unchanged if the external operating handle is re-oriented. The external operating handle's axis of rotation is on the intersection of the centre lines of a 3P MCCB.
This means that the positioning of the door cutouts is symmetrical for breakers mounted horizontally on either side of a vertical busbar system.



MCCB ON

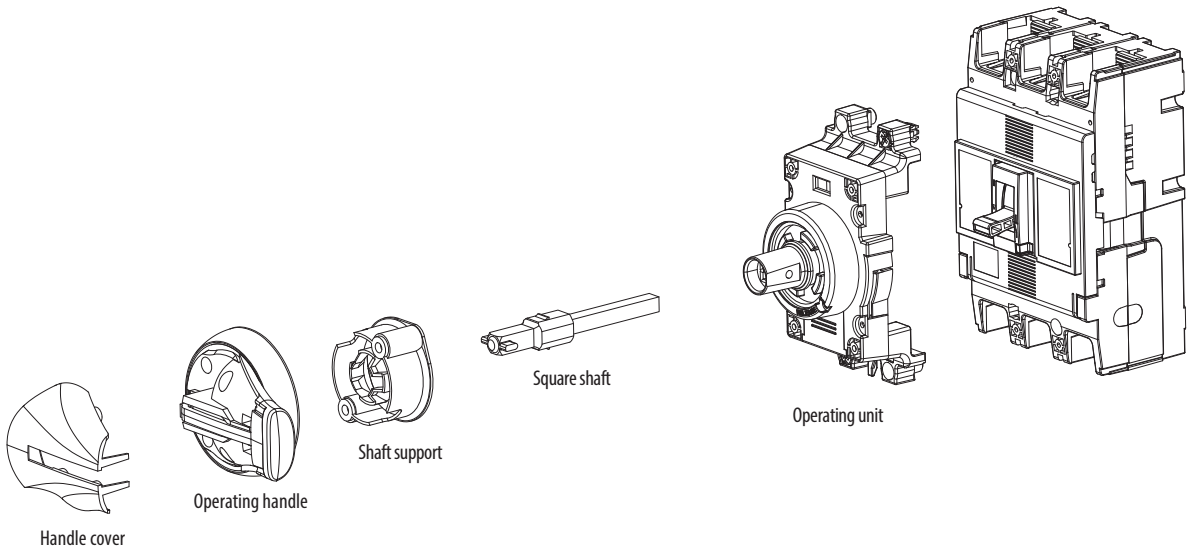


MCCB ON

ROTARY HANDLES AND LOCKING DEVICES

Extended rotary handle

The door mounted handles allow breakers installed in control centers or switchboards to be manually operated from outside and complies with IEC 60204-1.
It consists of an operating mechanism that is mounted on the breaker, an operating handle that is mounted on the door, and a shaft that transmits the turning force from the handle to the operating unit.
The shaft can be cut to the required length.
The shaft support makes easy to insert to the operating handle when the panel door is being closed.



Door Interlock Mechanism

The extended rotary handle keeps the panel door locked when in the ON position.
The handle is turned to the OFF position to open the panel door.
The release button enables the panel door to be opened with the handle in the ON position.
To release: push the release button on the side of the operating handle with a flat-bladed screwdriver.

Handle Lock Mechanism

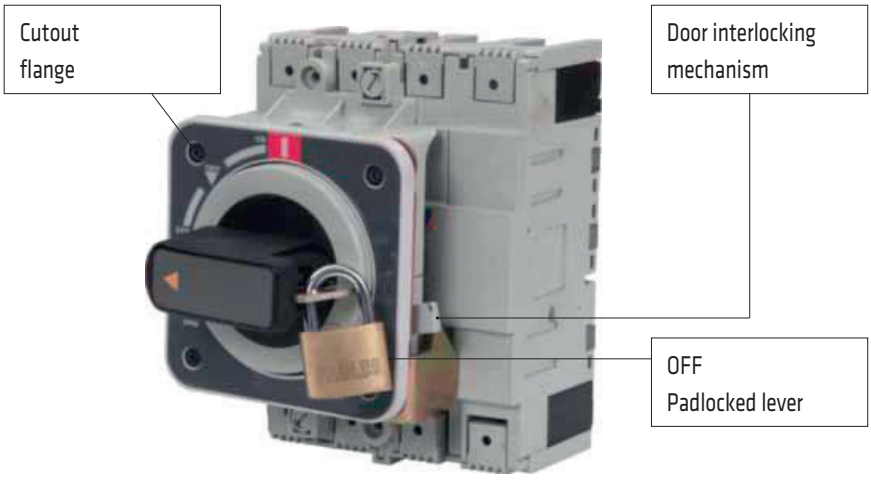
This mechanism allows the breaker to be padlocked in the OFF position.
Padlocks are not supplied.
Up to three padlocks can be installed.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

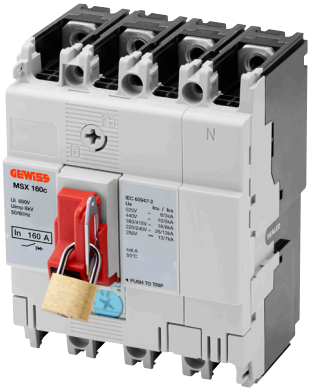
ROTARY HANDLES AND LOCKING DEVICES

Direct rotary handle



This external operating handle is used to operate a circuit breaker mounted just behind a compartment door with the door closed. The operating unit and the handle itself are mounted directly onto the circuit breaker. The handle protrudes through a cutout in the door. A moulded door flange is supplied with the external operating handle which covers the cutout from the front.
Padlocking and keylocking is possible in the OFF position.

Locking Devices



Toggle locking devices allow MCCBs to be locked ON or OFF using up to three padlocks. Locking devices for 125A to 160A and 250A frame models accept padlocks with 5mm hasp diameter. Locking devices for 400A to 1600A frame models accept padlock with 8mm hasp diameter.

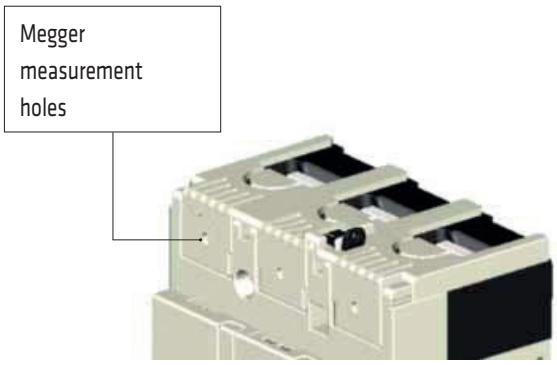
MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

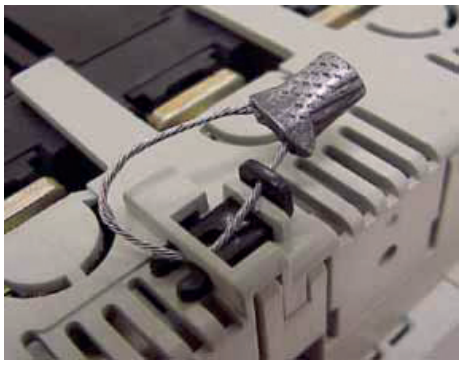
MSX - MSXD - MSXE - MSXM

INSULATION ACCESSORIES

Terminal covers

Terminal covers are used to prevent direct contact with live MCCB terminations.
They also provide additional insulation to reduce the possibility of a short circuit between phases or to earth when large conductors are used.





Terminal Cover Lock with Lead Seal

General features

- Terminal covers for 125A to 630A frame models require no tools for installation.
- Terminal covers for 800A to 1250A are fixed using self-tapping screws.
- Terminal covers for 125A to 1250A frame models have an IP20 ingress protection.
- Terminal covers are ordered individually. Two terminal covers are required to cover both the line and load terminals of an MCCB. Each cover can either be fitted to the top or bottom of the MCCB.
- Terminal covers have a megger measurement hole of 4mm diameter on each phase.

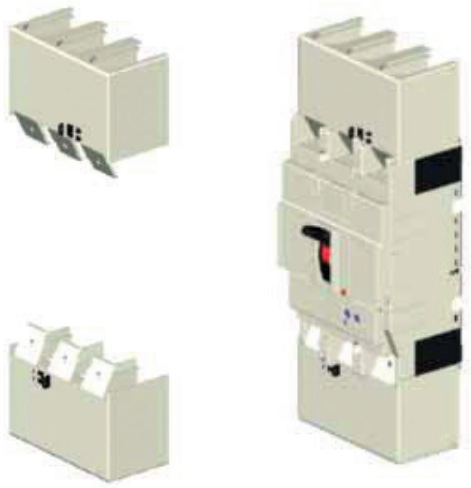
Options

- A terminal cover for 125A to 630A frame models include facility for an anti-tampering seal to be added.

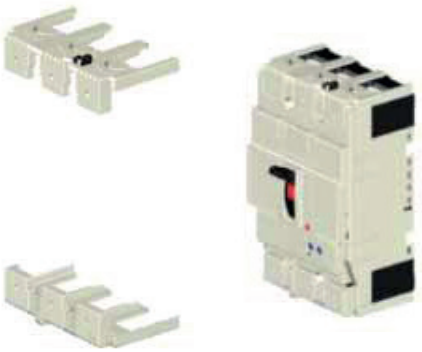
INSULATION ACCESSORIES

Terminal Covers for Front Connections

Terminal covers for front connection are suitable for covering the exposed live parts of conductors terminated on the MCCB.



Terminal Covers for Front Connection



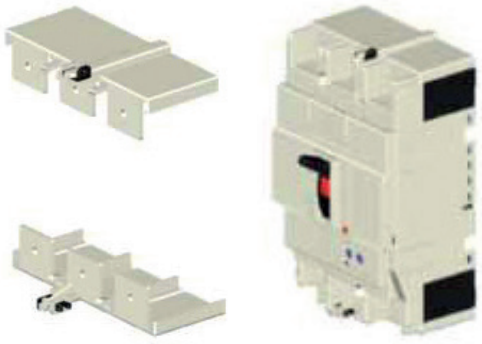
Terminal Covers for Front Connection with copper cables

Terminal Covers for Front Connections with copper cables

Terminal covers for front connection with copper cables, available only for 125A frame models, are useful for increasing the ingress protection rating at the terminals without increasing the overall length. They can be used for direct entry of stranded cable with cable clamp terminals (FW).
Flush terminal covers are identical to rear terminal covers for 400A and 630A frame models.
The user can remove a section of the rear terminal cover using a tool to allow entry of the conductor.

Terminal Covers for Rear Connections

Terminal covers for rear connection are available for 125A to 1000A frame models and may be used on MCCBs fitted with rear connections (RC) or plug-in connections. They prevent access to the terminals from the front and top.



Terminal Covers for Rear Connection

INSULATION ACCESSORIES

Interpole Barriers

Interpole barriers provide maximum insulation between phases at the terminals of the MCCB. They cannot be fitted at the same time as any of the terminal covers. Interpole barriers for use on one end of the MCCB are supplied as standard. Additional interpole barriers can be ordered individually. All interpole barriers can easily be fitted to either end of an MCCB.
MCCB have been designed to accept an additional interpole barrier between two adjacent MCCBs.

MCCB Fitted with Interpole Barriers on Both Ends

Interpole Barriers between Adjacent MCCBs

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

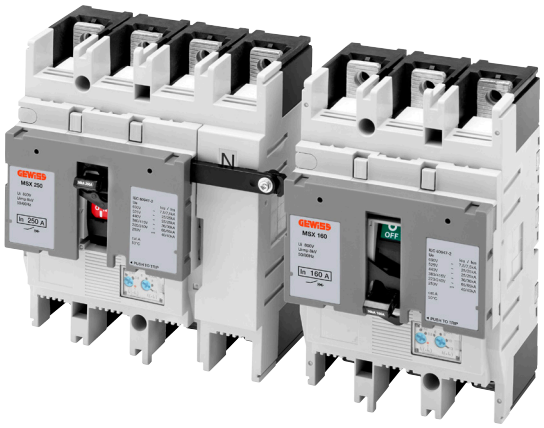
ACCESSORIES FOR CHANGEOVER SYSTEM

Where more than one AC voltage source is available to a distribution system it is often necessary to prevent multiple sources supplying the system at one time. Interlocking accessories are used together with two MCCBs to prevent both being in the ON state simultaneously. This provides a secure mechanical means of preventing the connection of two supply sources.
An automatic changeover controller can monitor the status of two supplies and control the switching of two MCCBs according to pre-programmed parameters. When an automatic changeover controller is interfaced to a pair of interlocked MCCBs fitted with remote control accessories, a secure, fully automatic changeover system is achieved.

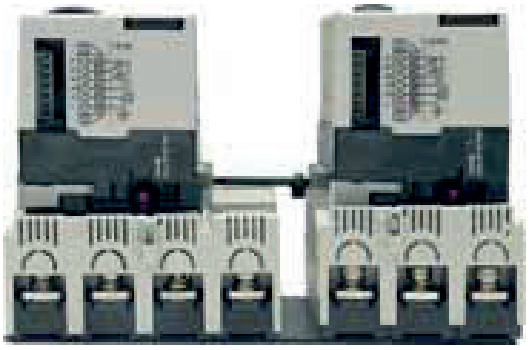
Link Interlock

Link interlocks are available for 125A to 1000A frame models and consist of a mechanism mounted to each MCCB in an adjacently mounted pair.
The link between each mechanism inhibits the closure of one MCCB unless the other is in the OFF position.
Link interlocks can be used on a mixture of 3 and 4 pole breakers of the same frame size. Link interlock is an innovative design which will save space, time and money for switchboard builders in that:

- Installation is extremely simple. Link interlocks are field-installable and only require a screwdriver to fit.
- Link interlocks replace the accessory cover on the front of the breaker.
- Motor operators and operating handles are compatible with link interlocks.
- The interlock is installed on the front of the MCCB and does not therefore interfere with copperwork or cables.
- No need to buy factory-built backplates with MCCBs and interlocks pre-fitted.



Front link interlock



Viewed from below of link interlock with motor operator

An important safety feature is that the interlocks do not allow a control system to close a second power supply on to a fault. If a breaker has tripped its partner is mechanically prevented from closing. This differs from other interlocks you may be familiar with, which allow a breaker to be closed while its partner is in the tripped position.
Link interlock operates according to the following table:

STATUS OF MCCB 1	STATUS OF MCCB 2	VALIDITY OF COMBINATION
ON	**ON**	NOT ALLOWED
ON	**TRIP**	NOT ALLOWED
TRIP	**ON**	NOT ALLOWED
TRIP	**TRIP**	NOT ALLOWED
OFF	**OFF**	ALLOWED
ON	**OFF**	ALLOWED
OFF	**ON**	ALLOWED
TRIP	**OFF**	ALLOWED
OFF	**TRIP**	ALLOWED

The electrical control system of an automatic changeover scheme which uses these interlocks should not attempt to switch the MCCBs to a combination indicated as "NOT ALLOWED" in the above table otherwise damage to the motor operations will occur.

ACCESSORIES FOR CHANGEOVER SYSTEM

Wire Interlock

Wire interlocks for 125A to 1000A frame models consist of two mechanisms connected by a cable. The mechanisms are mounted on two MCCBs located at a distance from each other which is limited by the length and bend radius of the cable. The mechanisms and cable inhibit the closure of one MCCB unless the other is in the OFF position. Each mechanism is ordered separately. Cables of 1.0m or 1.5m length are also ordered as separate items.
Wire interlocks can be used on a mixture of 3 and 4 pole MCCBs of different frame sizes. This allows potential cost savings by using lower rated MCCBs for the alternative power supply. MCCBs can be mounted in different switchboard compartments or on different planes.
Wire interlock is an innovative design which will save space, time and money for switchboard builders in that:
• Installation is extremely simple. Wire interlocks are field-installable up to 1000A models.
• Wire interlocks replace the accessory cover on the front of the breaker.
• Motor operators and operating handles are compatible with wire interlocks.
• Interlocking of MCCBs mounted in different compartments is possible.
• No need to buy factory-built backplates with MCCBs and interlocks pre-fitted.
Wire interlocks are available also for 1250A and 1600A frame models.
The mechanisms are mounted on the back of two MCCBs. MCCBs cannot be mounted directly to a flat plate, but are installed on a frame to ensure space for the interlock mechanism. (Factory Fit).
An important safety feature is that the interlocks do not allow a control system to close a second power supply on to a fault. If a breaker has tripped its partner is mechanically prevented from closing. This differs from other interlocks you may be familiar with, which allow a breaker to be closed while its partner is in the tripped position.

Changeover Pair with Wire Interlock and Motor Operators

Viewed from below of wire interlock with motor operator

Wire interlock operates according to the following table:

STATUS OF MCCB 1	STATUS OF MCCB 2	VALIDITY OF COMBINATION
ON	**ON**	NOT ALLOWED
ON	**TRIP**	NOT ALLOWED
TRIP	**ON**	NOT ALLOWED
TRIP	**TRIP**	NOT ALLOWED
OFF	**OFF**	ALLOWED
ON	**OFF**	ALLOWED
OFF	**ON**	ALLOWED
TRIP	**OFF**	ALLOWED
OFF	**TRIP**	ALLOWED

The electrical control system of an automatic changeover scheme which uses these interlocks should not attempt to switch the MCCBs to a combination indicated as "NOT ALLOWED" in the above table otherwise damage to the motor operations will occur.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

ACCESSORIES FOR CHANGEOVER SYSTEM

Automatic Transfer Switch

Automatic Transfer Switch is used in standby power applications.
ATS will monitor the voltage and frequency of the incoming AC mains (utility) supply and in the event of a failure will issue a start command to the generator control system.
ATS is designed to monitor the incoming AC mains supply (1 or 3 phases) for under/over voltage and under/over frequency. Should any of the parameters fall out of limit, ATS will issue a command to the generating set controller.
Once the generator set is available and producing an output within limits, ATS will control the transfer device and switch the load from the mains (utility) to the generating set.
When the mains (utility) supply returns to within limits, the module will command a return to the mains (utility) supply and shut down the generator after a suitable cooling run. Various timing sequences are available to prevent nuisance starting or unnecessary supply breaks.

Product Features

ATS has back-lit LCD with 4 line text display which shows system status and indicates any system warnings.
Red and green LEDs indicate the operational status of the network. Moreover ATS has USB, RS232 e RS485 outputs.
ATS is supplied pre-configured with default values which, if necessary, can be easily modified directly from the front panel.
In the absence of DC power supply, a power supply unit is available to be ordered separately (GWD8887).

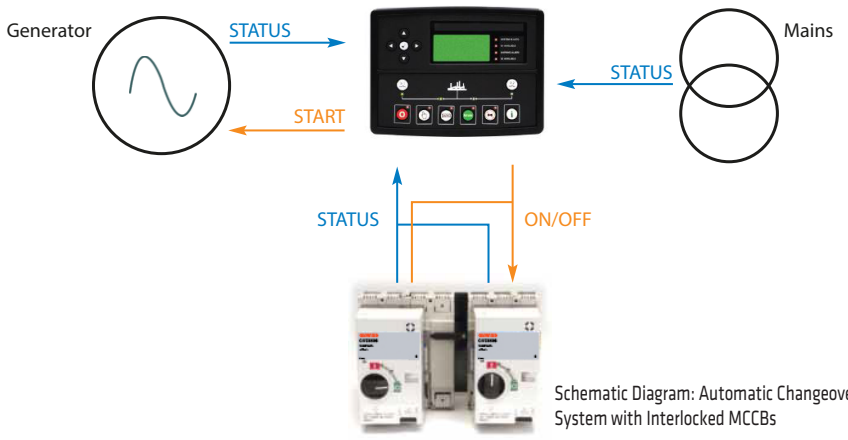
- Back-lit LCD with 4 line text display
- Front panel configuration with protection PIN code
- Configurable timers and alarms
- 12 configurable inputs
- 6 configurable volt-free outputs
- 6 configurable DC outputs
- Power and energy monitoring (kW, kWh, kVAr, kVAh, kVArh)
- Event log
- Auto start inhibit
- Load inhibition

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

ACCESSORIES FOR CHANGEOVER SYSTEM

Technical data	
Operating voltage	from 8V to 35V DC
Cranking dropouts	Able to survive 0V for 50 mS, providing supply was at least 10V before dropout and supply recovers to 5V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.
Maximum operating current	480mA to 12 V 360mA to 24 V
Maximum standby current	126 mA to 12 V 96 mA to 24 V
Mains (utility) voltage range	15V to 333V AC (L-N)
Outputs A and E	Normally closed volt-free output 8A AC at 250V AC
Outputs B and F	Normally open volt-free output 8A AC at 250V AC
Outputs C and D	Changeover volt-free output 8A AC at 250V AC
Outputs G, H, I, J, K and L	2A at supply voltage
Frequency range	3.5 Hz to 75 Hz
Dimensions overall	240mm x 181mm x 42mm
Panel cut-out	220mm x 160mm
Maximum panel thickness	8mm
Operating temperature	-30°C...+70°C
Stocking temperature	-40°C...+85°C
Degree of protection	IP65 (front of the device with the special gasket supplied)
Communication ports	
USB	
Port to be used only to configure ATS via PC and specific software. Maximum connection distance 6m. USB Type A / Type B cable required (this is the type of cable used to connect a PC to the USB printer)	
RS232	
Modbus RTU protocol Non-insulated port Max Baud rate 115200 baud subject to S/W TX, RX, RTS, CTS, DSR, DTR, DCD 9-pin D-type male connector Maximum distance 15m It is typically used to connect to a telephone or GSM modem for remote communications.	
RS485	
Modbus RTU protocol Insulated port 2 cables for data communication + common Half Duplex Data direction control for transmission (via s/w protocol) Max Baud Rate 115200 Required external termination resistance (120Ω) Maximum common mode offset 70V (on-board protection via surge arrester) Maximum distance 1.2km	



Schematic Diagram: Automatic Changeover System with Interlocked MCCBs

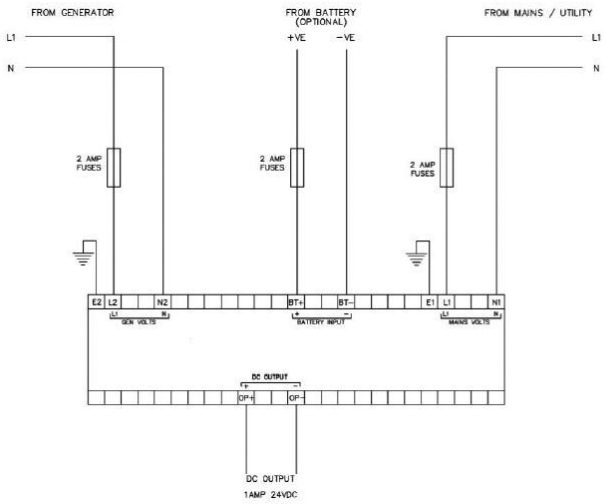
MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

ACCESSORIES FOR CHANGEOVER SYSTEM

Power Supply Module for ATS

Supplied as a separate unit, the power supply module for the Automatic Transfer Switch is self-seeking. The module will provide DC power output to the ATS whens mains power is lost, this is achieved by automatically switching between either generator or battery supply.
Housed within a strong plastic casing the module can be either DIN or chassis mounted and has 3 red LEDs which provide system status.



Technical data	
Voltage input	from 90V to 305V AC
Current output	1A DC at 24V DC
Current max	1,5A DC
Operating frequency	from 48Hz to 64Hz
Rise time	<20 ms
Ripple and noise	<1%
Efficiency	>80%
Regulation line	<0.1% Vo
Load	<5% Vo
Protections	Internal 250V 2A Anti Surge fuses (20mm x 5mm ceramic type) at mains input and generator power supply. PTC input for battery power supply. External fuses are recommended to protect the power supply input connection cables
Dimensions overall	136mm x 140mm x 63mm
Weight	0.5 kg
Section of connection cable	0,6÷1,5 mm^2
Rated tightening torque	0,8 Nm
Operating temperature	-30°C...+60°C

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

AUTOMATIC CHANGEOVER WITH TWO MSX/M250c

MCCB OF MAINS POWER SUPPLY S1		
Code	**Description**	**Quantity**
MSX/M250c	Circuit breaker for the protection of mains power supply S1	1
GWD8501	Auxiliary contact of open/closed position MSX/M160c-250c	2
GWD8502	Auxiliary contact of fault indicator switch SX MSX/M160c-250c	1
GWD8661	Wire mechanical interlock MSX/M250c	1
GWD8581	Motor operator MSX/M250c 240VAC	1

MCCB OF GENERATOR S2		
Code	**Description**	**Quantity**
MSX/M250c	Circuit breaker for the protection of generator S2	1
GWD8501	Auxiliary contact of open/closed position MSX/M160c-250c	2
GWD8502	Auxiliary contact of fault indicator switch SX MSX/M160c-250c	1
GWD8661	Wire mechanical interlock MSX/M250c	1
GWD8581	Motor operator MSX/M250c 240VAC	1

AUTOMATIC TRANSFER SWITCH		
Code	**Description**	**Quantity**
GWD8886	Automatic transfer switch MSX	1
GWD8887	Power supply module for ATS MSX	1

ACCESSORIES		
Code	**Description**	**Quantity**
GWD8666	Cable for wire interlock MSX/D/E/M/c125-1000	1
GW96220	Compact fuses holder 1P+N 10,3X38 690VAC 32A	4
GW96312	Fuses holder 3P+N 10,3X38 690VAC 32A	2
GWD6725	Contactor 40A 2NO+2NC 230V	1
GW74411	Fixed key selector 0-1	1
GW74504	Contact 1 N.O. - 1 N.C. 10A 250V	2

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

AUTOMATIC CHANGEOVER WITH TWO MSX125

MCCB OF MAINS POWER SUPPLY S1		
Code	**Description**	**Quantity**
MSX125	Circuit breaker for the protection of mains power supply S1	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8662	Wire mechanical interlock MSX125	1
GWD8584	Motor operator MSX/D125 240VAC	1

MCCB OF GENERATOR S2		
Code	**Description**	**Quantity**
MSX125	Circuit breaker for the protection of generator S2	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8662	Wire mechanical interlock MSX125	1
GWD8584	Motor operator MSX/D125 240VAC	1

AUTOMATIC TRANSFER SWITCH		
Code	**Description**	**Quantity**
GWD8886	Automatic transfer switch MSX	1
GWD8887	Power supply module for ATS MSX	1

ACCESSORIES		
Code	**Description**	**Quantity**
GWD8666	Cable for wire interlock MSX/D/E/M/c125-1000	1
GW96220	Compact fuses holder 1P+N 10,3X38 690VAC 32A	4
GW96312	Fuses holder 3P+N 10,3X38 690VAC 32A	2
GWD6725	Contactor 40A 2NO+2NC 230V	1
GW74411	Fixed key selector 0-1	1
GW74504	Contact 1 N.O. - 1 N.C. 10A 250V	2

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

AUTOMATIC CHANGEOVER WITH TWO MSX/E160-250

MCCB OF MAINS POWER SUPPLY S1		
Code	**Description**	**Quantity**
MSX/E160-250	Circuit breaker for the protection of mains power supply S1	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8663	Wire mechanical interlock MSX/E160-250	1
GWD8590	Motor operator MSX/D/E160-250 240VAC	1

MCCB OF GENERATOR S2		
Code	**Description**	**Quantity**
MSX/E160-250	Circuit breaker for the protection of generator S2	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8663	Wire mechanical interlock MSX/E160-250	1
GWD8590	Motor operator MSX/D/E160-250 240VAC	1

AUTOMATIC TRANSFER SWITCH		
Code	**Description**	**Quantity**
GWD8886	Automatic transfer switch MSX	1
GWD8887	Power supply module for ATS MSX	1

ACCESSORIES		
Code	**Description**	**Quantity**
GWD8666	Cable for wire interlock MSX/D/E/M/c125-1000	1
GW96220	Compact fuses holder 1P+N 10,3X38 690VAC 32A	4
GW96312	Fuses holder 3P+N 10,3X38 690VAC 32A	2
GWD6725	Contactor 40A 2NO+2NC 230V	1
GW74411	Fixed key selector 0-1	1
GW74504	Contact 1 N.O. - 1 N.C. 10A 250V	2

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

AUTOMATIC CHANGEOVER WITH TWO MSX/E/M400-630

MCCB OF MAINS POWER SUPPLY S1		
Code	**Description**	**Quantity**
MSX/E/M400-630	Circuit breaker for the protection of mains power supply S1	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8664	Wire mechanical interlock MSX/E/M400-630	1
GWD8595	Motor operator MSX/E/M400-630 240VAC	1

MCCB OF GENERATOR S2		
Code	**Description**	**Quantity**
MSX/E/M400-630	Circuit breaker for the protection of generator S2	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8664	Wire mechanical interlock MSX/E/M400-630	1
GWD8595	Motor operator MSX/E/M400-630 240VAC	1

AUTOMATIC TRANSFER SWITCH		
Code	**Description**	**Quantity**
GWD8886	Automatic transfer switch MSX	1
GWD8887	Power supply module for ATS MSX	1

ACCESSORIES		
Code	**Description**	**Quantity**
GWD8666	Cable for wire interlock MSX/D/E/M/c125-1000	1
GW96220	Compact fuses holder 1P+N 10,3X38 690VAC 32A	4
GW96312	Fuses holder 3P+N 10,3X38 690VAC 32A	2
GWD6725	Contactor 40A 2NO+2NC 230V	1
GW74411	Fixed key selector 0-1	1
GW74504	Contact 1 N.O. - 1 N.C. 10A 250V	2

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

AUTOMATIC CHANGEOVER WITH TWO MSX/E/M1000

MCCB OF MAINS POWER SUPPLY S1		
Code	**Description**	**Quantity**
MSX/E/M1000	Circuit breaker for the protection of mains power supply S1	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8665	Wire mechanical interlock MSXE/M1000	1
GWD8598	Motor operator MSX/E/M1000 240VAC	1

MCCB OF GENERATOR S2		
Code	**Description**	**Quantity**
MSX/E/M1000	Circuit breaker for the protection of generator S2	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8665	Wire mechanical interlock MSXE/M1000	1
GWD8598	Motor operator MSX/E/M1000 240VAC	1

AUTOMATIC TRANSFER SWITCH		
Code	**Description**	**Quantity**
GWD8886	Automatic transfer switch MSX	1
GWD8887	Power supply module for ATS MSX	1

ACCESSORIES		
Code	**Description**	**Quantity**
GWD8666	Cable for wire interlock MSX/D/E/M/c125-1000	1
GW96220	Compact fuses holder 1P+N 10,3X38 690VAC 32A	4
GW96312	Fuses holder 3P+N 10,3X38 690VAC 32A	2
GWD6725	Contactor 40A 2NO+2NC 230V	1
GW74411	Fixed key selector 0-1	1
GW74504	Contact 1 N.O. - 1 N.C. 10A 250V	2

AUTOMATIC CHANGEOVER WITH TWO MSXE/M1250-1600

MCCB OF MAINS POWER SUPPLY S1		
Code	**Description**	**Quantity**
MSXE/M1250-1600 with mechanical interlock (es. GWD9426B)	Circuit breaker for the protection of mains power supply S1	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8602	Motor operator MSX/E/M1250-1600 230VAC	1

MCCB OF GENERATOR S2		
Code	**Description**	**Quantity**
MSXE/M1250-1600 with mechanical interlock (es. GWD9426B)	Circuit breaker for the protection of generator S2	1
GWD8504	Auxiliary contact of open/closed position MSX/D/E/M125-1600	2
GWD8505	Auxiliary contact of fault indicator switch MSX/D/E/M125-1600	1
GWD8602	Motor operator MSX/E/M1250-1600 230VAC	1

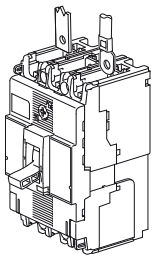
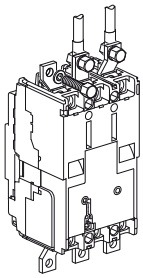
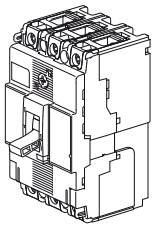
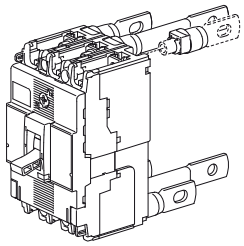
AUTOMATIC TRANSFER SWITCH		
Code	**Description**	**Quantity**
GWD8886	Automatic transfer switch MSX	1
GWD8887	Power supply module for ATS MSX	1

ACCESSORIES		
Code	**Description**	**Quantity**
GWD8668	Cable for wire interlock MSXE/M1250-1600	1
GW96220	Compact fuses holder 1P+N 10,3X38 690VAC 32A	4
GW96312	Fuses holder 3P+N 10,3X38 690VAC 32A	2
GWD6725	Contactor 40A 2NO+2NC 230V	1
GW74411	Fixed key selector 0-1	1
GW74504	Contact 1 N.O. - 1 N.C. 10A 250V	2

COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

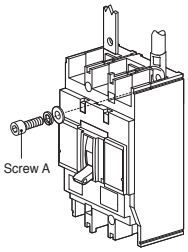
Connection type / Breaker	Front connection			Rear connection
	With front terminals FC	With front extended or spread terminals FB	With front terminals for copper cables FW	With rear terminals RC
Outer view				
MSX/M 160c	● (from 125A to 160A)	●	● (from 20A to 100A)	●
MSX/M 250c	●	●	X	●
	• Connect cables with crimp lugs or flat bars directly to breaker terminals.	• Front extended or spread terminals must be connected to breaker front terminals. Connect cables with crimp lugs or flat bars to front extended or spread terminals.	• Front terminals for copper cables are mounted on breaker and they cannot be removed and replaced with other types of terminals. Connect wires without crimp lug directly to breaker terminals.	• Rear terminals can be rotated in steps of 45 degrees or 90 degrees.

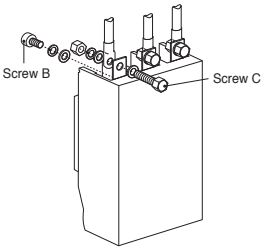
Note:

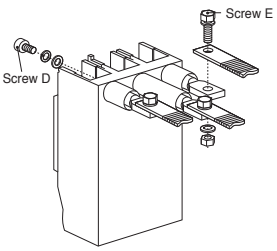
- ● **Standard. This configuration used unless otherwise specified.**
- ● **Optional standard. Specify when ordering.**
- X **"no" or "not available".**

Terminal Screws Sizes and Standard Torques

Frame size (A)	Breaker	Front terminals FC Screw size (A) Torque (N.m)	Front extended or spread terminals FB Screw size (B) Torque (N.m)	Front extended or spread terminals FB Screw size (C) Torque (N.m)	Rear terminals Screw size (D) Torque (N.m)	Rear terminals Screw size (E) Torque (N.m)
160	MSX/M 160c (20-100A)	Breakers with front terminals for copper cables FW				
	MSX/M 160c (125-160A)	Pan head M8x14 4.9~6.9	Pan head M8x14 4.9~6.9	Hex head M8x30 11.8~18.6	Hex head M6x14 7.8~11.8	Hex head M8x23 11.8~18.6
250	MSX/M 250c	Hex head M8x18 7.8~12.7	Hex head M8x18 7.8~12.7	Hex head M10x25 22.5~37.2	Hex head M6x18 7.8~11.8	Hex head M8x25 11.8~18.6







Pan head screw

Hex socket head bolt

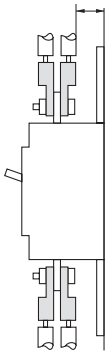
For technical information contact the Technical Assistance Service or visit gewiss.com

ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

Connection of cables terminated with crimp lugs

Connection (one electric cable)

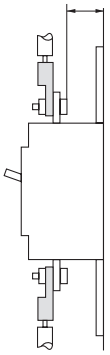
If a shortage of insulating occurs, use recommended tape or insulator.



Make connection so that the screw heads face toward the mounting surface.

Connection (two electric cables)

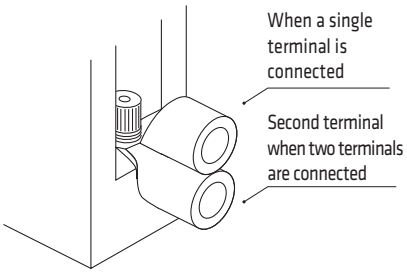
If a shortage of insulating occurs, use recommended tape or insulator.



Make connection so that the screw heads face toward the mounting surface.

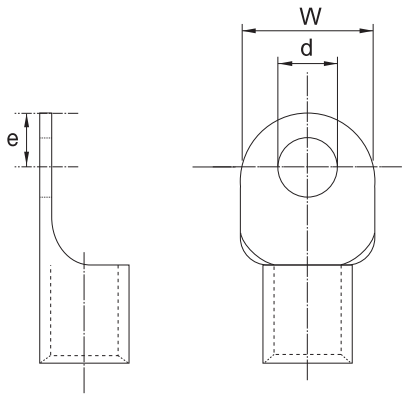
Connection (two terminals)

If a shortage of insulating occurs between the mounting plate and a terminal, use a recommended taping or insulator.



Crimp lugs types

Each terminal on 250A models has a serrated surface. This provides excellent grip for heavy cables terminated with crimp lug terminals, thereby preventing sideways rotation of the lug.

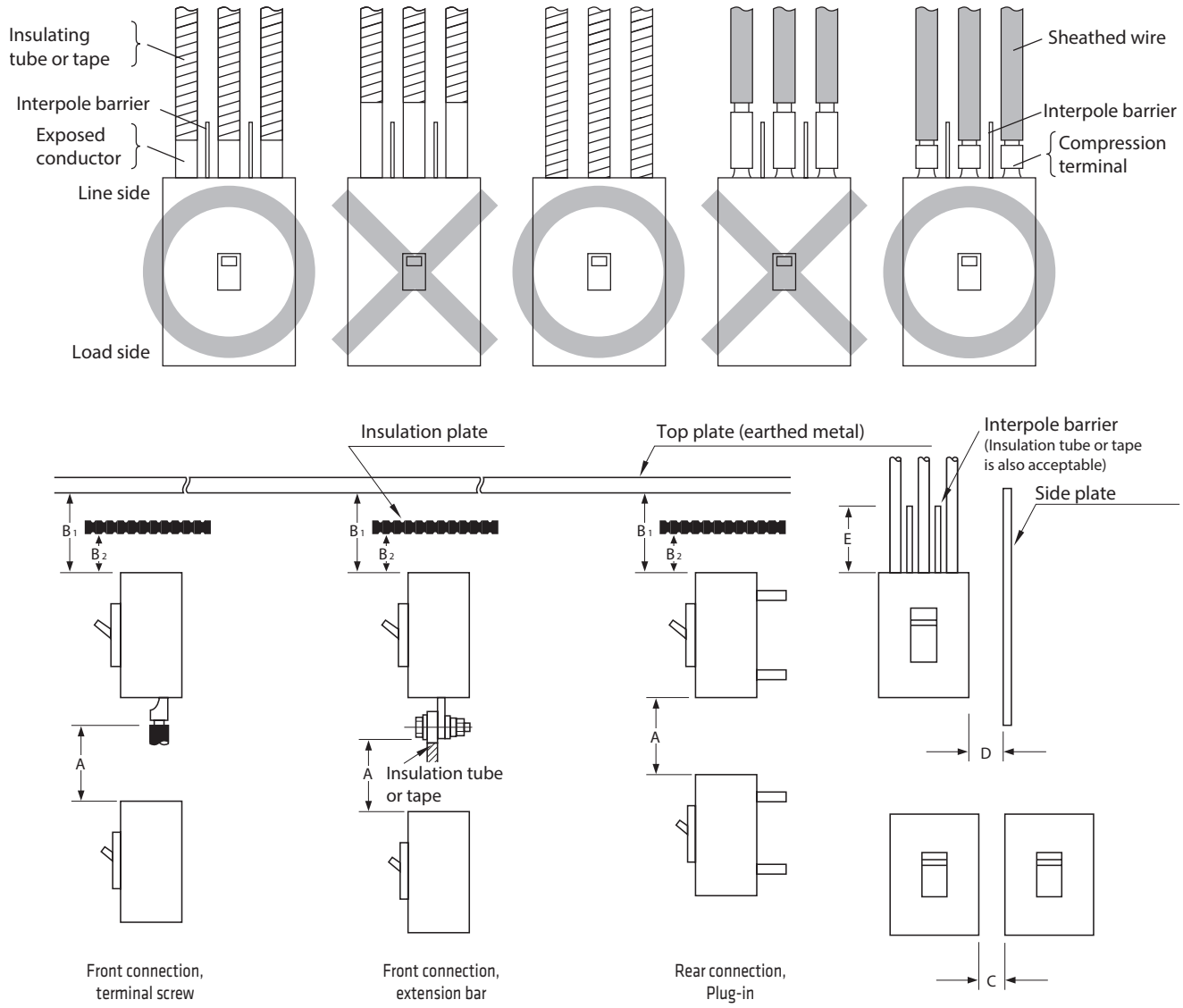


Maximum dimensions of crimp lug		
Frame Size (A)	160	250
Width, W (mm)	17.2	25
Diameter, d (mm)	8.5	9
Maximum from centre to tip, e(mm)	9.5	11

INSULATION DISTANCE

The insulation distance between the breaker and earthed metal parts and insulators shown in the table on the next page must be maintained to prevent arcing faults occurring due to conductive ionised gas. In addition, completely cover exposed conductors, to their roots at the breaker or to below the height protected by interpole barriers, on the line side of the breaker using insulation tube or tape, in order to provide positive protection against short circuit or ground fault due to the metal chipping, surge voltage, dust particles or salt. Be sure to install the interpole barriers supplied with the breaker.

Insulation distances



A Distance from lower breaker to exposed live part of upper breaker terminal (front connection) or distance from lower breaker to end face of upper breaker (rear connection).

B1 Distance from end face of breaker to top plate.

B2 Distance from end face of breaker to insulation plate.

C Gap between breakers.

D Distance from side of breaker to side plate (earthed metal).

E Dimension of insulation over exposed conductors.

INSULATION DISTANCE

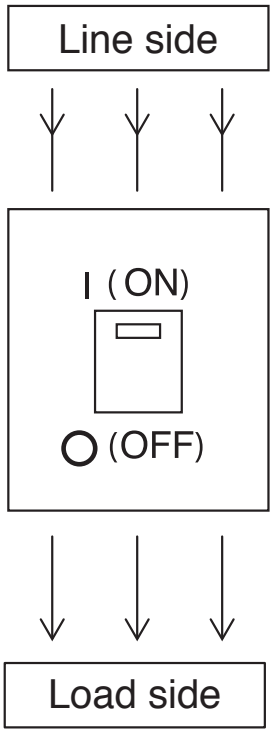
Tables of insulation distances

Breaker	A Note ①	B1	B2	C	D	E
MSX/M 160c	50	50	10	* Possible to set close	25	Not less than the length of the bare live part Note ②
MSX/M 250c	50	40	40	* Possible to set close	50	Not less than the length of the bare live part Note ②

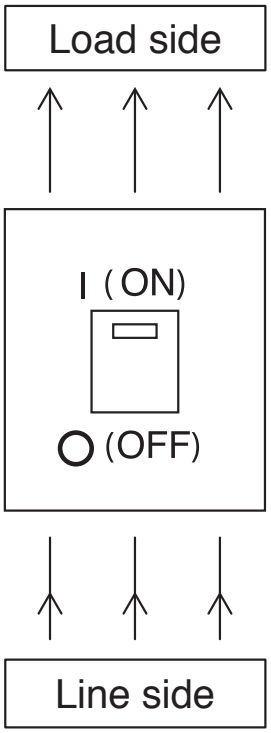
Notes:
① **The figures are for lower breakers.**
② **For front connection breakers, insulate all exposed conductors of the line side until the breaker end. If interpole barriers are packed, be sure to use the barriers; more over, insulate all exposed conductors by insulating tape or the like so that the tape overlaps with the barriers.**
*** If using extension bars (optional), ensure the insulation distance specified for the application.**

DIRECTION OF POWER SUPPLY

The breakers are available for normal connection by default. Reverse connection is optional.
See tables below.



Normal connection



Reverse connection

TEMPERATURE RATINGS

Rated currents depending on ambient temperature for compact MCCBs

Breaker	Connection Type	Rating at Calibration temperature (50°C)	Rated current (A)		
			(55°C)	(60°C)	(65°C)
MSX/M 160c	Front Rear	25A	24	24	23
		40A	39	37	36
		63A	61	59	57
		80A	77	73	70
		100A	97	94	91
		125A	122	118	115
		160A	156	152	149
MSX/M 250c	Front Rear	160A	156	152	148
		250A	243	236	229

Note:
Supplied with terminal bars fitted as standard. Temperature ratings are not valid if the terminal bars are removed.

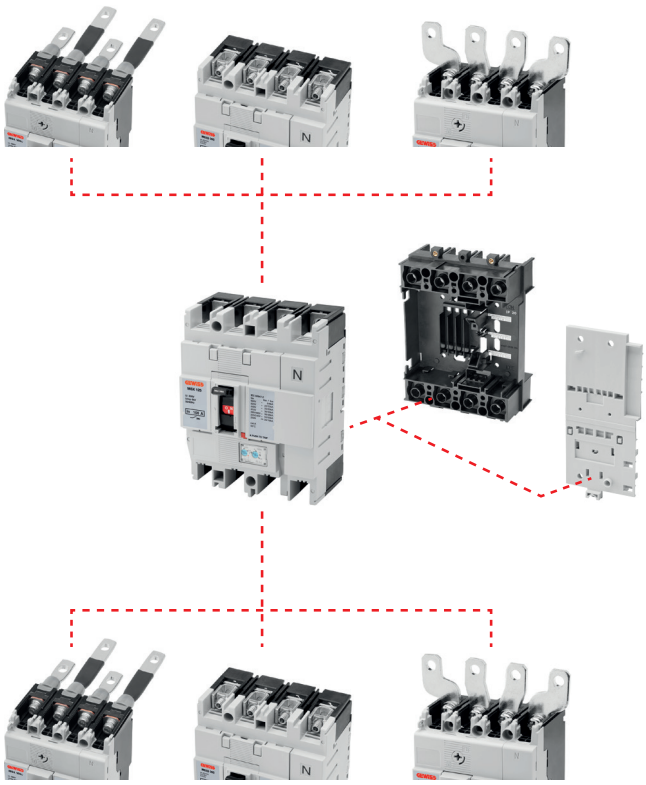
MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

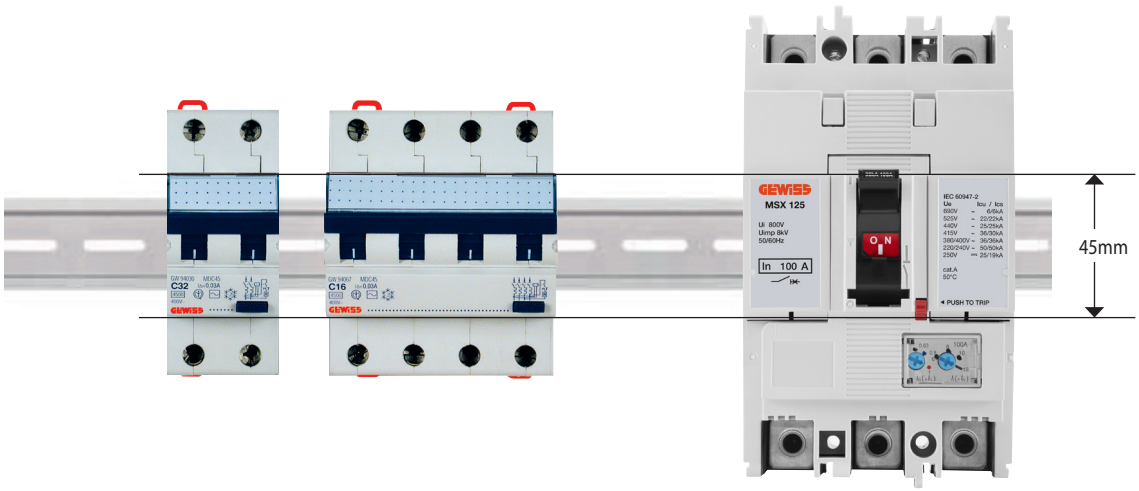
ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

MSX MCCBs connection and mounting accessories facilitate easy installation in any arrangement. Breakers and accessories are easy to fit. They are designed to provide safe and secure termination and mounting points.

Connection and mounting options overview diagram



The MSX/D 125, MSX/D 160 and MSX/D 250 models can be mounted on 35mm DIN rail along side the modular devices by means of a fixing bracket.
In addition, 45mm high window panels can be used.
The MSXE 160 and MSXE 250 models cannot be installed on DIN rail.



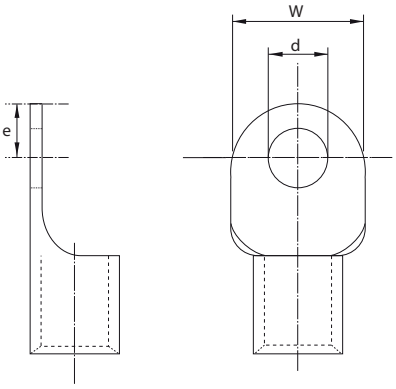
ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

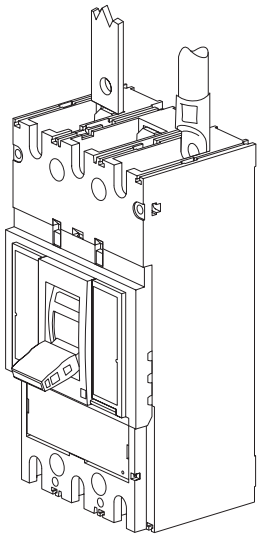
Connection of Busbars and Terminated Cables

The front terminals FC are supplied for all MSX range circuit breakers from frame size 125A up to 630A. Solid conductors or cables terminated with crimp lug terminals can be used.

Connection with front terminals FC

Each terminal on 160A and 250A models has a serrated surface. This provides excellent grip for heavy cables terminated with crimp lug terminals, thereby preventing sideways rotation of the lug.

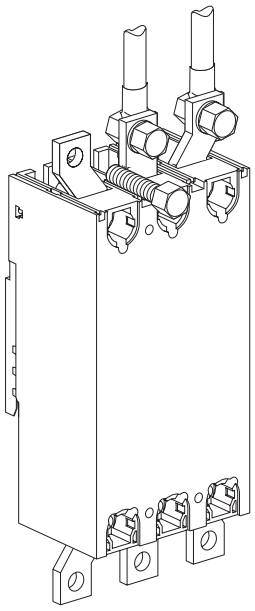




Maximum dimensions of crimp lug			
Frame Size (A)	125	160 - 250	400 - 630
Width, W (mm)	17	25	25
Diameter, d (mm)	9	9	11
Maximum from centre to tip, dim e (mm)	8.5	10	12

Connection with extended or spread front terminals FB

Extended or spread front terminals FB are an extension of front terminal FC which can be fitted to line or load side terminals of circuit breaker. They are used to connect multiple conductors or large conductors.



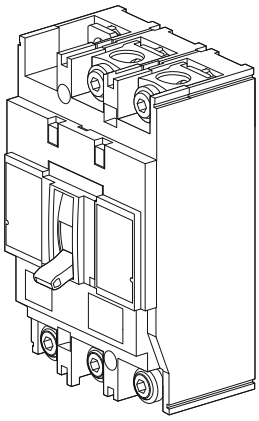
ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

Direct Entry of Stranded Cable

Connection with front terminals for copper cables FW

Front terminals for copper cables FW can be used to connect stranded cables without crimp lug directly to the MCCB.

Model	Cable Capacity (mm²)
MSX/D 125	min: 1,5 max: 50

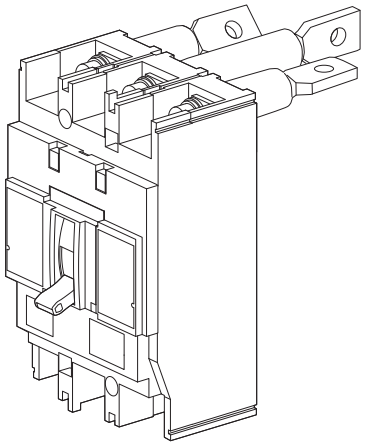


Connection of Busbars

Connection with rear terminals RC

Rear terminals RC allow connection of conductors in a different switchboard compartment to the MCCB body.

The rear terminal can be rotated in steps of 45 degrees on a 125A to 630A frame MCCBs and 90 degrees on a 800A and 1250A frame MCCBs.



ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

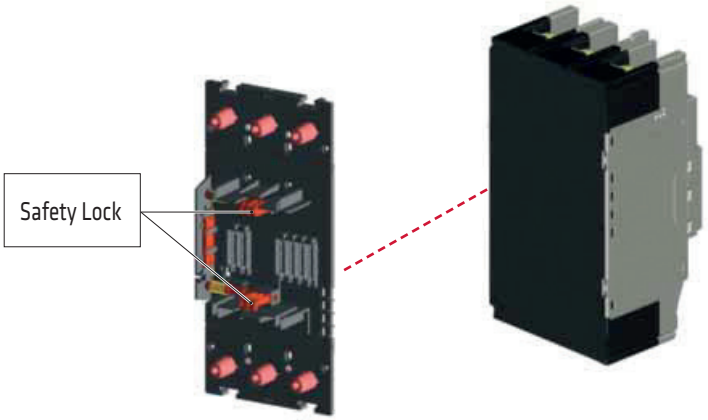
Plug-in Mounting

The plug in mounting system allows fast replacement of the MCCB body without the need to disturb the terminations. Solid conductors or cables terminated with compression terminals can be used.

Plug-In Safety Lock

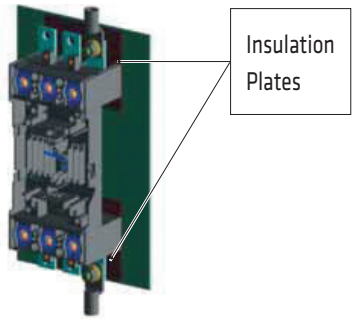
The plug-in MCCB body is automatically locked to the base when the contacts are closed (toggle ON). It cannot be removed unless the contacts are in the open position (toggle OFF or TRIPPED). This system ensures safe removal of the MCCB from the base.

Plug-in MCCB and base



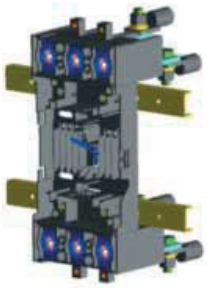
Plug-in connections and safety lock are fitted to the back of the MCCB

The connection bars for plug-in bases are optional and can be configured in the field either for front or rear access. The illustrations below show possible mounting and connection options for plug in bases. These mounting and connection options are available from 125A to 800A frame models.



1. Mounted on base plate with connection bars mounted for front access. Insulation plates are supplied as standard and must be fitted.

2. Terminations in separate compartment. Connection bars are mounted for top access at the top and rear access at the bottom.



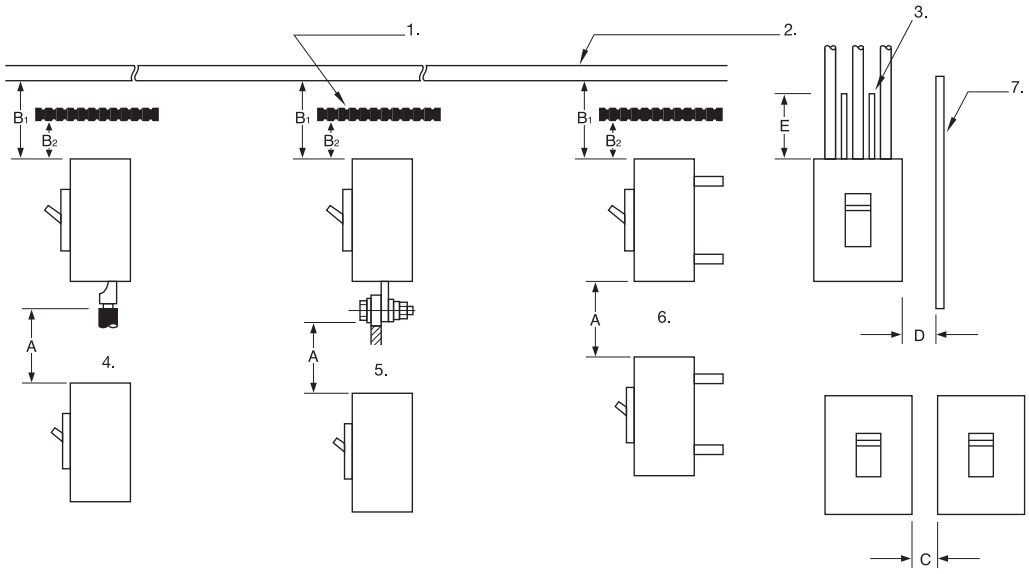
3. Mounted on angle bars. Connection bars are mounted for rear access.

INSULATION DISTANCES

The insulation distances between the MCCB and earthed metal parts and insulators shown in this section must be maintained to prevent arcing faults occurring due to conductive ionised gas.
In cases where other specifications require different insulation distances to those shown here, the greater distance must be maintained. In cases where two different models are installed one above the other, the insulation distance between the two models should be as for the lower model.

ATTENTION
Exposed conductors must be insulated up to the breaker terminals. Interpole barriers or optional terminal covers are recommended.
If optional terminal covers are used, insulate the exposed conductor until it overlaps the terminal cover.

Insulation distances



1. Insulation plate
2. Top plate (earthed metal)
3. Interpole barrier
4. Front-connected type
5. Front-connected type with extension bar
6. Rear-connected type, plug-in type
7. Side panel
8. A. Distance from lower breaker to exposed live part of upper breaker terminal (front-connected type) or distance from lower breaker to end face of upper breaker (rear-connected type or plug-in type)
   B1. Distance from end face of breaker to top plate
   B2. Distance from end face of breaker to insulation plate
   C. Gap between breakers
   D. Distance from side of breaker to side panel (earthed metal)
   E. Dimensions of insulation over exposed conductors

INSULATION DISTANCE IN mm (AT 690V AC Maximum)

Model	Breaking capacity	A	B1	B2	C [4]	D	E
MSX/D 125	25 kA	50	40	10	0	25	*[1]
	36 kA	50	40[2]	10	0	25	*[1]
	65 kA	75	45	25	0	25	*[1]
MSX/D 160	25 kA	50	40	30	0	25	*[1]
	36 kA	50	40	30	0	25	*[1]
	65 kA	100	80	60	0	50	*[1]
MSX/D 250	25 kA	50	40	30	0	25	*[1]
	36 kA	50	40	30	0	25	*[1]
	65 kA	100	80	30	0	25	*[1]
MSXE 160 MSXE 250	36 kA	50	40	30	0	25	*[1]
	65 kA	100	80	30	0	25	*[1]
MSX 400	36 kA	100	80	40	0	30	*[1]
	50 kA	100	80	40	0	30	*[1]
MSXE 400 MSXE 630	36 kA	120	100	80	0	80	*[1]
	50 kA	120	100	80	0	80	*[1]
MSXE 1000 (800A)	50 kA	120	100	80	0	80	*[1]
MSXE 1000 (1000A)	50 kA	150	120	80	0	80	*[1]
MSXE 1250	50 kA	150	120	80	0	80	*[1]
MSXE 1600	50 kA	150	150	100	0	100	*[1]

***Note:**

[1] Insulate the exposed conductor until it overlaps the moulded case at the terminal, or the terminal cover.

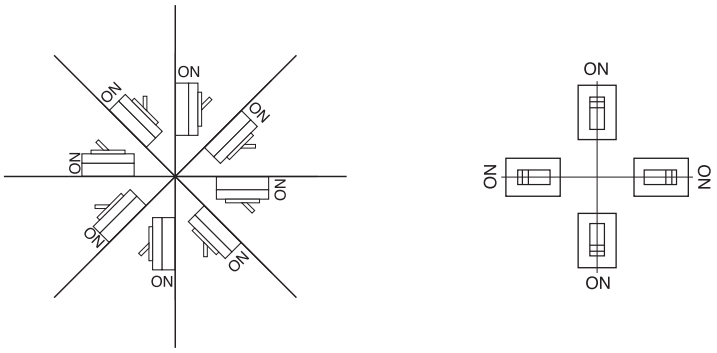
[2] 10mm at 440V AC Maximum.

[3] Take care that arc gases are emitted to both line and load sides.

[4] If using extension bars (optional), ensure the insulation distance for the application.

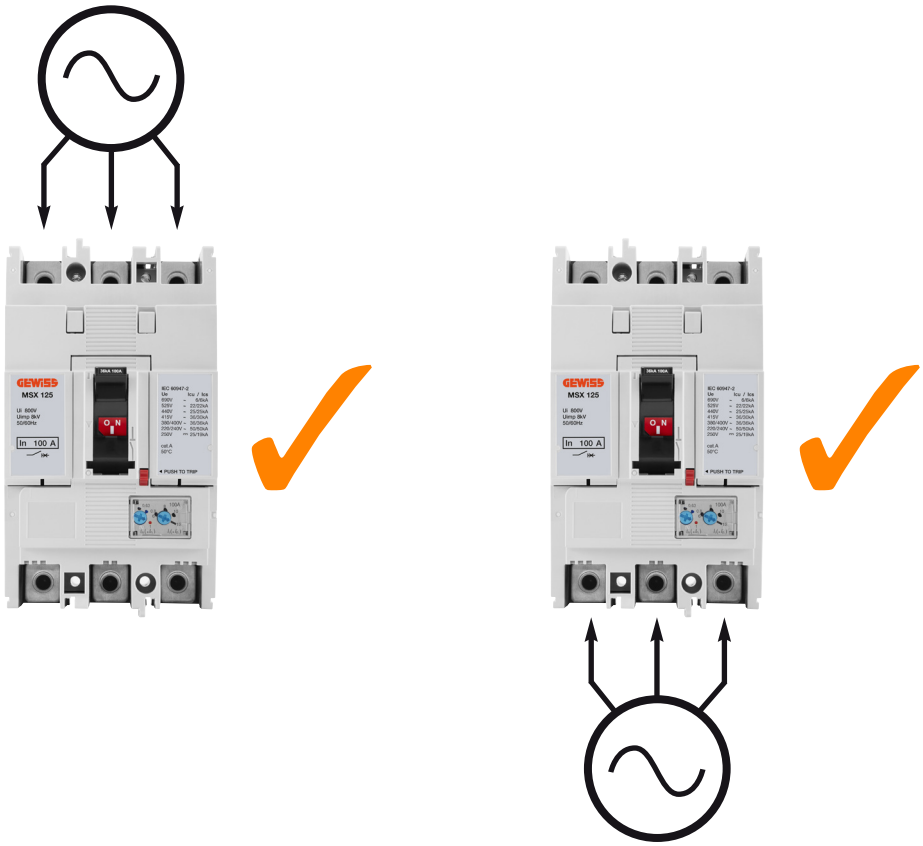
MOUNTING ANGLE

MSX MCCBs may be mounted at any angle without affecting performance.



Mounting angle does not affect performance.

Direction of Power Supply



Power can be supplied through MSX MCCBs in either direction without loss of performance.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

STANDARD INSTALLATION ENVIRONMENT

MSX MCCBs are intended for installation in the following conditions as standard:

- Operating ambient temperature -10 degrees C to 50 degrees C.
  Refer to the tables below for thermal derating information above this temperature.
- Relative humidity of up to 85%.
- Altitude up to 2000m.
- Atmospheres free from dust, smoke, corrosive gases, inflammable gases, moisture and salt.

TEMPERATURE RATINGS

Rated currents depending on ambient temperature for MSX MCCBs and MSXD RCBOs.

MCCB Type	Connection Type	Rating at calibration temperature (50°C)	Rated Current (A)			
			50°C	55°C	60°C	65°C
MSX/D 125	Front Rear Plug-in	20A	20	18.5	18	17.5
		32A	32	30.5	30	29
		50A	50	45	43	41
		63A	63	57	55	52
		100A	100	94	90	87
		125A	125	117	113	109
MSX/D 160	Front Rear Plug-in	160A	160	151	146	141
MSX/D 250	Front Rear Plug-in	250A	250	235	227	219
MSX 400	Front Rear Plug-in	400A	400	380	369	358

Rated currents depending on ambient temperature for MSXE electronic MCCBs

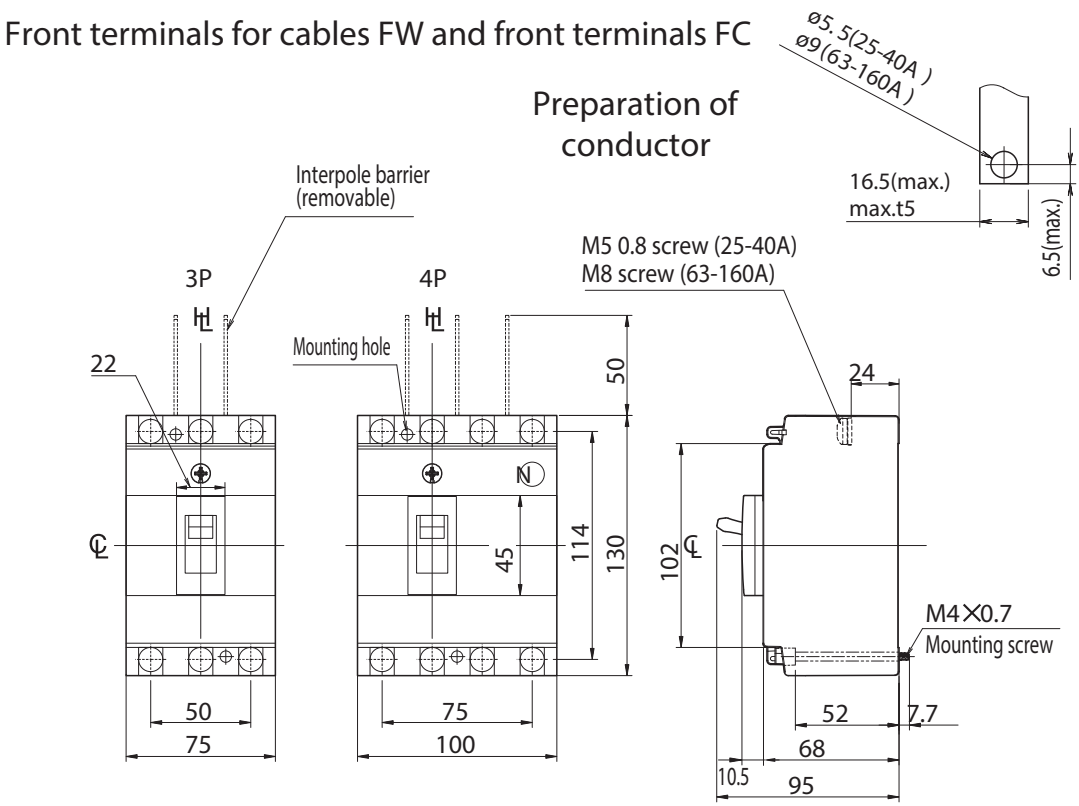
Electronic Models			Rated Current (A)					
MCCB Type	Connection Type	Rating at calibration temperature (40°C)	30°C	40°C	50°C	55°C	60°C	65°C
MSXE 160 **MSXE 250**	Front Rear Plug-in	40 A	40A	40A	40A	40A	40A	40A
		125A	125A	125A	125A	125A	125A	125A
		160A	160A	160A	160A	160A	160A	160A
	Front Rear	250A	250	250	237.5	225	200	200
	Plug-in	250A	250	225	200	200	157.5	157.5
MSXE 400	Front Rear Plug-in	400A	400	400	400	380	360	320
MSXE 630	Front Rear	630A	630	630	630	598.5	567	504
	Plug-in	630A	536	536	504	397	397	397
MSXE 1000 (800A)	Front	800A	800	800	800	720	640	504
	Rear, Plug-in	800A	800	800	760	720	640	504
MSXE 1000 (1000A)[1]	Front Rear	1000A	1000	1000	900	800	630	630
MSXE 1250[1]	Front	1250A	1250	1250	1250	1000	787	787
	Rear	1250A	1250	1250	1125	1000	787	787
MSXE 1600[1]	Front	1600A	1600	1600	1600	1440	1280	1008
	Rear	1600A	1600	1600	1520	1440	1280	1008

Note:

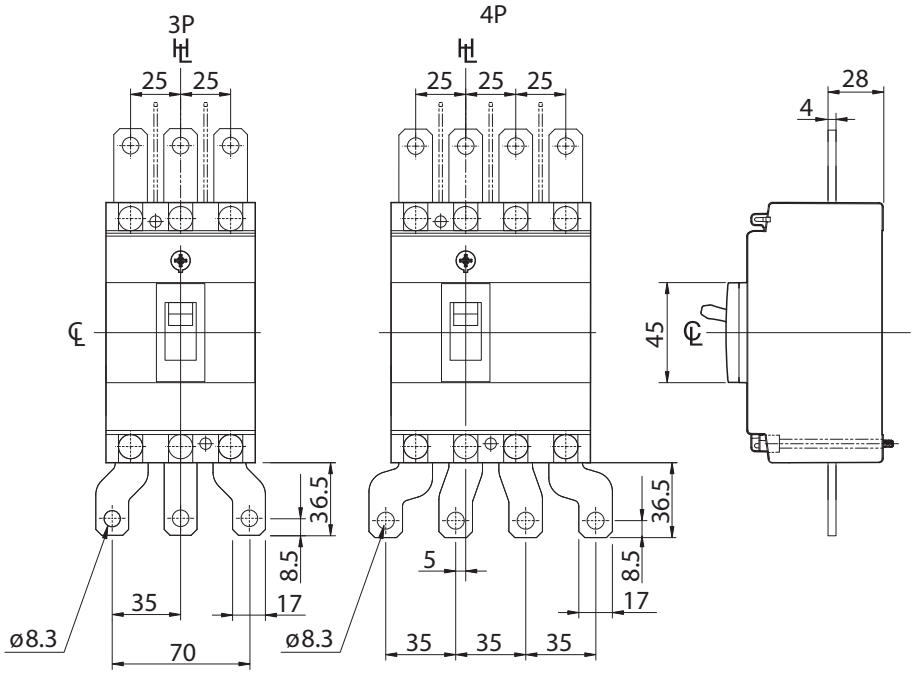
[1] Supplied with terminal bars fitted as standard. Temperature ratings are not valid if the terminal bars are removed.

FRONT TERMINALS

Front terminals for cables FW and front terminals FC



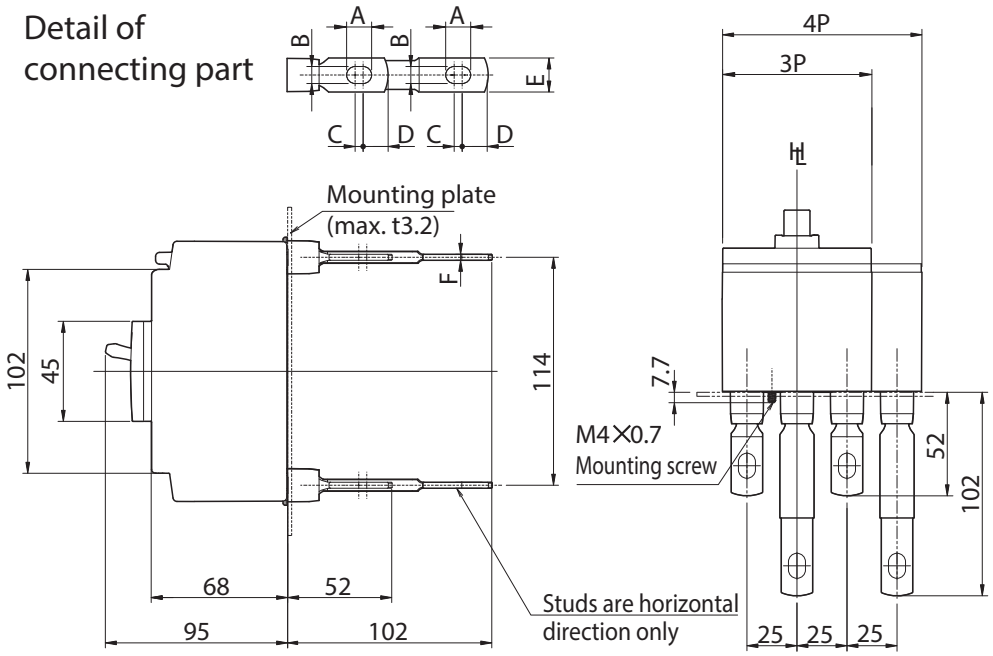
Front extended and spread terminals FB



℄: Handle Centre Line ℔: Handle Frame Centre Line

REAR TERMINALS

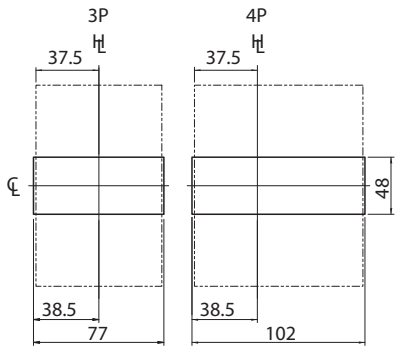
Rear terminals RC



Rated current (A)	A	B	C	D	E	F
125-160	12.5	8.5	4	13	16	5

PANEL CUTOUT

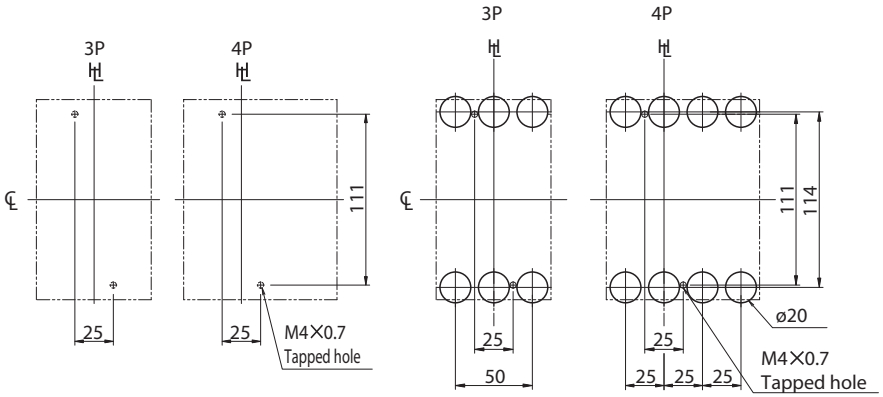
(front view)



Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.

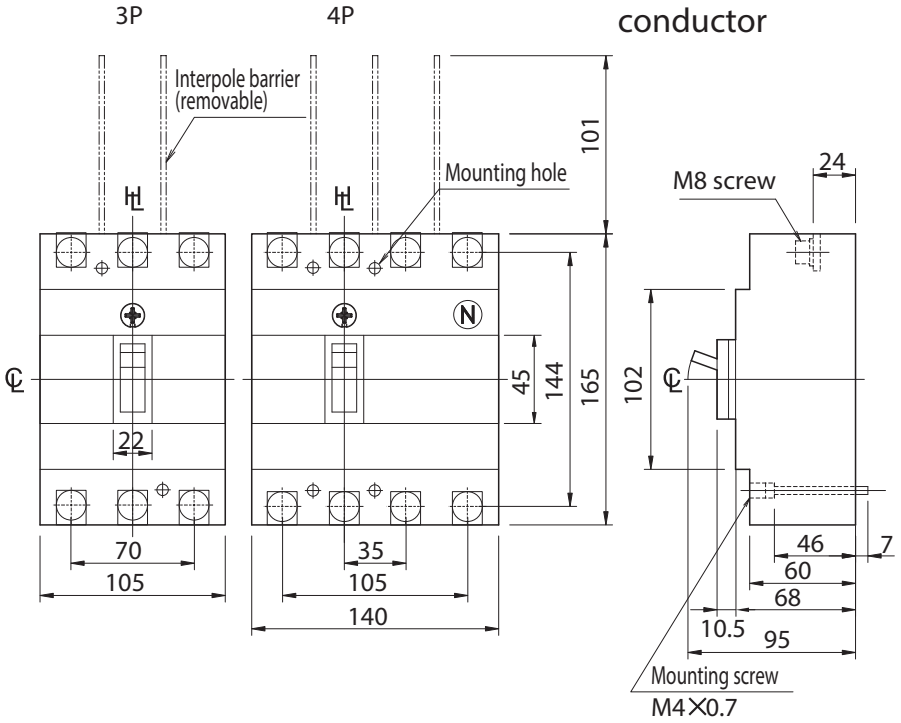
DRILLIN PLAN

(front view)

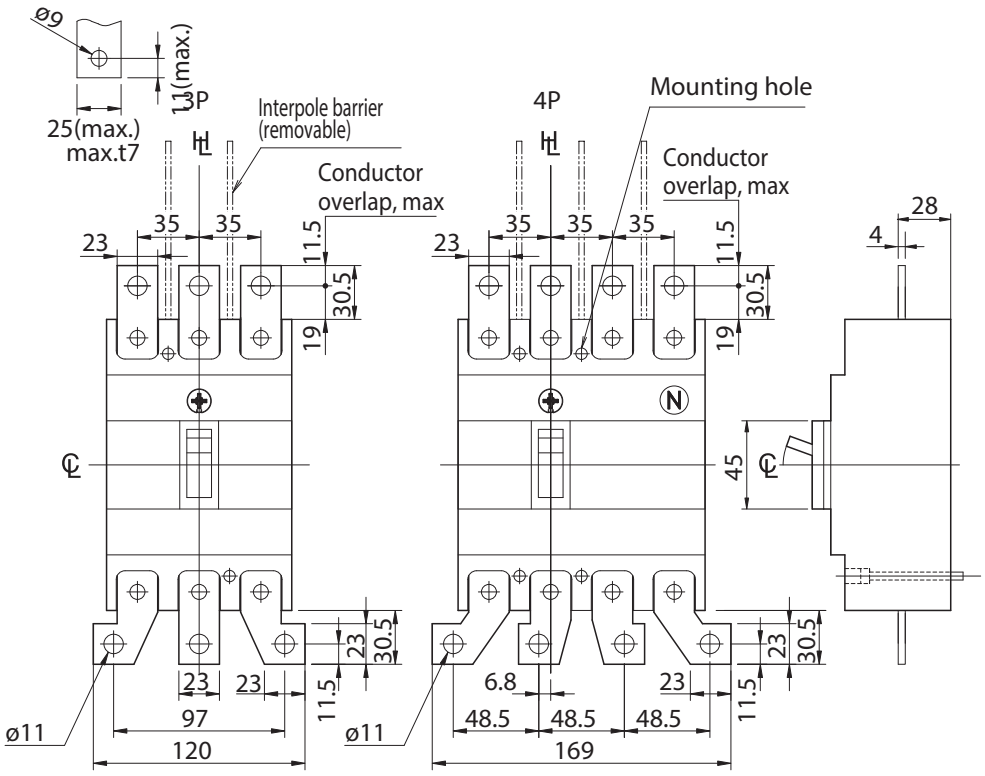


FRONT TERMINALS

Front terminals FC



Front extended and spread terminals FB



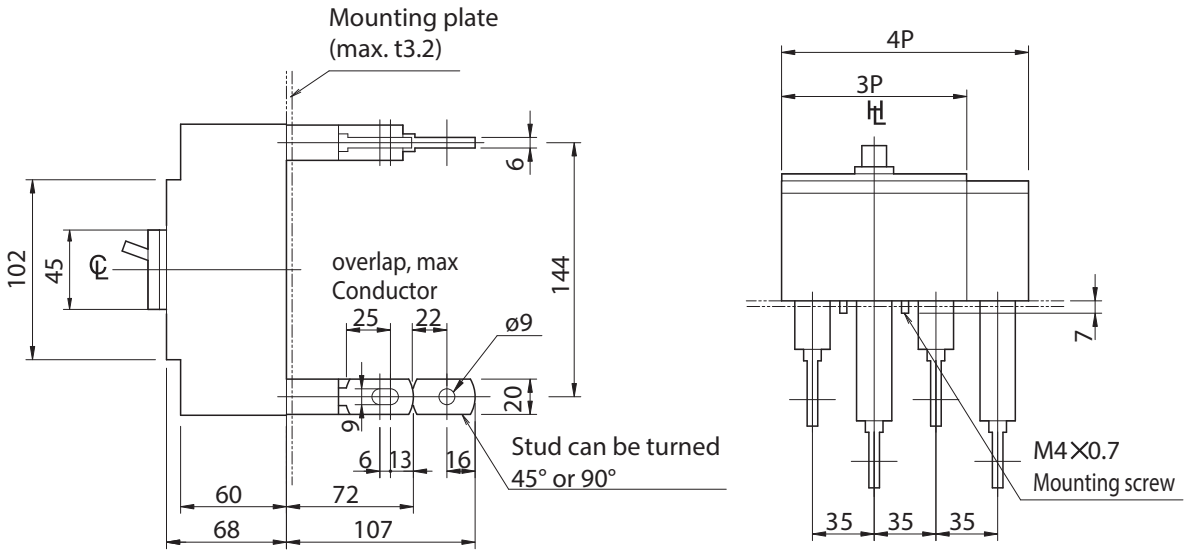
℄: Handle Centre Line ℔: Handle Frame Centre Line

COMPACT MCCB AND SWITCH DISCONNECTORS

MSX 250c, MSXM 250c

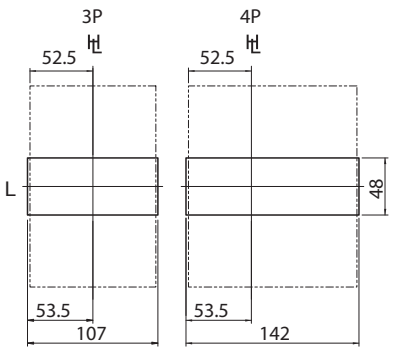
REAR TERMINALS

Rear terminals RC



PANEL CUTOUT

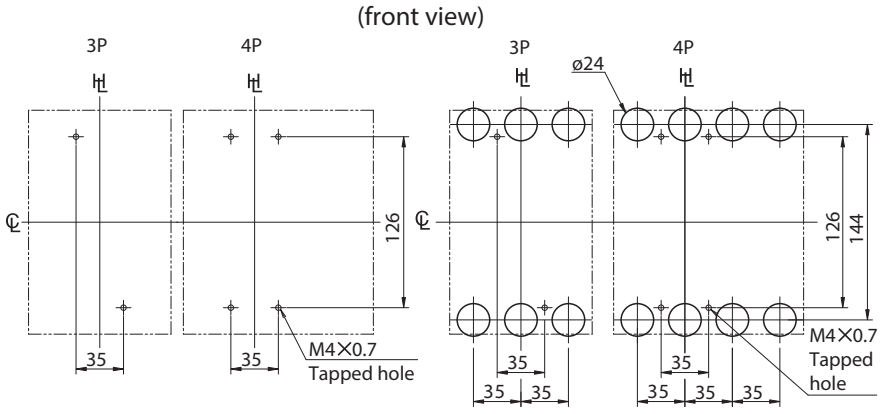
(front view)



Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

DRILLIN PLAN

(front view)

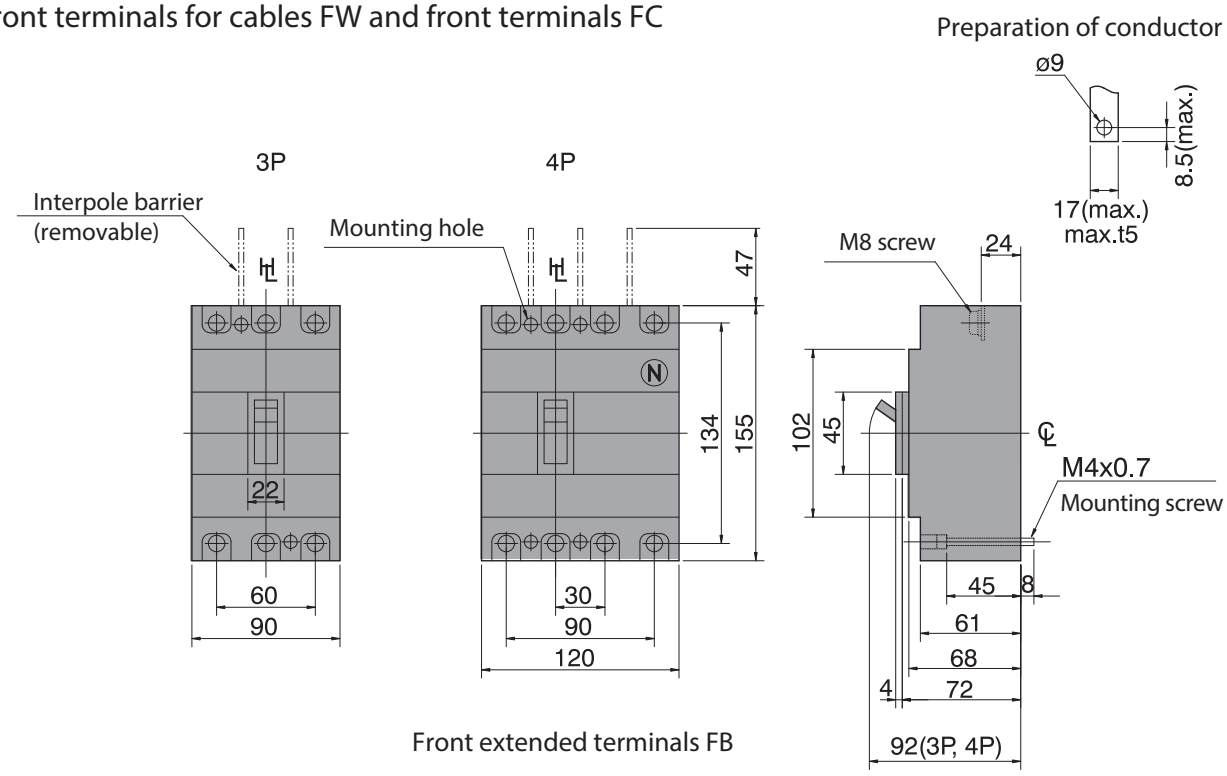


MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

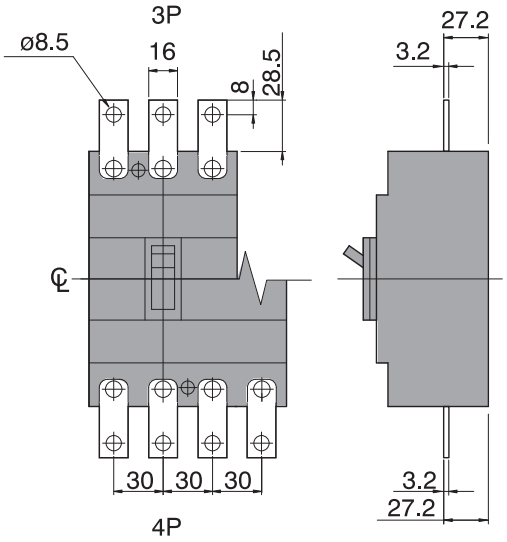
MSX 125 fixed version, MSXD 125

FRONT TERMINALS

Front terminals for cables FW and front terminals FC



Front extended terminals FB



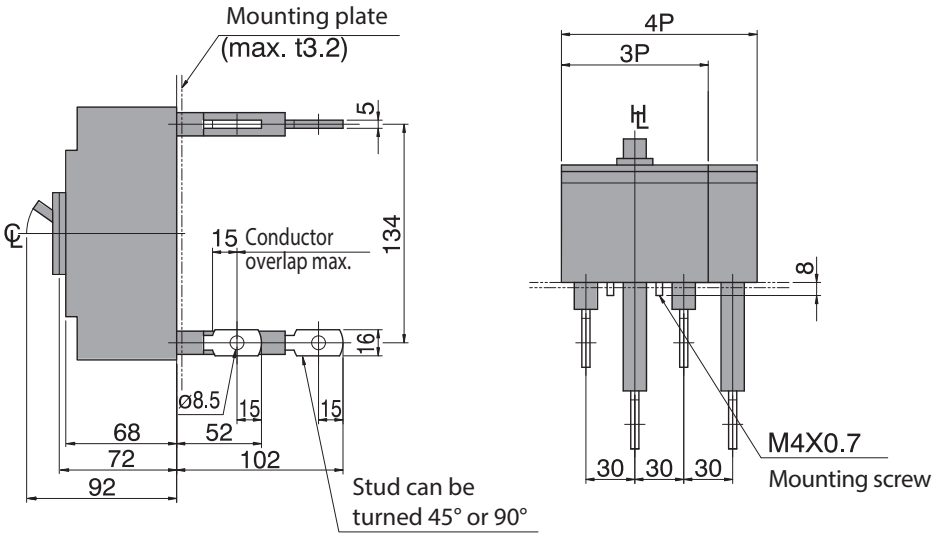
℄: Handle Centre Line ⊬: Handle Frame Centre Line

MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

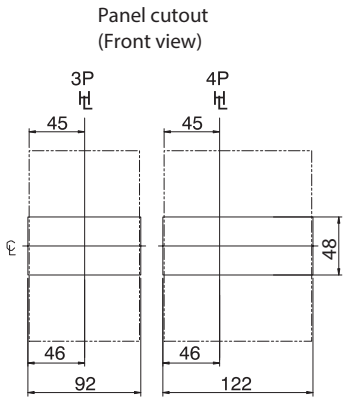
MSX 125 fixed version, MSXD 125

REAR TERMINALS

Rear terminals RC

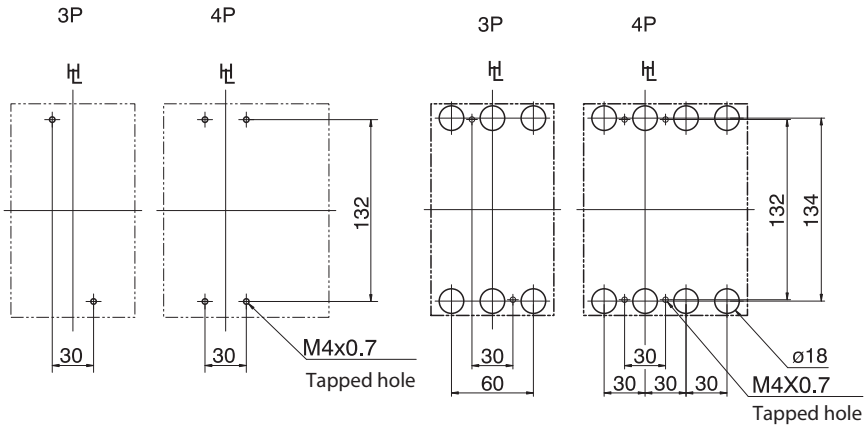


PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.

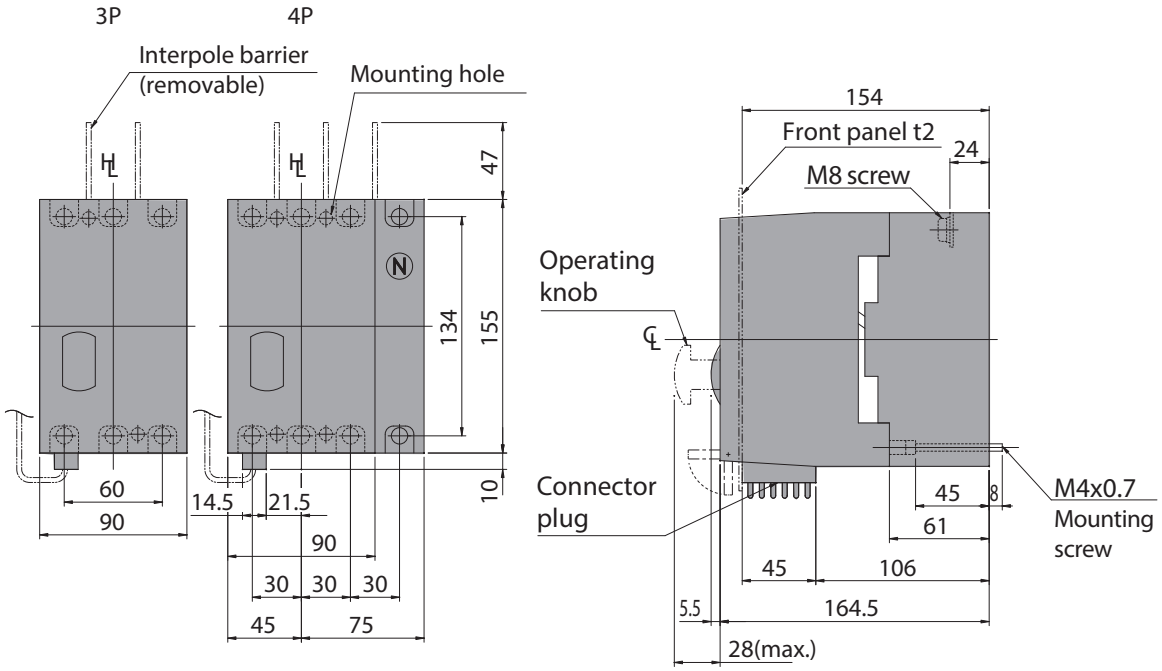
DRILLIN PLAN



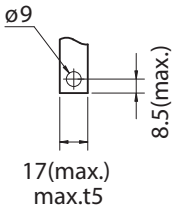
MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

MSX 125 fixed version, MSXD 125

FRONT TERMINALS WITH MOTOR OPERATOR

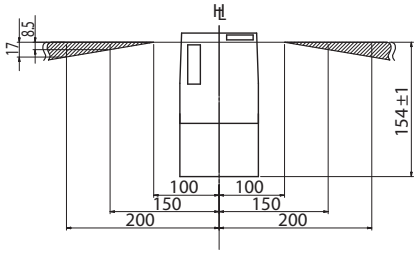


Preparation of conductor



PANEL HINGE POSITION

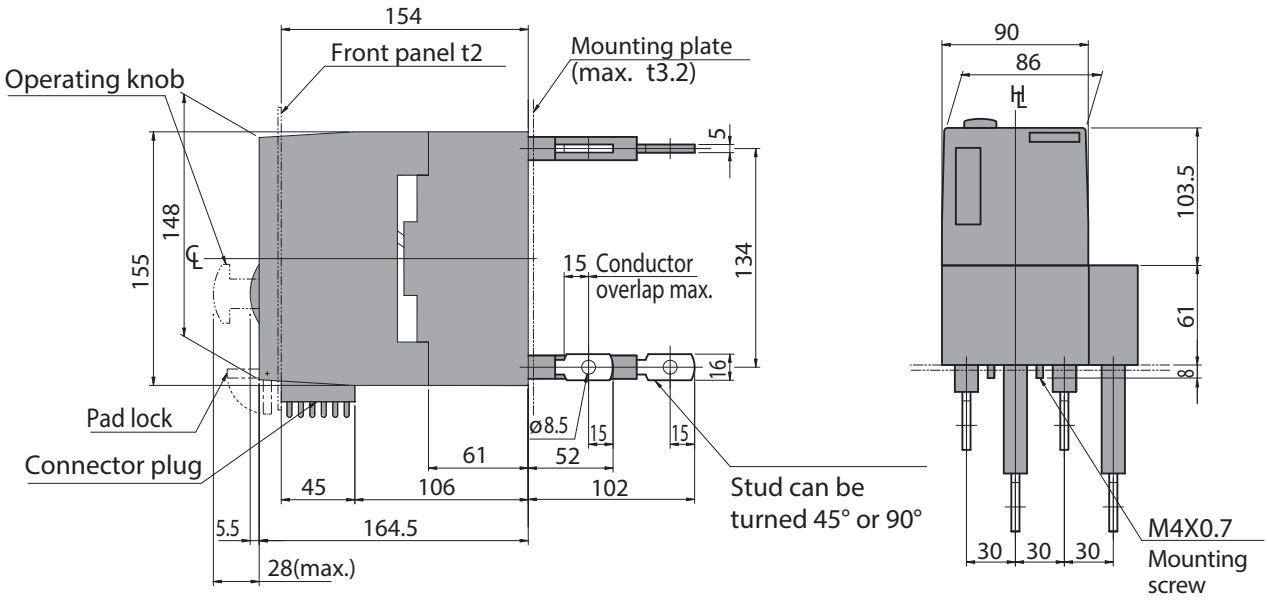
Panel hinge position (hatching area)
bottom view



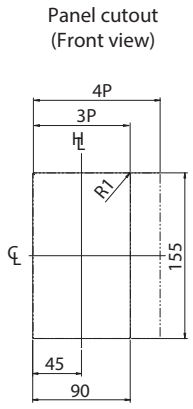
MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

MSX 125 fixed version, MSXD 125

REAR TERMINALS WITH MOTOR OPERATOR

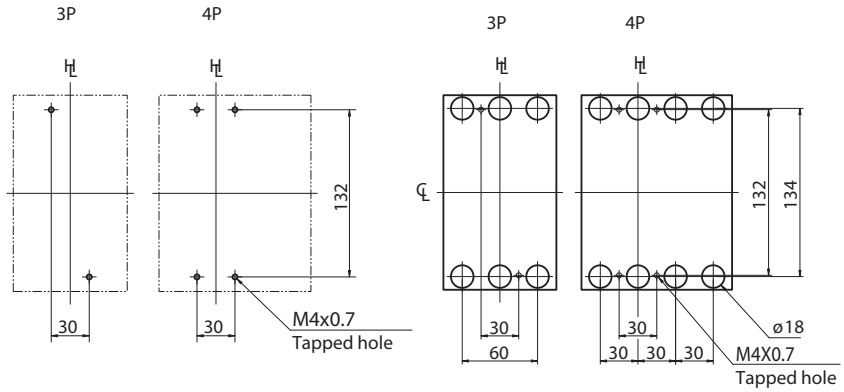


PANEL CUTOUT



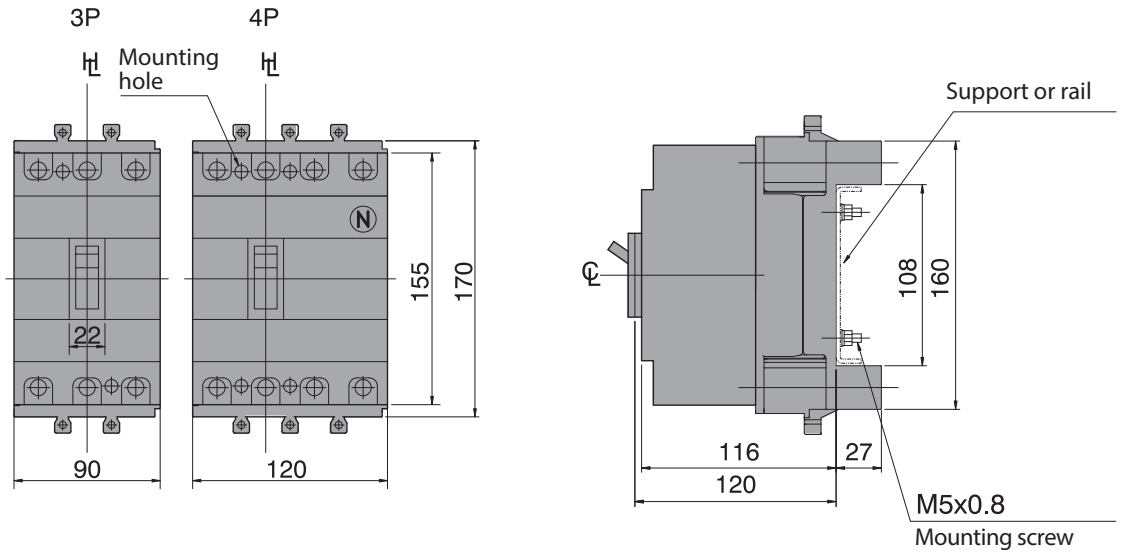
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

DRILLIN PLAN



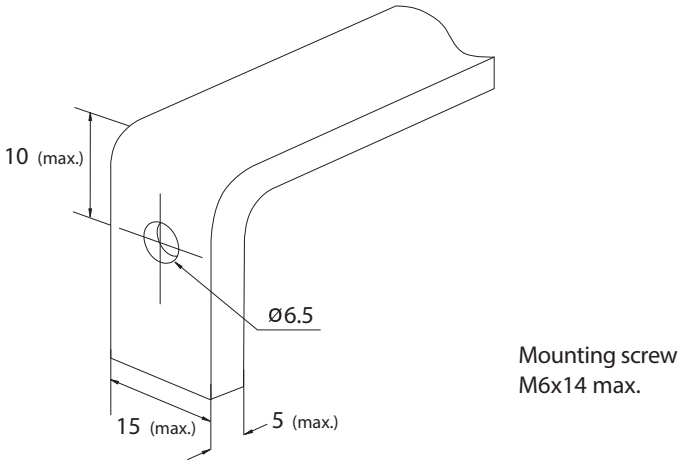
DIMENSIONS

Outline



TERMINATION OF BUSBAR

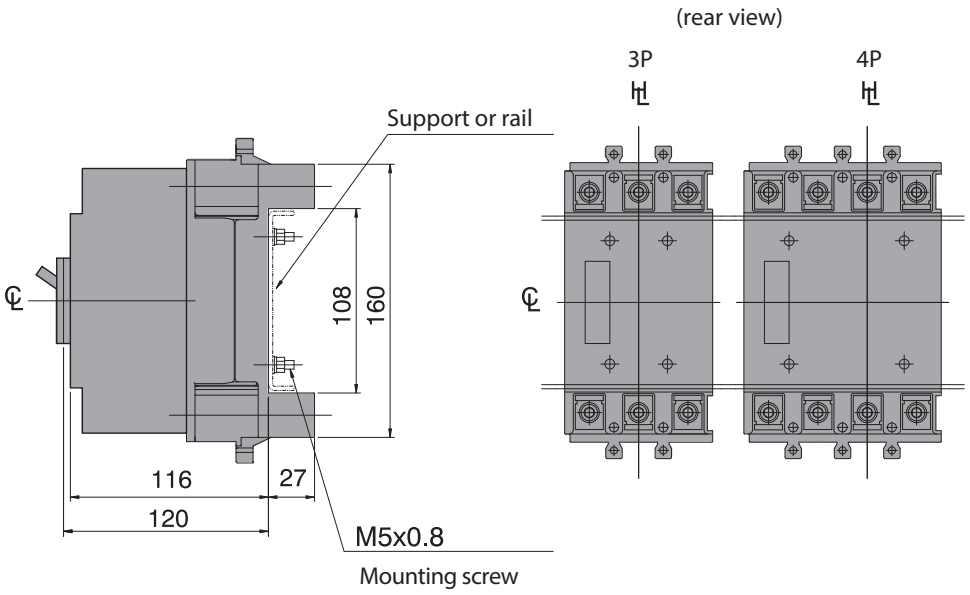
Preperation of conductor



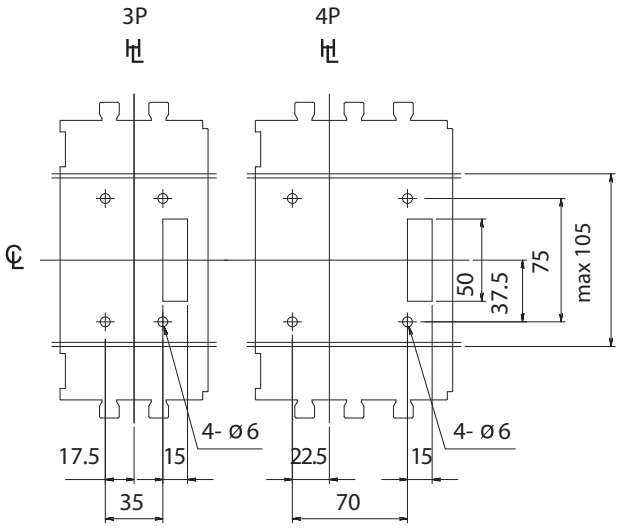
℄: Handle Centre Line **℔: Handle Frame Centre Line**

For technical information contact the Technical Assistance Service or visit gewiss.com

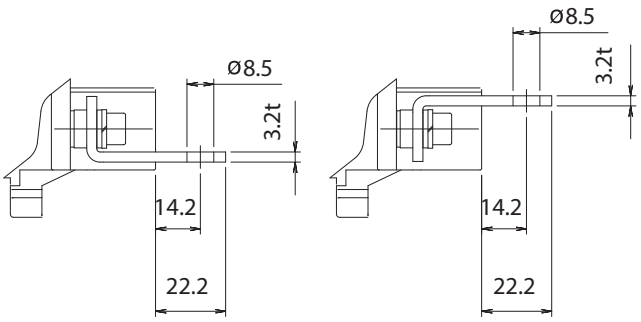
MOUNTING ON A SUPPORT OR RAILS



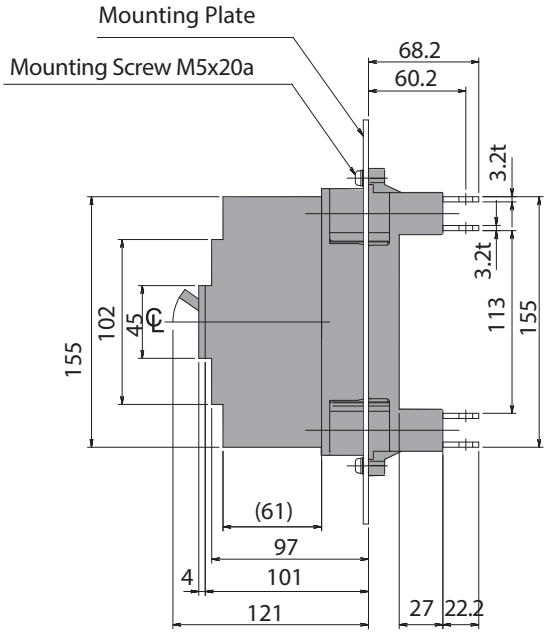
Drilling plan (front view)



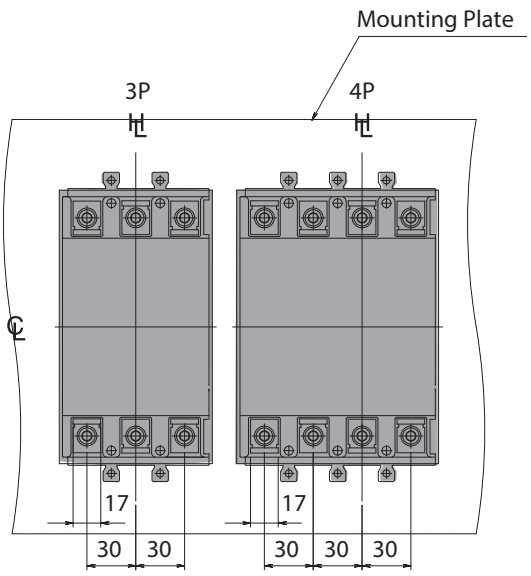
Detail of connecting part
Oriented for rear access



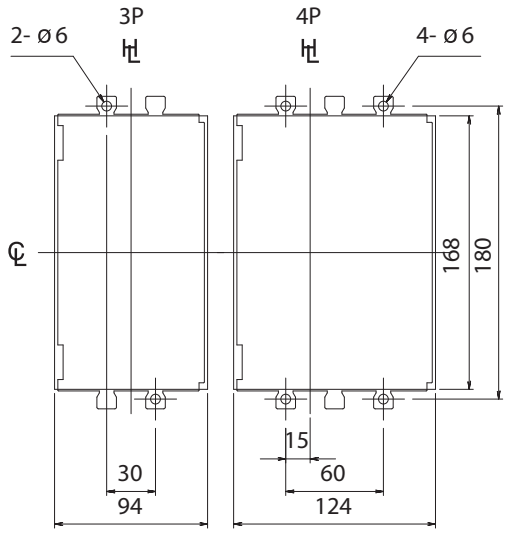
MOUNTING ON THE BACK OF FIXING PLATE



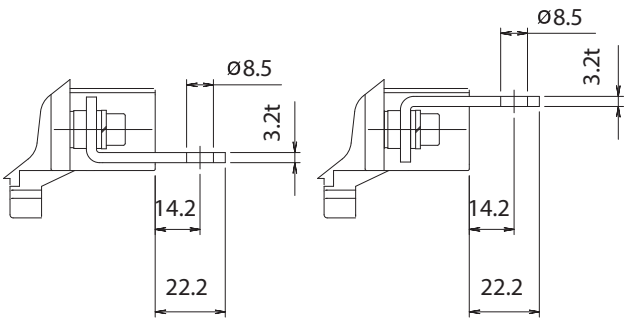
(rear view)



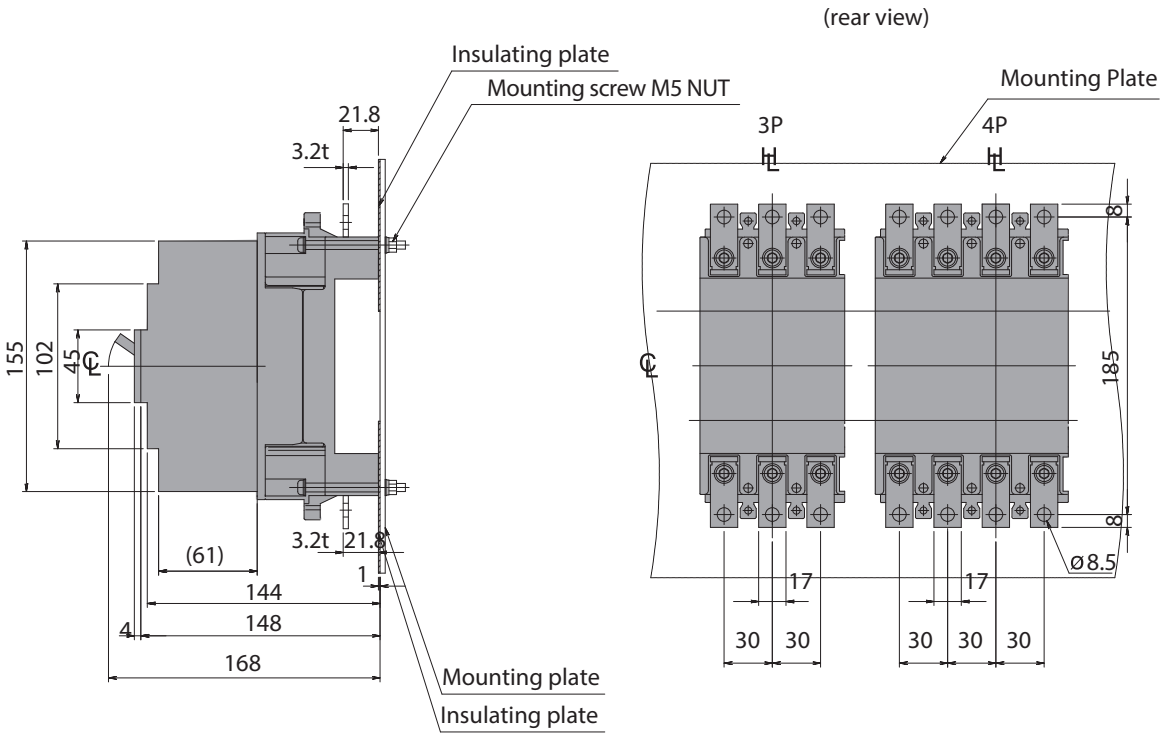
Drilling plan (front view)



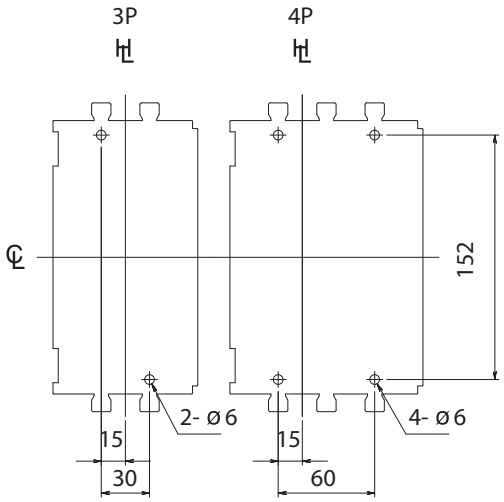
Detail of connecting part
Oriented for rear access



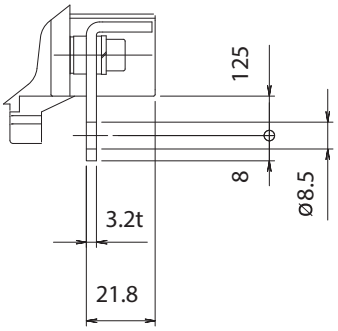
MOUNTING ON THE FRONT OF FIXING PLATE



Drilling plan (front view)



Detail of connecting part
Oriented for front access

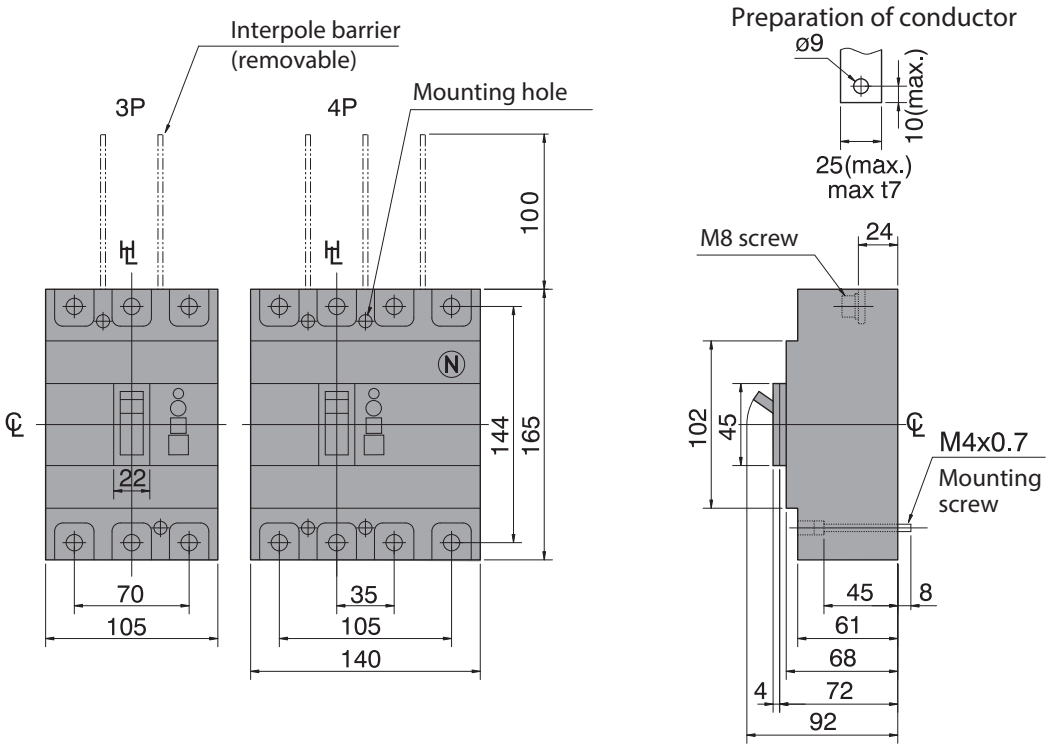


Note that the insulation plate (supplied as standard) must be fitted between the base and the backplate.

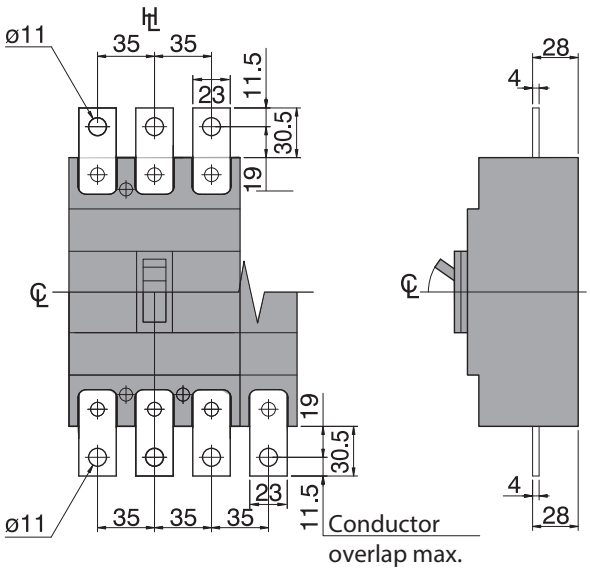
MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

MSX 160, MSX 250 fixed version, MSXD 160, MSXD 250

FRONT TERMINALS FC



Front extended terminals FB



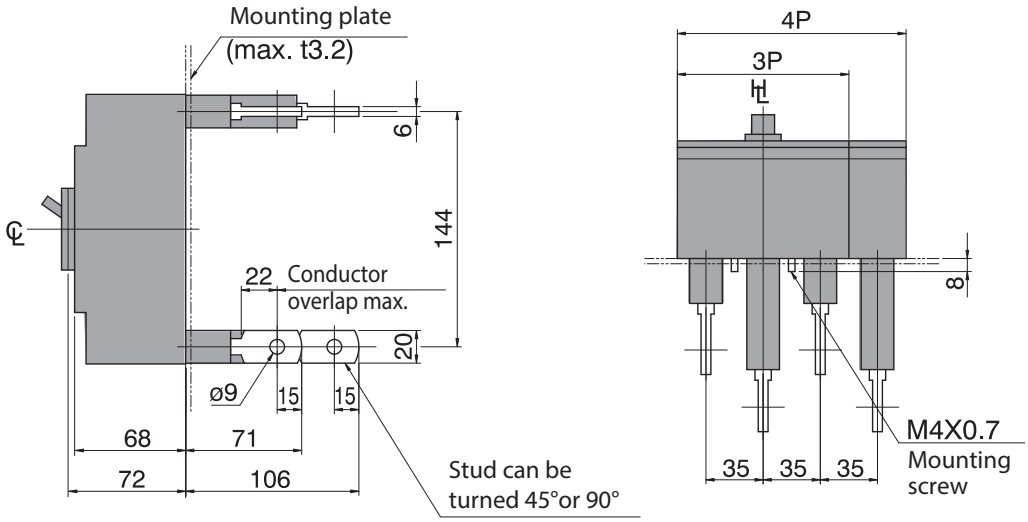
℄: Handle Centre Line ℔: Handle Frame Centre Line

For technical information contact the Technical Assistance Service or visit gewiss.com

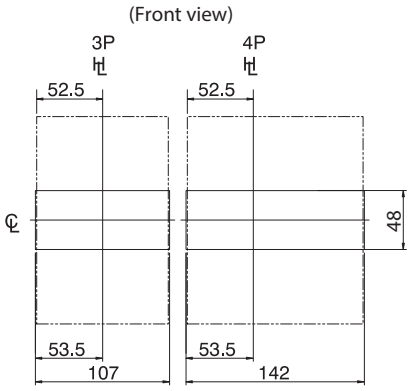
MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

MSX 160, MSX 250 fixed version, MSXD 160, MSXD 250

REAR TERMINALS RC

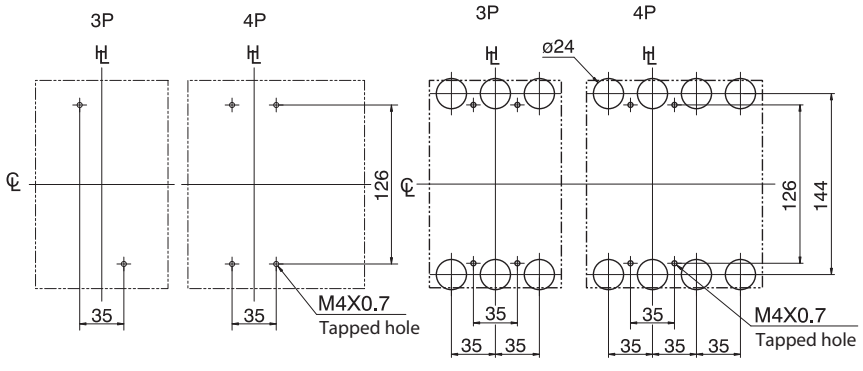


PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.

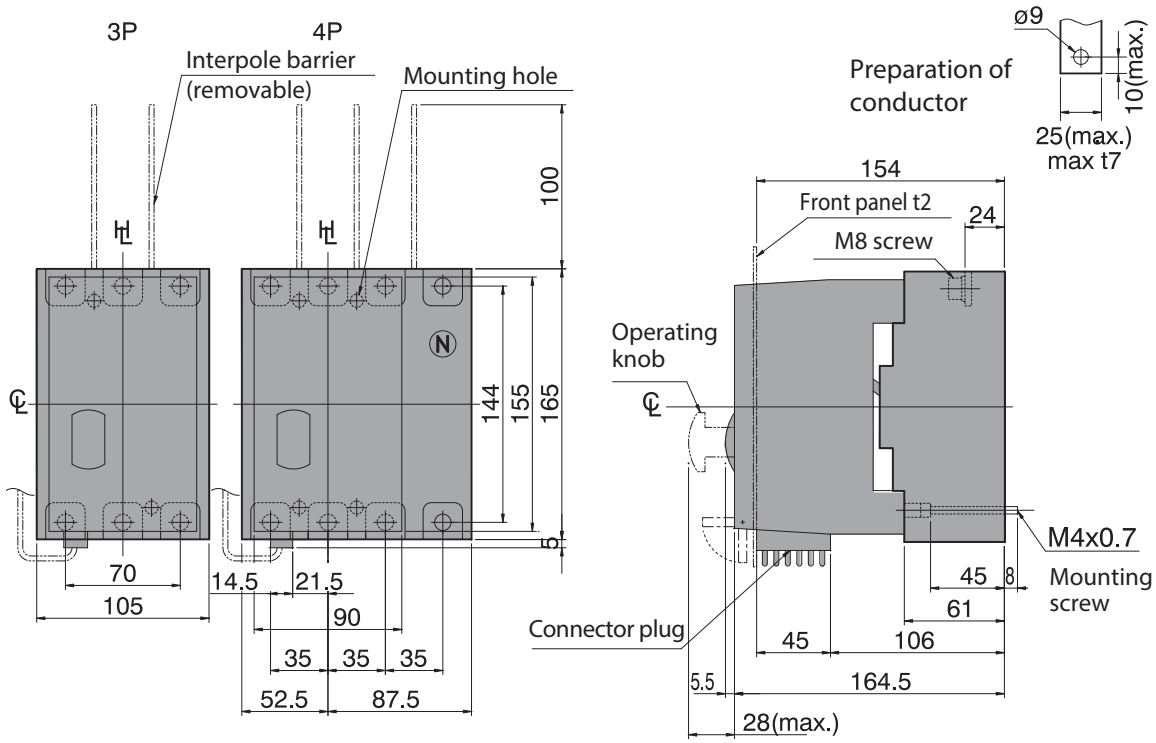
DRILLIN PLAN



MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

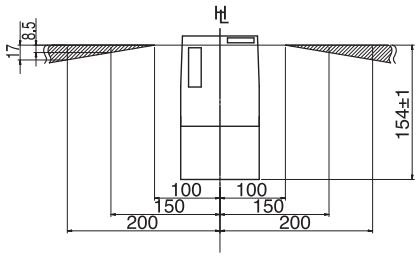
MSX 160, MSX 250 fixed version, MSXD 160, MSXD 250

FRONT TERMINALS WITH MOTOR OPERATOR



PANEL HINGE POSITION

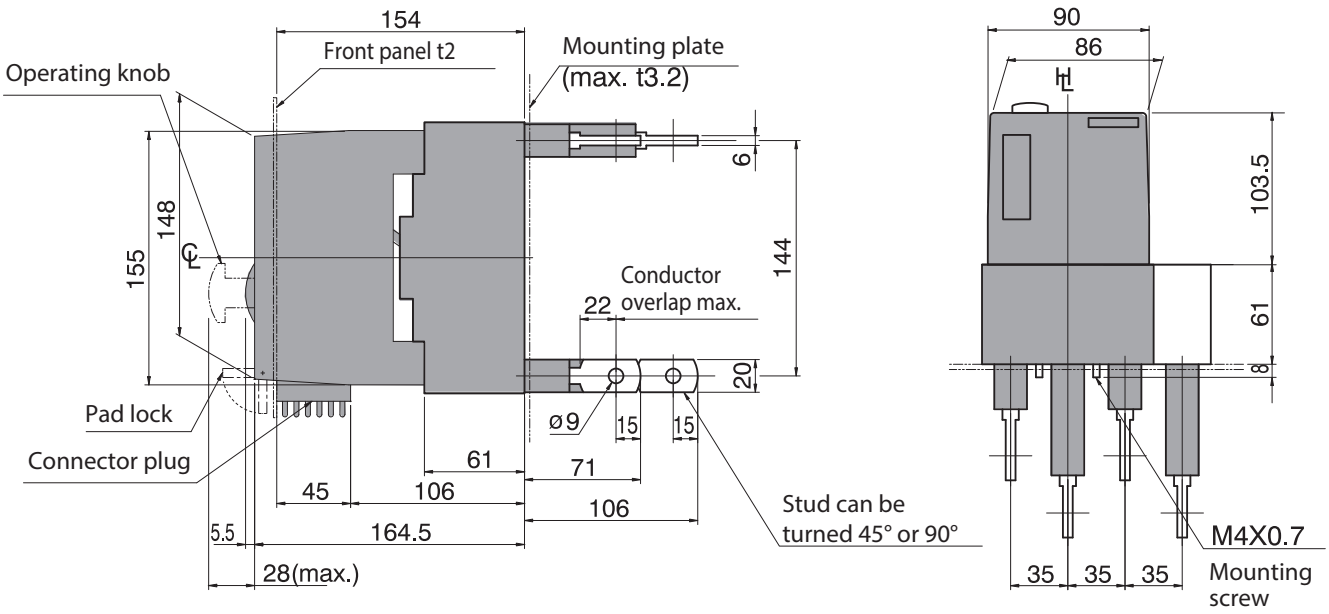
(hatching area)
bottomview



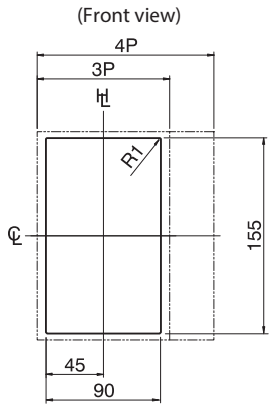
MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

MSX 160, MSX 250 fixed version, MSXD 160, MSXD 250

REAR TERMINALS WITH MOTOR OPERATOR

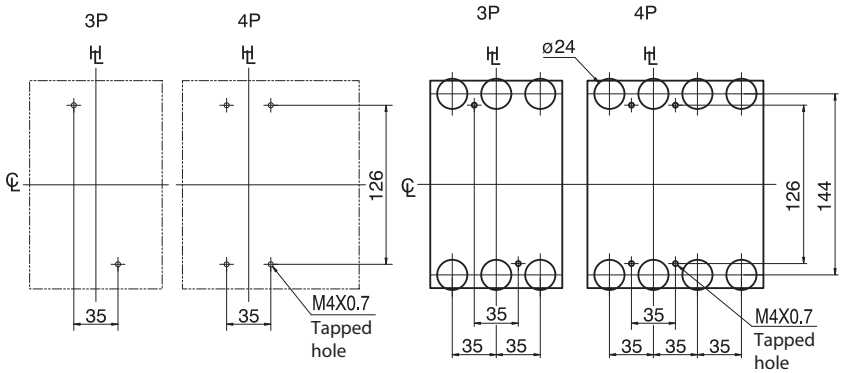


PANEL CUTOUT

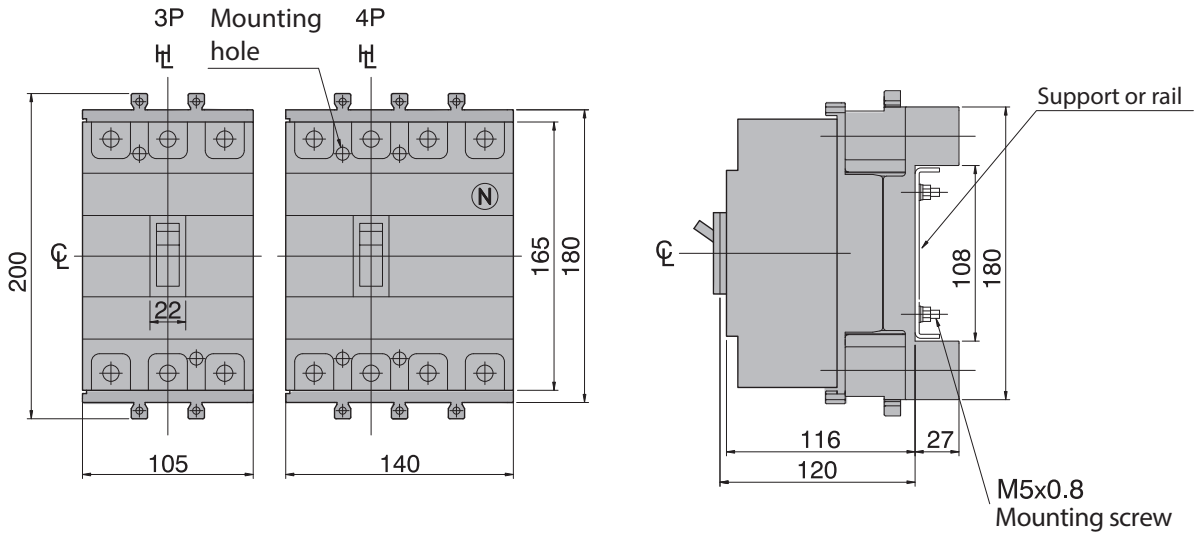


Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

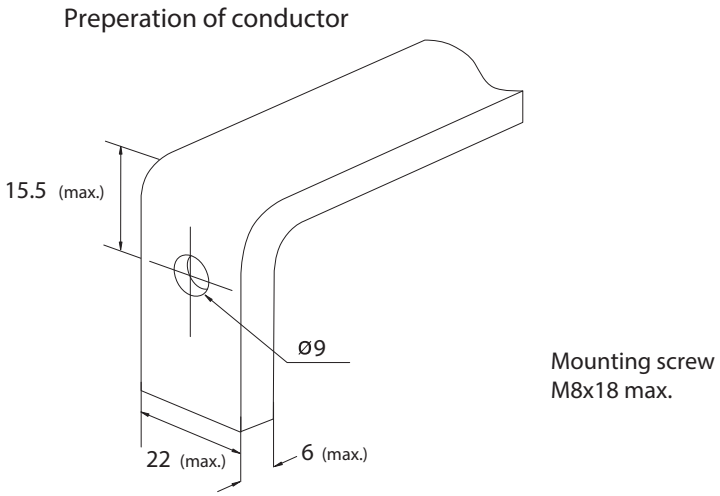
DRILLIN PLAN



DIMENSIONS



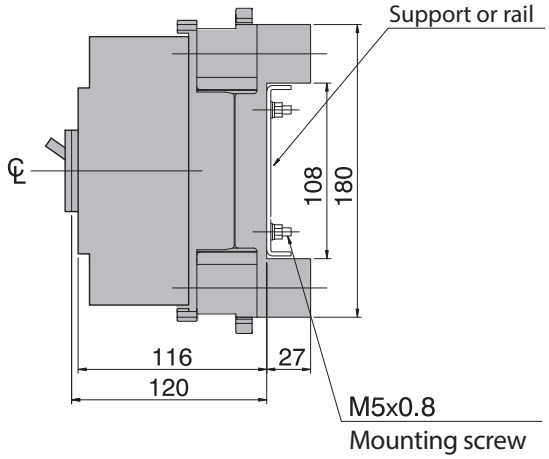
TERMINATION OF BUSBAR



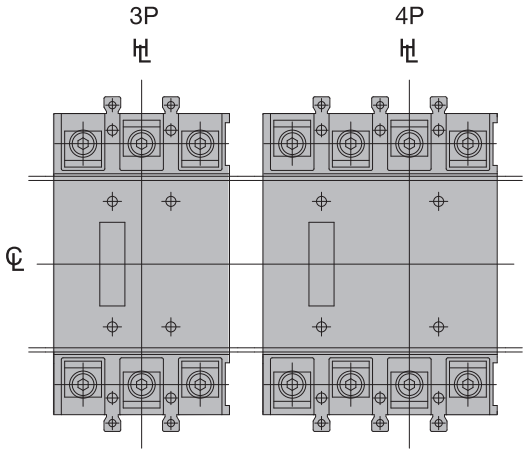
℄: Handle Centre Line **⊬: Handle Frame Centre Line**

For technical information contact the Technical Assistance Service or visit gewiss.com

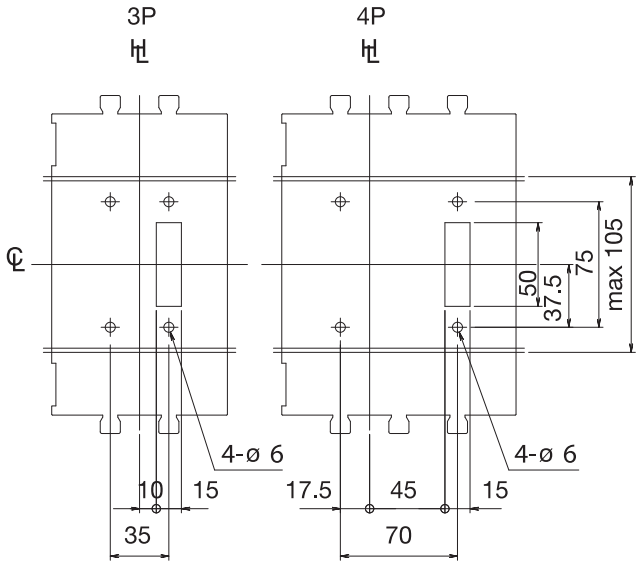
MOUNTING ON A SUPPORT OR RAILS



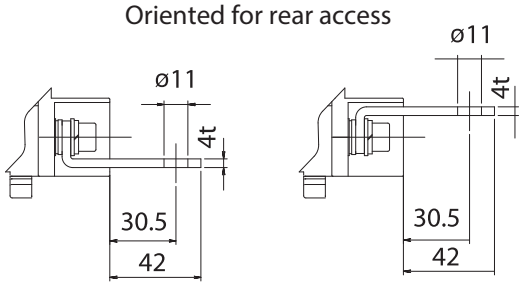
(rear view)



Drilling plan(front view)

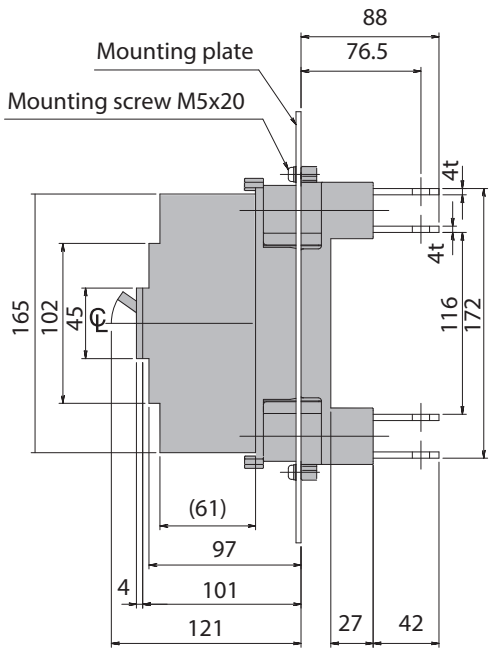


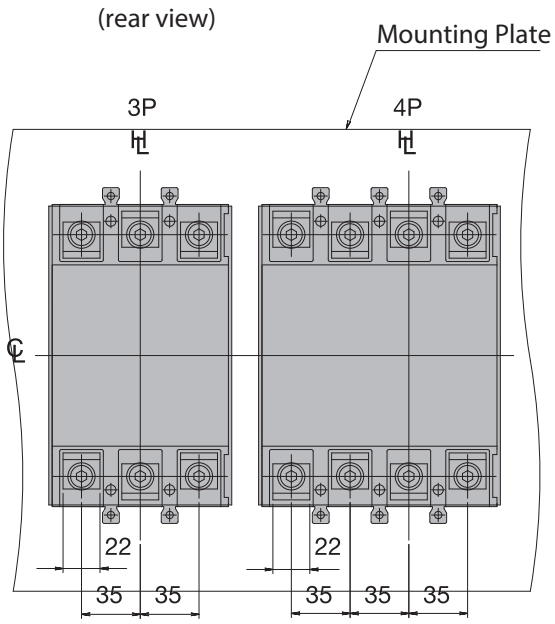
Detail of connecting part
Oriented for rear access



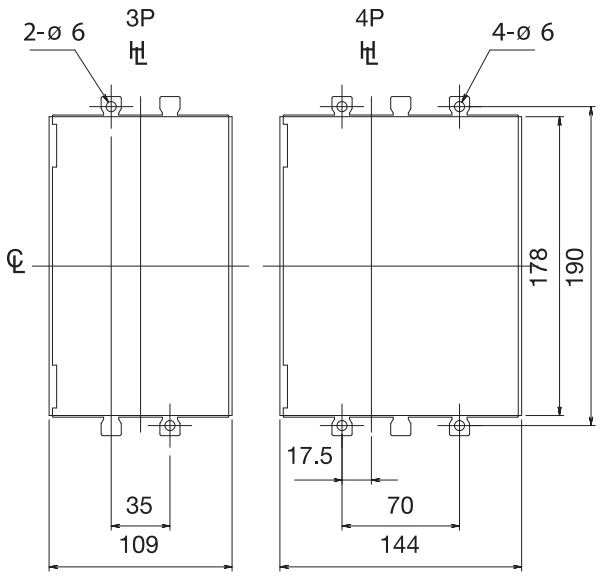
Terminal bars should be connected altemately on adjacent poles.

MOUNTING ON THE BACK OF FIXING PLATE

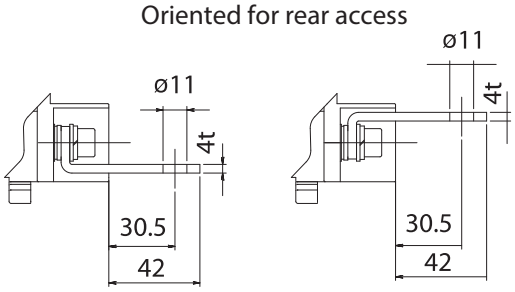




Drilling plan (front view)

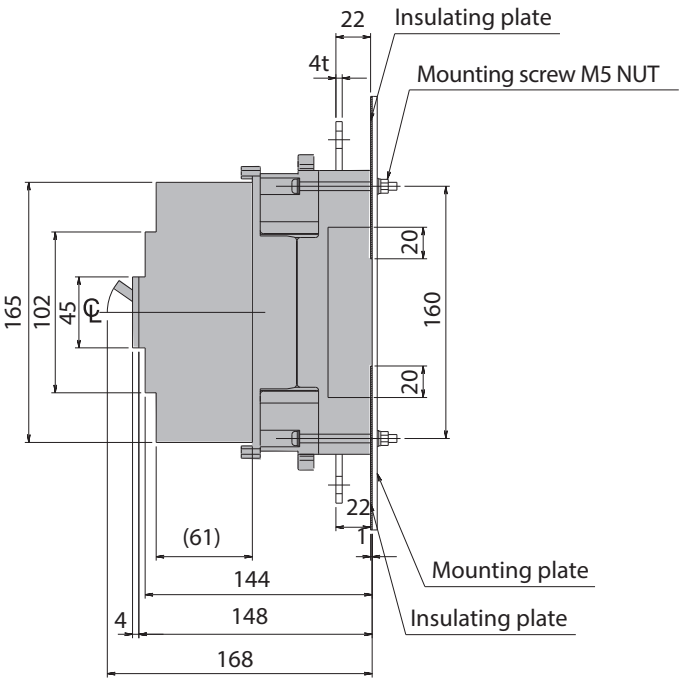


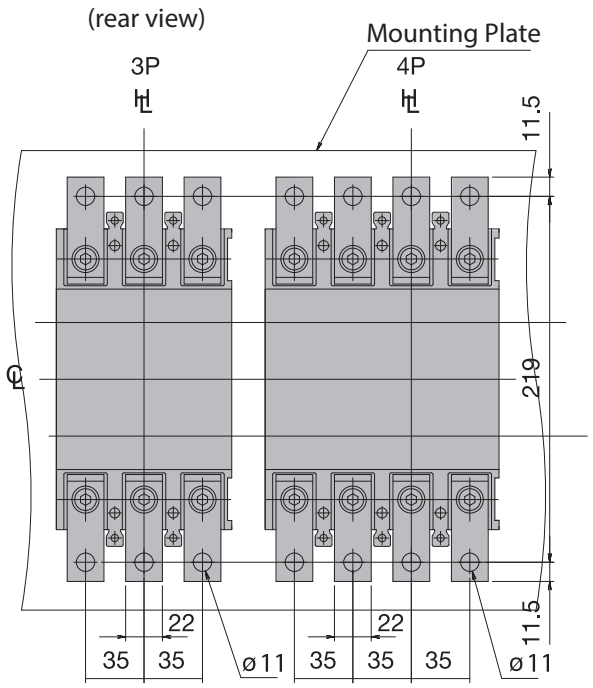
Detail of connecting part
Oriented for rear access



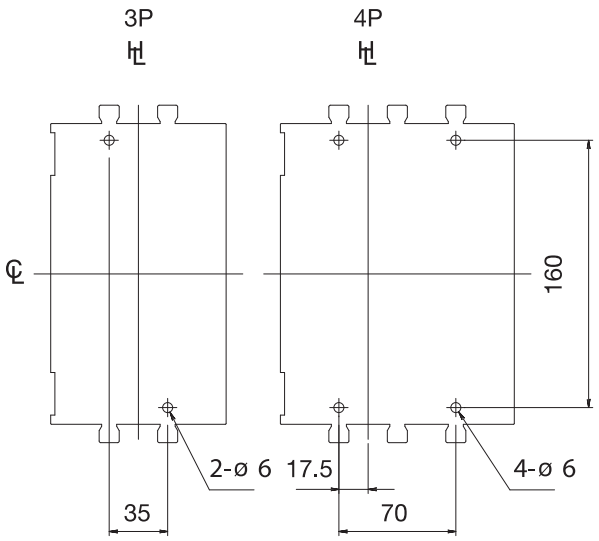
Terminal bars should be connected alternately on adjacent poles.

MOUNTING ON THE FRONT OF FIXING PLATE

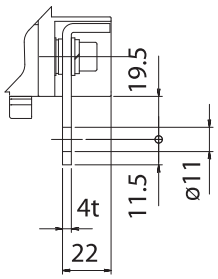




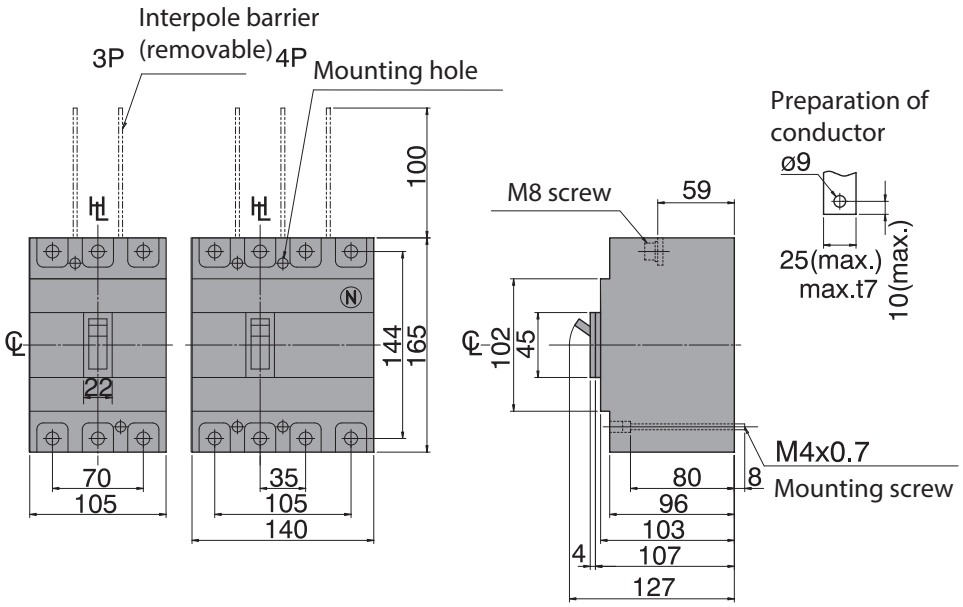
Drilling plan (front view)



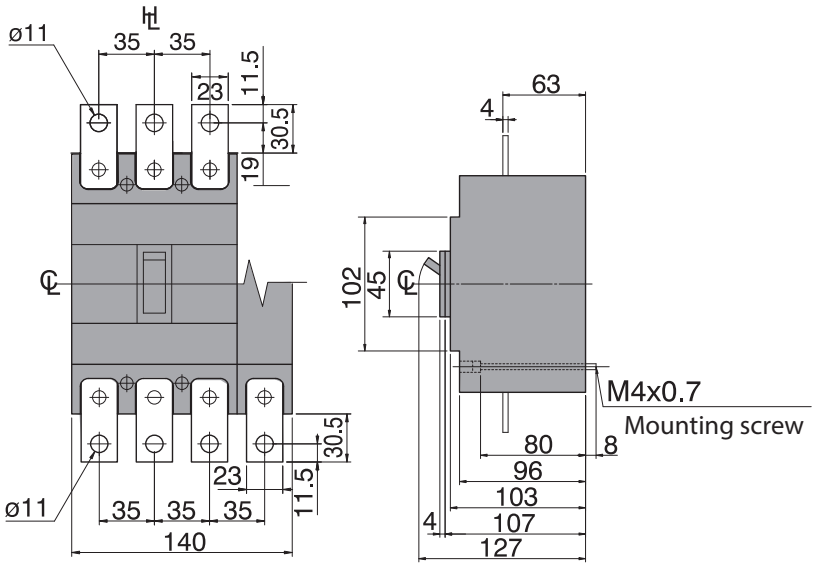
Detail of connecting part
Oriented for front access



FRONT TERMINALS FC



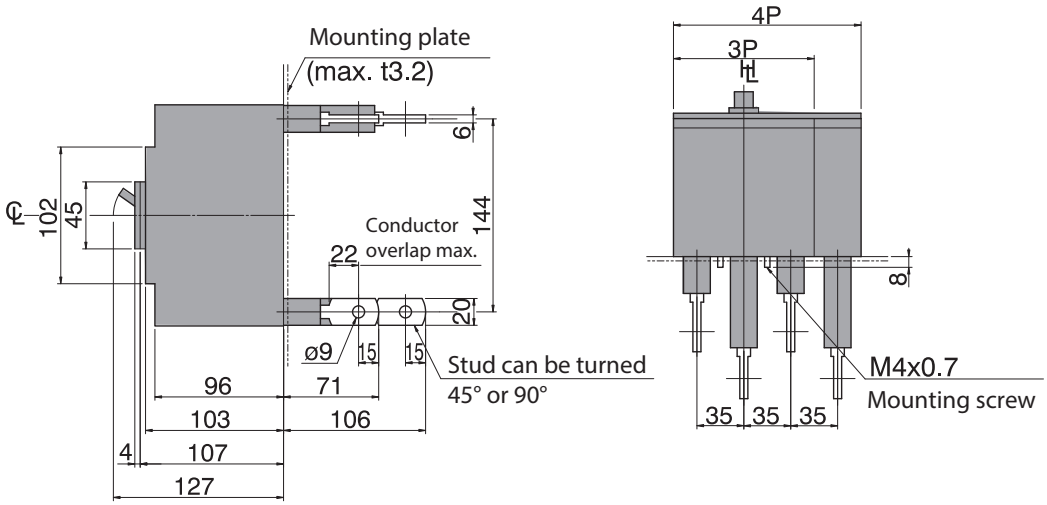
Front extended terminals FB



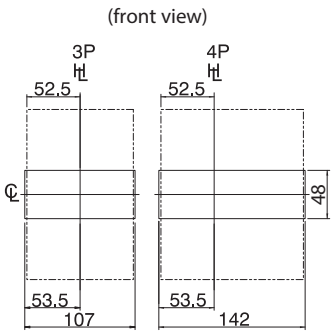
℄: Handle Centre Line **⊬: Handle Frame Centre Line**

For technical information contact the Technical Assistance Service or visit gewiss.com

REAR TERMINALS RC

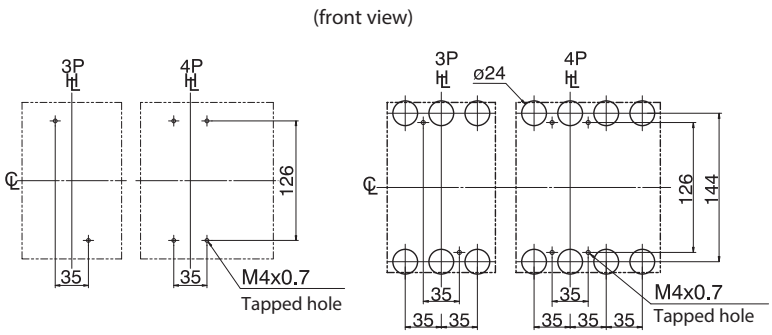


PANEL CUTOUT

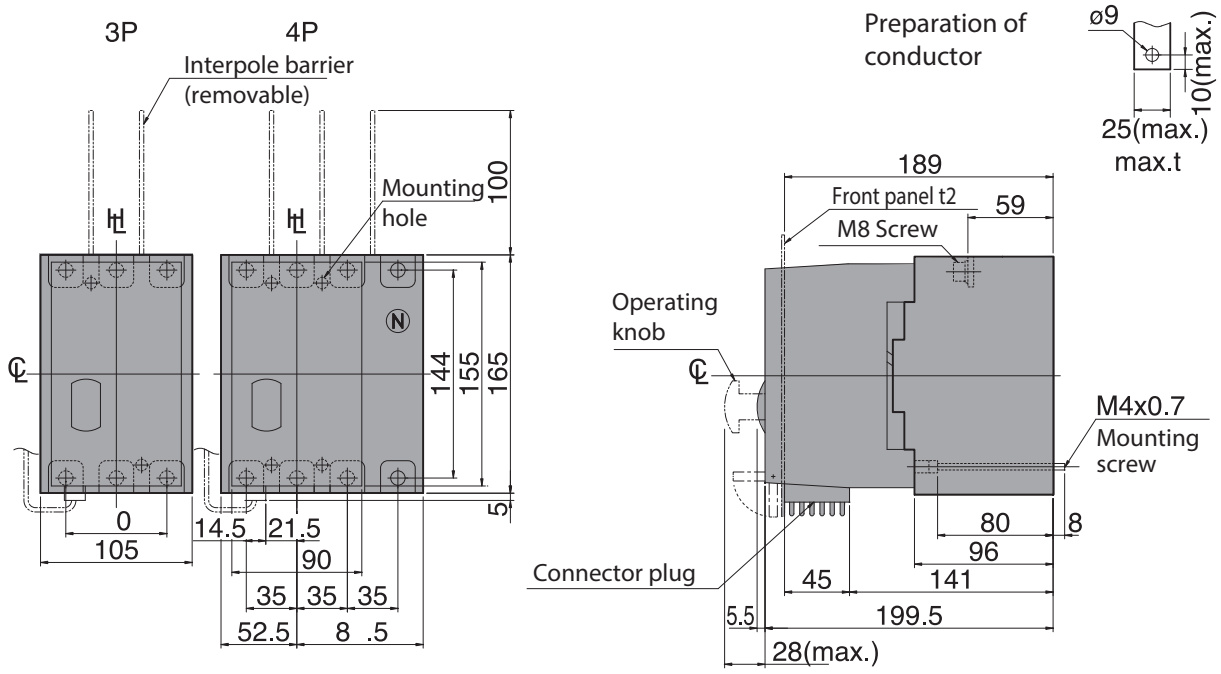


Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.

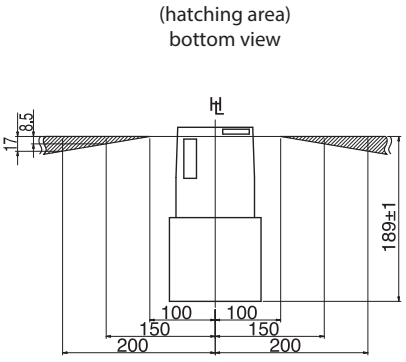
DRILLIN PLAN



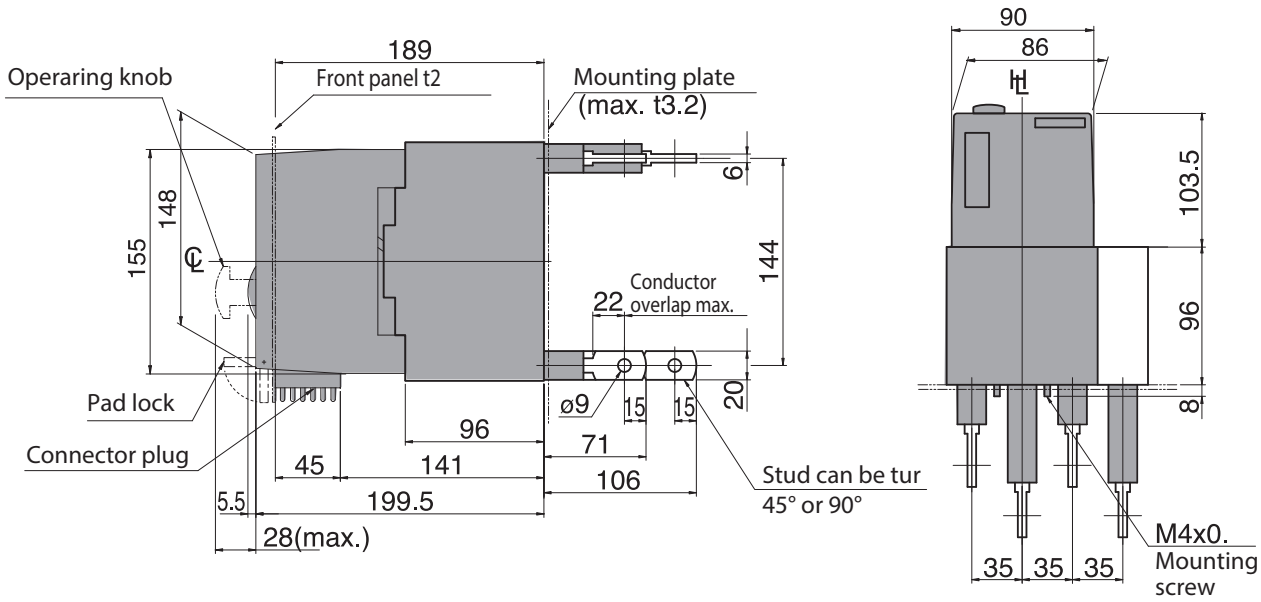
FRONT TERMINALS WITH MOTOR OPERATOR



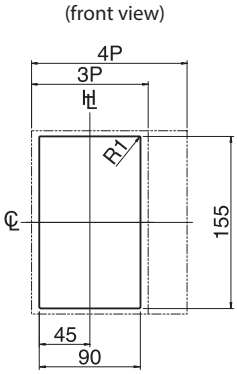
PANEL HINGE POSITION



REAR TERMINALS WITH MOTOR OPERATOR

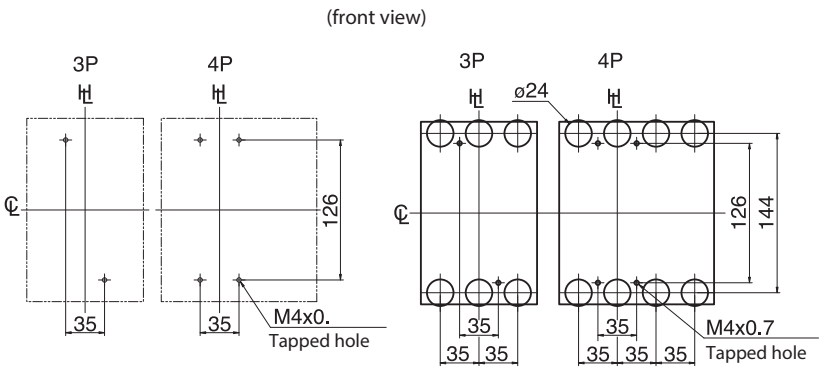


PANEL CUTOUT

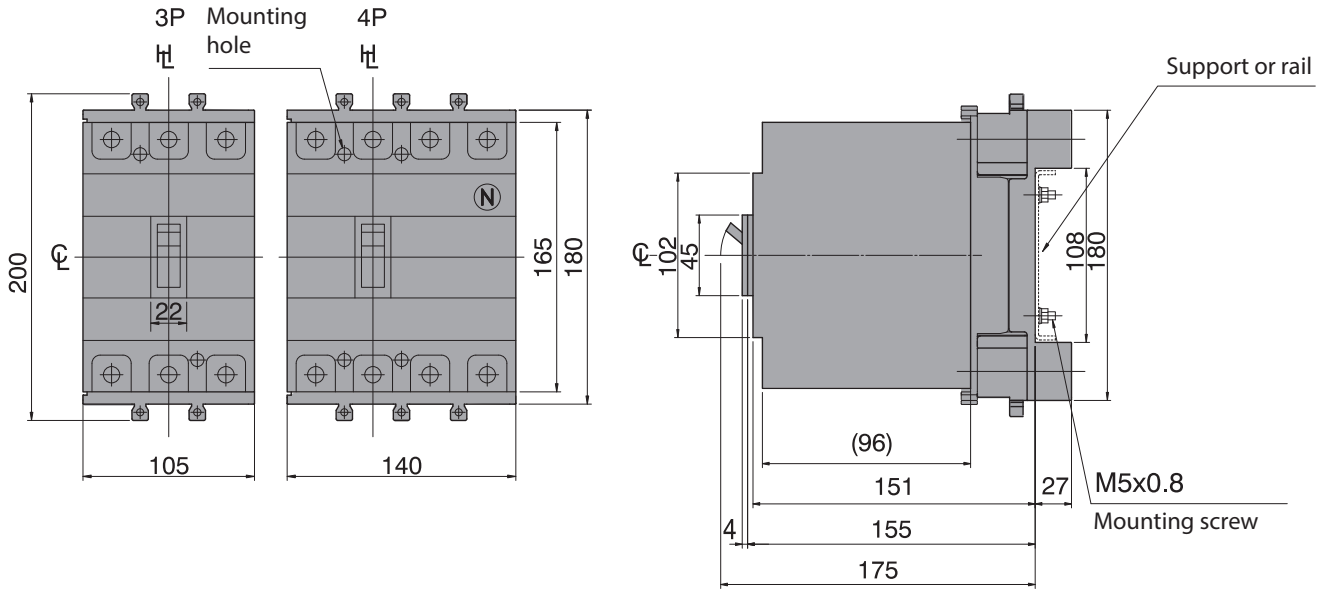


Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

DRILLIN PLAN

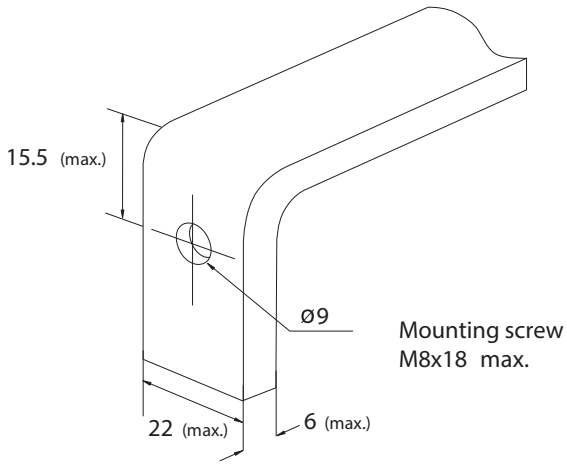


DIMENSIONS



TERMINATION OF BUSBAR

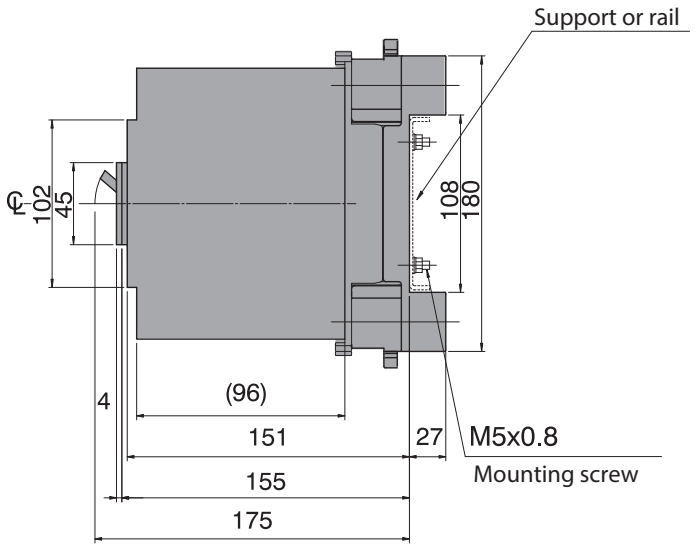
Preperation of conductor

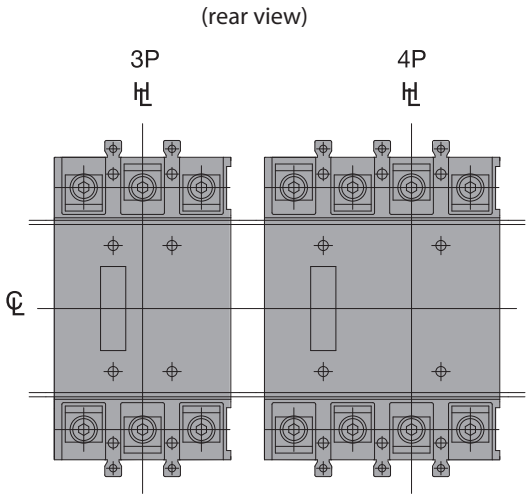


℄: Handle Centre Line ⊬: Handle Frame Centre Line

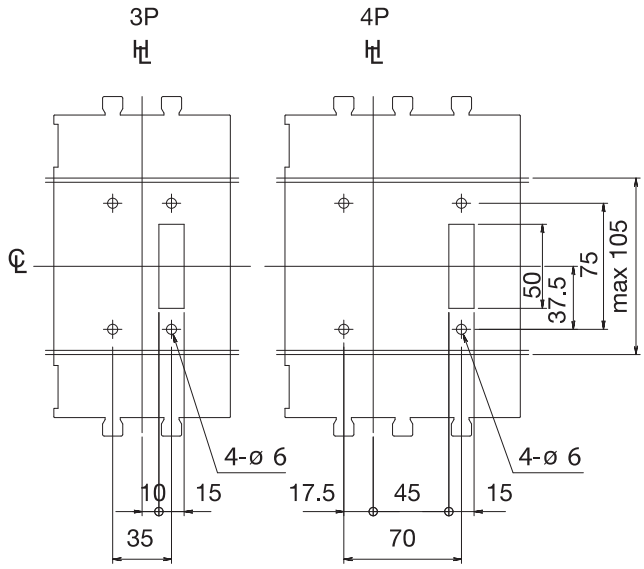
For technical information contact the Technical Assistance Service or visit gewiss.com

MOUNTING ON A SUPPORT OR RAILS

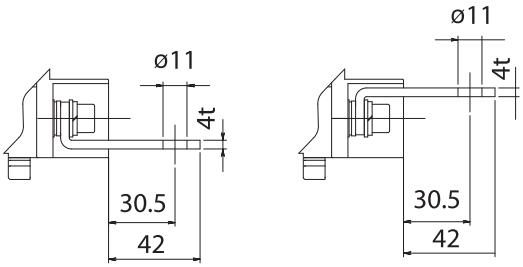




Drilling plan (front view)

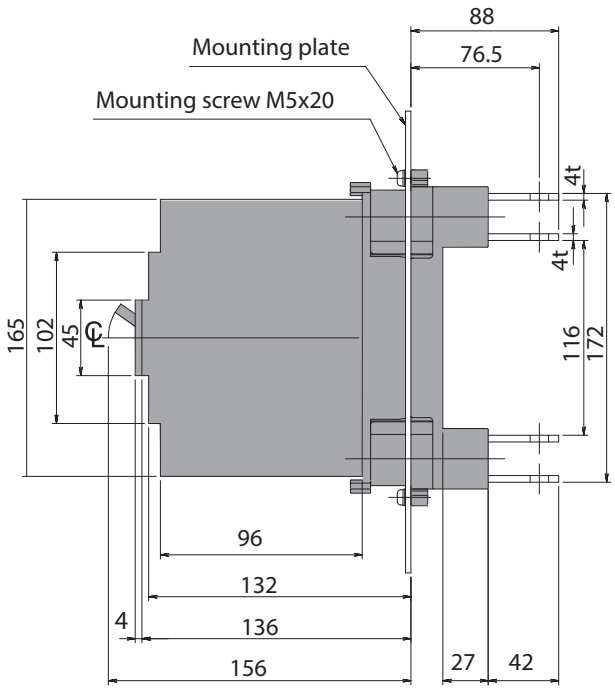


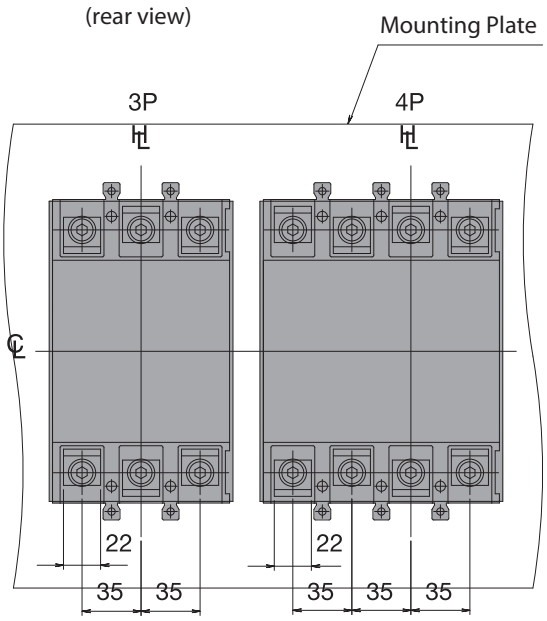
Drilling plan (front view)
Oriented for rear access



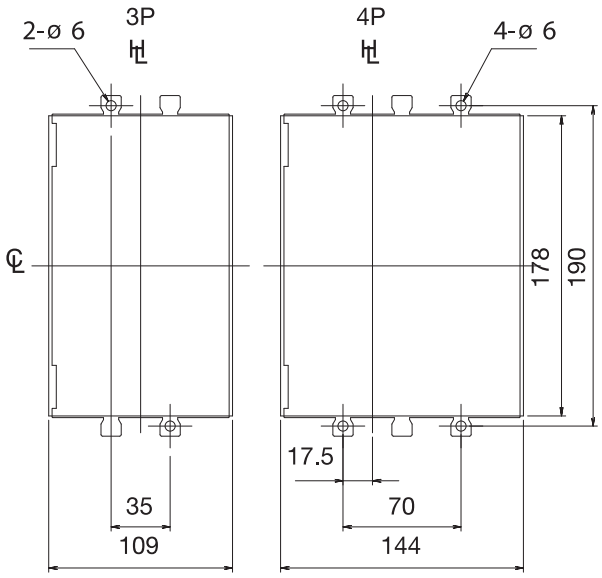
Terminal bars should be connected altemately on adjacent poles

MOUNTING ON THE BACK OF FIXING PLATE

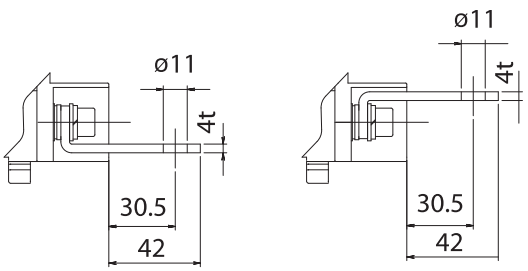




Drilling plan (front view)

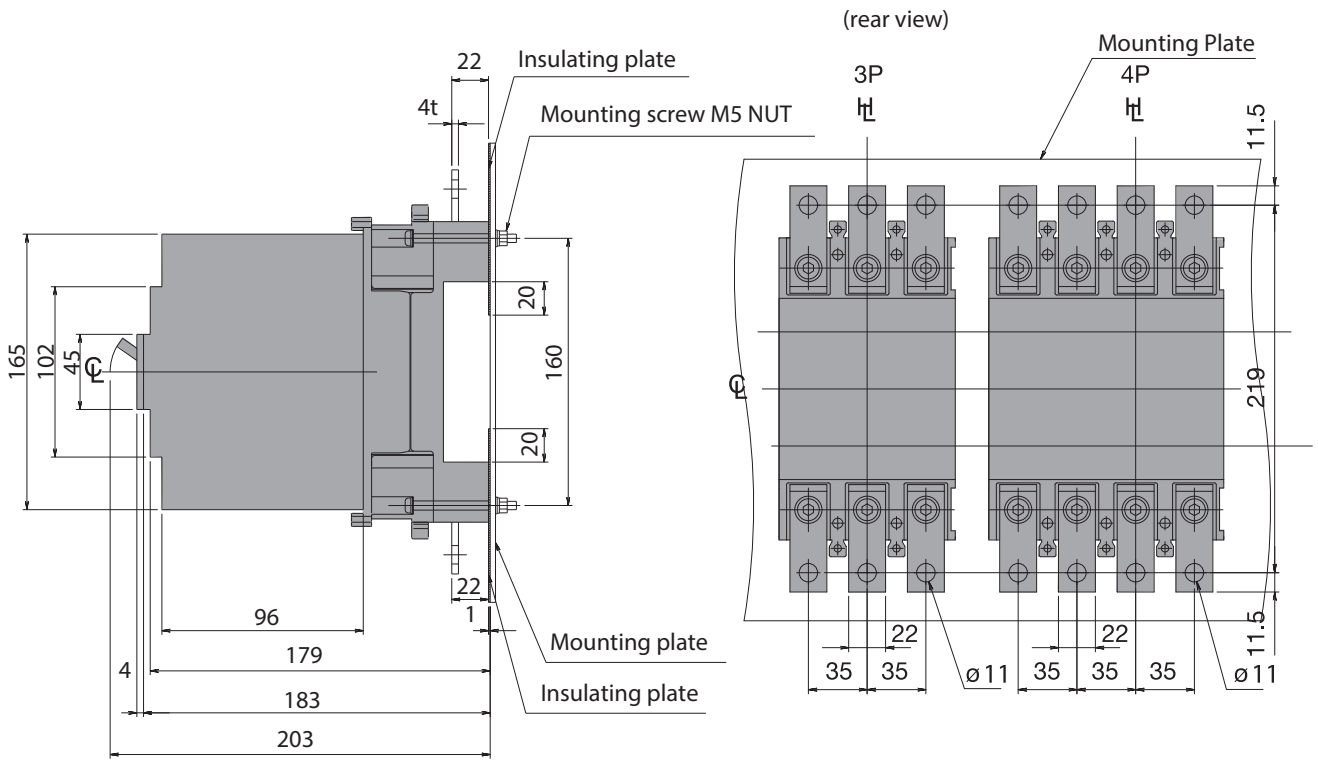


Detail of connecting part
Oriented for rear access

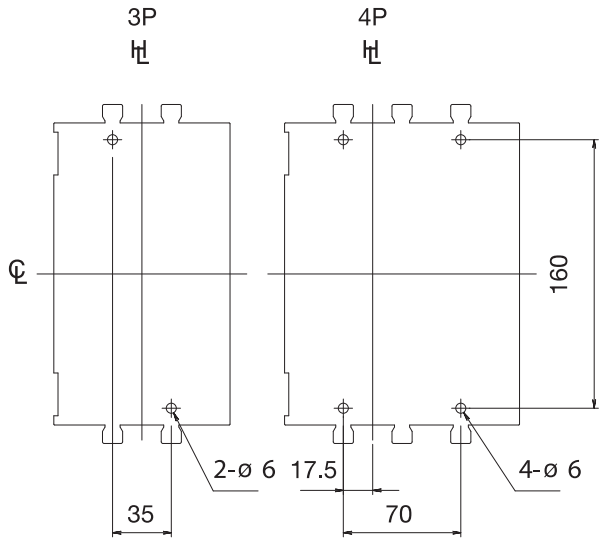


Terminal bars should be connected alternately on adjacent poles

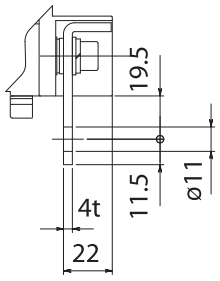
MOUNTING ON THE FRONT OF FIXING PLATE



Drilling plan (front view)



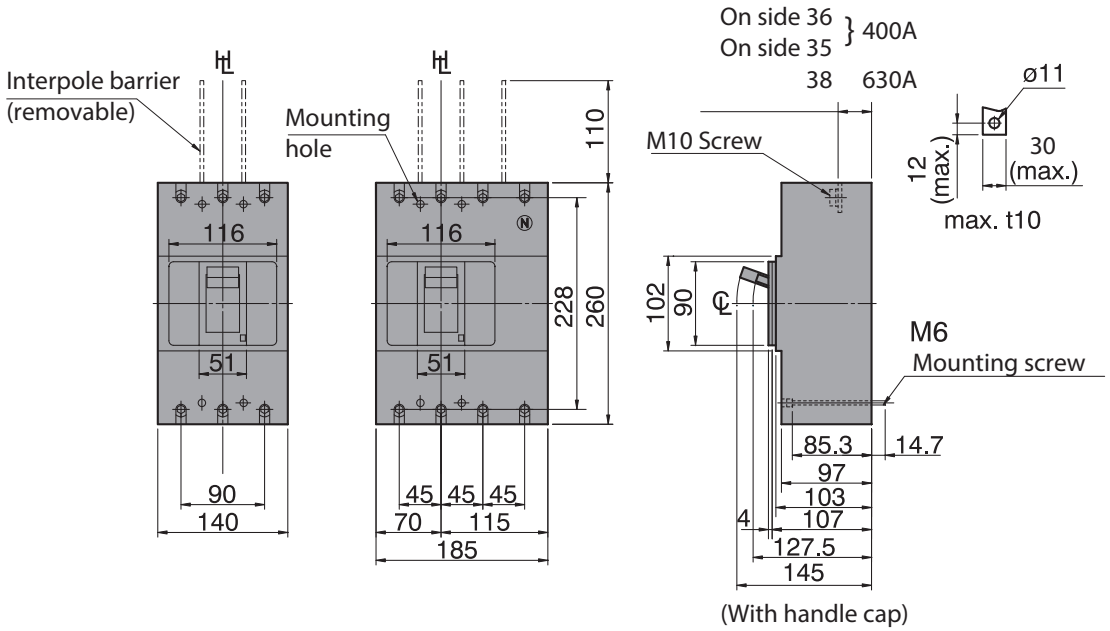
Detail of connecting part
Oriented for front access



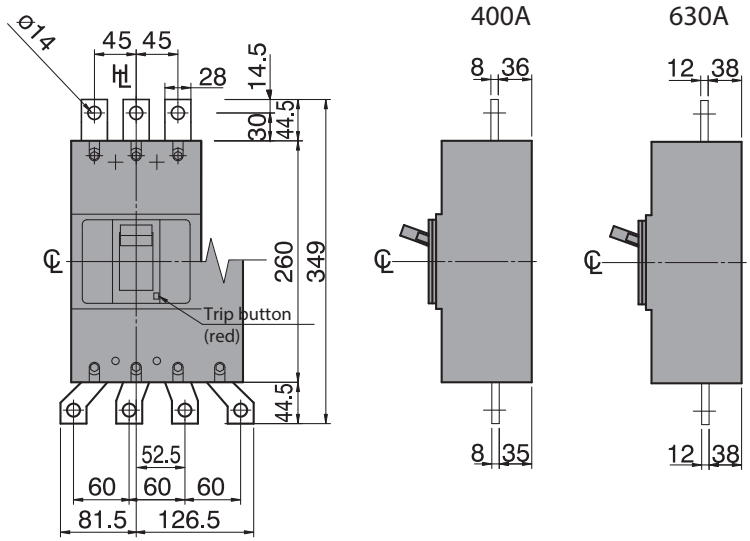
MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

FRONT TERMINALS FC



Front extended and spread terminals FB

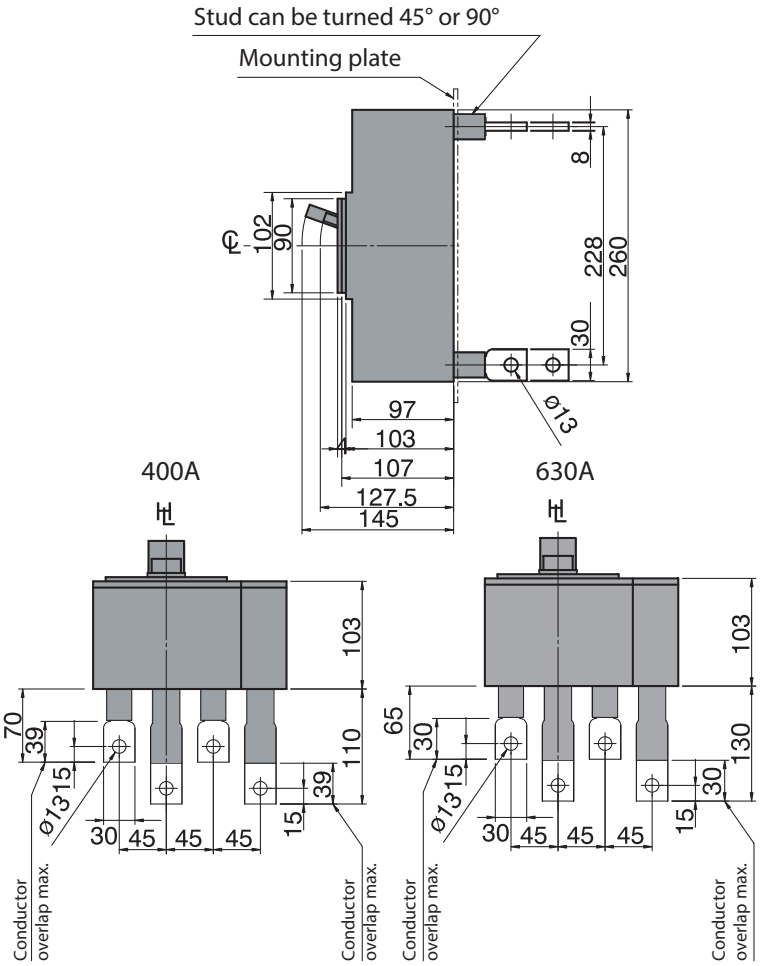


℄: Handle Centre Line ⊬: Handle Frame Centre Line

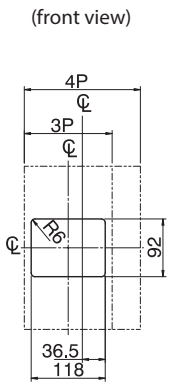
MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

REAR TERMINALS RC

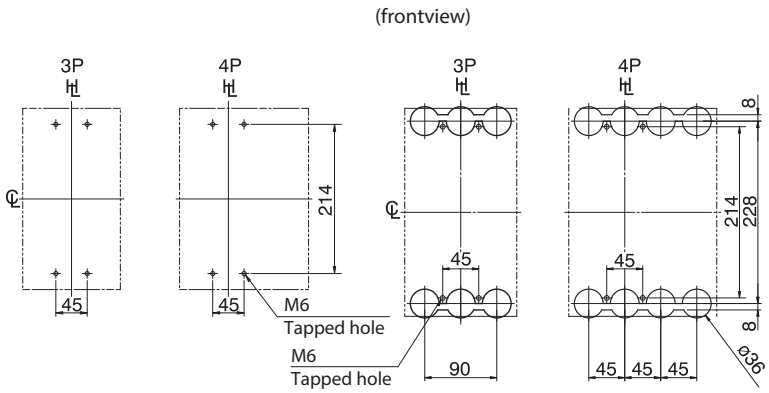


PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

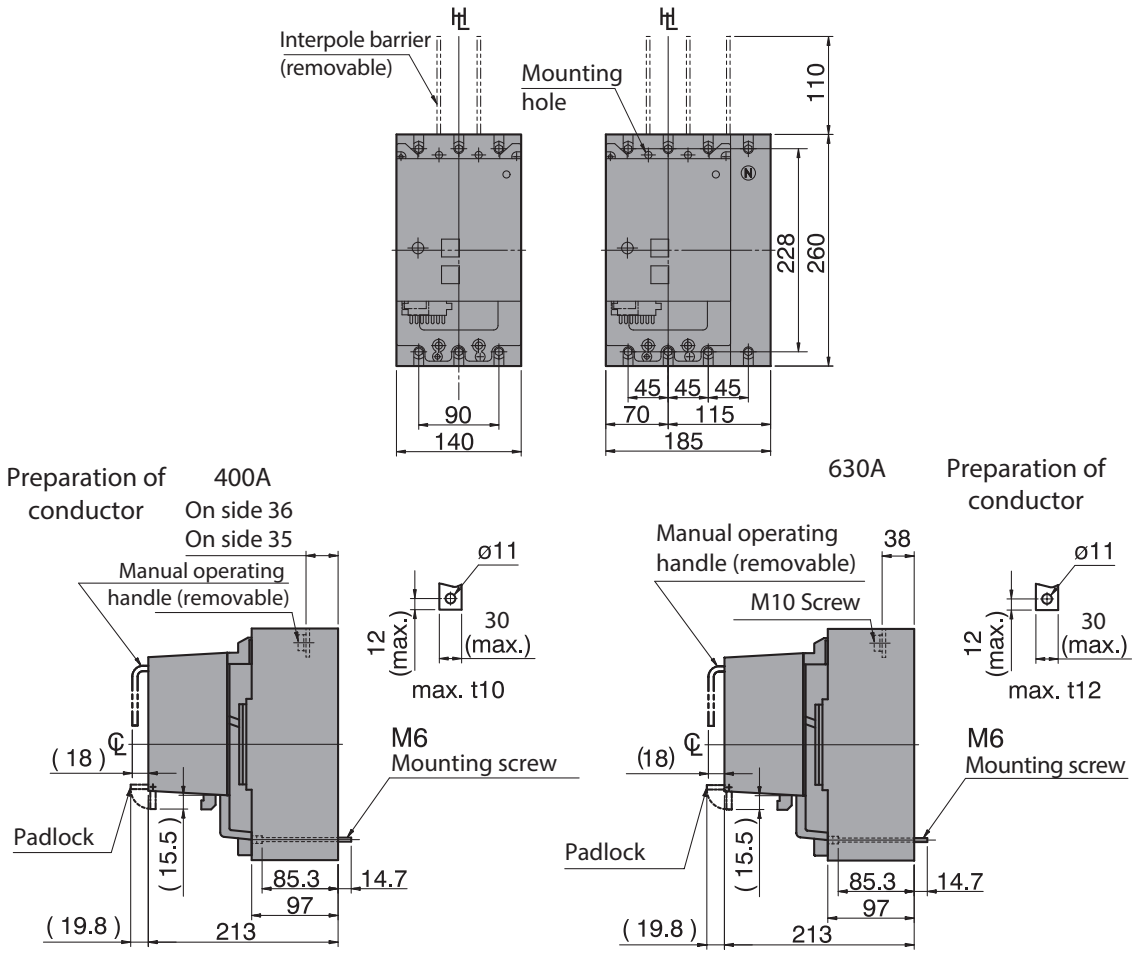
DRILLIN PLAN



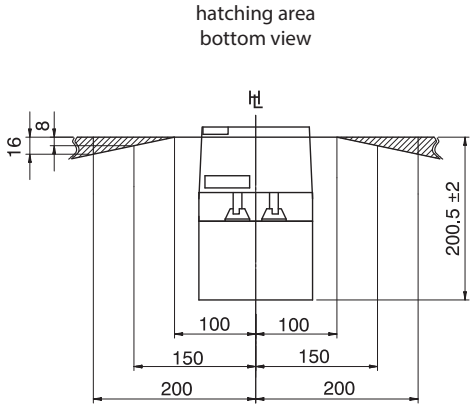
MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

FRONT TERMINALS WITH MOTOR OPERATOR



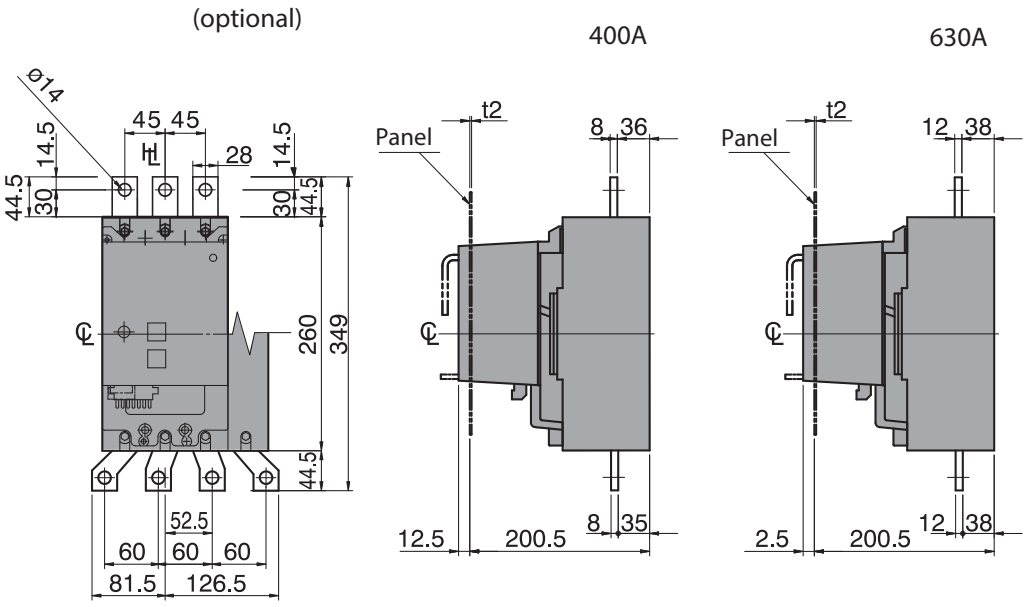
PANEL HINGE POSITION



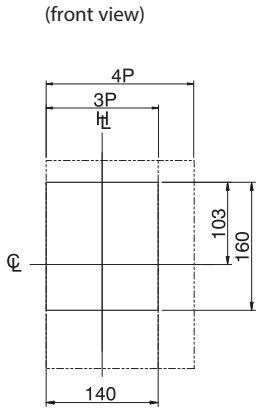
MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

FRONT TERMINALS WITH EXTENSION BARS

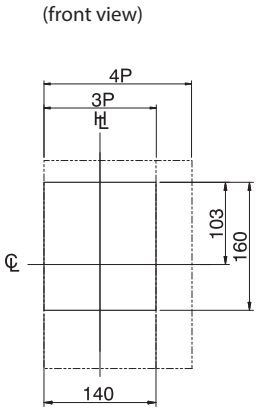


PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.5mm around motor operator

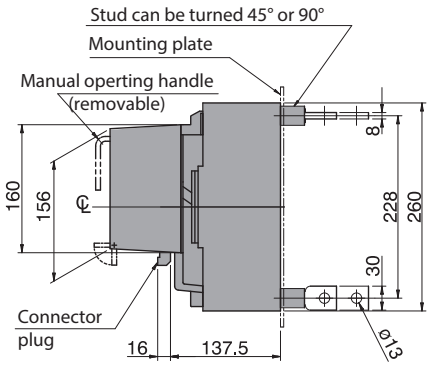
DRILLIN PLAN

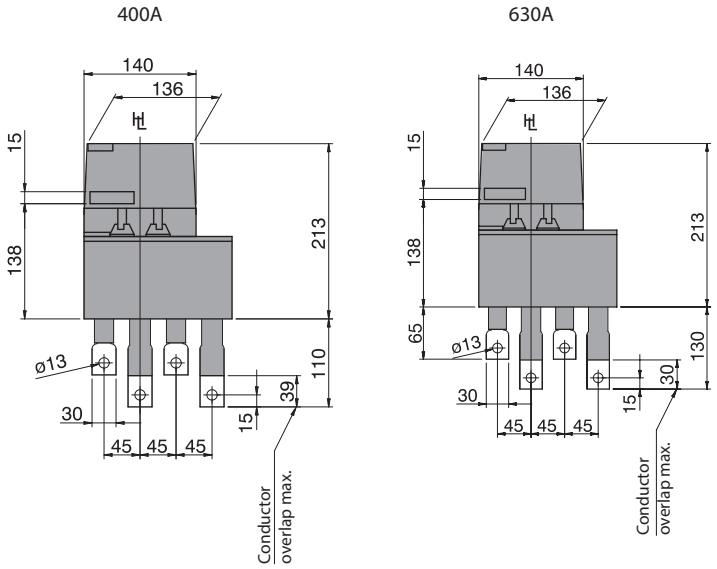


MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

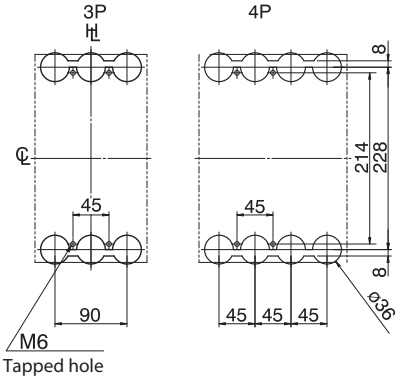
MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

REAR TERMINALS WITH MOTOR OPERATOR





Drilling pian
(front view)



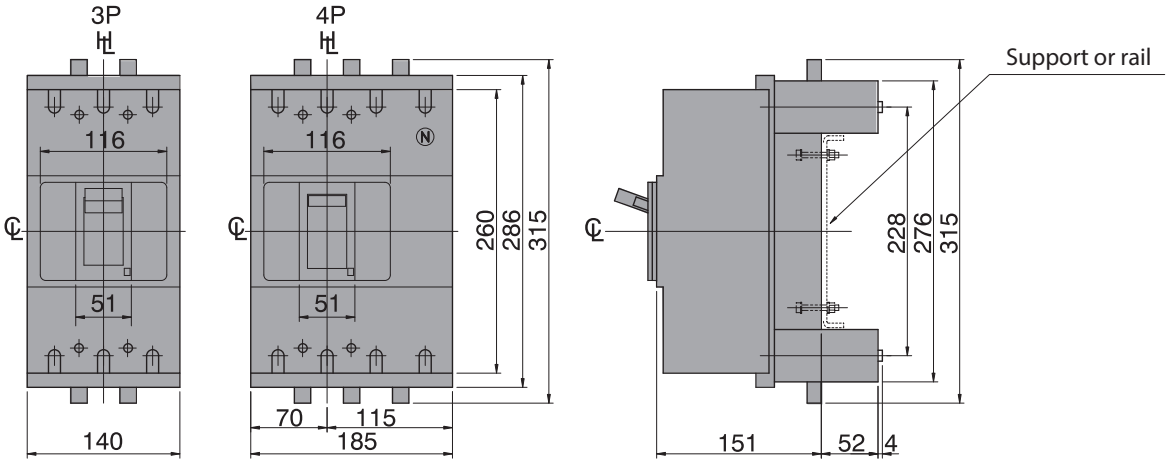
℄: Handle Centre Line **⊬: Handle Frame Centre Line**

MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 plug-in version, MSXE 630, MSXM 630 plug-in version

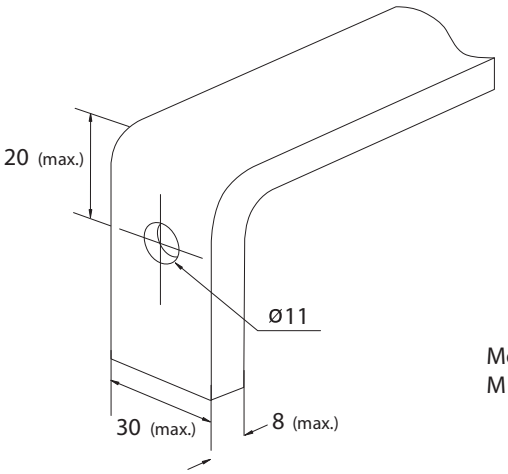
DIMENSIONS

Outline



TERMINATION OF BUSBAR

Preperation of conductor



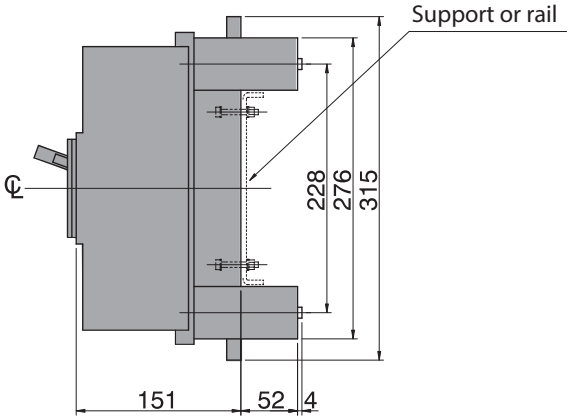
Mounting screw
M10x30 max.

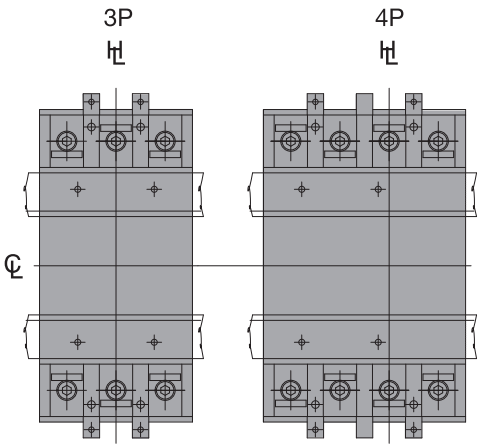
**: Handle Centre Line **: Handle Frame Centre Line

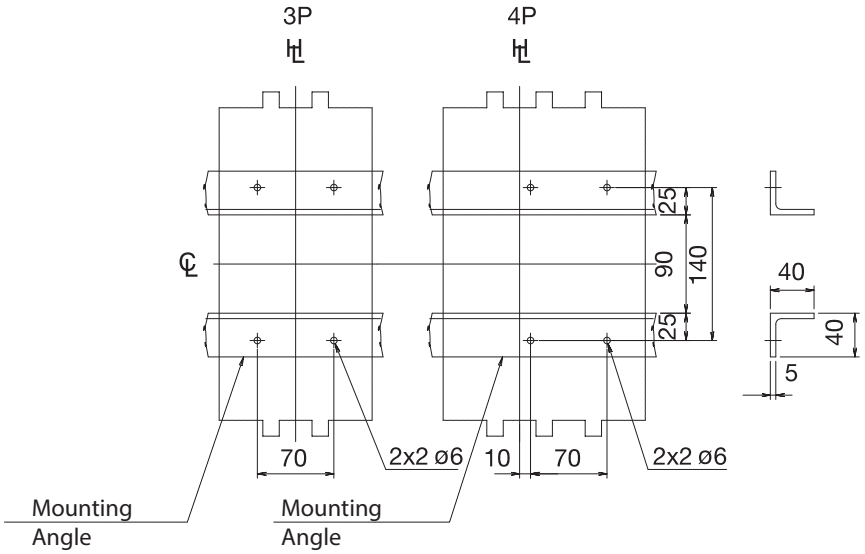
MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

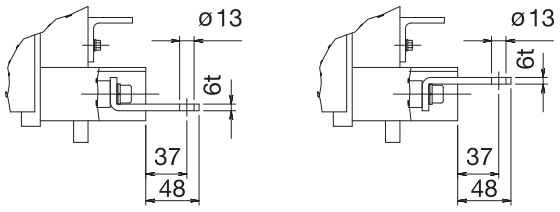
MOUNTING ON A SUPPORT OR RAILS





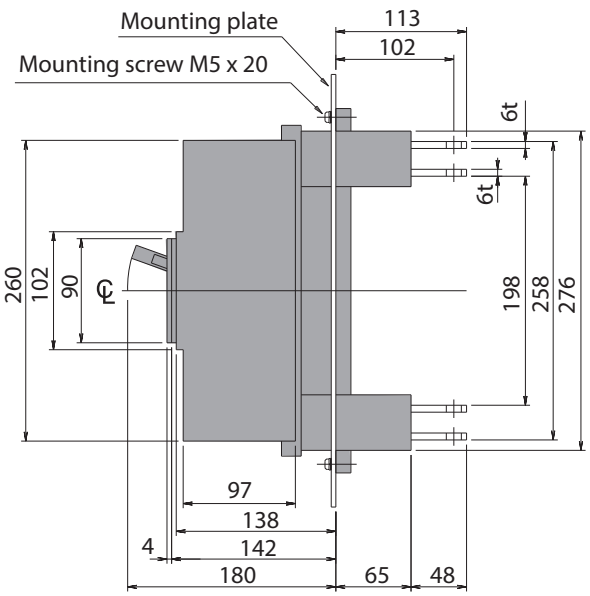


Detail of connecting part
Oriented far rear access

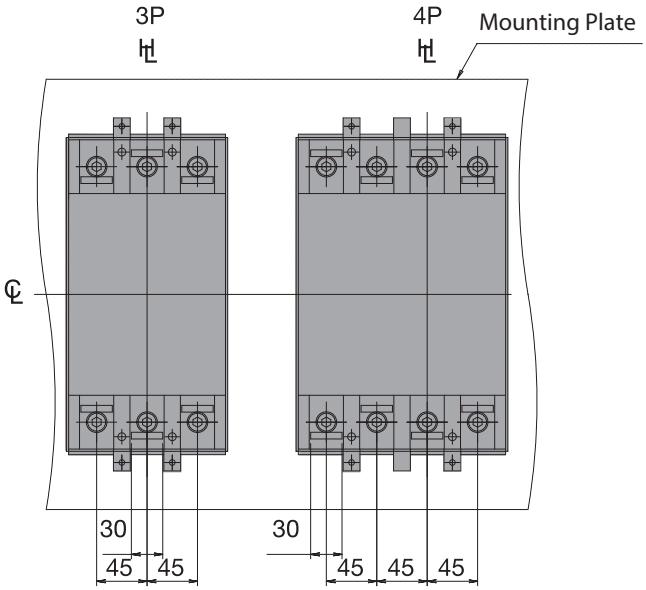


Terminal bars should be connected alternately on adjacent poles.

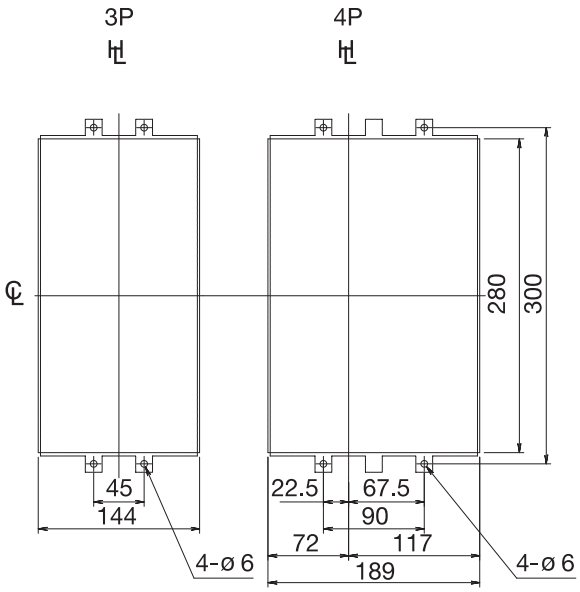
MOUNTING ON THE BACK OF FIXING PLATE



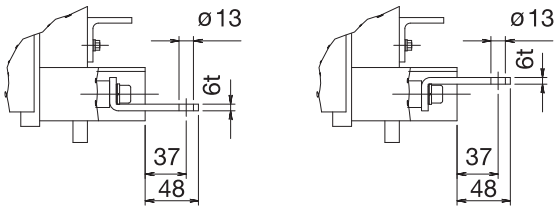
(rear view)



Drilling plan
(front view)



Detail of connecting part
Oriented far rear access

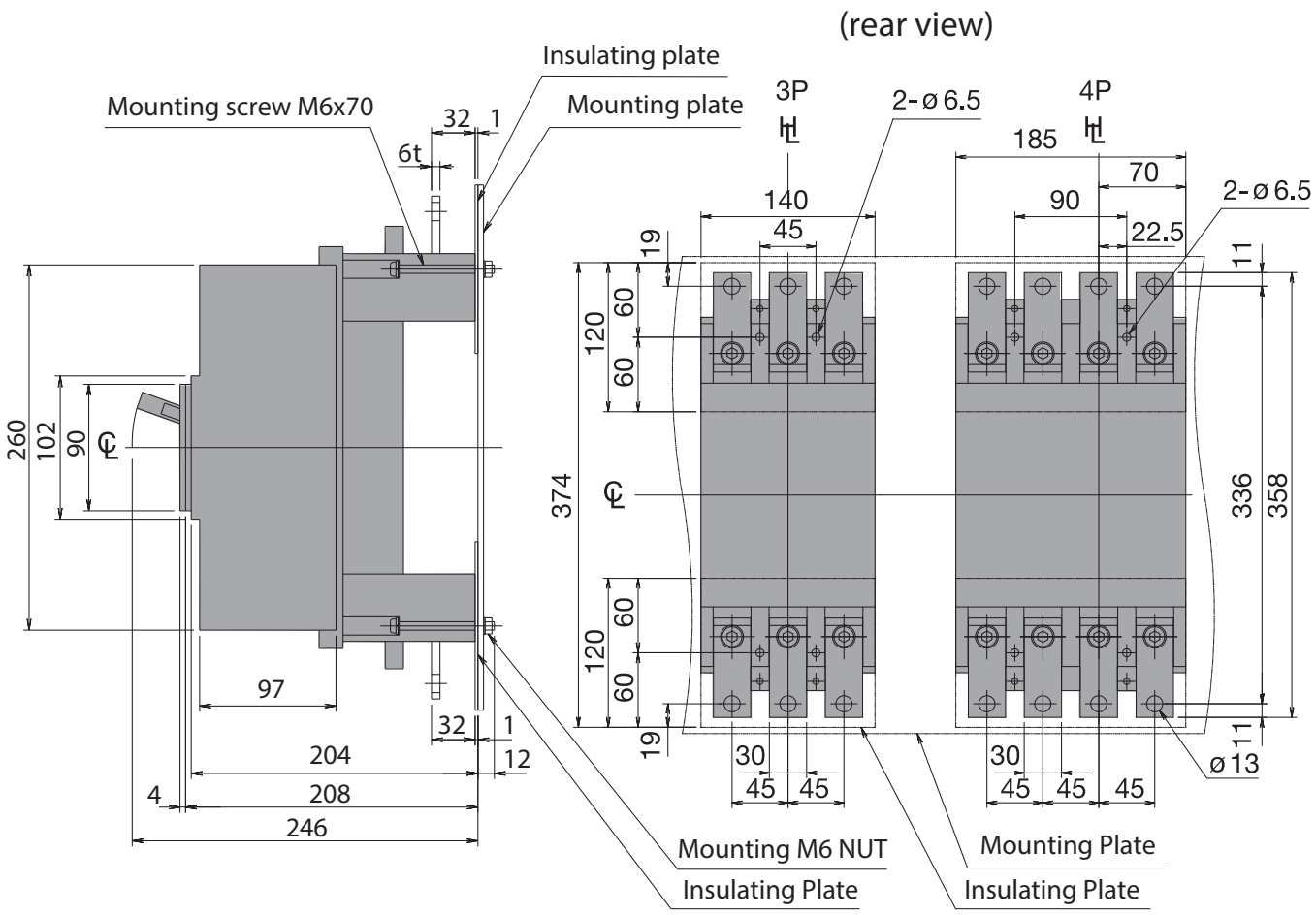


Terminal bars should be connected alternately on adjacent poles.

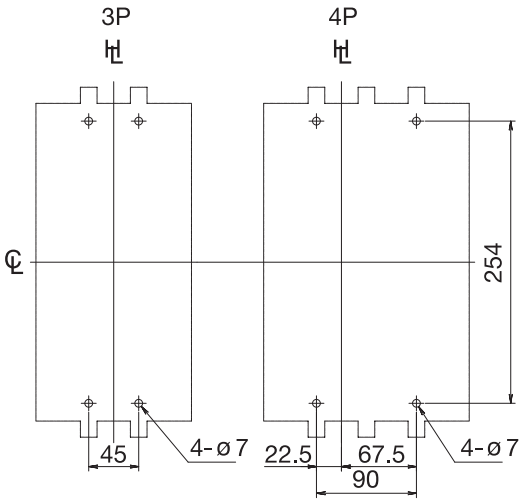
MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

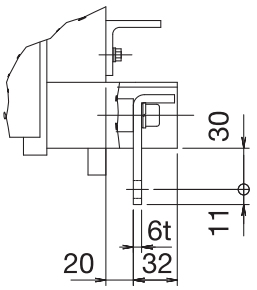
MOUNTING ON THE FRONT OF FIXING PLATE



Drilling plan
(front view)



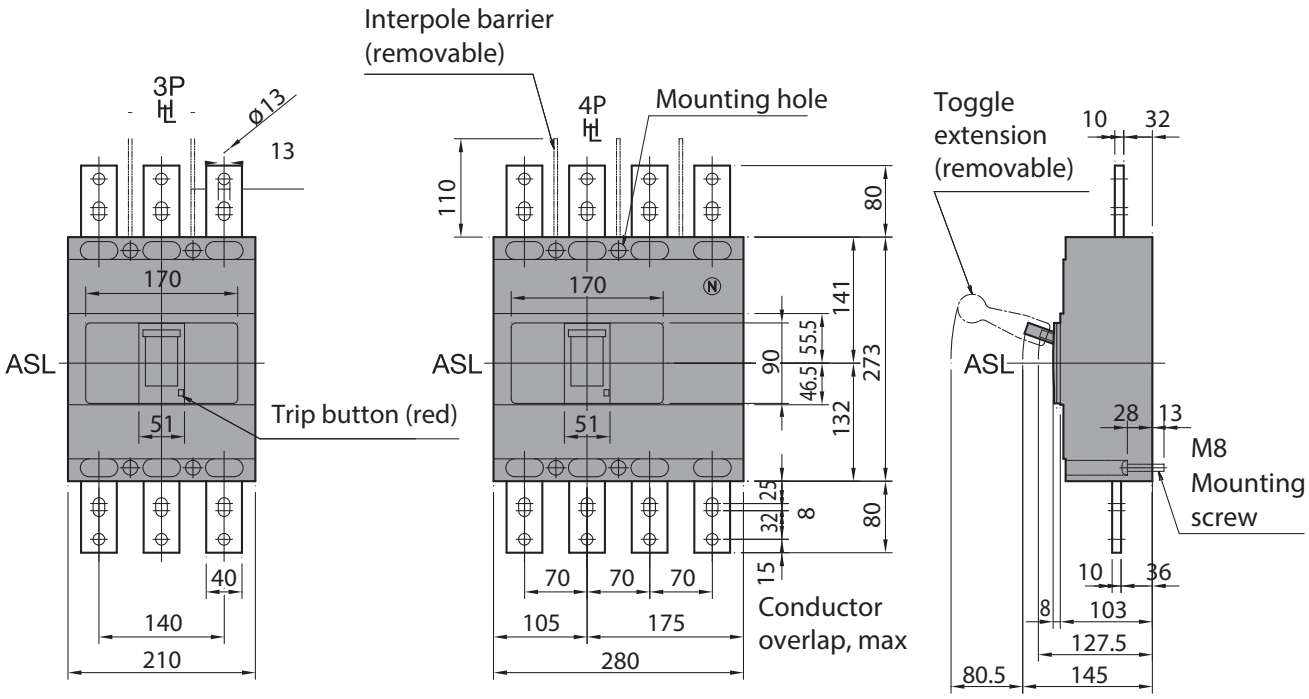
Detail of connecting part
Oriented far front access



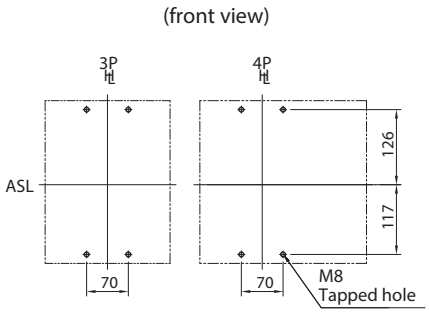
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) fixed version

FRONT EXTENDED TERMINALS FB



DRILLING PLAN

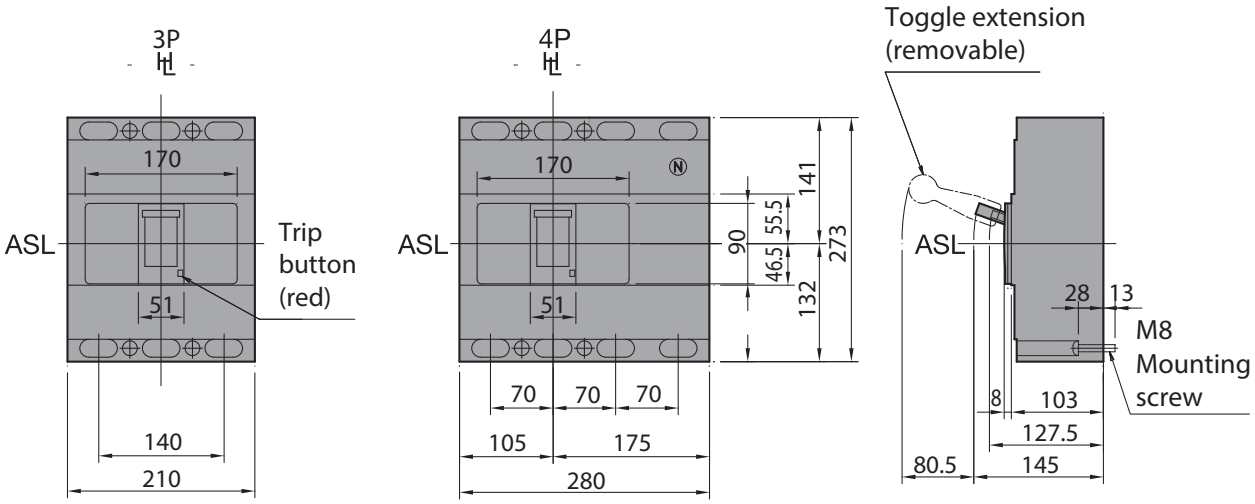


℄: Handle Centre Line **⊬: Handle Frame Centre Line**

ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) fixed version

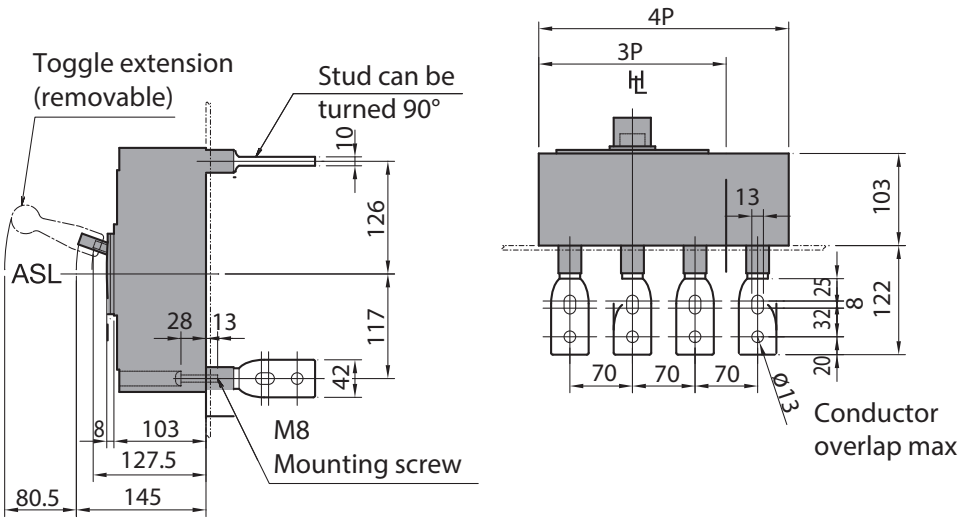
FRONT TERMINALS FC



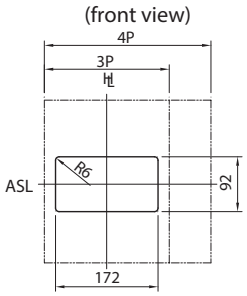
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) fixed version

REAR TERMINALS RC

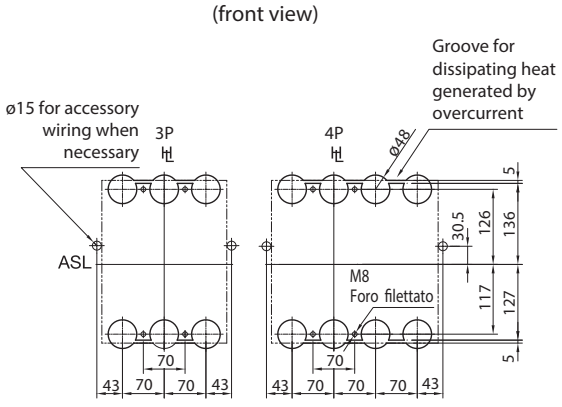


PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

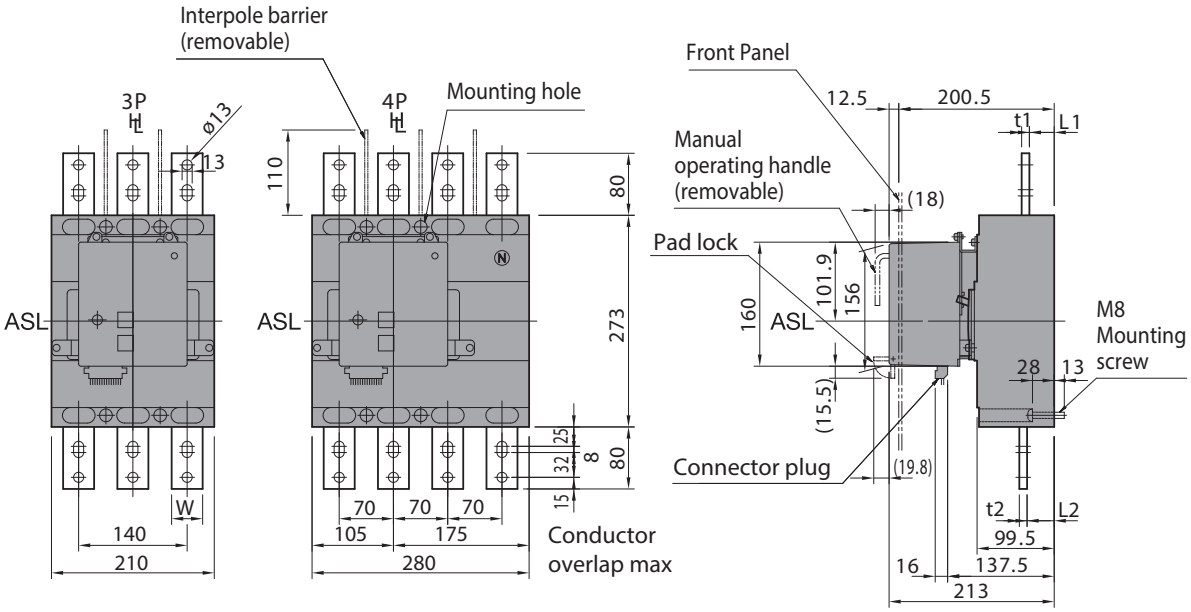
DRILLING PLAN



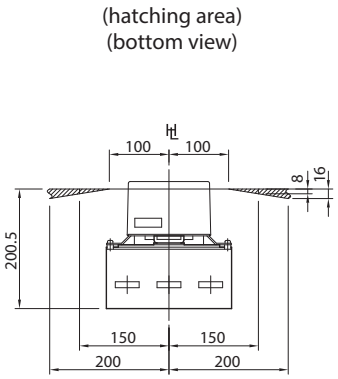
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) fixed version

FRONT TERMINALS WITH MOTOR OPERATOR



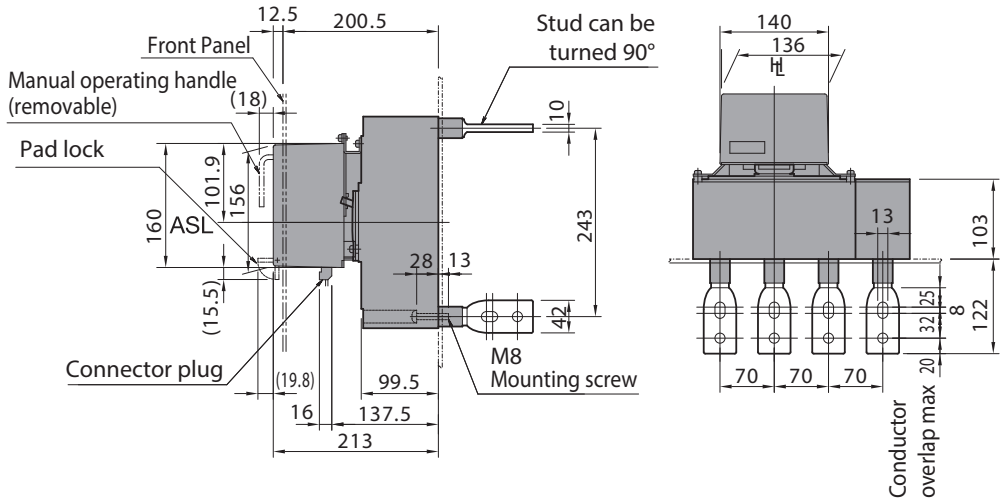
REAR TERMINALS WITH MOTOR OPERATOR



ELECTRONIC MCCB AND SWITCH DISCONNECTORS

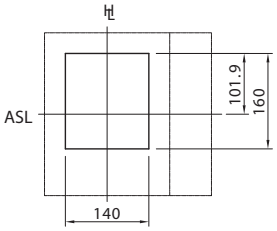
MSXE 1000 (800A), MSXM 1000 (800A) fixed version

FRONT TERMINALS WITH EXTENSION BARS



PANEL CUTOUT

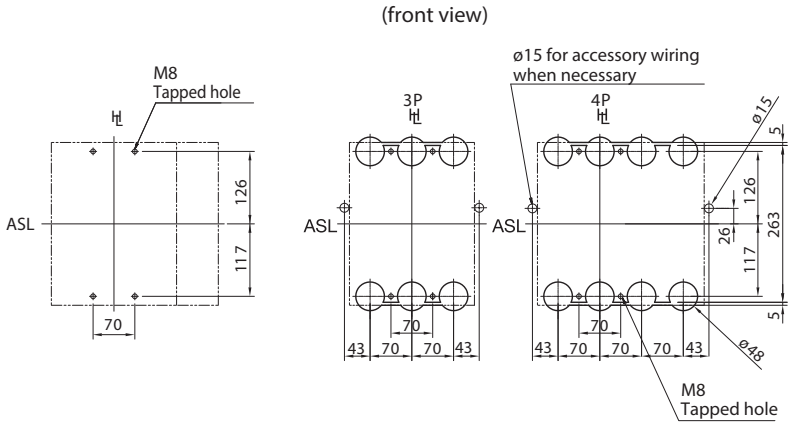
(front view)



Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

DRILLIN PLAN

(front view)

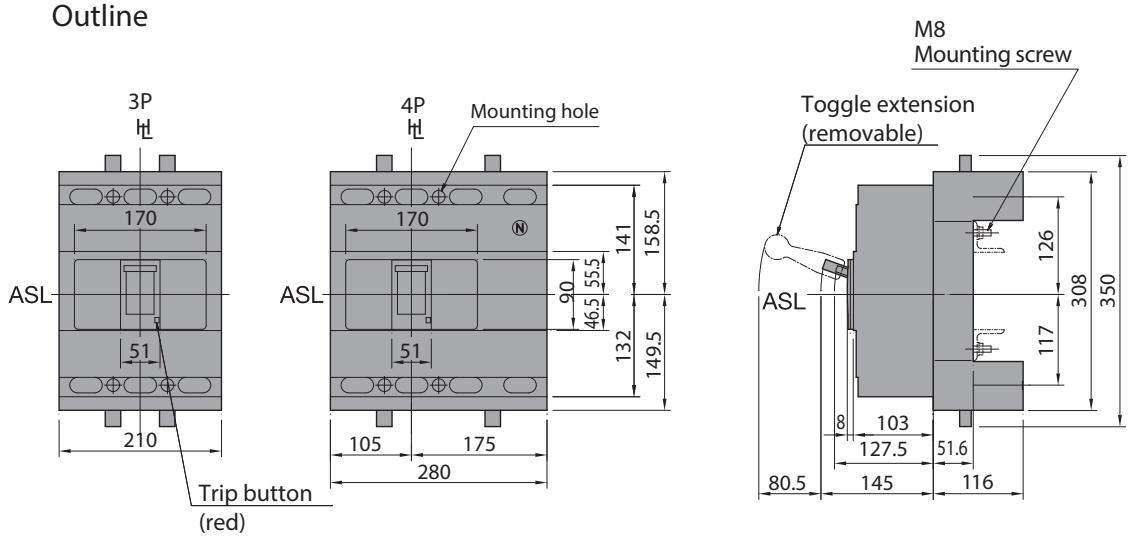


ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) plug-in version

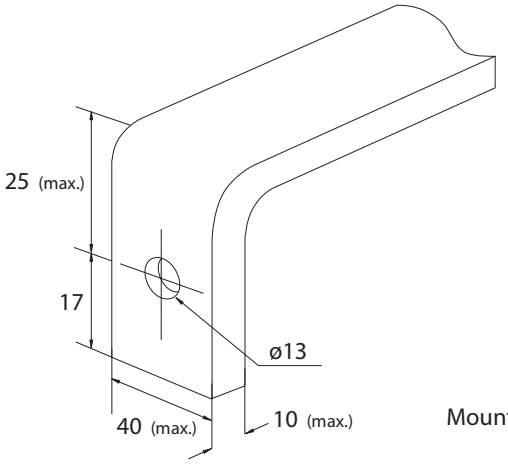
DIMENSIONS

Outline



TERMINATION OF BUSBAR

Preperation of conductor



Mounting screw M12x25 max. Hex. sec. head bolt.

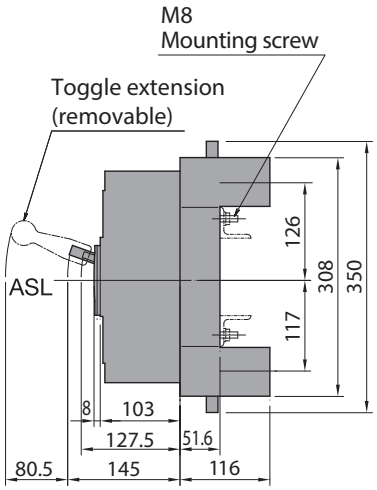
**: Arrangement Standard Line **: Handle Frame Centre Line

For technical information contact the Technical Assistance Service or visit gewiss.com

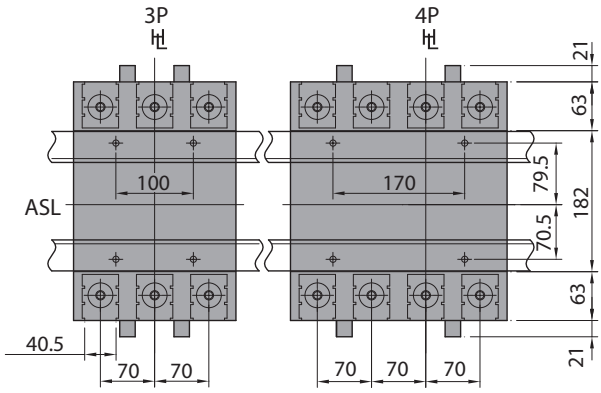
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) plug-in version

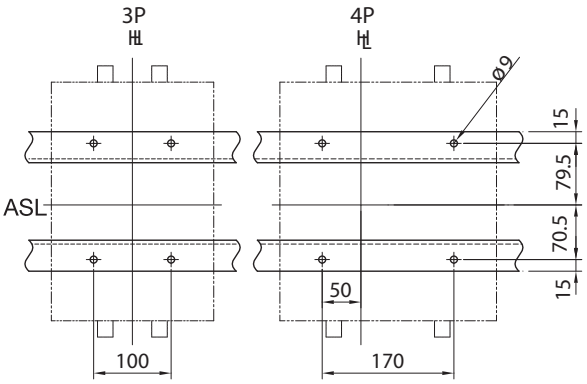
MOUNTING ON A SUPPORT OR RAILS



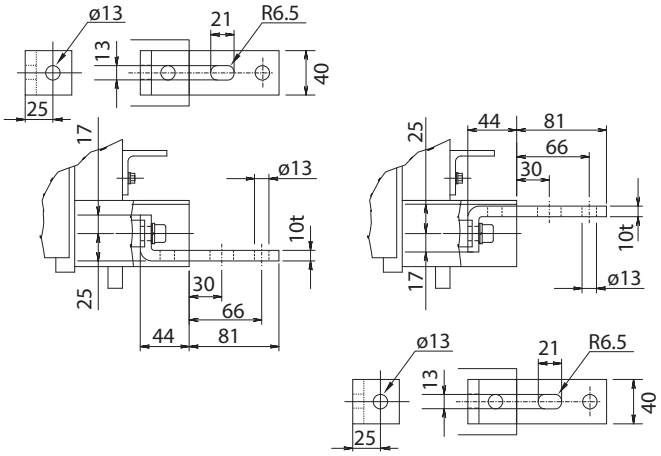
Mounting base
(rear view)



Drilling plan
(front view)



Detail of connecting part
Oriented for rear access

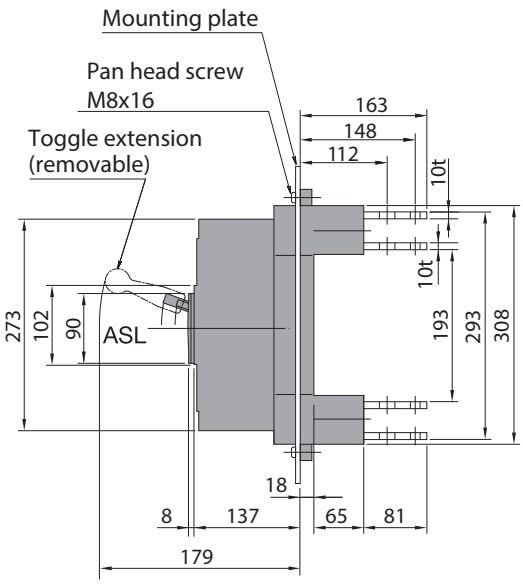


Terminal bars should be connected alternately on adjacent poles.

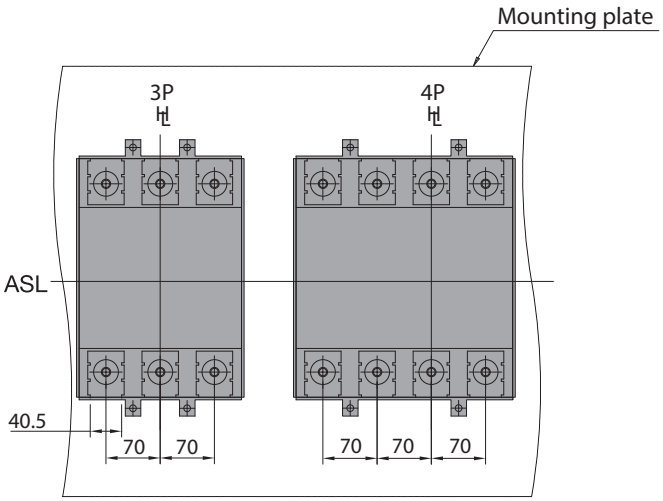
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) plug-in version

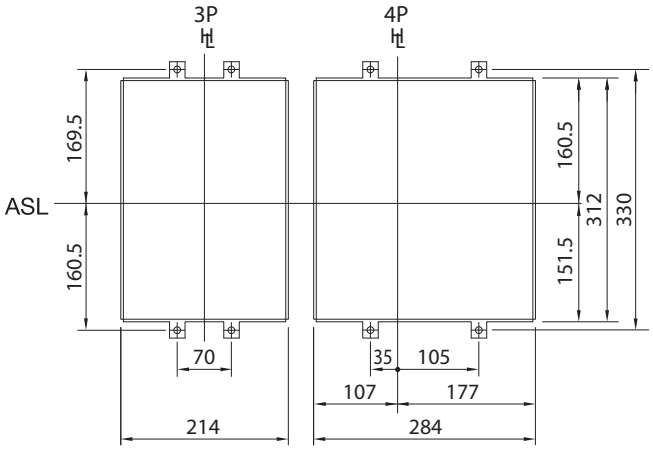
MOUNTING ON THE BACK OF FIXING PLATE



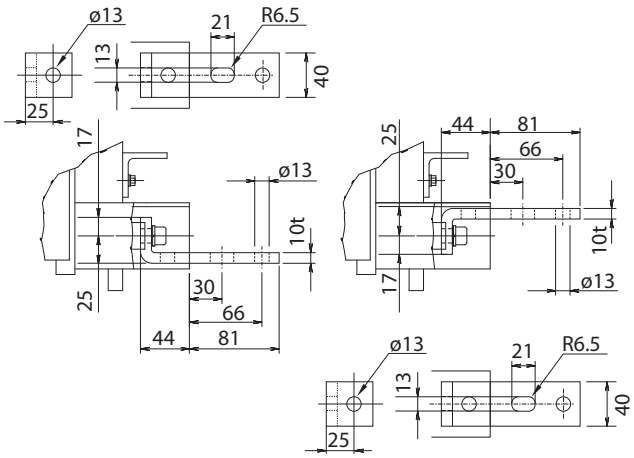
(rear view)



Drilling plan
(front view)



Detail of connecting part
Oriented for rear access

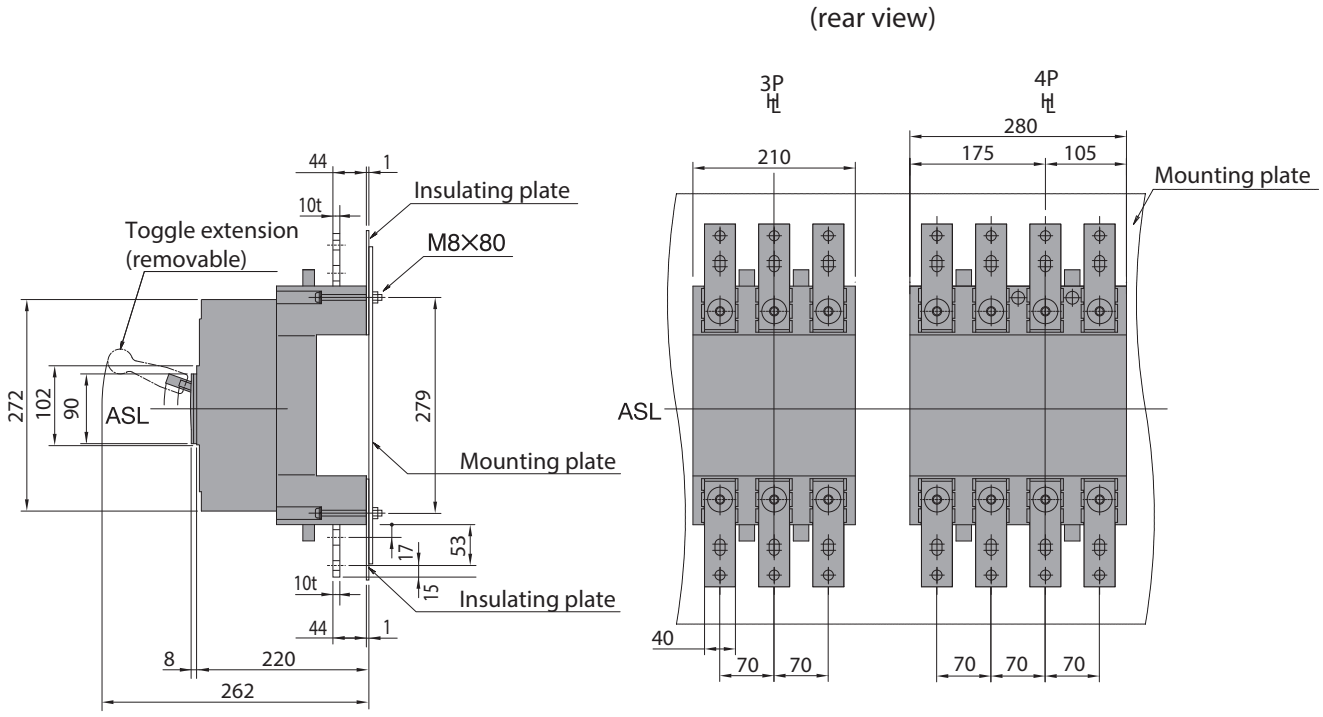


Terminal bars should be connected alternately on adjacent poles.

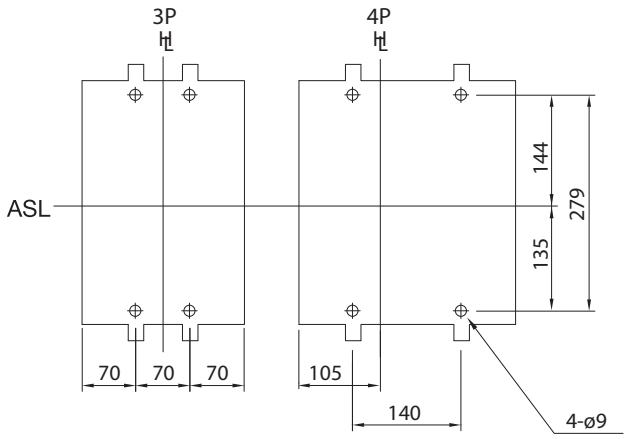
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) plug-in version

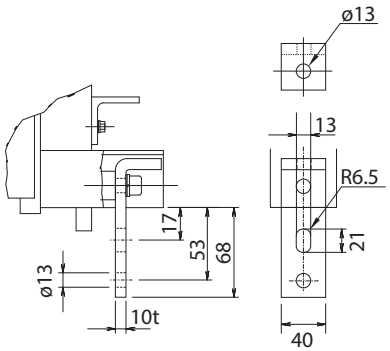
MOUNTING ON THE FRONT OF FIXING PLATE



Drilling plan
(front view)



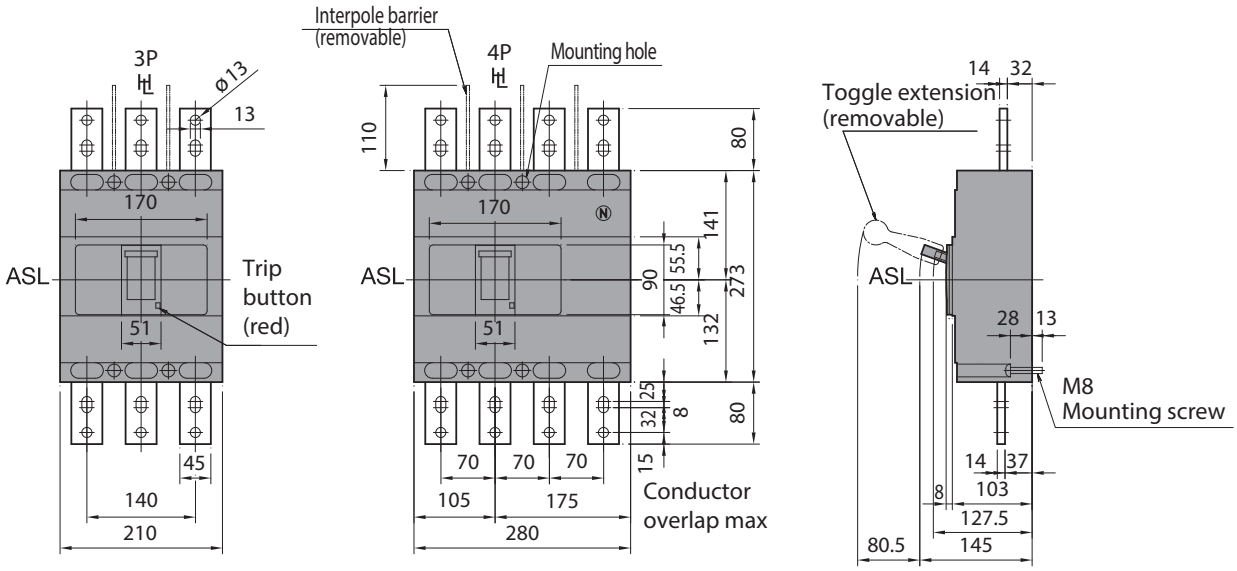
Detail of connecting part
Oriented for front access



ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000, MSXM 1000 (1000A)

FRONT EXTENDED TERMINALS FB



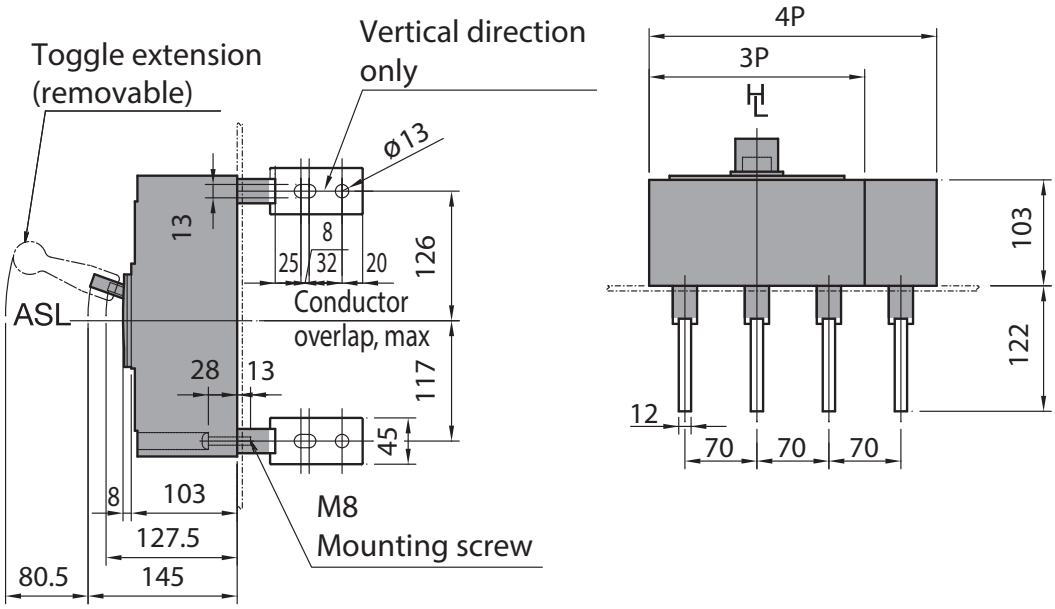
Arrangement Standard Line Handle Frame Centre Line

For technical information contact the Technical Assistance Service or visit gewiss.com

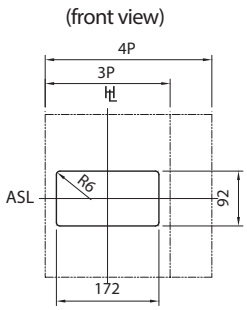
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000, MSXM 1000 (1000A)

REAR TERMINALS RC

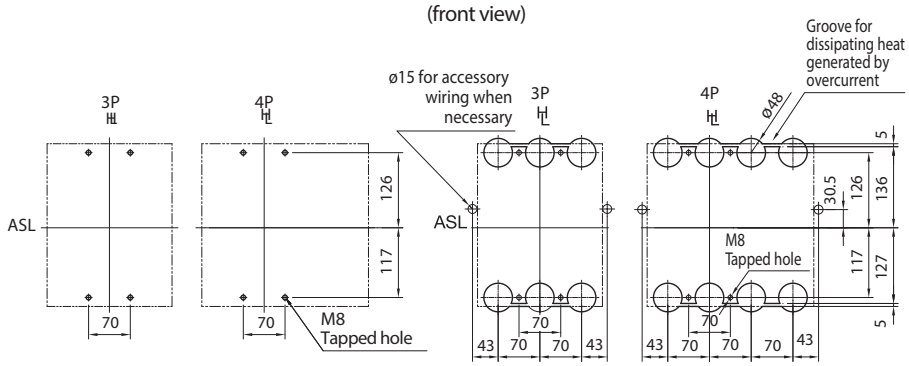


PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

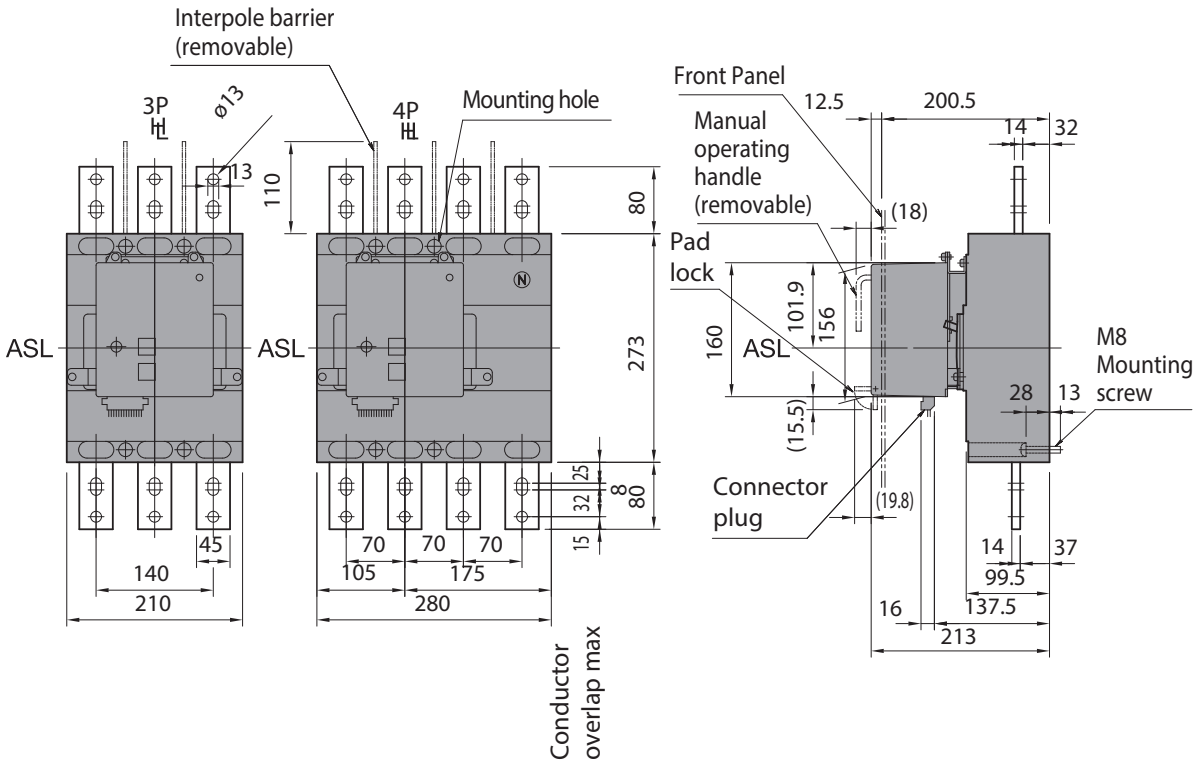
DRILLIN PLAN



ELECTRONIC MCCB AND SWITCH DISCONNECTORS

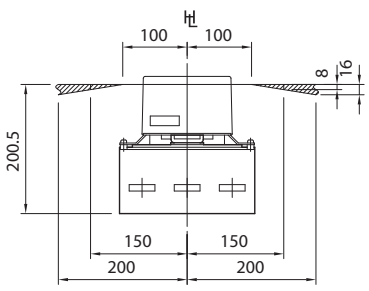
MSXE 1000, MSXM 1000 (1000A)

FRONT TERMINALS WITH MOTOR OPERATOR



PANEL HINGE POSITION

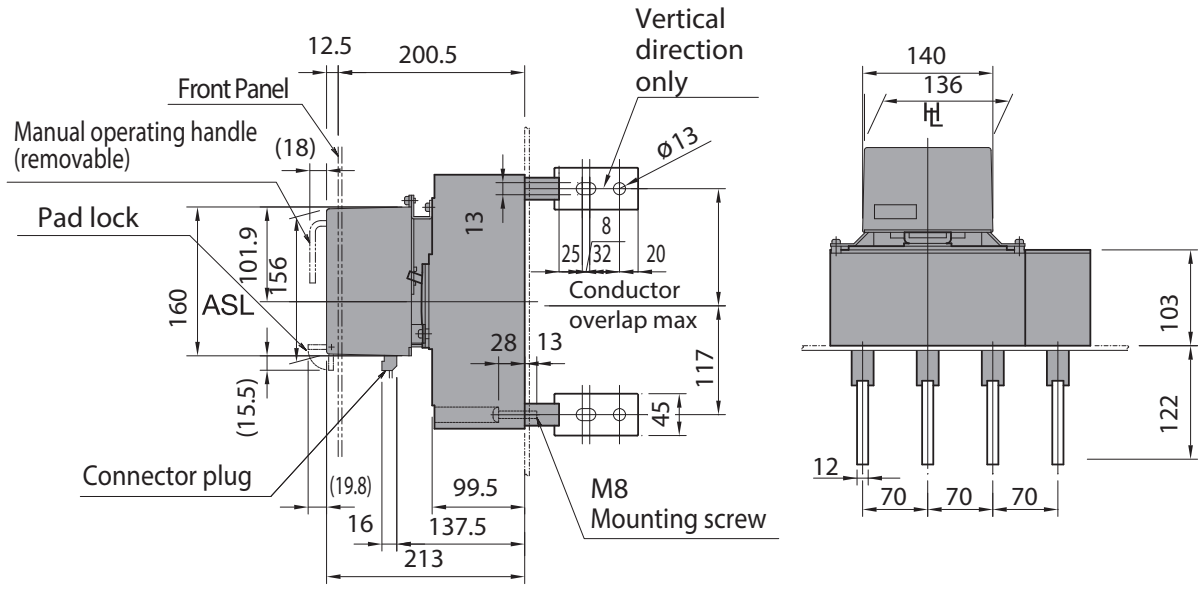
(hatching area)
(bottom view)



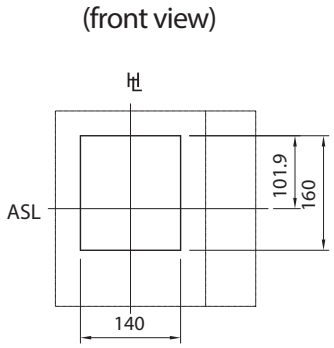
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000, MSXM 1000 (1000A)

REAR TERMINALS WITH MOTOR OPERATOR

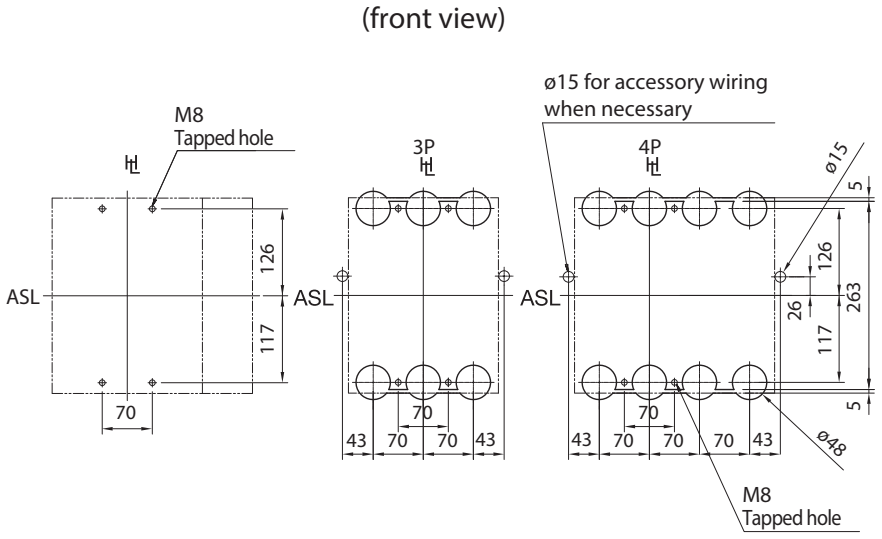


PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

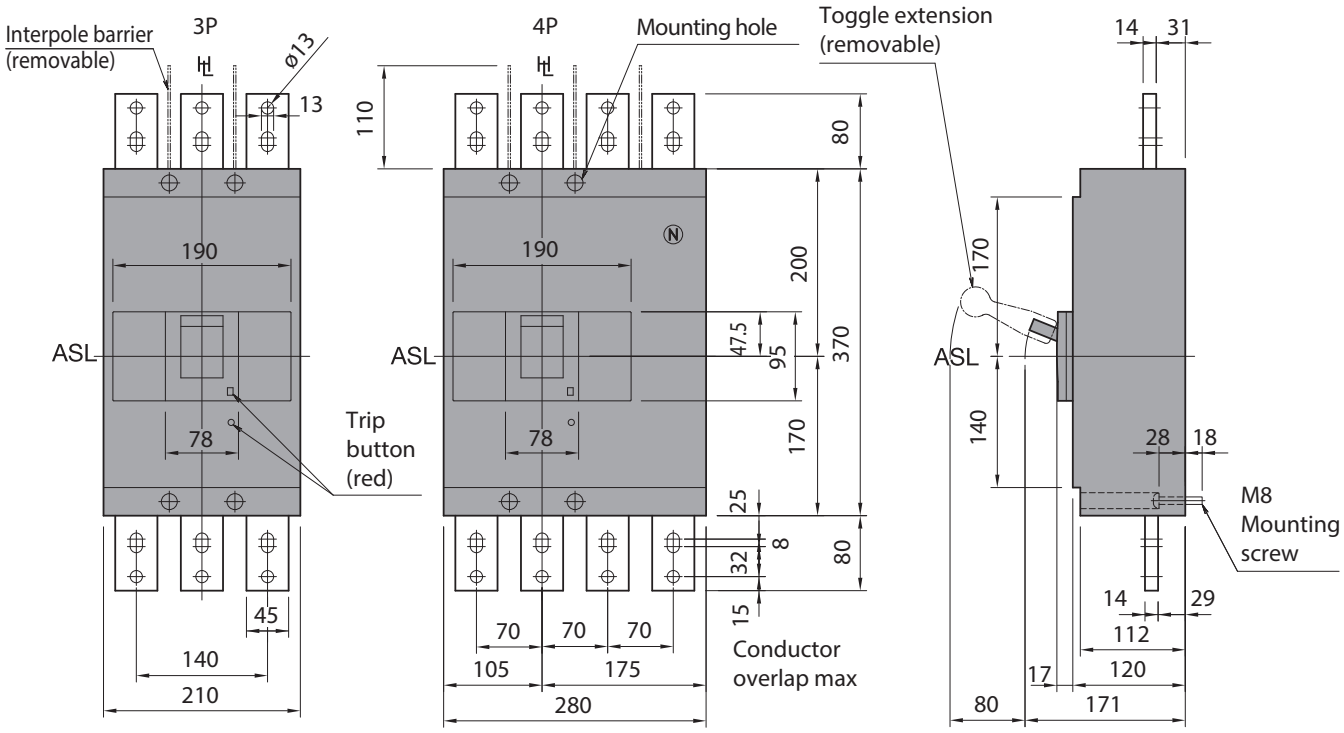
DRILLIN PLAN



ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1250, MSXM 1250

FRONT EXTENDED TERMINALS FB

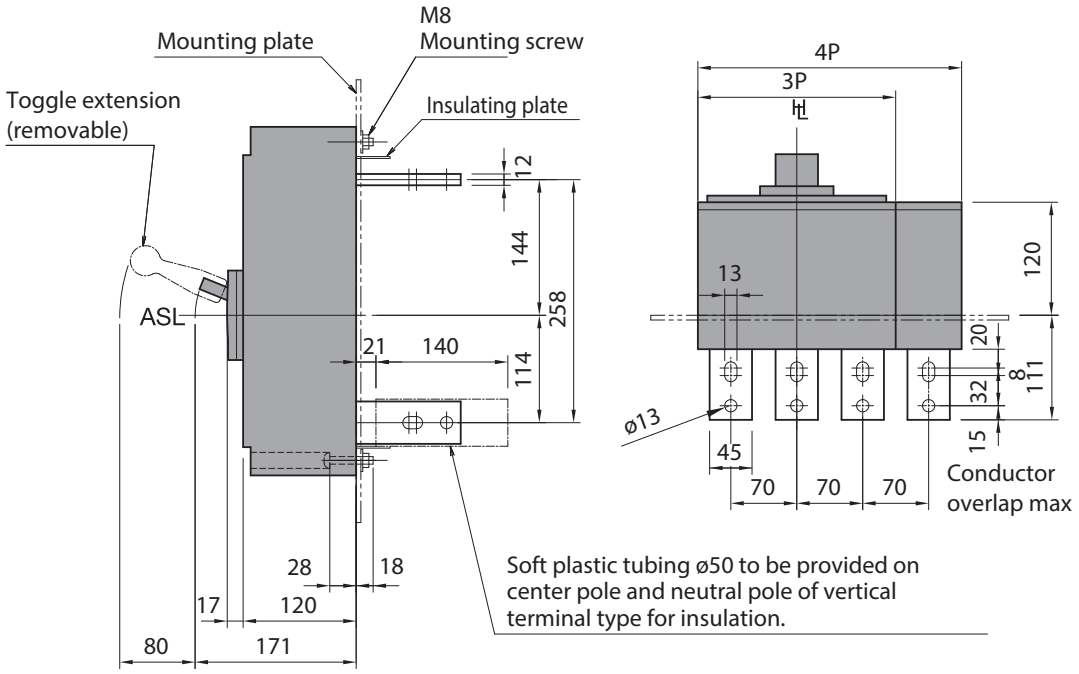


℄: Arrangement Standard Line ⊬: Handle Frame Centre Line

ELECTRONIC MCCB AND SWITCH DISCONNECTORS

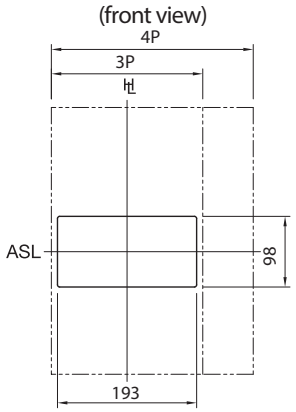
MSXE 1250, MSXM 1250

REAR TERMINALS RC



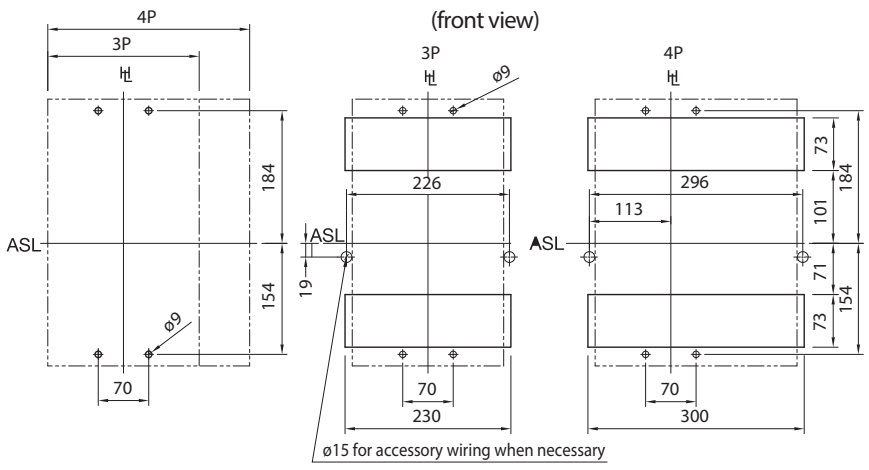
Note: terminals are supplied arranged horizontally. Possibility to put the terminals vertically
MSXM switch disconnectors are only supplied with extended front terminals FB

PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

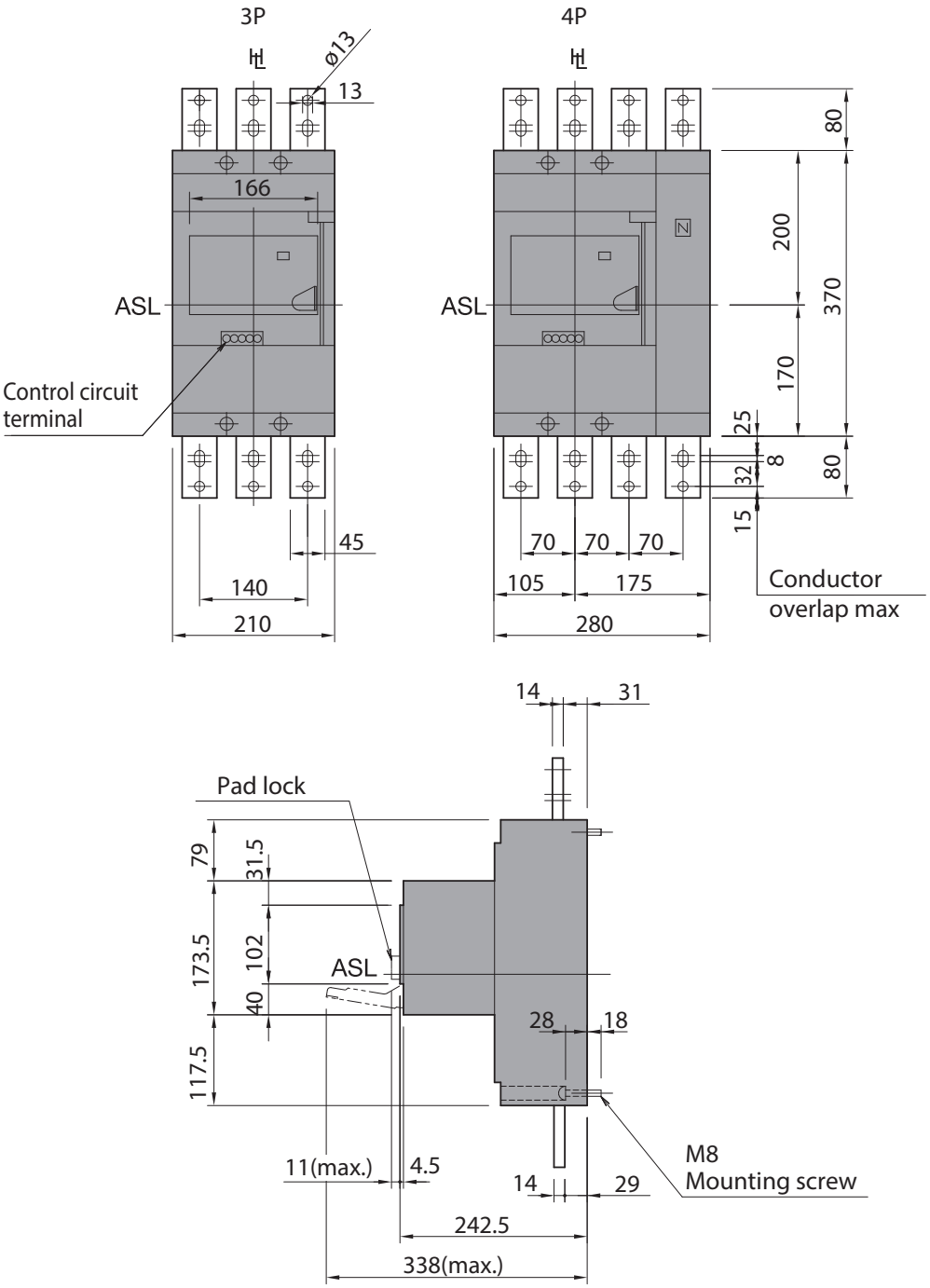
DRILLIN PLAN



ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1250, MSXM 1250

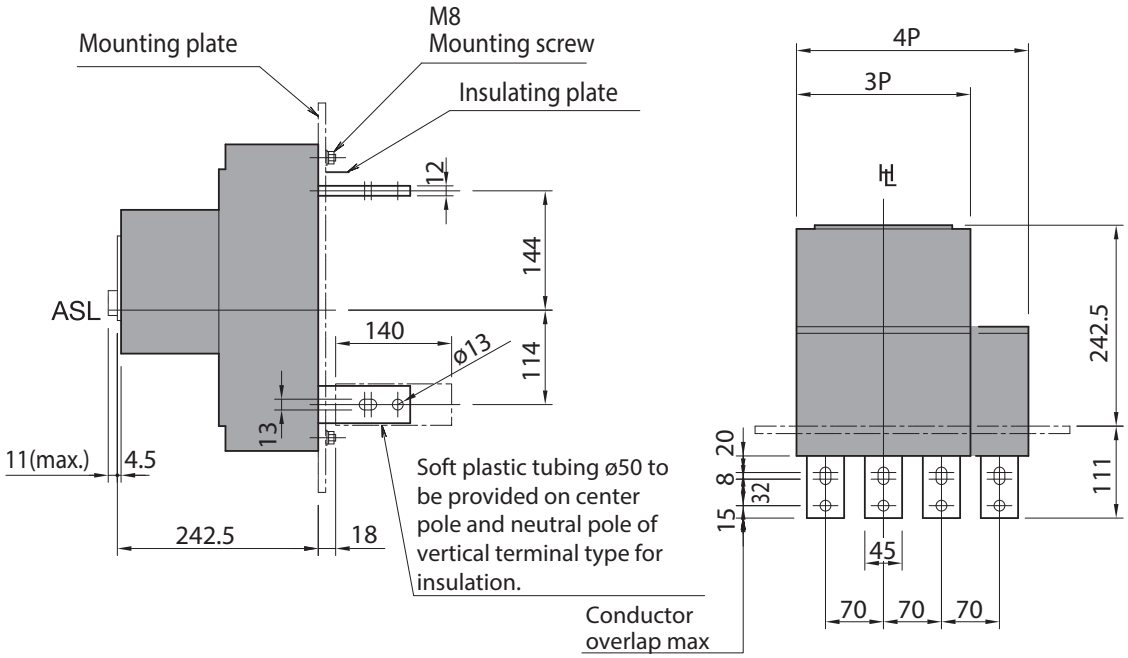
FRONT TERMINALS WITH MOTOR OPERATOR



ELECTRONIC MCCB AND SWITCH DISCONNECTORS

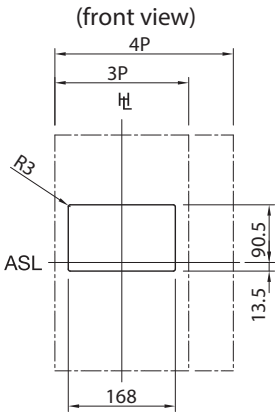
MSXE 1250, MSXM 1250

REAR TERMINALS WITH MOTOR OPERATOR



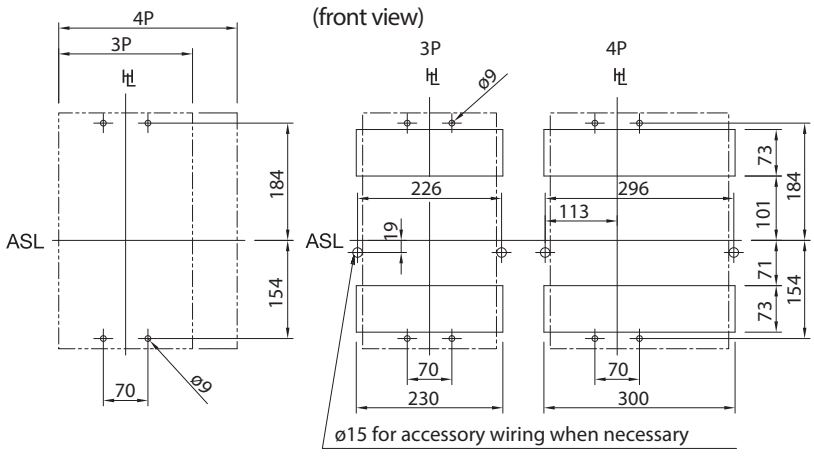
Note: terminals are supplied arranged horizontally. Possibility to put the terminals vertically
MSXM switch disconnectors are only supplied with extended front terminals FB

PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

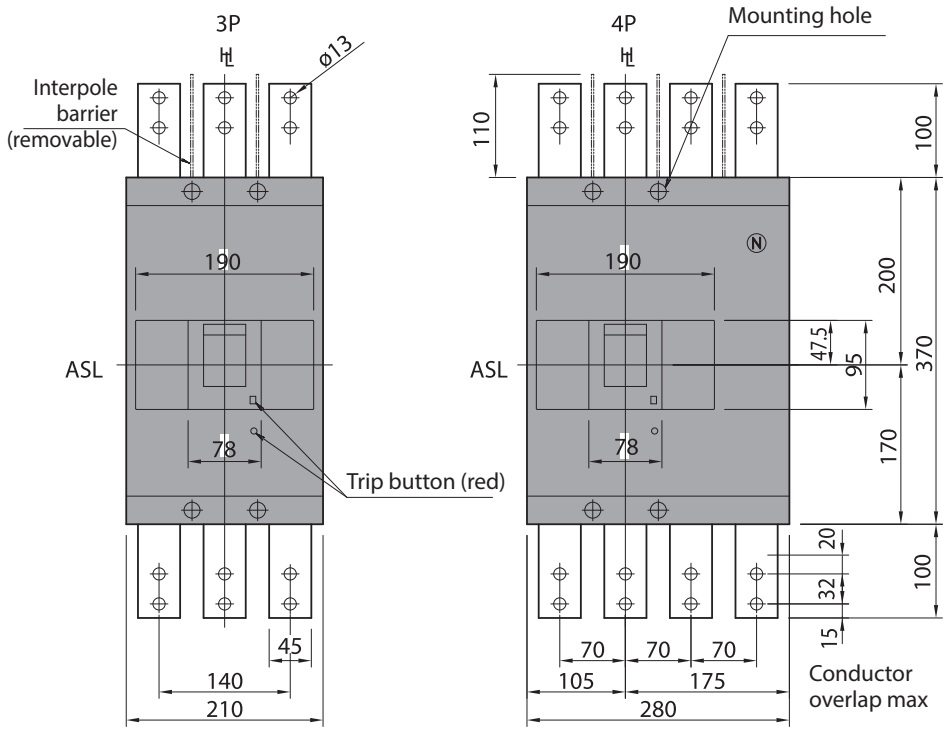
DRILLIN PLAN

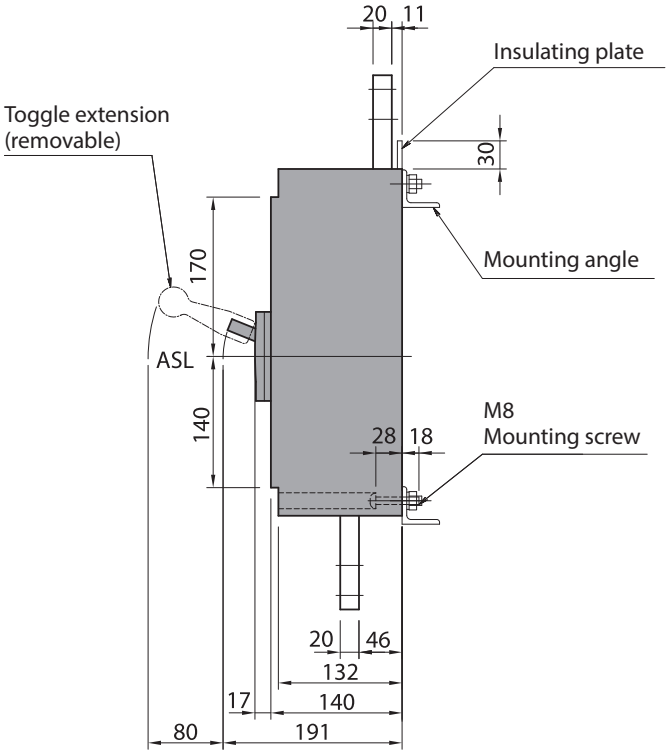


ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1600, MSXM 1600

FRONT EXTENDED TERMINALS FB



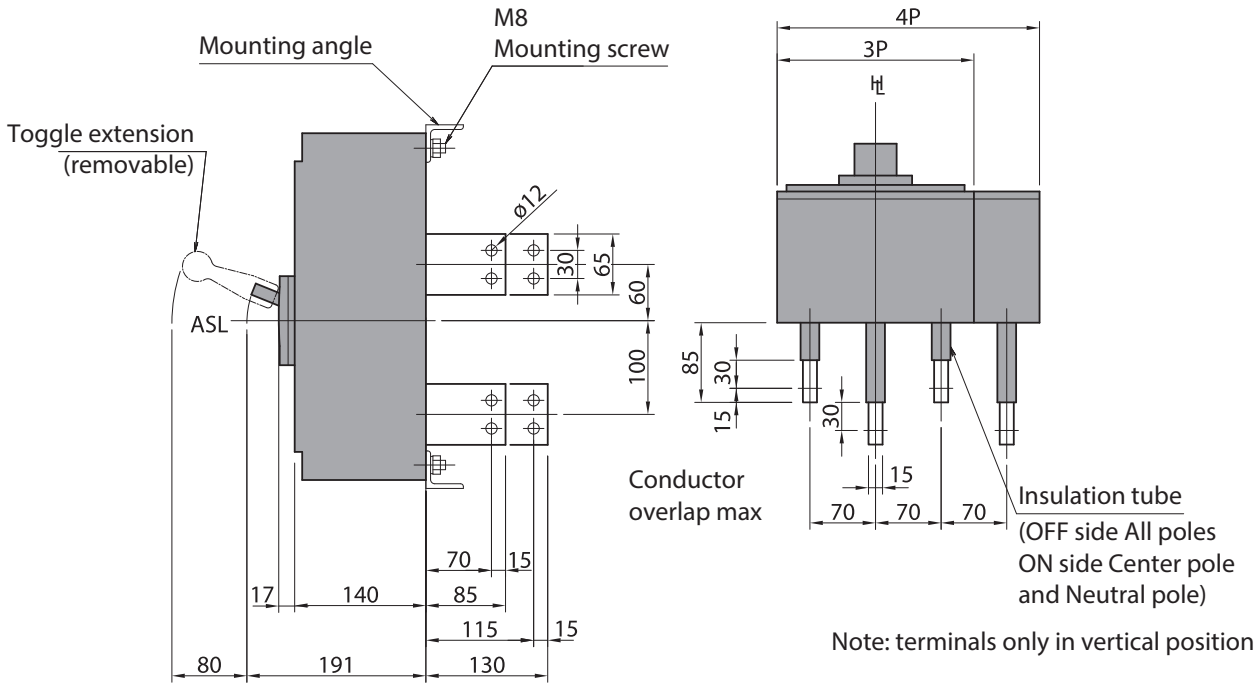


Arrangement Standard Line Handle Frame Centre Line

ELECTRONIC MCCB AND SWITCH DISCONNECTORS

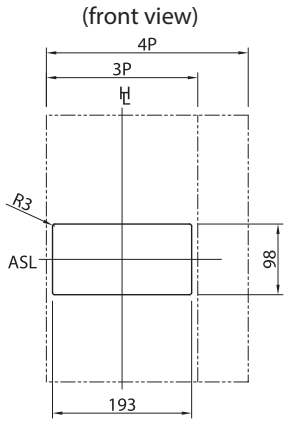
MSXE 1600, MSXM 1600

REAR TERMINALS RC



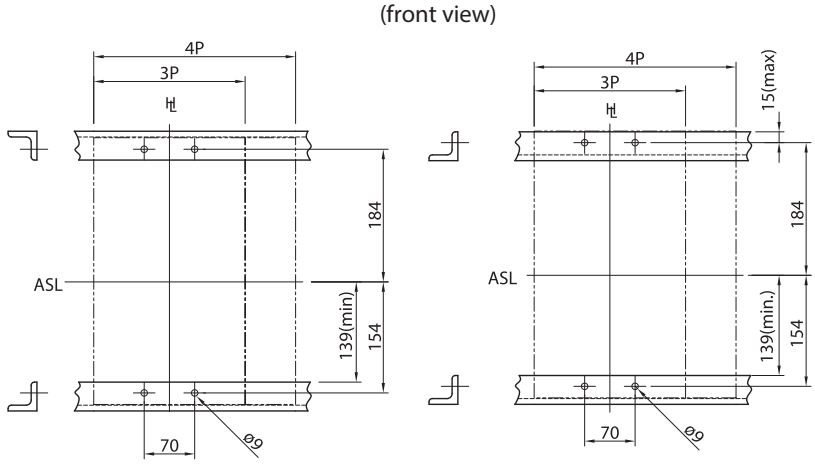
Note: terminals only in vertical position

PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

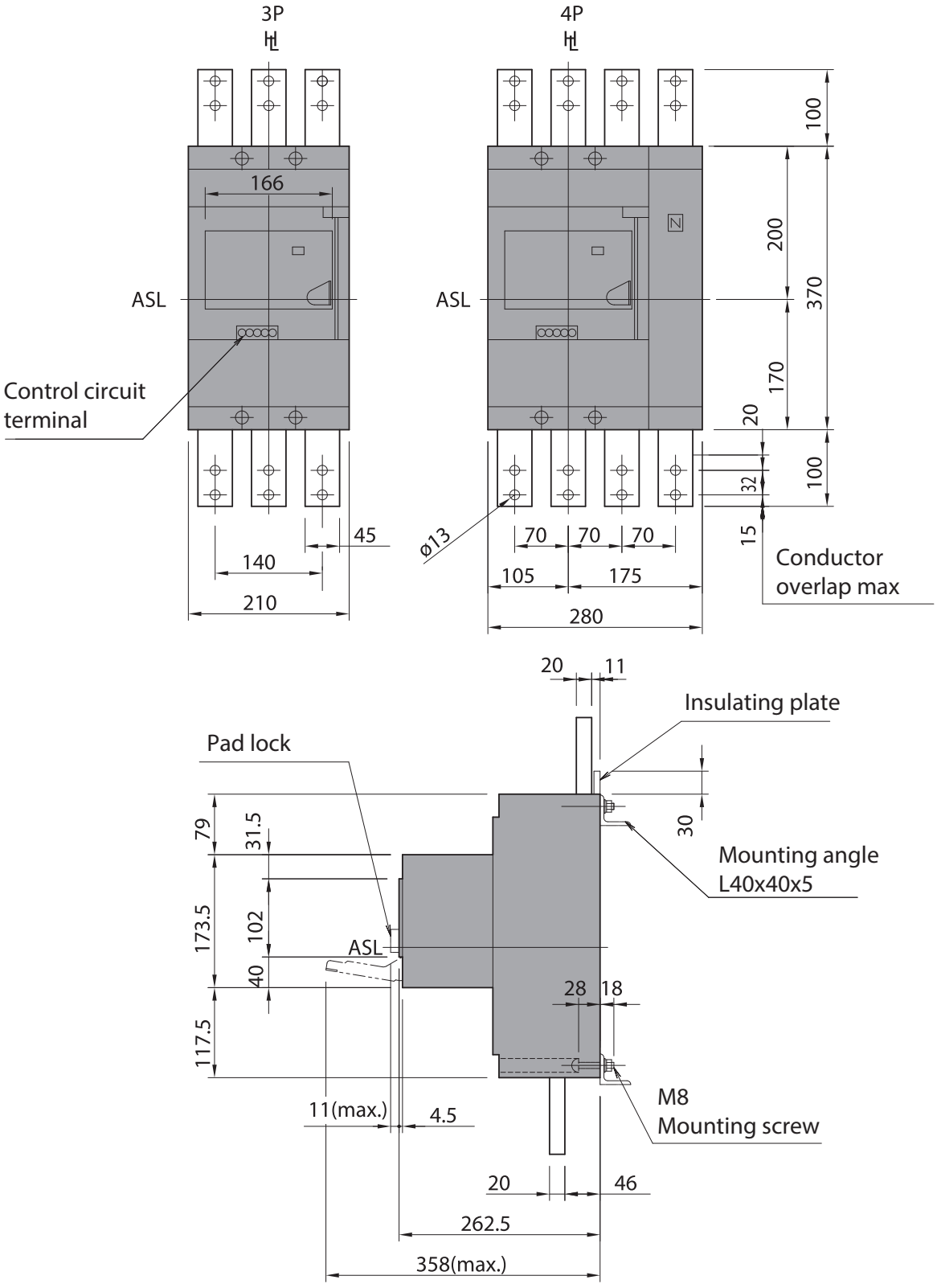
DRILLIN PLAN



ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1600, MSXM 1600

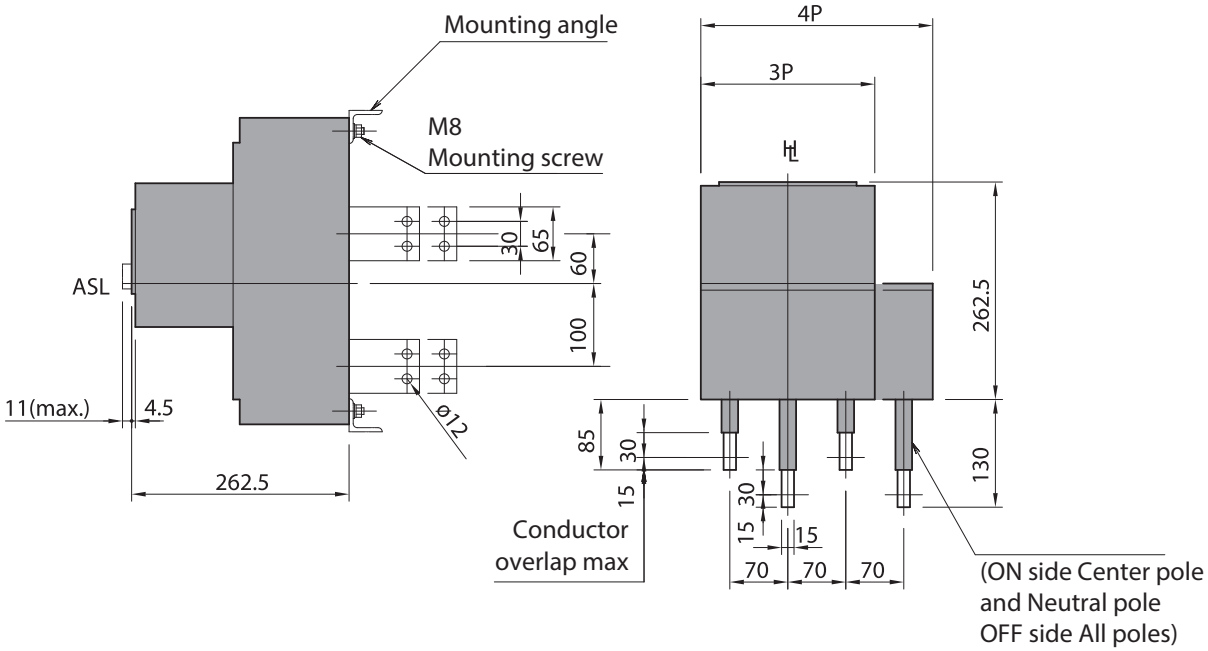
FRONT TERMINALS WITH MOTOR OPERATOR



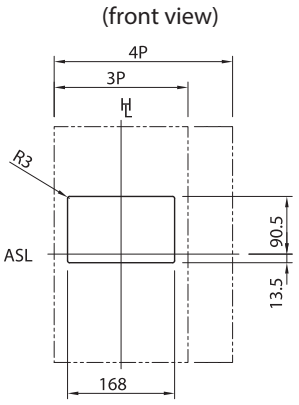
ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1600, MSXM 1600

REAR TERMINALS WITH MOTOR OPERATOR

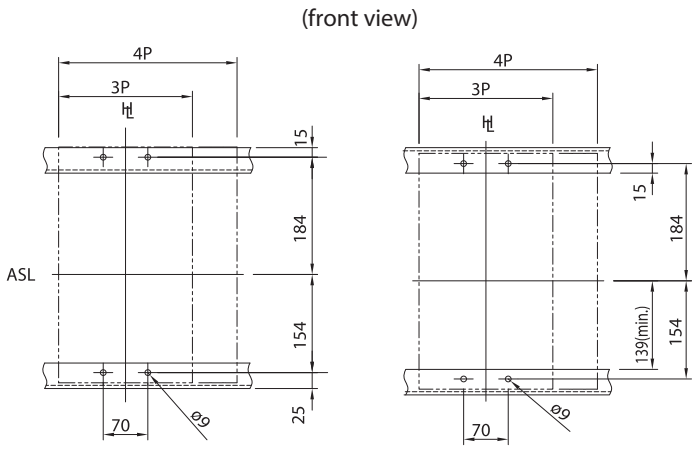


PANEL CUTOUT



Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

DRILLIN PLAN

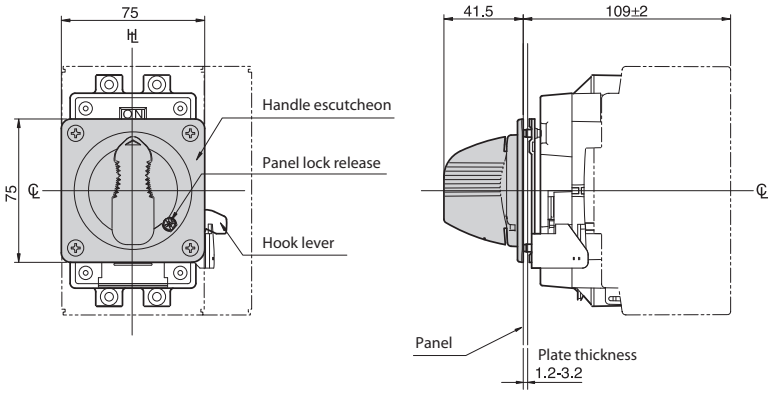


MSX/M 160c - MSX/M 250c

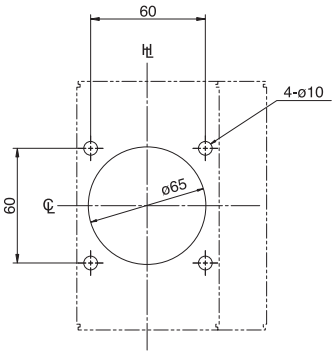
Applicable breaker types

MSX 160c, MSXM 160c
MSX 250c, MSXM 250c

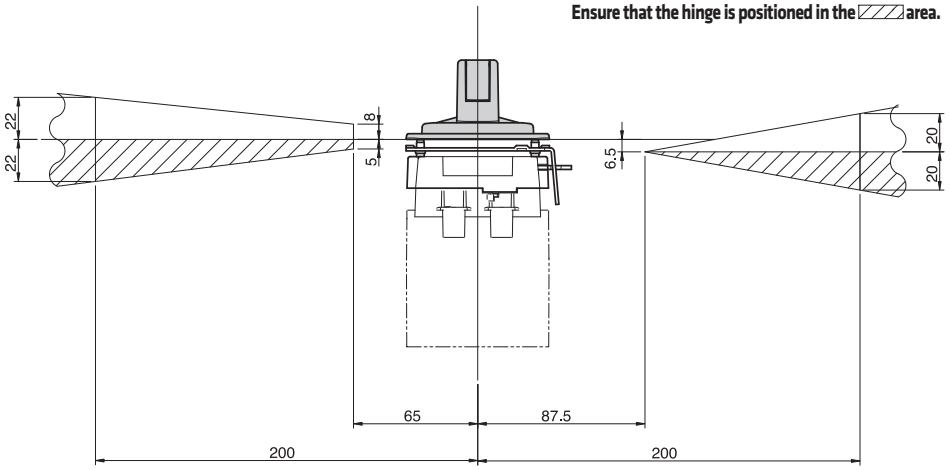
Outline dimensions



Panel cutout dimensions



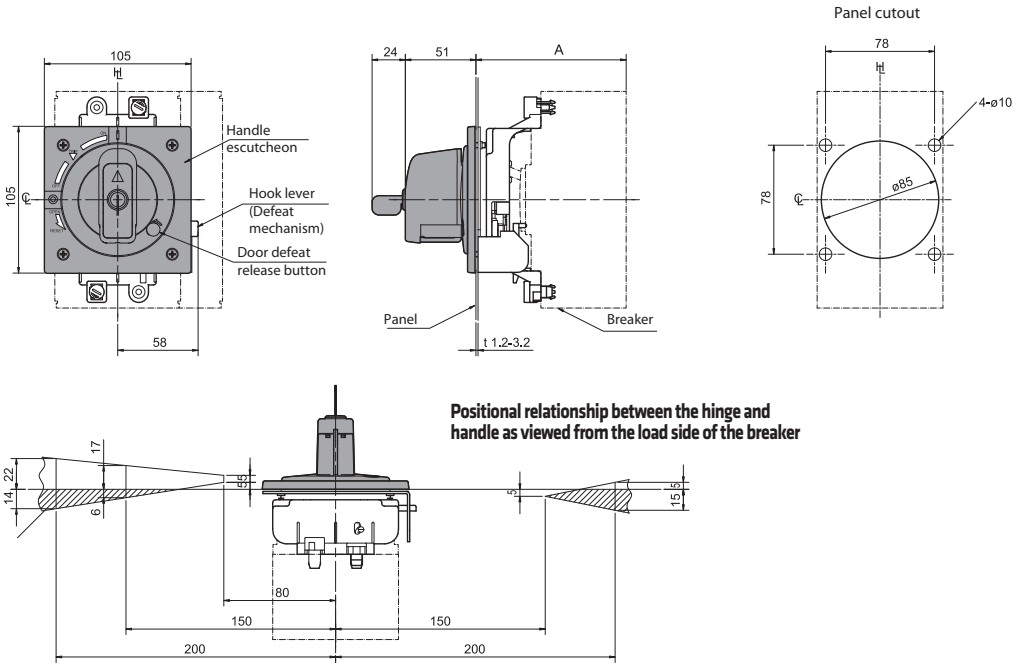
- **Positions of the hinge and handle as seen from the load side of the breaker.**
  Ensure that the hinge is positioned in the ▨ area.



ASL: Arrangement Standard Line **℄: Arrangement Standard Line** **⊬: Handle Frame Centre Line**

MSX/D 125 - MSX/D/E 160 - MSX/D/E 250

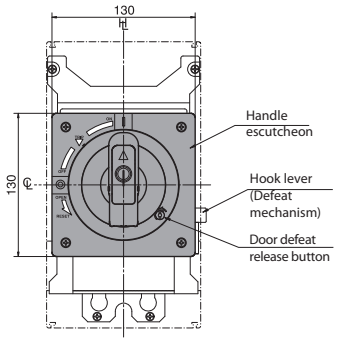
Applicable MCCB	A
MSX 125, MSX 160, MSX 250 MSXD 125, MSXD 160, MSXD 250	106±2
MSXE 160, MSXE 250	141±2

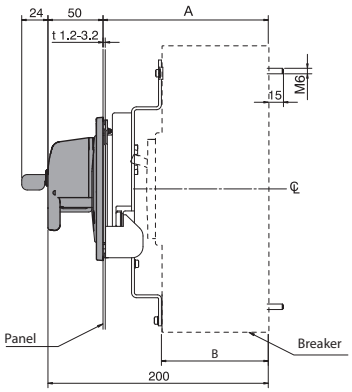


ASL: Arrangement Standard Line **: Arrangement Standard Line** **: Handle Frame Centre Line**

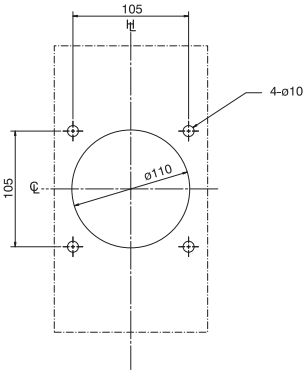
MSX/E/M 400 - MSXE/M 630

Applicable MCCB	A	B
MSXE 630, MSXM 630 MSX 400, MSXE 400, MSXM 400	150±2	97

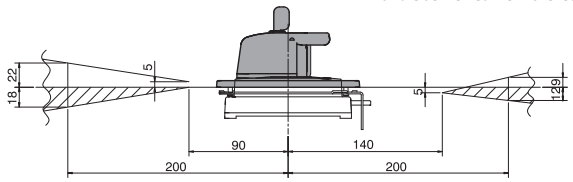




Panel cutout

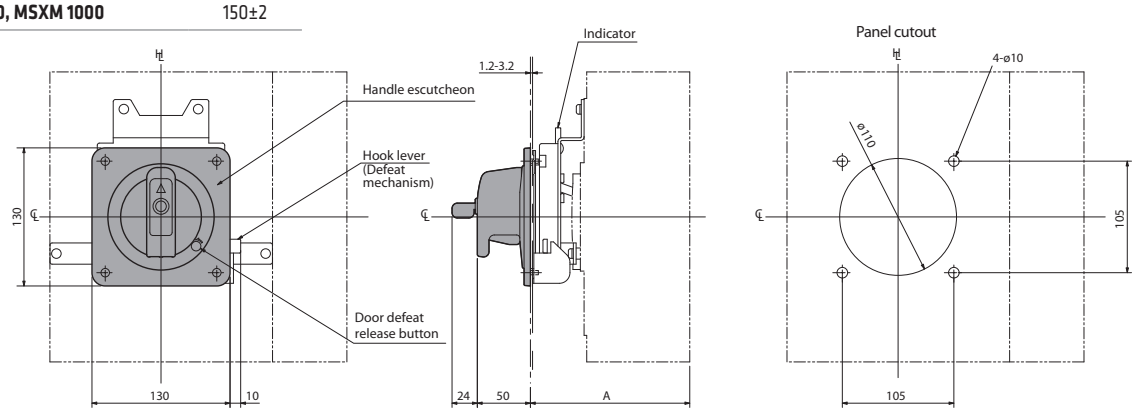


Positional relationship between the hinge and handle as viewed from the load side of the breaker



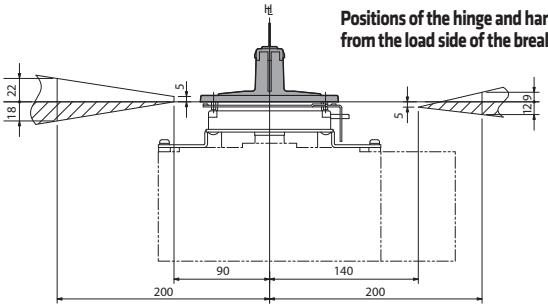
MSXE/M 1000

Applicable MCCB	A
MSXE 1000, MSXM 1000	150±2



Panel cutout

Positions of the hinge and handle as seen from the load side of the breaker.



ASL: Arrangement Standard Line **℄: Arrangement Standard Line** **℔: Handle Frame Centre Line**

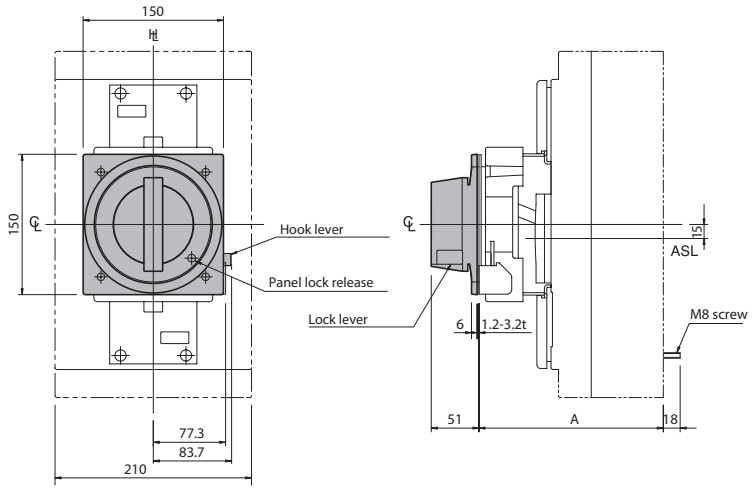
DIRECT ROTARY HANDLES

MSXE/M 1250 - MSXE/M 1600

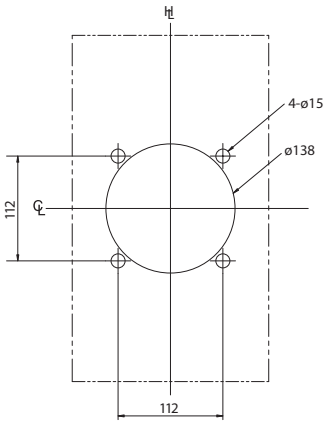
Applicable MCCB	A	Mounting screw*
MSXE 1250, MSXM 1250	197±2	M6 x 110, 4pcs
MSXE 1600, MSXM 1600	217±2	

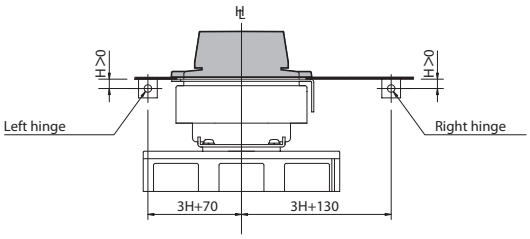
*Secured to breaker cover

Outline dimensions



Panel cutout dimensions





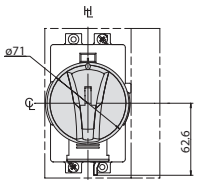
ASL: Arrangement Standard Line **℄: Handle Centre Line** **⊬: Handle Frame Centre Line**

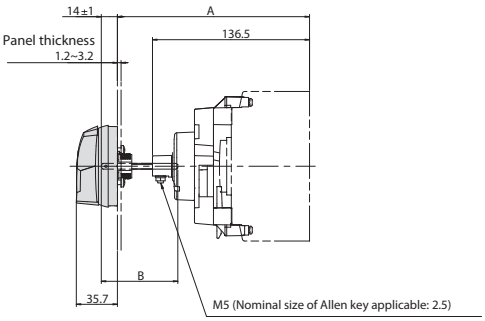
MSX/M 160c

Applicable breaker types	A±2	B±0.5
MSX 160c, MSXM 160c	175min.	80
	453max.	358

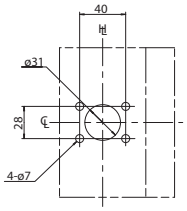
Note
"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
"Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.
A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

Outline dimensions

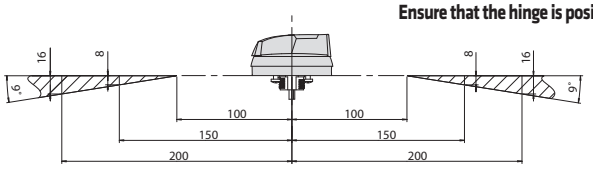




Panel cutout dimensions



- **Positions of the hinge and handle as seen from the load side of the breaker.**
  Ensure that the hinge is positioned in the ▨ area.

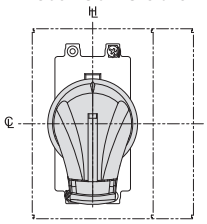


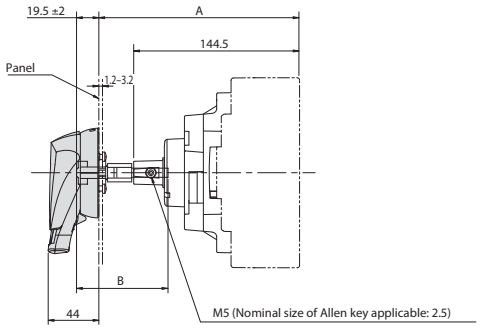
MSX/M 250c

Applicable breaker types	A±2	B±0.5
MSX 160c, MSXM 160c	175min.	80
	453max.	358

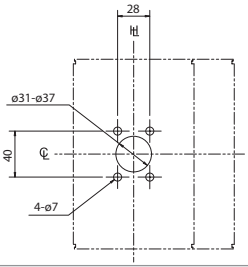
Note
"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
"Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.
A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

Outline dimensions

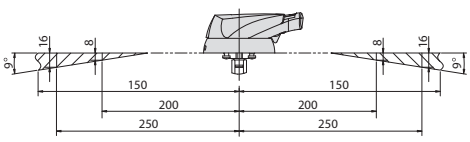




Panel cutout dimensions



- **Positions of the hinge and handle as seen from the load side of the breaker.**
  Ensure that the hinge is positioned in the ▨ area.



℄: Handle Centre Line **⊬: Handle Frame Centre Line**

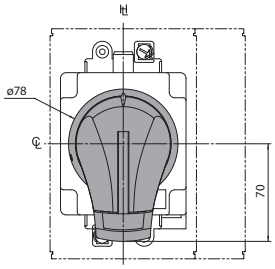
TRANSMITTED ROTARY HANDLES

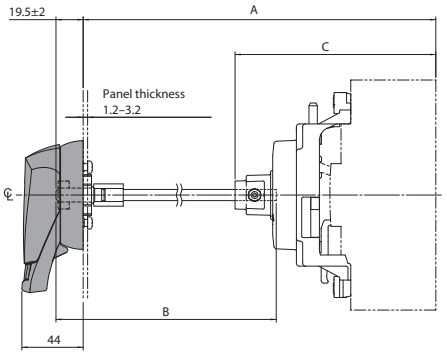
MSX/D 125 - MSX/D/E 160 - MSX/D/E 250

Applicable MCCB	A*1	B	C
MSX 125, MSX 160, MSX 250 MSXD 125, MSXD 160, MSXD 250	175 min	80	144
	453 max.	358	144
MSXE 160, MSXE 250	210 min	80	144
	488 max	358	179

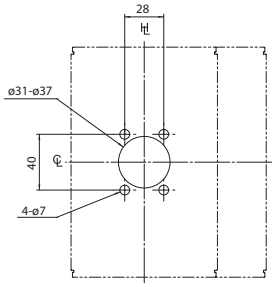
Min means the length for A. by cutting the shaft.
*1: Max. means the maximum length fot A without cutting the shaft.
The shaft can be cut to the required length.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

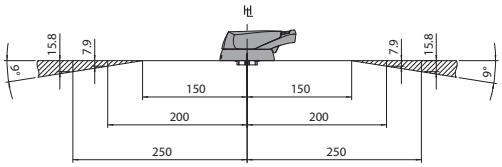




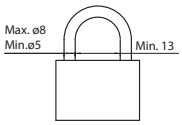
Panel cutout



Positional relationship between the hinge and handle as viewed from the load side of the breaker. The hinge must be inside the hatched area.



Padlock dimensions (mm)



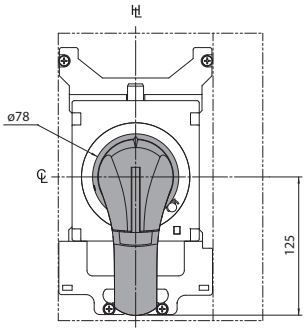
℄: Handle Centre Line ⊬: Handle Frame Centre Line

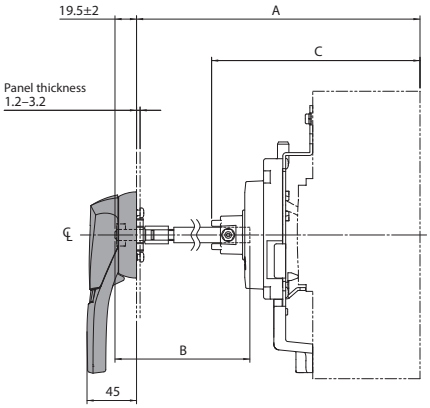
MSX/E/M 400 - MSXE/M 630

Applicable MCCB	A*1	B	C
MSX 400, MSXE 400, MSXM 400 MSXE 630, MSXM 630	220 min.	86	188.5
	456 max.	322	188.5

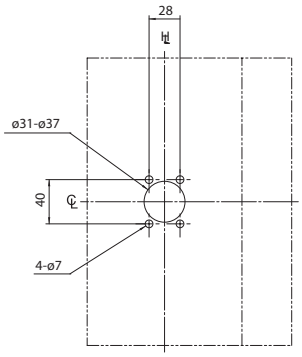
*1: Min. means the minimum length for A by cutting the shaft.
Max. means the maximum length fot A without cutting the shaft.
Max. means the maximum length fot A without cutting the shaft.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

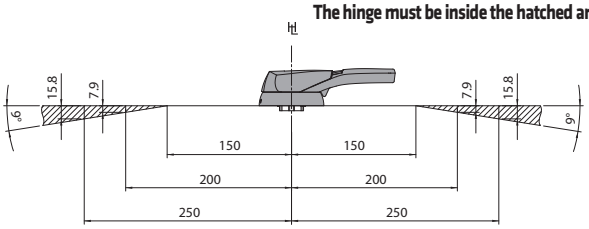




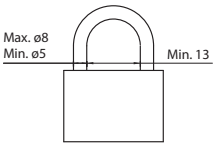
Panel cutout



Positional relationship between the hinge and handle as viewed from the load side of the breaker. The hinge must be inside the hatched area.



Padlock dimensions (mm)



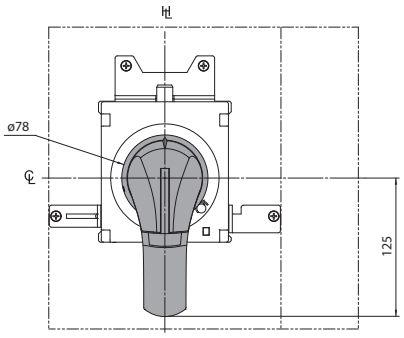
℄: Handle Centre Line **⊬: Handle Frame Centre Line**

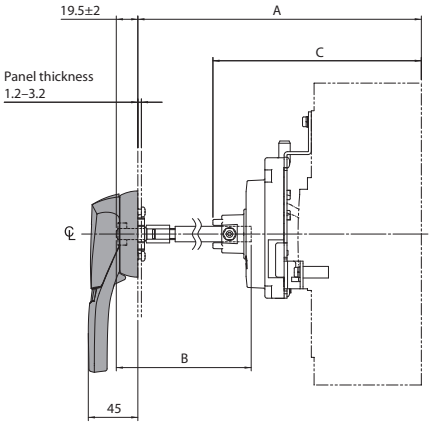
MSXE/M 1000

Applicable MCCB	A*1	B	C
MSXE 1000, MSXM 1000	220 min.	86	188.5
	456 max.	322	188.5

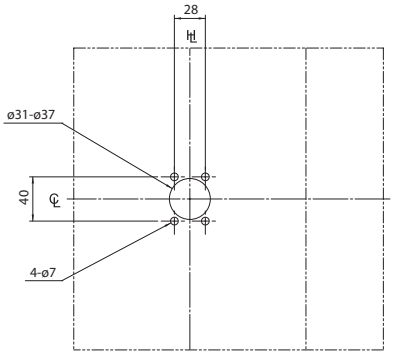
*1: Min. means the minimum length for A by cutting the shaft.
Max. means the maximum length fot A without cutting the shaft.
The shaft can be cut to the required length.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

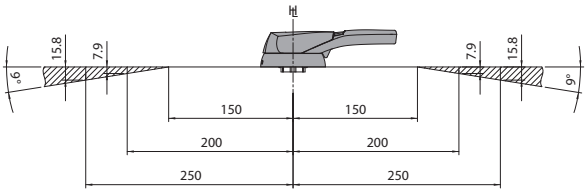




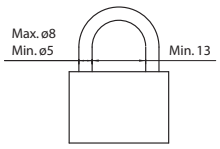
Panel cutout



Positional relationship between the hinge and handle as viewed from the load side of the breaker. The hinge must be inside the hatched area.



Padlock dimensions (mm)



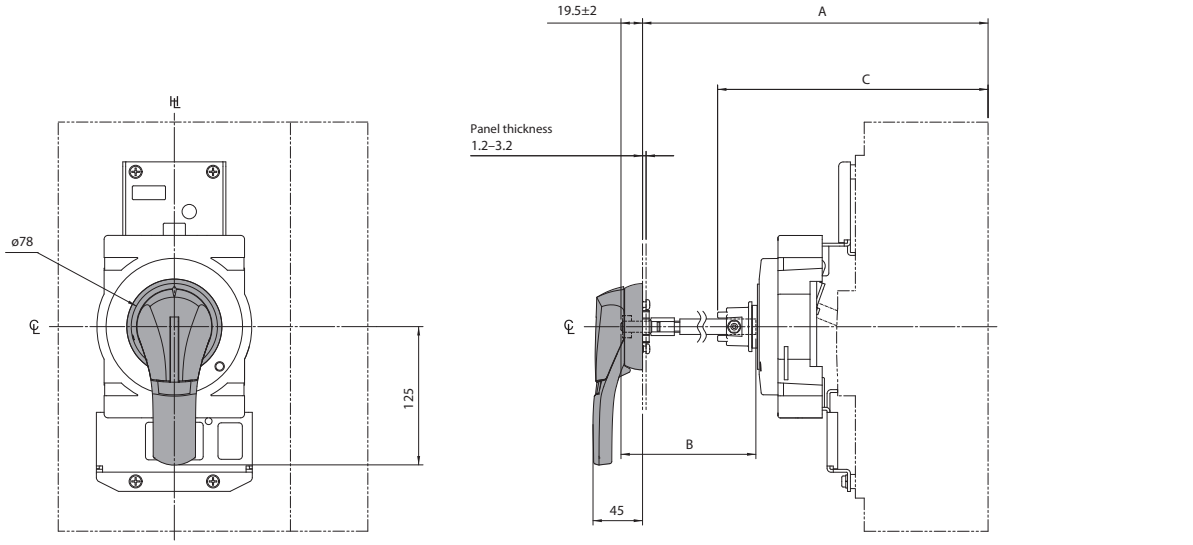
℄: Handle Centre Line **⊬: Handle Frame Centre Line**

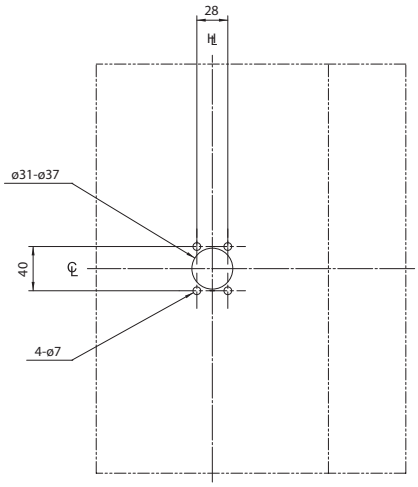
MSXE/M 1250 - MSXE/M 1600

Applicable MCCB	A*1	B	C
MSXE 1250, MSXM 1250	276.5min.	86	245
	512.5max.	322	245
MSXE 1600, MSXM 1600	296.5min.	86	265
	532.5max.	322	265

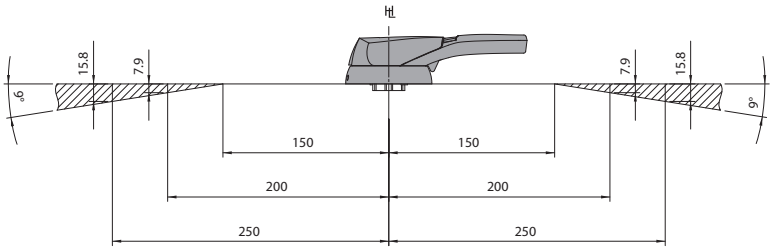
*1: Min. means the minimum length for A by cutting the shaft.
Max. means the maximum length fot A without cutting the shaft.
The shaft can be cut to the required length.

A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

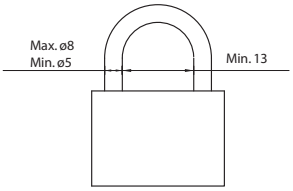




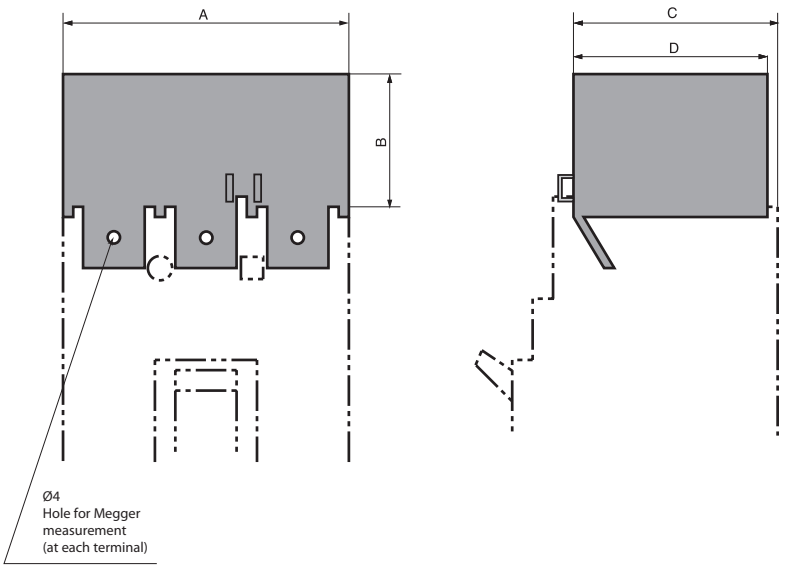
Positional relationship between the hinge and handle as viewed from the load side of the breaker. The hinge must be inside the hatched area.



Padlock dimensions (mm)



TERMINAL COVERS



Plug-in mounted version

This version can be mounted simply by being plugged in the breaker body.

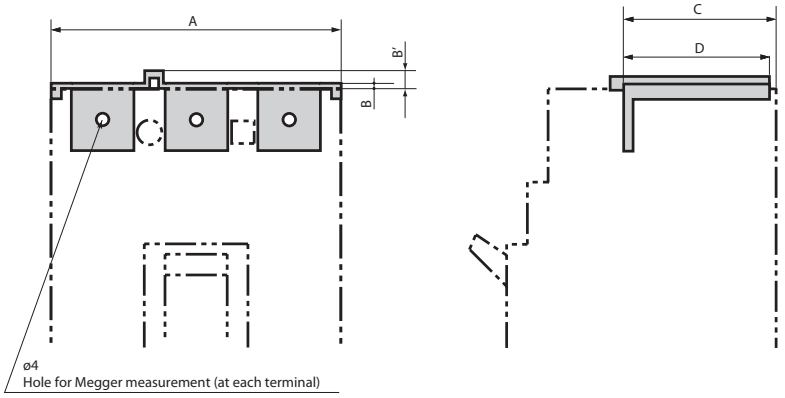
To be stated when ordering.
- Please state the arder codes in the table below. Covers should be ordered individually far Line and Load side.

Types and dimensions of terminal covers, units in mm

for front-connected breakers with extended and spread terminals

Types of breakers	Terminal cover	A		B		C		D	
	Type	3P	4P	3P	4P	3P	4P	3P	4P
MSX 160c, MSXM 160c	Front terminals FC and extended FB	75	100	50	50	61	61	60.3	60.3
	Front terminals spread FB	105	140	60	60	61	61	60.3	60.3
MSX 250c, MSXM 250c	Front terminals FC and extended FB	105	140	55	55	59	59	57.5	57.5
	Front terminals spread FB	147.5	196	55	55	59	59	57.5	57.5

TERMINAL COVERS



To be stated when ordering
- Please state "with CR" if ordering along with the breaker.
- Covers should be ordered individually for Line and Load side.

Types and dimensions of terminal covers, units in mm

for rear-connected

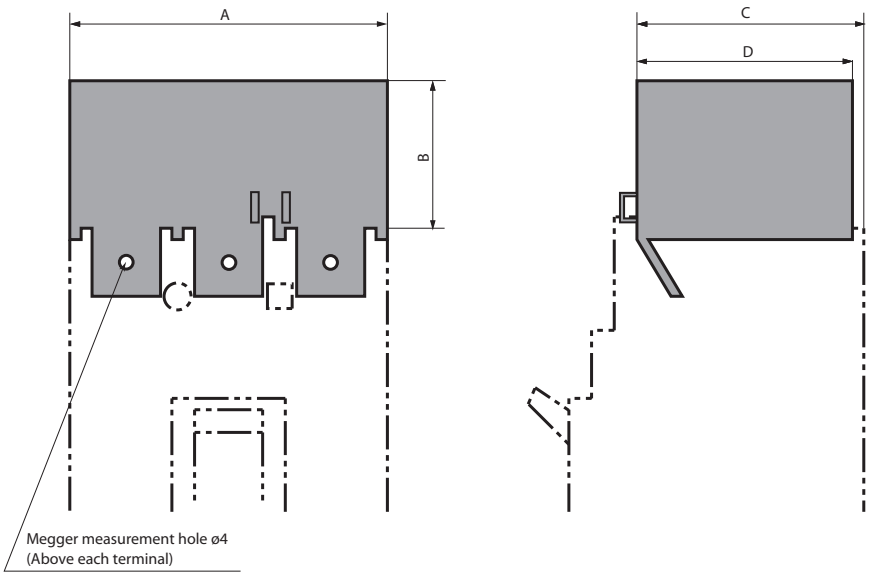
Types of breakers	A		B		B'	C		D	
	3P	4P	3P	4P		3P	4P	3P	4P
MSX 160c, MSXM 160c	75	100	5.5	5	-	61	61	60.3	60.3
MSX 250c, MSXM 250c	105	140	2.3	2.3	5.3	58.6	58.6	57.1	57.1

for front-connected breakers with terminals for cables (In up to 100A)

Types of breakers	A		B	C	D
	3P	4P			
MSX 160c, MSXM 160c	75	100	55	61	60.3

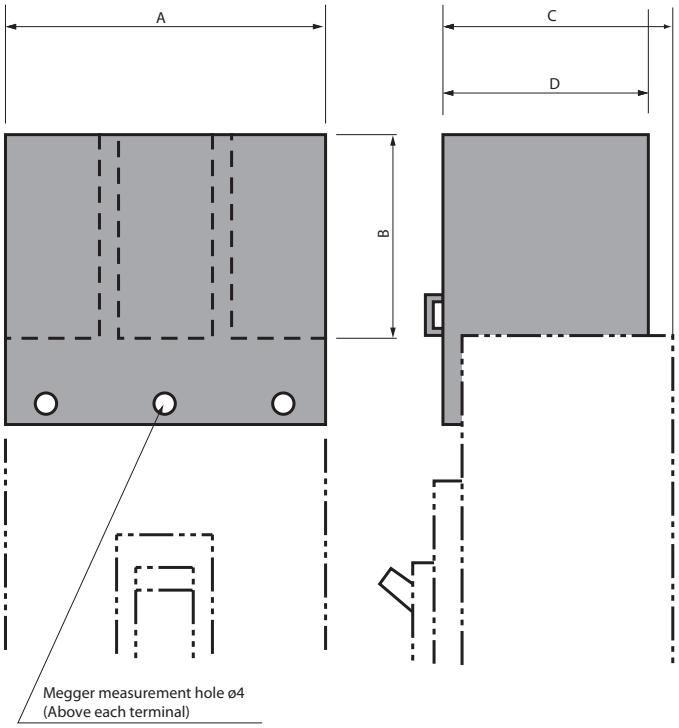
TERMINAL COVERS

Terminal covers for front terminals FC, extended and spread terminals FB



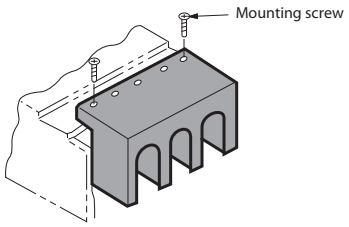
Plug-in mounted version

This version can be mounted simply by being plugged in the breaker body.



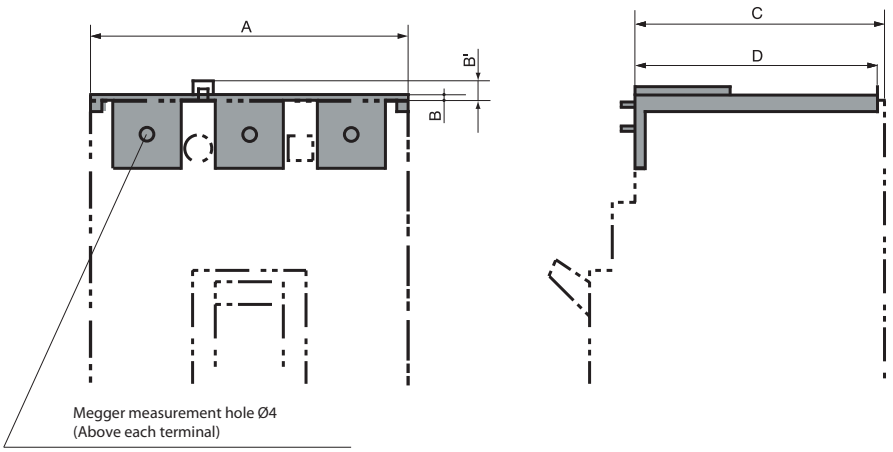
Screw-mounted version

The terminal covers for 800A are mounted to the breakers using tapping screws.
The terminal cover for 1250AF is mounted using insert nuts on the breaker cover using screws.
The insert nuts do not come standard with the breaker.
Please be sure to state "with terminal cover (CF)" when ordering the breaker.



TERMINAL COVERS

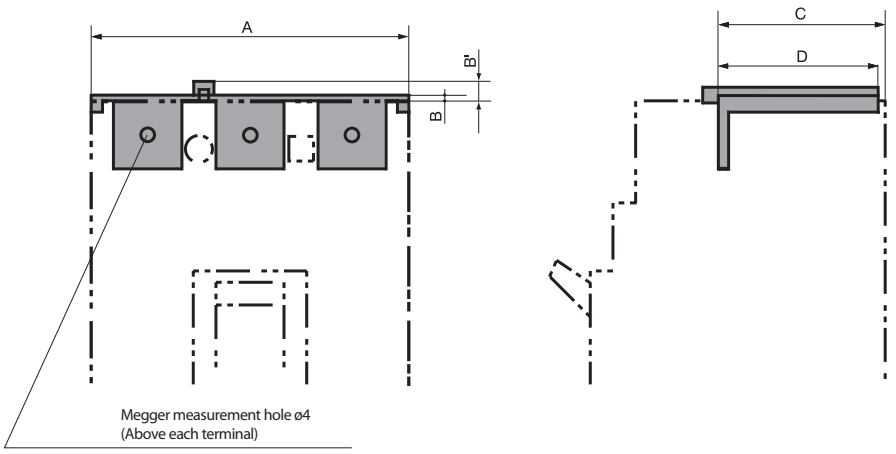
Terminal covers for front terminals for cables FW



MCCB type	Connection	A		B		B'	C		D		Mounting version	
		3P	4P	3P	4P	3P-4P	3P	4P	3P	4P	Plug-in mounted	Screw mounted
MSX 125 **MSXD 125**	Front conn.	90	120	40	40	–	48	48	46	46	o	–
	Cable clamp	90	120	2.5	2.5	6	61	61	59.5	59.5	o	–
MSX 160, MSX 250 **MSXD 160, MSXD 250**	Front conn. (1)	105	140	55	55	–	54	54	52	52	o	–
MSXE 160, MSXE 250	Front conn. (1)	105	140	55	55	–	89	89	87	87	o	–
MSX 400, MSXE 400, MSXM 400 **MSXE 630, MSXM 630**	Front conn. Wide type	140	185	85	85	–	97	97	94.5	94.5	o	–
	Front conn. Straight type	180	240	110	114	–	97	98	96	98	o	–
MSXE 1000, MSXM 1000	Front conn.	215	285	130	130	–	99.5	99.5	99	99	–	o
MSXE 1250, MSXM 1250	Front conn.	215	285	130	130	–	115	115	99	99	–	o

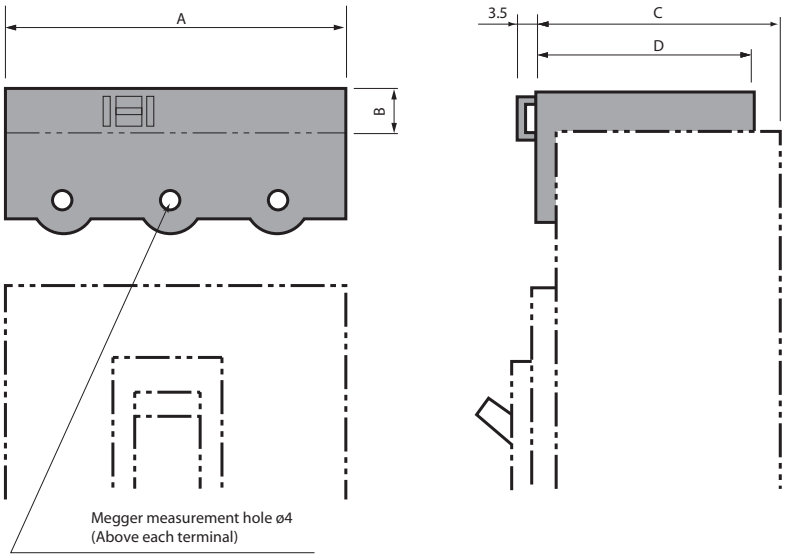
TERMINAL COVERS

Terminal covers for rear terminals RC and plug-in MCCBs



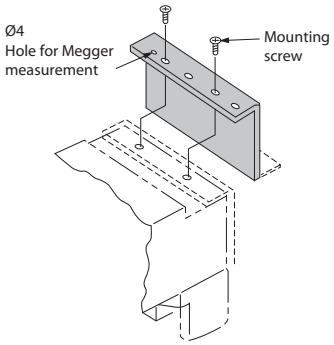
Plug-in mounted version

This version can be mounted simply by being plugged in the breaker body.



Screw-mounted version

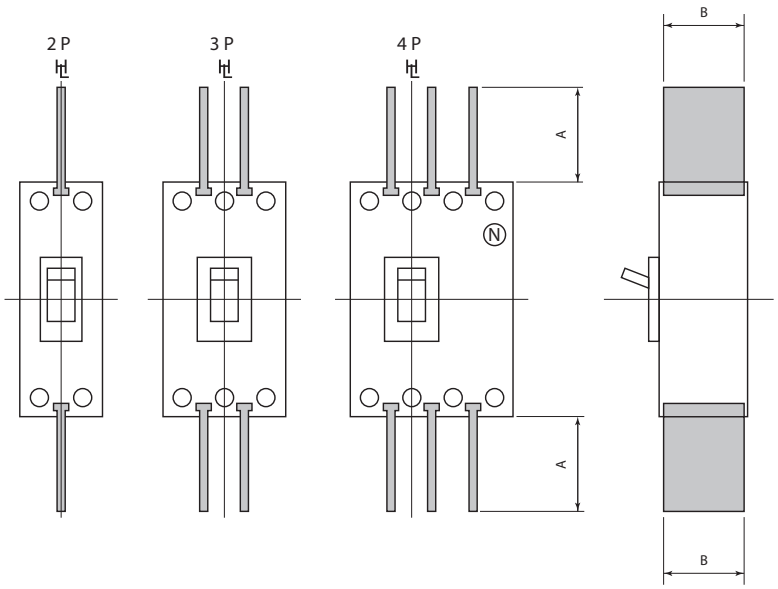
The terminal covers for 630 to 1000AF are mounted to the breakers using tapping screws.

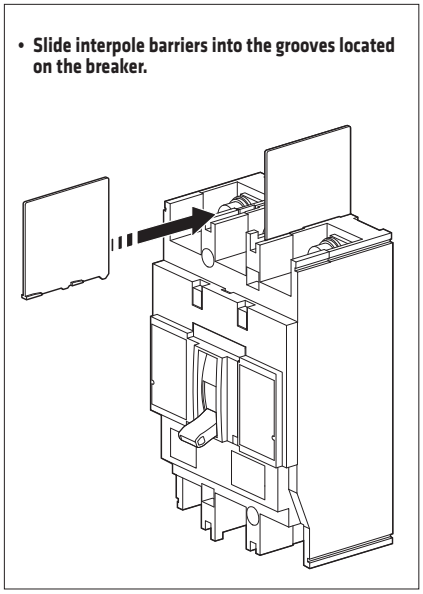


MCCB type	A		B		B'	C		D		Mounting version	
	3P	4P	3P	4P		3P	4P	3P	4P	Plug-in mounted	Screw mounted
MSX 125 **MSXD 125**	90	120	2	2	6	41.5	41.5	40.5	40.5	o	–
MSX 160, MSX 250 **MSXD 160, MSXD 250**	105	140	2	2	6	42.5	42.5	39.5	39.5	o	–
MSXE 160, MSXE 250	105	140	2	2	6	77.5	77.5	39.5	39.5	o	–
MSX 400, MSXE 400, MSXM 400 **MSXE 630, MSXM 630**	140	185	3	3	5	97	97	93	93	o	–
MSXE 1000, MSXM 1000	206	280	14	18	–	101	99	100.5	98	–	o

INTERPOLE BARRIERS

Interpole barriers serve to enhance electrical insulation between pole and prevent short-circuit due to electrically conductive foreign matter. Combined use of interpole barriers and terminal covers (standard type) is not possible.



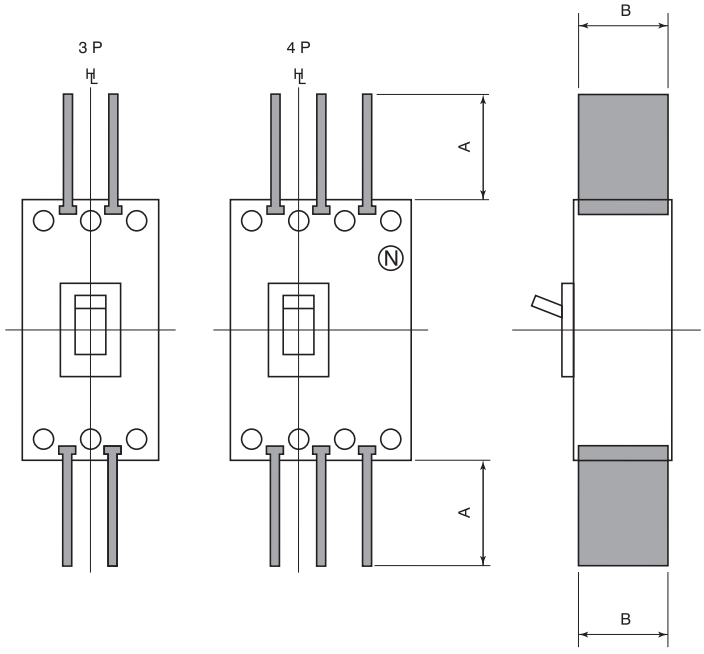


Dimension (mm)

Types of breakers	A	B
MSX 160c, MSXM 160c	50	55
MSX 250c, MSXM 250c	101	53

Note: Line side interpole barriers are supplied as standard for all front connected breakres.

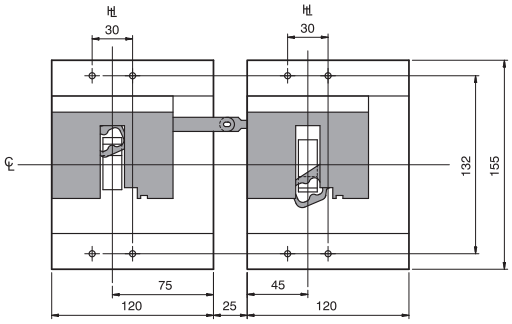
DIMENSION

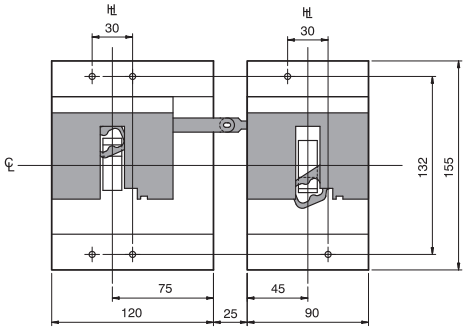


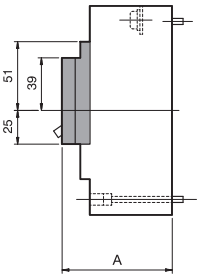
MCCB type	A	B
MSX 125	47	53
MSX 160, MSX 250	100	53
MSXE 160, MSXE 250	100	88
MSX 400, MSXE 400, MSXM 400 MSXE 630, MSXM 630	110	95
MSXE 1000, MSXM 1000	110	95

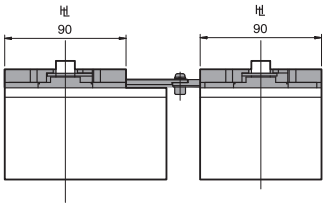
LINK MECHANICAL INTERLOCKS

MSX 125









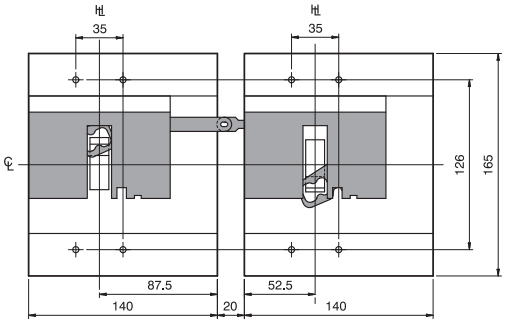
MCCB Type	A
MSX 125	81.7

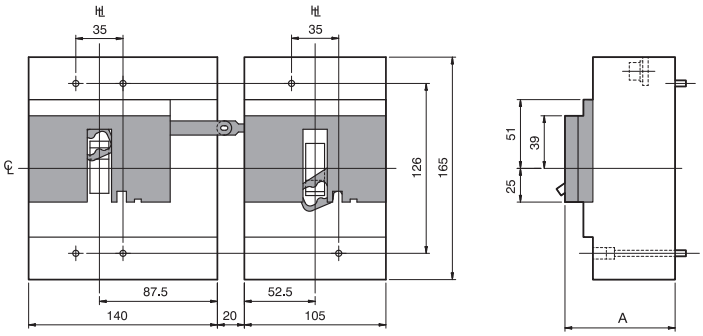
The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

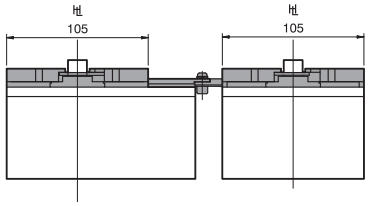
ASL: Arrangement Standard Line **℄: Handle Centre Line** **⊢: Handle Frame Centre Line**

LINK MECHANICAL INTERLOCKS

MSX/M 250c - MSX/E 160 - MSX/E 250







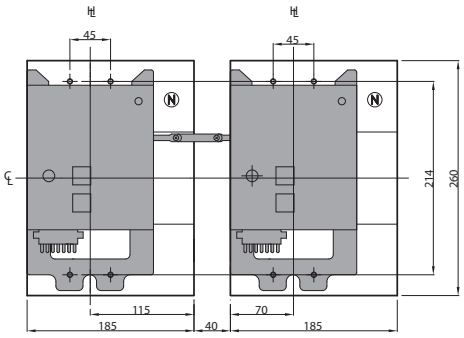
MCCB Type	A
MSX 250c, MSXM 250c MSX 160, MSX 250	81.7
MSXE 160, MSXE 250	116.7

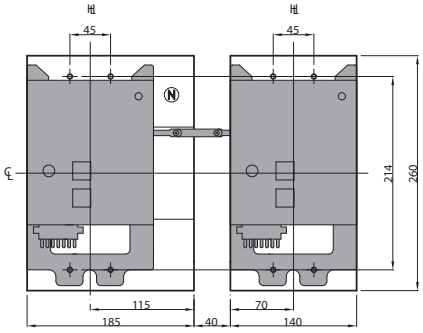
The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

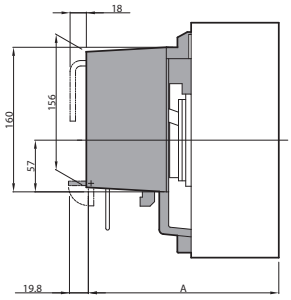
ASL: Arrangement Standard Line **℄: Handle Centre Line** **⊬: Handle Frame Centre Line**

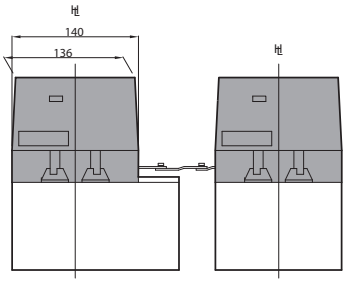
LINK MECHANICAL INTERLOCKS WITH MOTOR OPERATOR

MSX/E/M 400 - MSXE/M 630









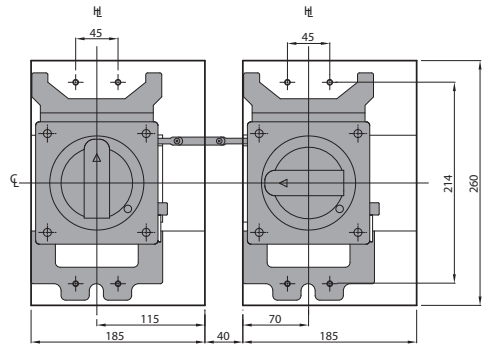
MCCB Type	A
MSX 400, MSXE 400, MSXM 400 MSXE 630, MSXM 630	213

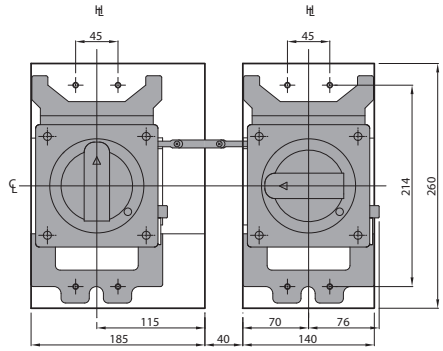
The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

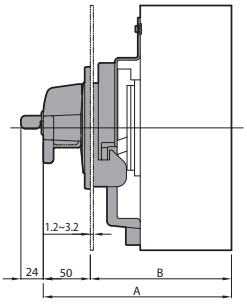
ASL: Arrangement Standard Line **℄: Handle Centre Line** **⊬: Handle Frame Centre Line**

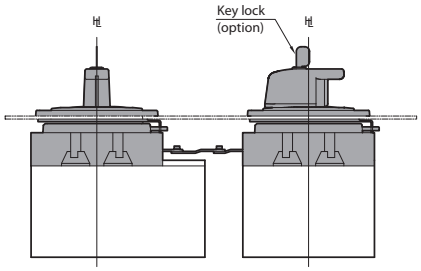
LINK MECHANICAL INTERLOCKS WITH DIRECT ROTARY HANDLE

MSX/E/M 400 - MSXE/M 630









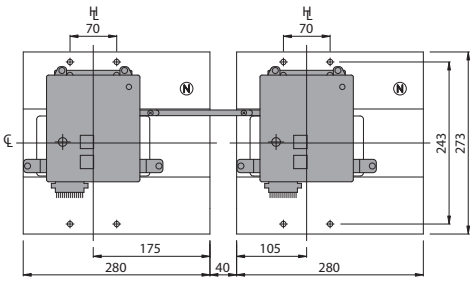
MCCB Type	A	B
MSX 400, MSXE 400, MSXM 400 MSXE 630, MSXM 630	200	150±2

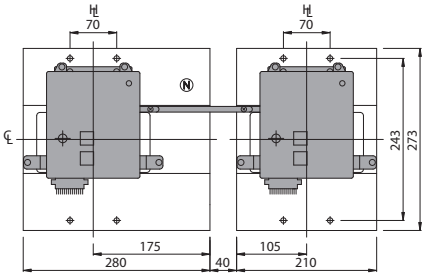
The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

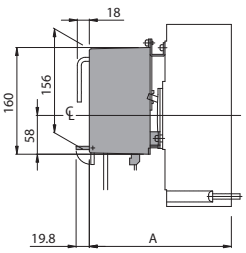
ASL: Arrangement Standard Line ℄: Handle Centre Line ℔: Handle Frame Centre Line

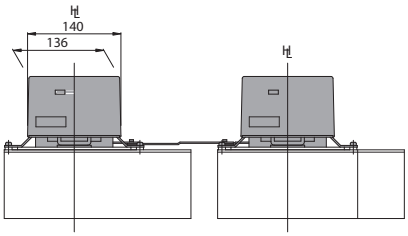
LINK MECHANICAL INTERLOCKS WITH MOTOR OPERATOR

MSXE/M 1000









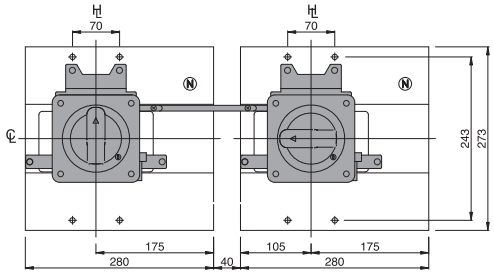
MCCB Type	A
MSXE 1000, MSXM 1000	213

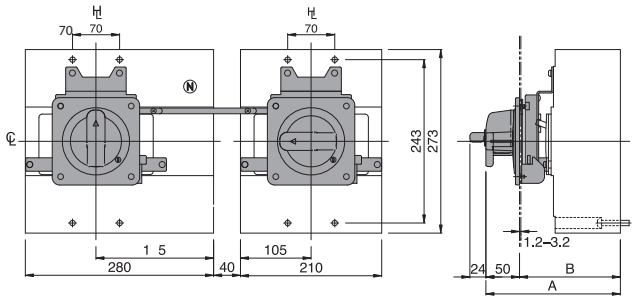
The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

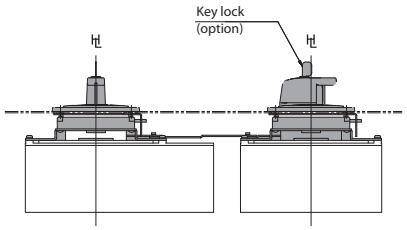
ASL: Arrangement Standard Line **℄: Handle Centre Line** **H: Handle Frame Centre Line**

LINK MECHANICAL INTERLOCKS WITH DIRECT ROTARY HANDLE

MSXE/M 1000







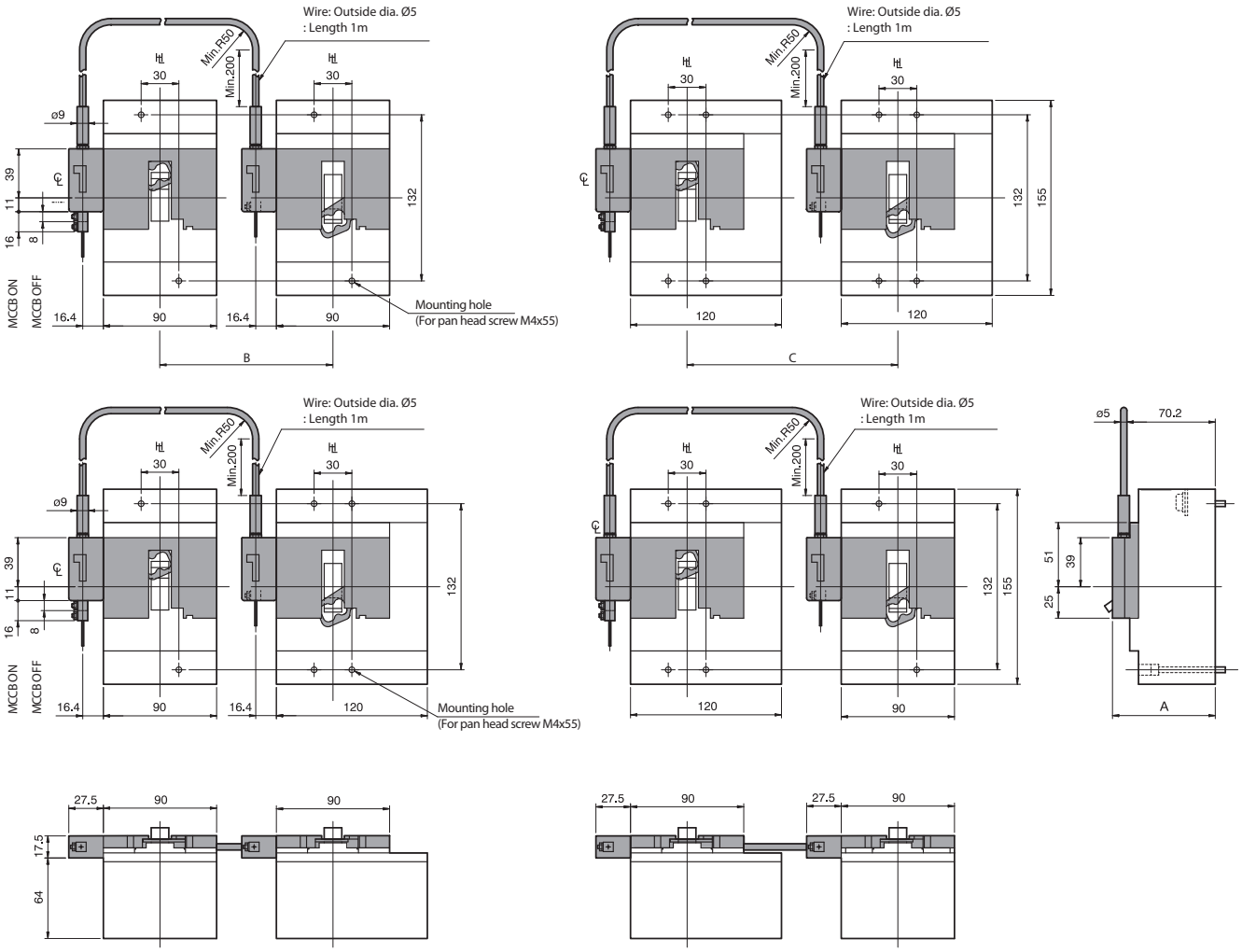
MCCB Type	A	B
MSXE 1000, MSXM 1000	200	150

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

ASL: Arrangement Standard Line ℄: Handle Centre Line ℔: Handle Frame Centre Line

WIRE MECHANICAL INTERLOCKS

MSX 125



MCCB Type	A
MSX 125	81.7

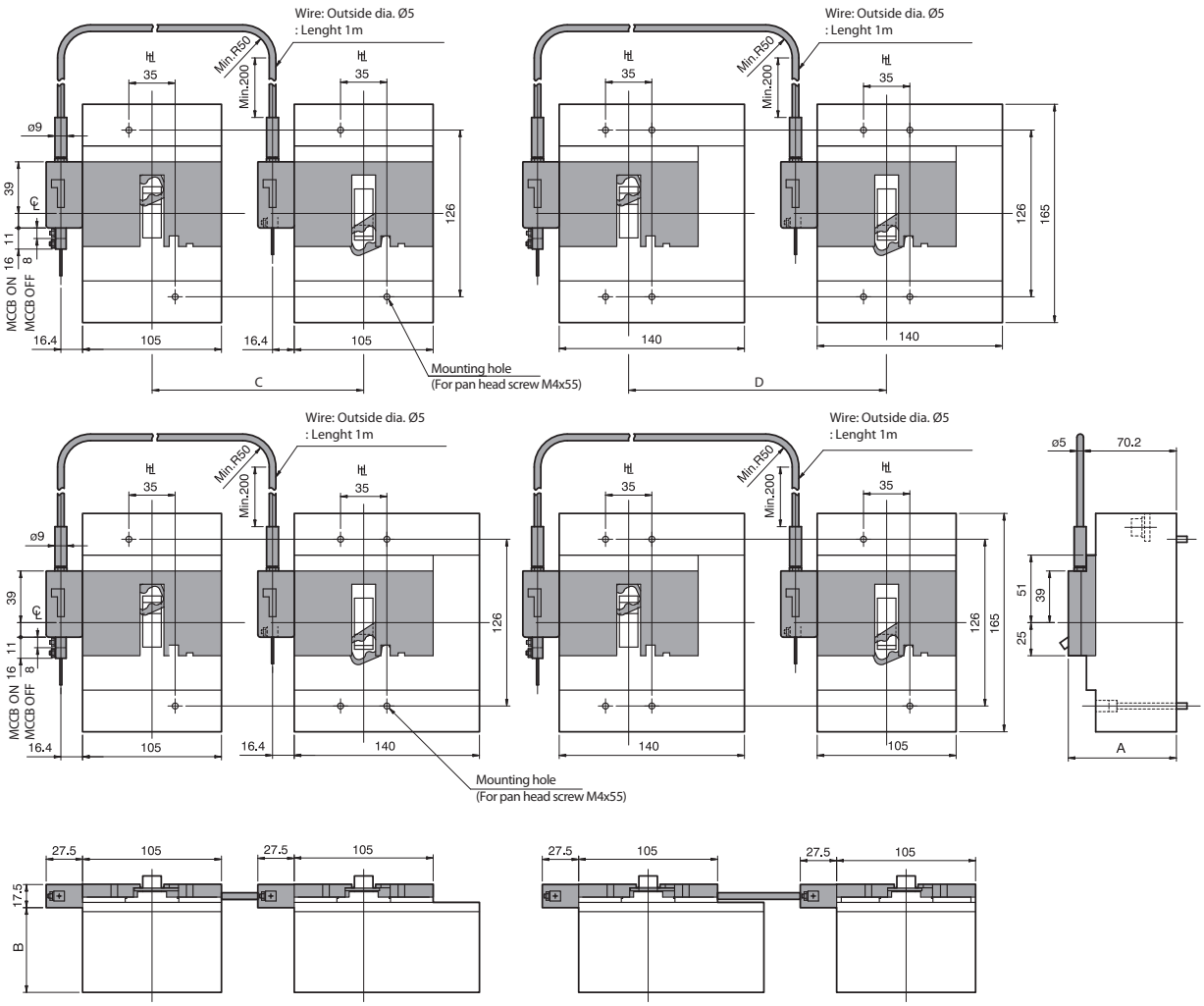
Cable length	B	C
1m	130min - 480max	160min - 480max

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

ASL: Arrangement Standard Line **℄: Handle Centre Line** **⊬: Handle Frame Centre Line**

WIRE MECHANICAL INTERLOCKS

MSX/M 250c - MSX/E 160 - MSX/E 250



MCCB Type	A	B
MSX 250c, MSXM 250c MSX 160, MSX 250	81.7	64
MSXE 160, MSXE 250	116.7	99

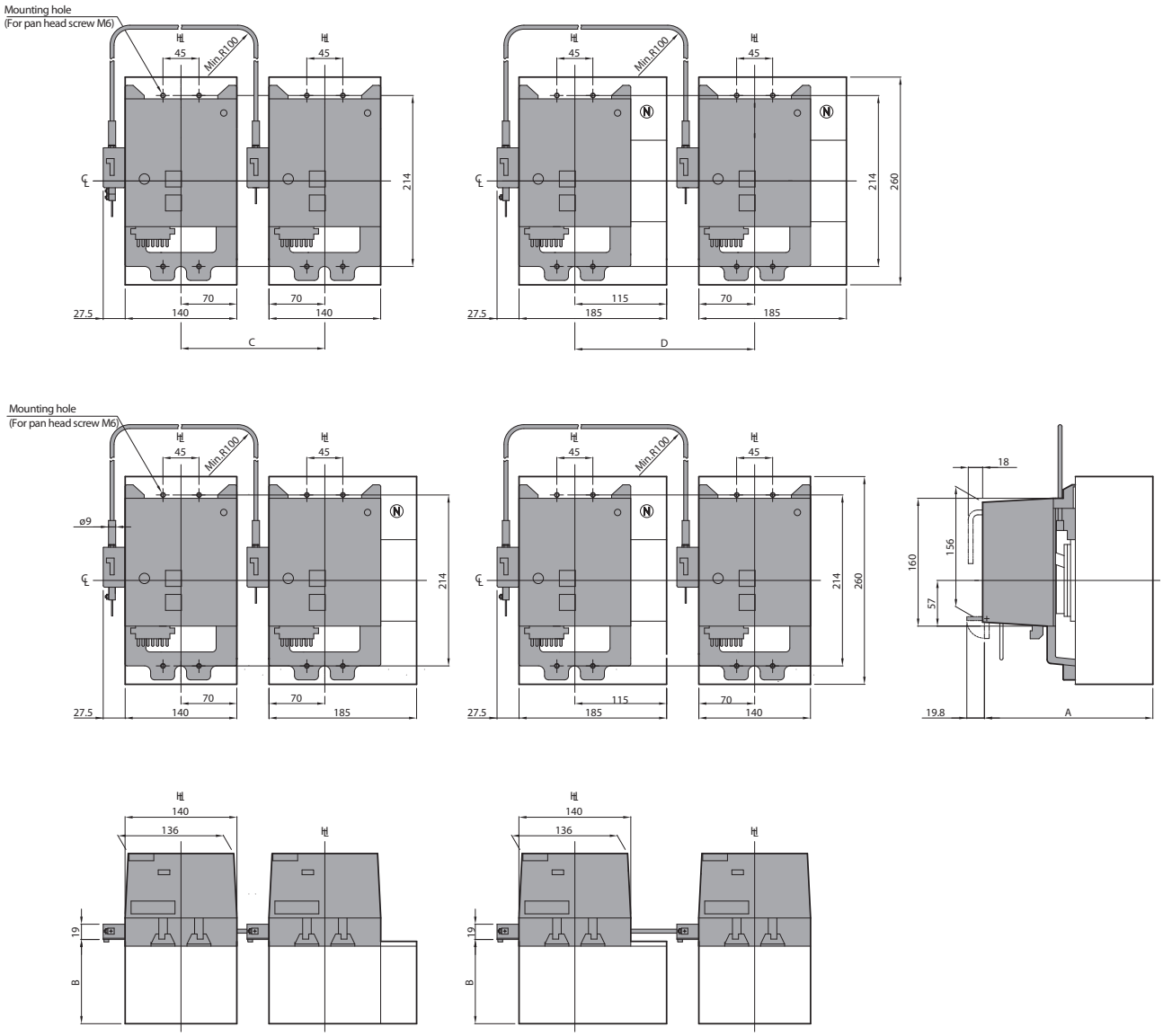
Cable length	C	D
1m	155min – 480max	180min – 480max

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

ASL: Arrangement Standard Line **: Asse di simmetria orizzontale** **: Asse di manovra**

WIRE MECHANICAL INTERLOCKS WITH MOTOR OPERATOR

MSX/E/M 400 - MSXE/M 630



MCCB Type	A	B
MSX 400, MSXE 400, MSXM 400 MSXE 630, MSXM 630	213	105.4

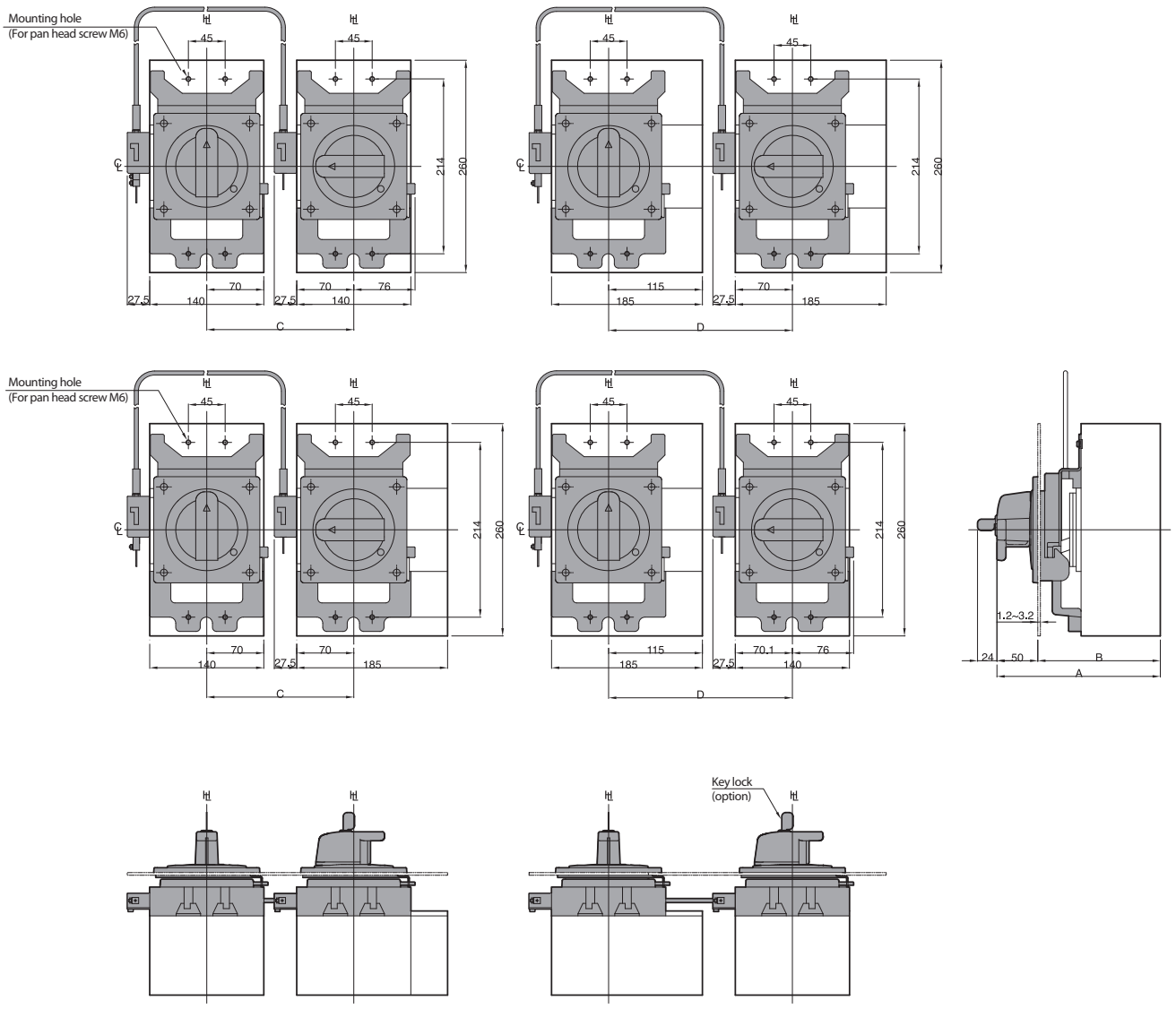
Cable length	C	D
1m	180min - 480max	225min - 480max

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

ASL: Arrangement Standard Line **℄: Asse di simmetria orizzontale** **⊬: Asse di manovra**

WIRE MECHANICAL INTERLOCKS WITH DIRECT ROTARY HANDLE

MSX/E/M 400 - MSXE/M 630



MCCB Type	A	B
MSX 400, MSXE 400, MSXM 400 MSXE 630, MSXM 630	200	150±2

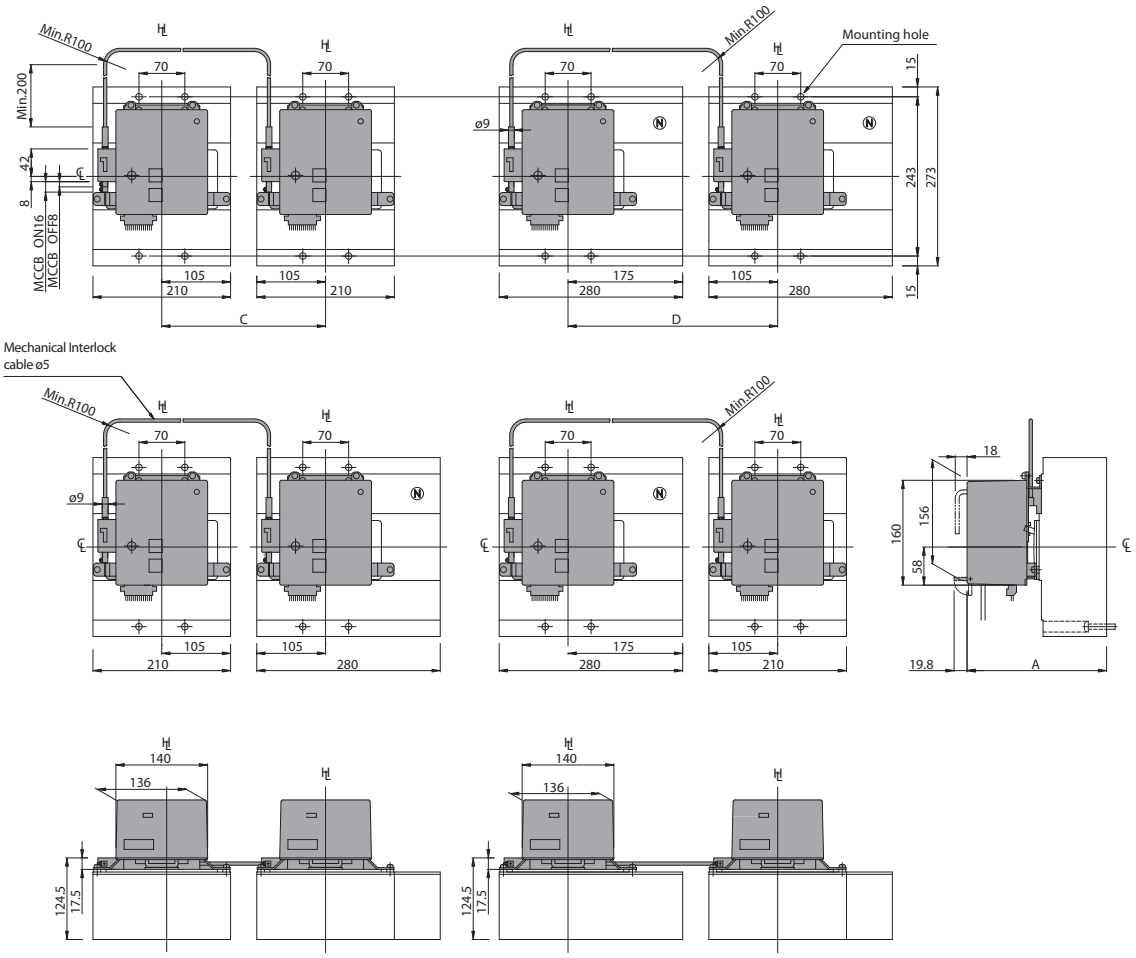
Cable length	C	D
1m	180min - 430max	225min - 430max

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

ASL: Arrangement Standard Line **: Asse di simmetria orizzontale** **: Asse di manovra**

WIRE MECHANICAL INTERLOCKS WITH MOTOR OPERATOR

MSXE/M 1000



MCCB Type	A
MSXE 1000, MSXM 1000	213

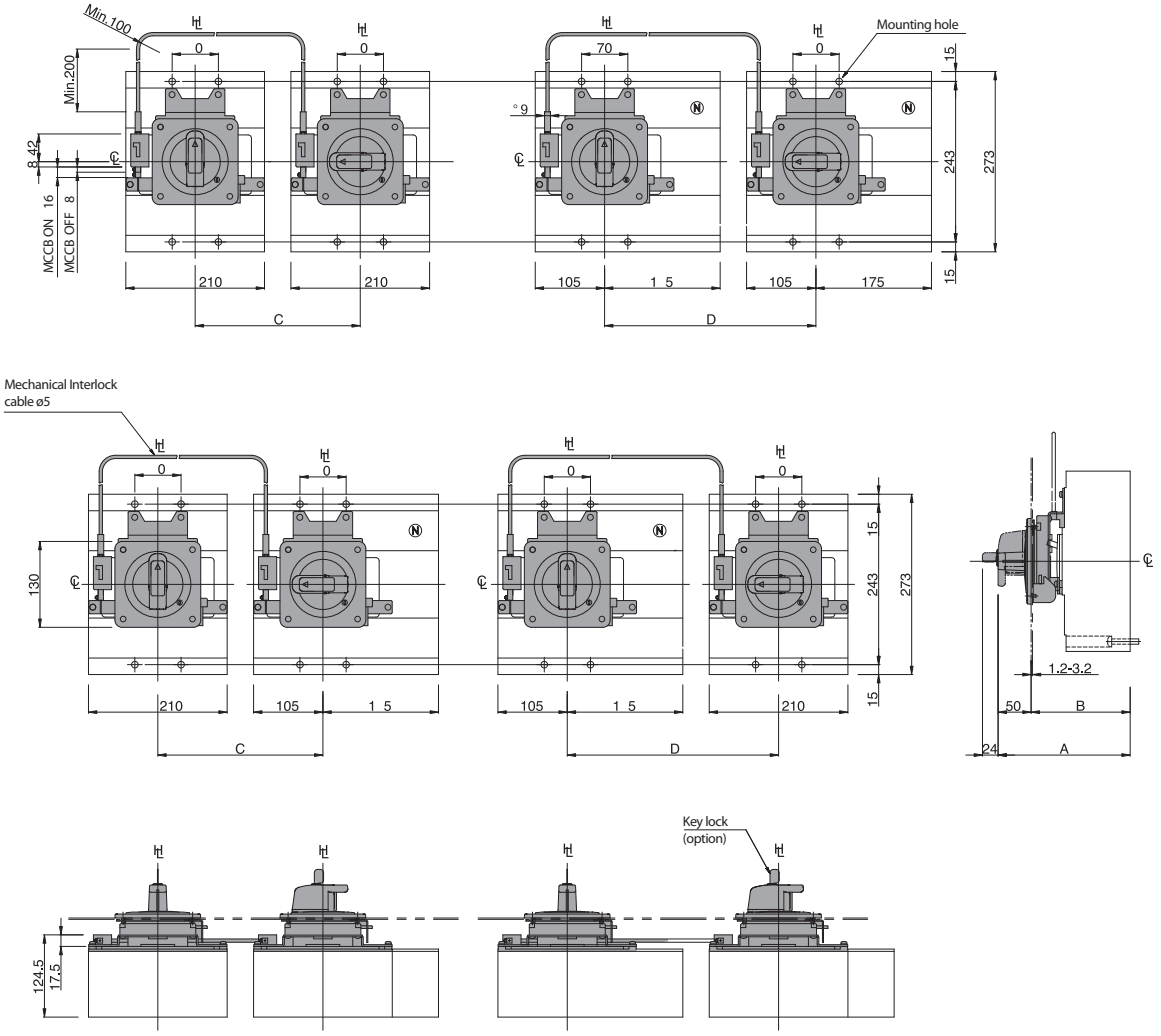
Cable length	C	D
1m	250min - 430max	320min - 430max

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

ASL: Arrangement Standard Line **℄: Asse di simmetria orizzontale** **⊬: Asse di manovra**

WIRE MECHANICAL INTERLOCKS WITH DIRECT ROTARY HANDLE

MSXE/M 1000



MCCB Type	A	B
MSXE 1000, MSXM 1000	200	150±2

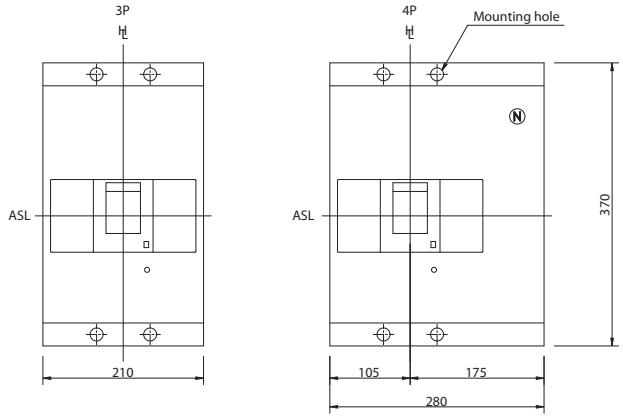
Cable length	C	D
1m	250min - 430max	320min - 430max

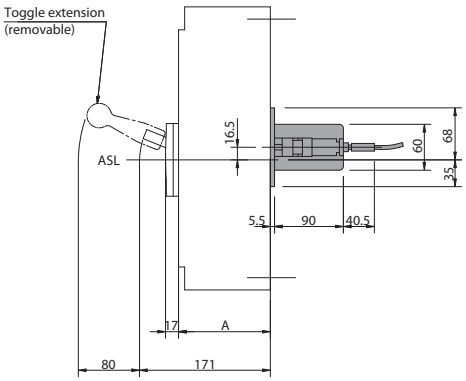
The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

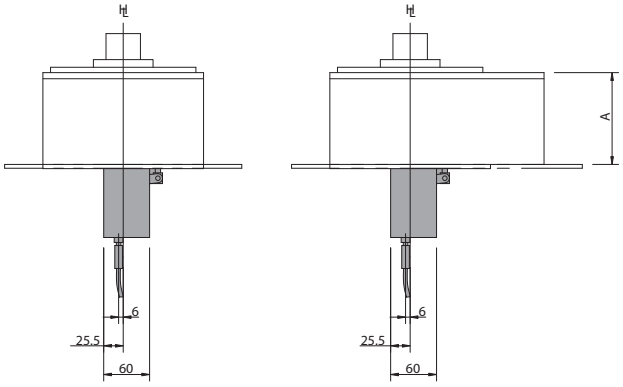
ASL: Arrangement Standard Line **: Asse di simmetria orizzontale** **: Asse di manovra**

WIRE MECHANICAL INTERLOCKS

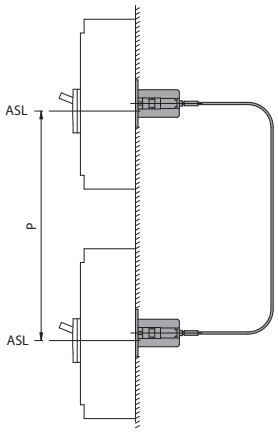
MSXE/M 1250 - MSXE/M 1600



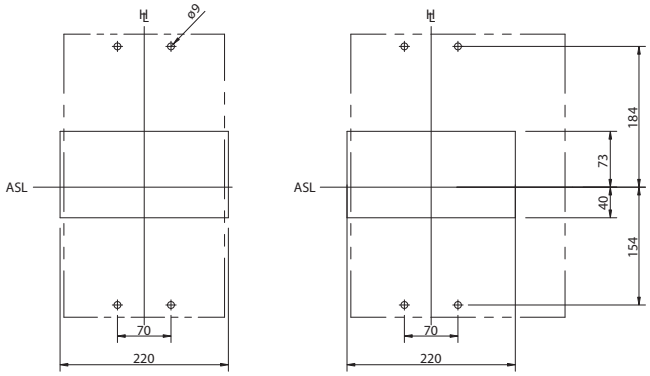




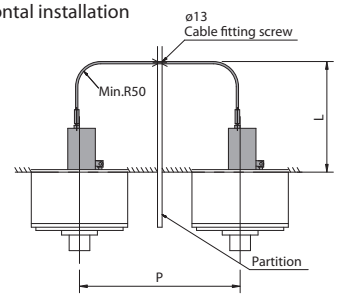
Vertical installation



Drilling plan (front view)



Horizontal installation



MCCB Type	A
MSXE 1250, MSXM 1250	120
MSXE 1600, MSXM 1600	140

Cable length	P	L
1m	650-500-350	450-500-530 ±30

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

ASL: Arrangement Standard Line **℄: Asse di simmetria orizzontale** **⊩: Asse di manovra**