Low voltage moulded case circuit breaker EB2

Product series	description	unit	condition	EB2 125				EB2 160	
Model-type				L	S	H	V	S	H
Number of poles					3, 4		3	3, 4	
Nominal current ratings									
	I_n	(A)	50°C		20,32,50,			160	
					63,100,125				
Electrical characteristics									
Rated operational voltage	U_e	(V)	AC 50/60 Hz	690	690	690	1100	690	690
			DC	250	250	250	-	250	250
Rated insulation voltage	U_i	(V)		800	800	800	1100	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8	8
Ultimate breaking capacity	I_{cu}	(kA)	1100V AC	-	-	-	4*/6**	-	-
(IEC, JIS, AS/NZS)			690V AC	-	6	6		7.5	7.5
			525V AC	8	22	25		25	25
			440V AC	15	25	50		25	50
			400/415V AC	25	36	65		36	65
			220/240V AC	35	50	85		65	85
			250V DC	25	25	40		40	40
Service breaking capacity	I_{cs}	(kA)	1100V AC	-	-	-	4	-	-
(IEC, JIS, AS/NZS)	I_{cs}	(kA)	690V AC	-	6	6		7.5	7.5
			525V AC	6	22	22		25	25
			440V AC	12	25	25		25	25
			400/415V AC	19	36/30	36/33		36	36
			220/240V AC	27	50	85		65	85
			250V DC	19	19	40		40	40
Rated breaking capacity (NEMA)		(kA)	480V AC	8	22	25		22	25
			240VAC	35	50	85		65	85
Protection									
Adjustable thermal, adjustable magnetic				■		■	■		■
Fixed thermal, fixed magnetic				■					
Microprocessor									
Utilisation category				A		A	A		A
Installation									
Front connection				■		■	■		■
Attached flat bar				•		•	•		•
Solderless terminal (cable clamp)				•		•	•		•
Rear connection				•		•	•		•
Plug-in				•		•	•		•
Draw- out				-		-			-
DIN rail mounting				•		•	-		-
Dimensions	h	(mm)		155		155	155		165
	w	(mm)	3 pole	90		90	90		105
			4 pole	120		120			140
	d	(mm)		68		68	68		68
Weight	W	(kg)	3 pole	1.1		1.1	1.1		1.5
			4 pole	1.4		1.4			1.9
Operation									
Direct Opening Action				■		■	■		■
Toggle operation				■		■	■		■
Variable depth / direct mount operating handle				•		•	•		•
Motor operator				•		•	•		•
Endurance	Electrical	cycles	415V AC	30000		30000			20000
			1100V AC				1000		
	Mechanical	cycles		30000		30000	7000		30000
Standards				IEC 60947-2, EN 60947-2					

■ Standard • Optional - Not Available

*20, 32A

**50, 63, 100, 125A

Product series	description	unit	condition	EB2 250				EB2 250	
Model-type				L	S	H	V	LE	E
Number of poles					3, 4		3	3, 4	
Nominal current ratings									
	I_n	(A)	50°C		200, 250		160, 250	40, 125, 160, 250	
Electrical characteristics									
Rated operational voltage	U_e	(V)	AC 50/60 Hz	690	690	690	1100	690	690
			DC	250	250	250	-	-	-
Rated insulation voltage	U_i	(V)		800	800	800	1100	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8	8
Ultimate breaking capacity	I_{cu}	(kA)	1100V AC	-	-	-	6	-	-
(IEC, JIS, AS/NZS)			690V AC	-	7.5	7.5		7,5	20
			525V AC	10	25	25		25	35
			440V AC	15	25	50		25	50
			400/415V AC	25	36	65		36	70
			220/240V AC	35	65	85		65	125
			250V DC	25	40	40		-	-
Service breaking capacity	I_{cs}	(kA)	1100V AC	-	-	-	4	-	-
(IEC, JIS, AS/NZS)			690V AC	-	7.5	7.5		7,5	15
			525V AC	7.5	25	25		25	35
			440V AC	12	25	25		25	50
			400/415V AC	19	36	36		36	70
			220/240V AC	27	65	85		65	125
			250V DC	19	40	40		-	-
Rated breaking capacity (NEMA)		(kA)	480V AC	10	22	25		25	35
			240VAC	35	65	85		65	125
Rated short-time withstand current	I_{cw}	(kA)	0.3 s	-	-		-	-	-
Protection									
Adjustable thermal, adjustable magnetic				■	■		■	-	-
Fixed thermal, fixed magnetic								-	-
Microprocessor								■	■
Utilisation category				A	A		A	A	A
Installation									
Front connection				■	■		■	■	■
Attached flat bar				•	•		•	•	•
Solderless terminal (cable clamp)				•	•		•	•	•
Rear connection				•	•		•	•	•
Plug-in				•	•		•	•	•
Draw- out				-	-			-	-
DIN rail mounting				-	-		-	-	-
Dimensions	h	(mm)		165	165		165	165	165
	w	(mm)	3 pole	105	105		105	105	105
		(mm)	4 pole	140	140			140	140
	d	(mm)		68	68		68	103	103
Weight	W	(kg)	3 pole	1.5	1.5		1.5	2.3	2.5
			4 pole	1.9	1.9			3.1	3.3
Operation									
Direct Opening Action				■	■		■	■	■
Toggle operation				■	■		■	■	■
Variable depth / direct mount operating handle				•	•		•	•	•
Motor operator				•	•		•	•	•
Endurance	Electrical	cycles	415V AC	10000	10000			10000	10000
			1100V AC				10000		
	Mechanical	cycles		30000	30000		70000	30000	30000
Standards				IEC 60947-2, EN 60947-2					

■ Standard • Optional - Not Available

Technical data

Product series	description	unit	condition	EB2 400		EB2 400		EB2 630		
Model-type				L	S	E, LCD	HLCD	LE, LLCD	E, LCD	HE
Number of poles				3, 4	3, 4	3,4	4	3,4	3, 4	3, 4
Nominal current ratings										
	I_n	(A)	50°C	250, 400	250, 400	250, 400		630	630	630
Electrical characteristics										
Rated operational voltage	U_e	(V)	AC 50/60 Hz	525	690	690	690	690*	690*	690*
			DC	250	250	-	-	-	-	-
Rated insulation voltage	U_i	(V)		800	800	800	800	800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8	8	8
Ultimate breaking capacity	I_{cu}	(kA)	690V AC	-	20	20	20	10*	20*	20*
(IEC, JIS, AS/NZS)			525V AC	15	30	30	30	15	30	30
			440V AC	22	45	45	65	25	45	65
			400/415V AC	25	50	50	70	36	50	70
			220/240V AC	35	85	85	100	50	85	100
			250V DC	25	40	-	-	-	-	-
Service breaking capacity	I_{cs}	(kA)	690V AC	-	15	15	15	10*	15*	15*
(IEC, JIS, AS/NZS)			525V AC	15	30	30	30	15	30	30
			440V AC	22	45	45	50	25	45	50
			400/415V AC	25	50	50	50	36	50	50
			220/240V AC	35	85	85	85	50	85	85
			250V DC	19	40	-	-	-	-	-
Rated breaking capacity (NEMA)		(kA)	480V AC	15	25	25	30	15	25	30
			240VAC	35	85	85	100	50	85	100
Rated short-time withstand current	I_{cw}	(kA)	0.3 s	-	-	5	5	-	-	
Protection										
Adjustable thermal, adjustable magnetic				■	■					
Fixed thermal, fixed magnetic										
Microprocessor						■	■	■	■	■
Utilisation category				A	A	B	B	A	A	A
Installation										
Front connection				■	■	■	■	■	■	■
Attached flat bar				•	•	•	•	•	•	•
Solderless terminal (cable clamp)				•	•	•	•	-	-	-
Rear connection				•	•	•	•	-	-	-
Plug-in				•	•	•	•			
Draw- out				•	•	•	•	-	-	-
DIN rail mounting				-	-	-	-	-	-	-
Dimensions	h	(mm)		260	260	260	260	260	260	260
	w	(mm)	3 pole	140	140	140	-	140	140	140
		(mm)	4 pole	185	185	185	185	185	185	185
	d	(mm)		103	103	103	103	103	103	103
Weight	W	(kg)	3 pole	4.2	4.2	4.3	-	5.0	5.0	5.0
			4 pole	5.6	5.6	5.7	5.7	6.5	6.5	6.5
Operation										
Direct Opening Action				■	■	■	■	■	■	■
Toggle operation				■	■	■	■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•	•	•	•
Motor operator				•	•	•	•	•	•	•
Endurance	Electrical	cycles	415V AC	4500	4500	4500	4500	4500	4500	4500
	Mechanical	cycles		15000	15000	15000	15000	15000	15000	15000
Standards	IEC 60947-2, EN 60947-2									

■ Standard • Optional - Not Available

* MCCB can not be used in IT system at this voltage

Product series	description	unit	condition	EB2 800			EB2 800			EB2 1000		EB2 1250		EB2 1600	
Model-type				L	S	H	LE	E	HE	LE	E	LE	E	LE	E
Number of poles				3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4
Nominal current ratings															
	I_n	(A)	50°C	630, 800	630, 800	630, 800	800	800	800	1000	1000	1250	1250	1600	1600
Electrical characteristics															
Rated operational voltage	Ue	(V)	AC 50/60 Hz	690	690	690	690	690	690	690	690	690	690	690	690
			DC	250	250	250	-	-		-	-	-	-	-	-
Rated insulation voltage	Ui	(V)		800	800	800	800	800	800	800	800	800	800	800	800
Rated impulse withstand voltage	Uimp	(kV)		8	8	8	8	8	8	8	8	8	8	8	8
Ultimate breaking capacity	Icu	(kA)	690V AC	10*	20*	25*	20*	25*	25*	20*	25*	20*	25*	20*	45*
(IEC, JIS, AS/NZS)			525V AC	15*	30	45	30	35	40	30	45	30	45	30	65
			440V AC	30	50	65	50	65	125	45	65	45	65	45	85
			400/415V AC	36	50	70	50	70	125	50	70	50	70	50	100/85
			220/240V AC	50	85	100	85	100	150	85	100	85	100	85	125
			250V DC	50	50	50	-	-	-	-	-	-	-	-	-
Service breaking capacity	Ics	(kA)	690V AC	10*	20*	20*	20*	20*	20*	15*	20*	15*	20*	15*	34*
(IEC, JIS, AS/NZS)			525V AC	15*	30	34	30	30	34	23	34	23	34	23	50
			440V AC	30	50	50	50	50	94	34	50	34	50	34	65
			400/415V AC	36	50	50	50	50	94	38	50	38	50	38	75/65
			220/240V AC	50	85	75	85	75	150	65	75	65	75	65	94
			250V DC	50	50	50	-	-	-	-	-	-	-	-	-
Rated breaking capacity (NEMA)		(kA)	480V AC	15	30	45	30	35	40	30	45	30	45	30	65
			240V AC	50	85	100	85	100	150	85	100	85	100	85	125
Rated short-time withstand current	Icw	(kA)	0,3 sec	-	-	-	10	10	10	-	-	15	15	20	20
Protection															
Adjustable thermal, adjustable magnetic				■	■	■	-	-	-	-	-	-	-	-	-
Fixed thermal, fixed magnetic				-	-	-	-	-	-	-	-	-	-	-	-
Microprocessor				-	-	-	■	■	■	■	■	■	■	■	■
Utilisation category				A	A	A	B	B	B	A	A	B	B	B	B
Installation															
Front connection				■	■	■	■	■	-	-	-	-	-	-	-
Attached flat bar				•	•	•	•	•	■	■	■	■	■	■	■
Solderless terminal (cable clamp)				•	•	•	-	-	-	-	•	-	-	-	-
Rear connection				•	•	•	-	-	•	•	-	-	-	•	•
Plug-in				•	•	•	-	-	•	-	-	-	-	-	-
Draw- out				-	-	-	-	-	-	-	-	-	-	-	-
DIN rail mounting				-	-	-	-	-	-	-	-	-	-	-	-
Dimensions	h	(mm)		273	273	273	273	273	273	273	273	370	370	370	370
	w	(mm)	3 pole	210	210	210	210	210	210	210	210	210	210	210	210
		(mm)	4 pole	280	280	280	280	280	280	280	280	280	280	280	280
	d	(mm)		103	103	103	103	103	140	103	103	120	120	140	140
Weight	W	(kg)	3 pole	8,5	8,5	8,5	9,1	9,1	12,3	11	11	19,8	19,8	27	27
			4 pole	11,5	11,5	11,5	12,3	12,3	14,8	14,8	14,8	25	25	35	35
Operation															
Direct Opening Action				■	■	■	■	■	■	■	■	■	■	■	■
Toggle operation				■	■	■	■	■	■	■	■	■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•	•	•	•	•	•	•	•	•
Motor operator				•	•	•	•	•	•	•	•	•	•	•	•
Endurance	Electrical	cycles	690	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	2000	2000
	Mechanical	cycles		10000	10000	10000	10000	10000	10000	10000	10000	5000	5000	5000	5000
Standards	IEC 60947-2, EN 60947-2														

■ Standard • Optional - Not Available

* MCCB can not be used in IT system at this voltage

Product series	description	unit	condition	EB2R	EB2R
Model-type				125L	250L
Number of Poles				3, 4	3, 4
Nominal current ratings					
	I_n	(A)	50°C	20, 32, 50	160, 250
				63, 100, 125	
Electrical characteristics					
Rated operational voltage	U_e	(V)	AC 50/60 Hz	525	525
Rated impulse withstand voltage	U_{imp}	(kV)		8	8
Ultimate breaking capacity	I_{cu}	(kA)	525V AC	8	10
(IEC, JIS, AS/NZS)			440V AC	15	15
			400/415V AC	25	25
			220/240V AC	35	35
Service breaking capacity	I_{cs}	(kA)	525V AC	6	7.5
(IEC, JIS, AS/NZS)			440V AC	12	12
			400/415V AC	19	19
			220/240V AC	27	27
Protection					
Adjustable thermal, adjustable magnetic				■	■
Residual current protection, Type A				■	■
Utilization category				A	A
Installation					
Front connection				■	■
Attached flat bar				•	•
Solderless terminal (cable clamp)				•	•
Rear connection				•	•
Plug-in				-	-
DIN rail mounting				•	-
Dimensions	h	(mm)		155	165
	w	(mm)	3 pole	90	105
			4 pole	120	140
	d	(mm)		68	68
Weight	W	(kg)	3 pole	1.1	1.5
			4 pole	1.4	1.9
Operation					
Direct Opening Action				■	■
Toggle operation				■	■
Variable depth / direct mount operating handle				•	•
Mechanical interlocks				-	-
Motor operator				•	•
Endurance	Electrical	cycles	440V AC	30000	30000
	Mechanical	cycles		30000	30000
Standards	IEC 60947-2, EN 60947-2				

■ Standard • Optional - Not Available

Product series	description	unit	condition	EB2 400		EB2 800	
Model-type				LF	SF	LF	LF
Number of poles				3	3, 4	3,4	
Nominal current ratings							
	I_n	(A)	50°C	400 (45°C)	400 (45°C)	630 (45°C)	800 (45°C)
Electrical characteristics							
Rated operational voltage	U_e	(V)	AC 50/60 Hz	690	690	690	690
			DC	250	250	250	250
Rated insulation voltage	U_i	(V)		690	690	690	690
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8
Ultimate breaking capacity (IEC, JIS, AS/NZS)	I_{cu}	(kA)	3,817	10	15	10	10
			525V AC	15	22	15	15
			440V AC	22	30	30	30
			400/415V AC	25	36	36	36
			220/240V AC	35	50	50	50
			250V DC	35	40	50	50
Service breaking capacity (IEC, JIS, AS/NZS)	I_{cs}	(kA)	690V AC	10	15	10	10
			525V AC	15	22	15	15
			440V AC	22	30	30	30
			400/415V AC	25	36	36	36
			220/240V AC	35	50	50	50
			250V DC	35	40	50	50
Rated breaking capacity (NEMA)		(kA)	480V AC				
			240VAC				
Rated short-time withstand current							
Protection							
Fixed thermal, adjustable magnetic				-	■		
Fixed thermal, fixed magnetic				■		-	-
Microprocessor				-	-	-	-
Utilisation category				A	A	A	A
Installation							
Front connection				■	■	-	-
Attached flat bar				•	•	■	■
Solderless terminal (cable clamp)				•	•	•	•
Rear connection				•	•	•	•
Plug-in				•	•	•	•
Draw- out						-	-
DIN rail mounting				-	-	-	-
Dimensions	h	(mm)		260	260	273	273
	w	(mm)	3 pole	140	140	210	210
		(mm)	4 pole	-	185	280	280
	d	(mm)		103	103	103	103
Weight	W	(kg)	3 pole	4.2	4.2	8	8,5
			4 pole	-	5.6	11	11,5
Operation							
Direct Opening Action				■	■	■	■
Toggle operation				■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•
Motor operator				•	•	•	•
Endurance	Electrical	cycles	415V AC	4500	4500	4000	4000
	Mechanical	cycles		15000	15000	10000	10000
Standards	IEC 60947-2, EN 60947-2						

■ Standard • Optional - Not Available

Low voltage switch disconnector

Product series	desc.	unit	condition	ED2	ED2	ED2	ED2	ED2	ED2	ED2	ED2	ED2
Model-type				125	160	250	400	630	800	1000	1250	1600
Number of Poles				3, 4	3, 4	3,4	3,4	3, 4	3, 4	3, 4	3, 4	3,4
Nominal current ratings												
	I_n	(A)		125	160	250	400	630	800	1000	1250	1600
Electrical characteristics												
Rated operational voltage	U_e	(V)	AC 50/60 Hz	690	690	690	690	690	690	690	690	690
			DC	250	250	250	250	250	250	250	250	250
Rated insulation voltage	U_i	(V)		800	800	800	800	800	800	800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8	8	8	8	8
Rated short-circuit making capacity	I_{cm}	(kA peak)		3,6	6	6	9	9	17	17	32	45
Rated short-time withstand current	I_{cw}	(kA rms)	0.3s	2	3	3	5	5	10	10	10	10
			AC	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A
			DC	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A	DC-22A
Installation												
Front connection				■	■	■	■	■	■	-	-	-
Attached flat bar				•	•	•	•	•	•	■	■	•
Solderless terminal				•	•	•	•	•	-	-	-	-
Rear connection				•	•	•	•	•	•	•	•	■
Plug-in				•	•	•	•	•	•	-	•	-
Draw- out				•	•	•	•	•	•	-	•	•
DIN rail mounting				•	-	-	-	-	-	-	-	-
Dimensions	h	(mm)		155	165	165	260	260	273	273	370	370
	w	(mm)	3 pole	90	105	105	140	140	210	210	210	210
		(mm)	4 pole	120	140	140	185	185	280	280	280	280
	d	(mm)		68	68	68	103	103	103	103	120	140
Weight	W	(kg)	3 pole	1.1	1.5	1.5	4.2	4.4	8,5	10,4	18,2	24,9
			4 pole	1.4	1.9	1.9	5.6	5.8	11,5	14,0	23,4	32,9
Operation												
Direct Opening Action				■	■	■	■	■	■	■	■	■
Toggle operation				■	■	■	■	■	■	■	■	■
Variable depth / direct mount operating handle				•	•	•	•	•	•	•	•	•
Motor operator				•	•	•	•	•	•	•	•	•
Endurance	Elec.	cycles	415V AC	30000	10000	10000	4500	4500	4000	4000	4000	2000
	Mech.	cycles		30000	30000	30000	15000	15000	10000	10000	5000	5000
Standards				IEC 60947-2, EN 60947-2						IEC 60947-3, EN 60947-3		

Thermal magnetic adjustments and characteristics

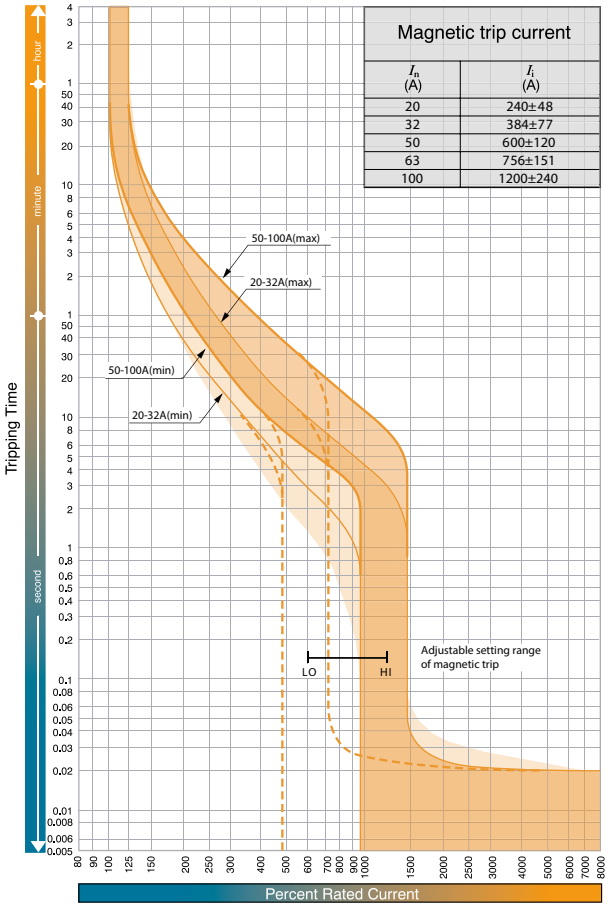
Thermal adjustment

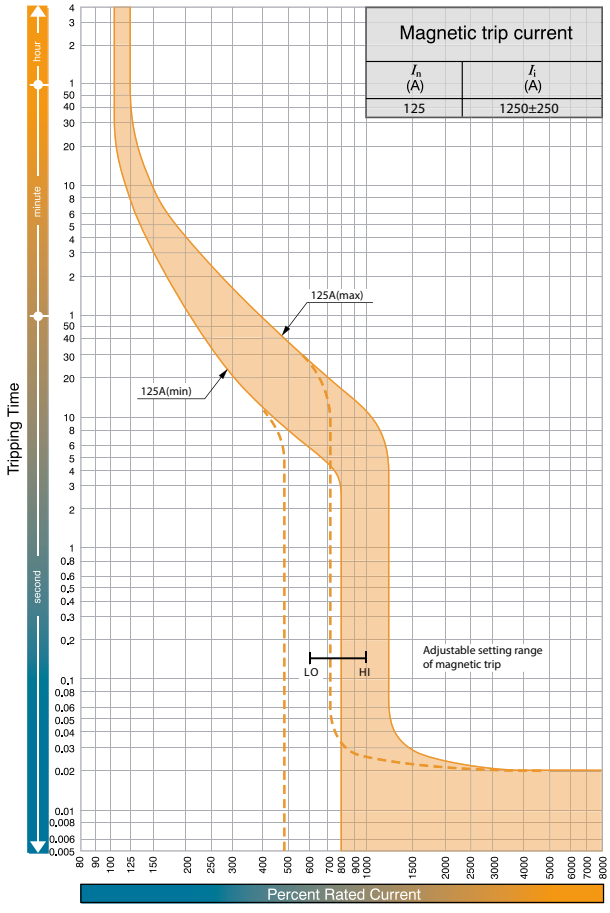
Low voltage moulded case circuit breakers have a wide thermal adjustment range, one of the largest on the market. The rated current 'I_r' is continuously adjustable from 63% to 100% of this nominal current 'I_n'. There are three main points of calibration marked at 63%, 80% and 100%.

Magnetic adjustment

An adjustable magnetic characteristics allows short-circuit protection to be matched to the load and supply characteristics, for example motor inrush current or generator short-circuit current.

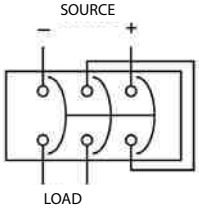
Time, current characteristics curves
EB2 125



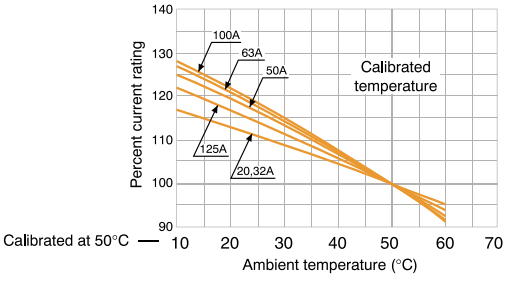


Special applications of thermal magnetic MCCBs

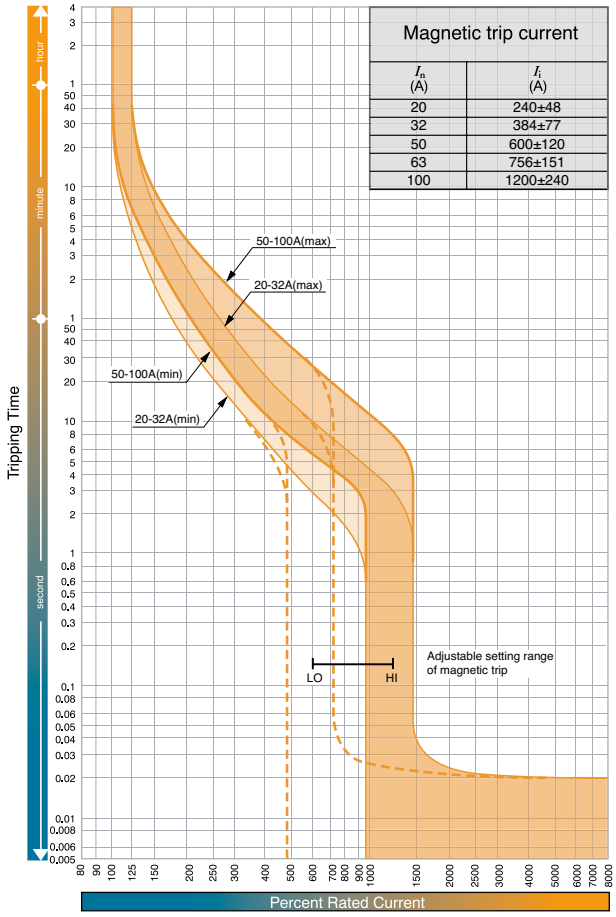
All standard thermal magnetic MCCBs are suitable for DC application up to 250 V DC.

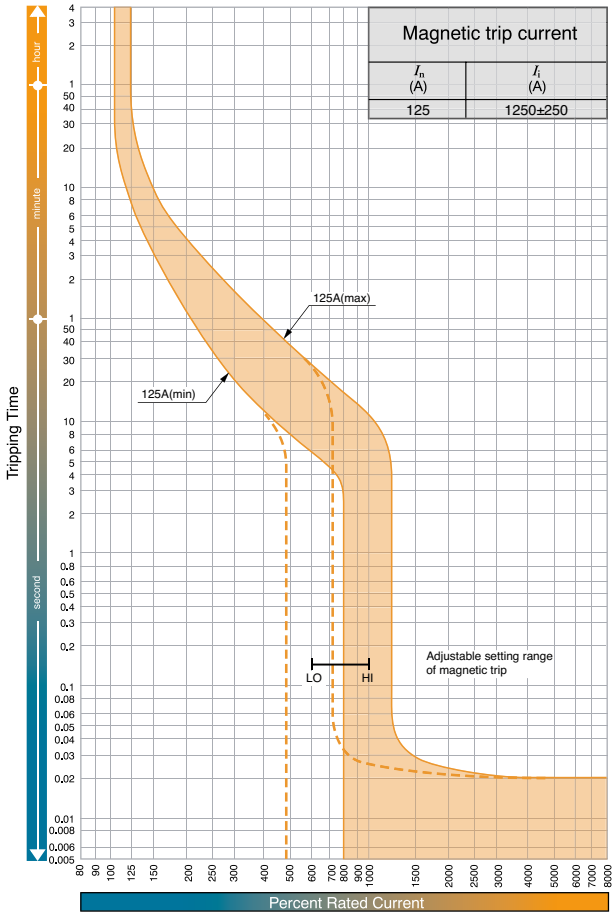


Ambient compensating curves

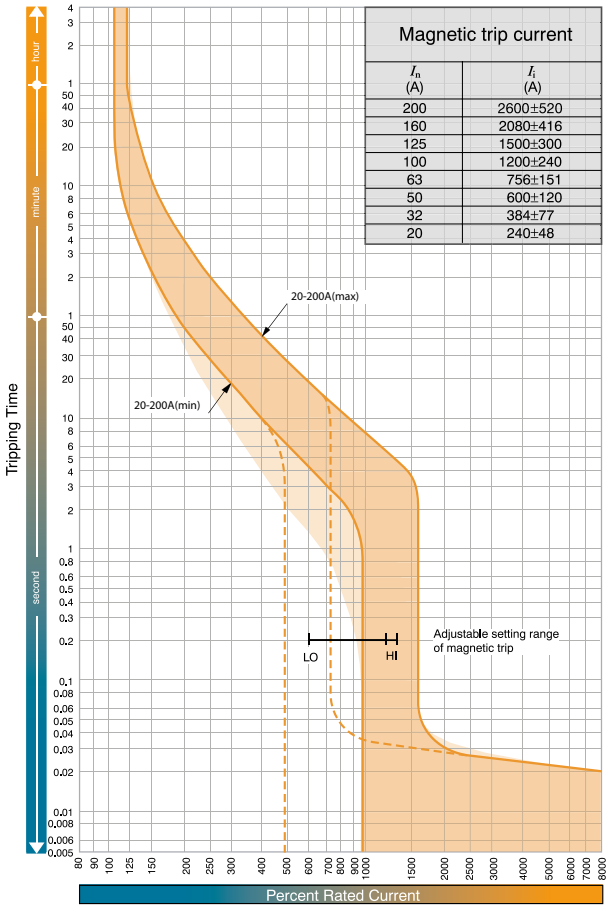


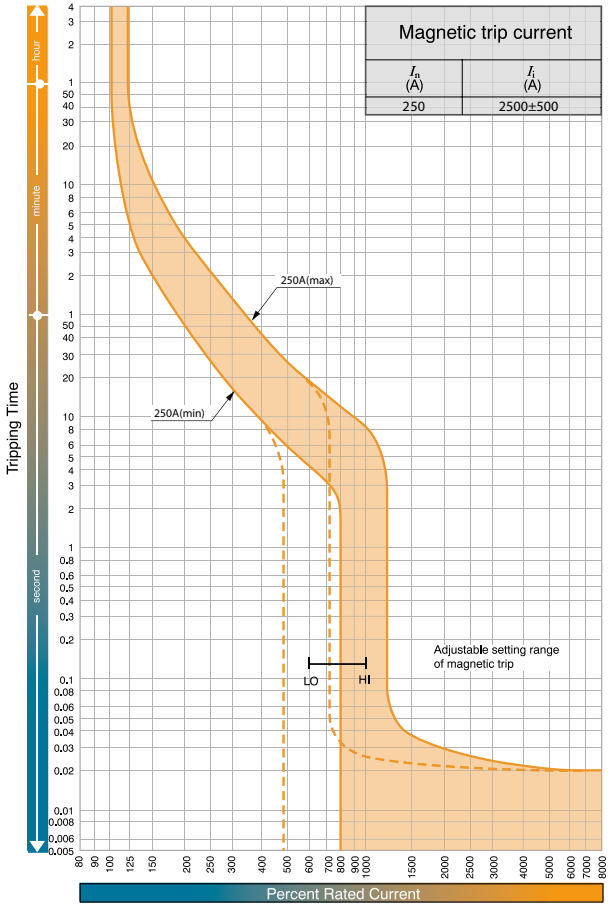
Time, current characteristics curves
EB2 125 1000V



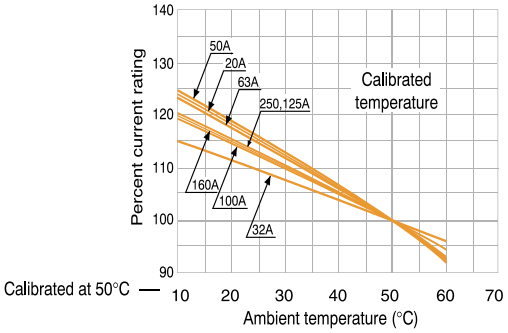


Time, current characteristics curves
EB2 160 and EB2 250



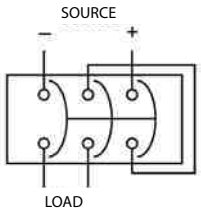


Ambient compensating curves

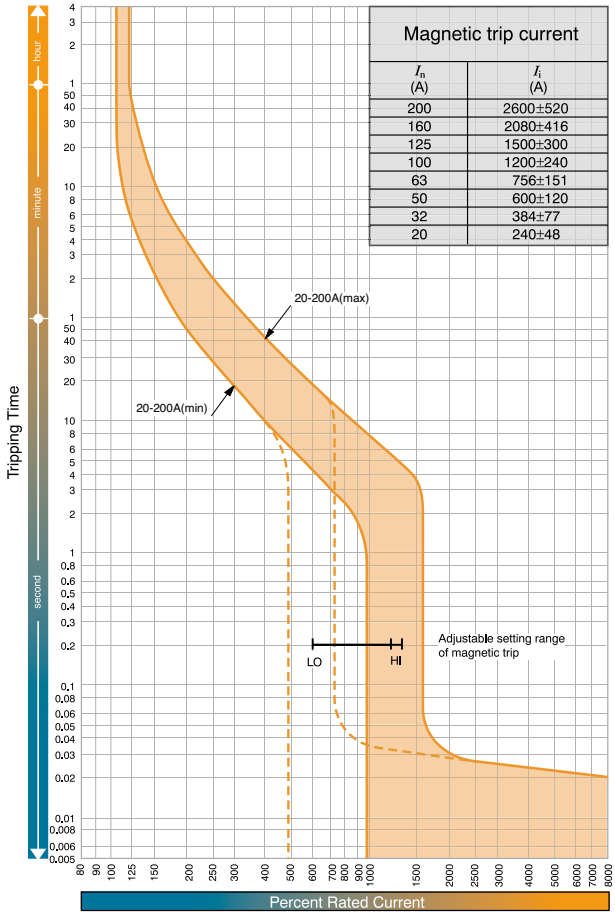


Special applications of thermal magnetic MCCBs

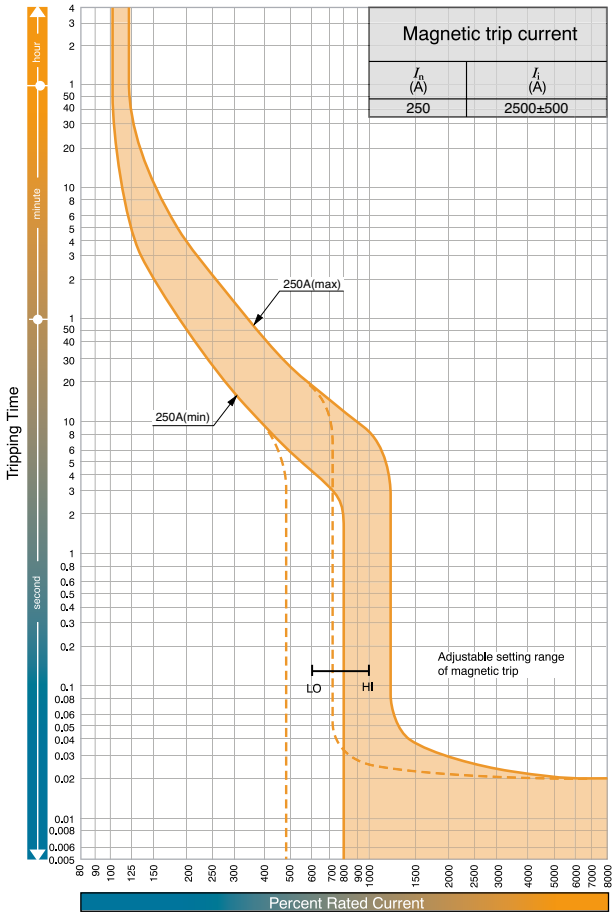
All standard thermal magnetic MCCBs are suitable for DC application up to 250 V DC.



Time, current characteristics curves
EB2 250 1000V

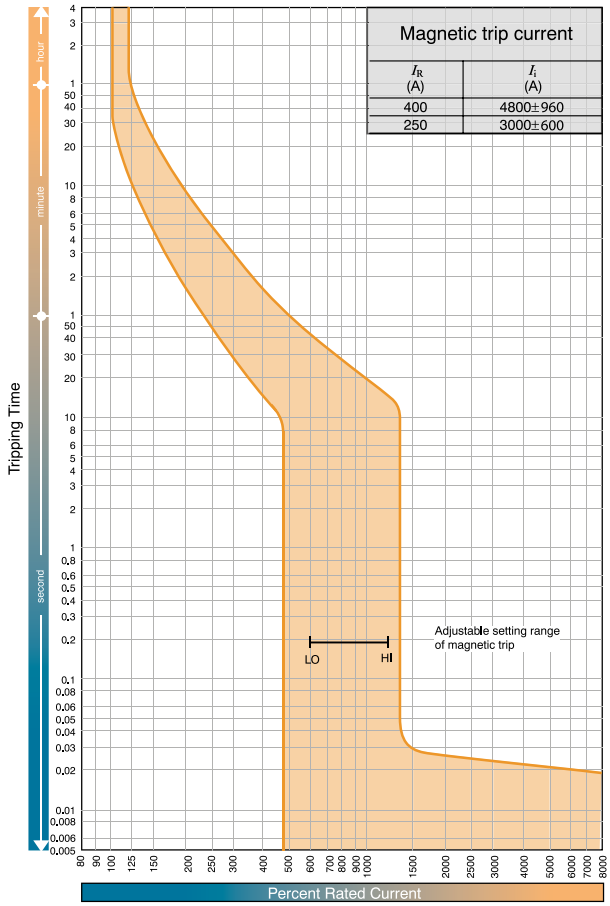


Magnetic trip current	
I_n (A)	I_i (A)
200	2600±520
160	2080±416
125	1500±300
100	1200±240
63	756±151
50	600±120
32	384±77
20	240±48

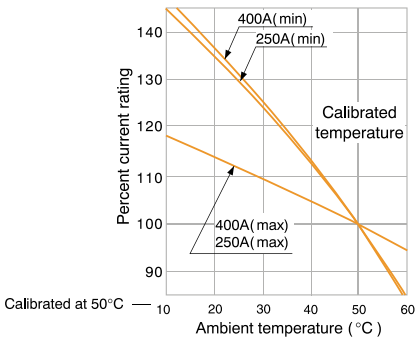


Magnetic trip current	
I_n (A)	I_i (A)
250	2500±500

Time, current characteristics curves
EB2 400

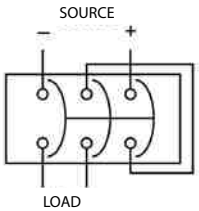


Ambient compensating curves

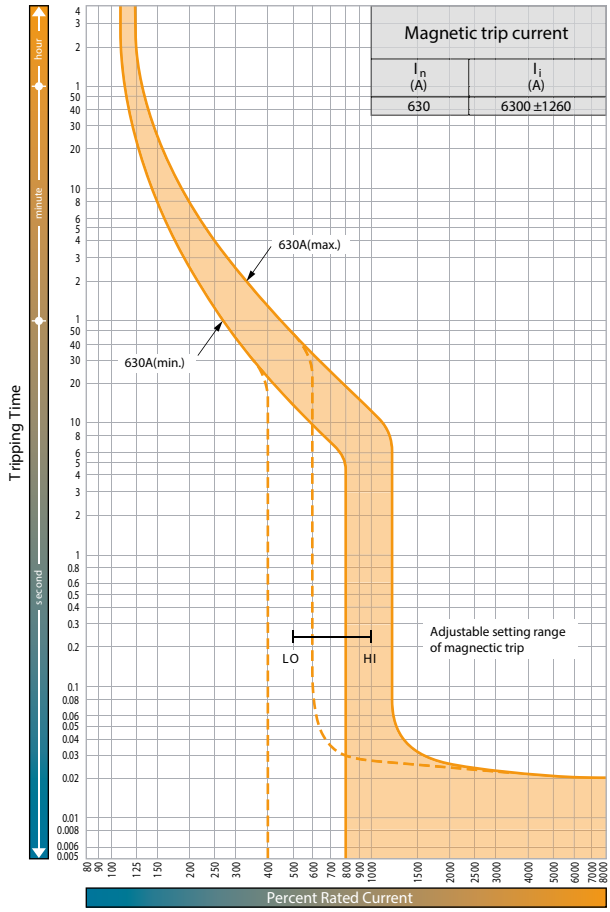


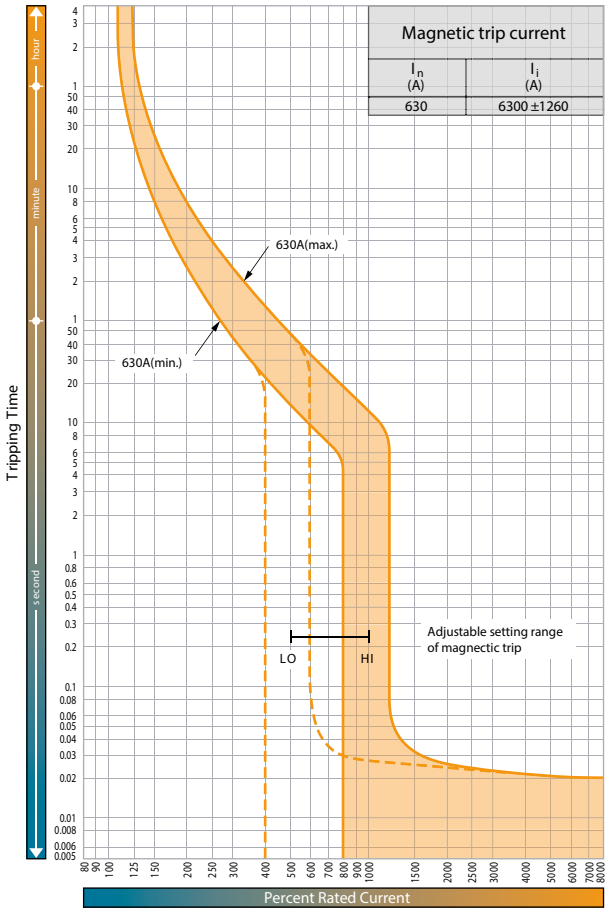
Special applications of thermal magnetic MCCBs

All standard thermal magnetic MCCBs are suitable for DC application up to 250 V DC.

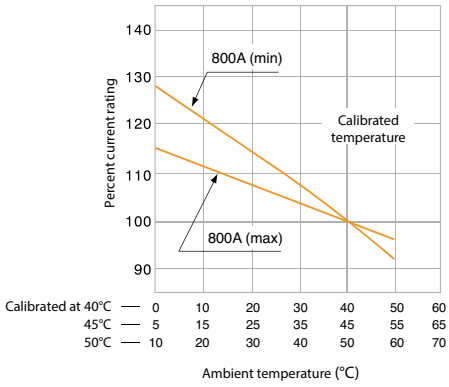


Time, current characteristics curves
EB2 630 and EB2 800



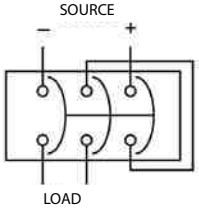


Ambient compensating curves

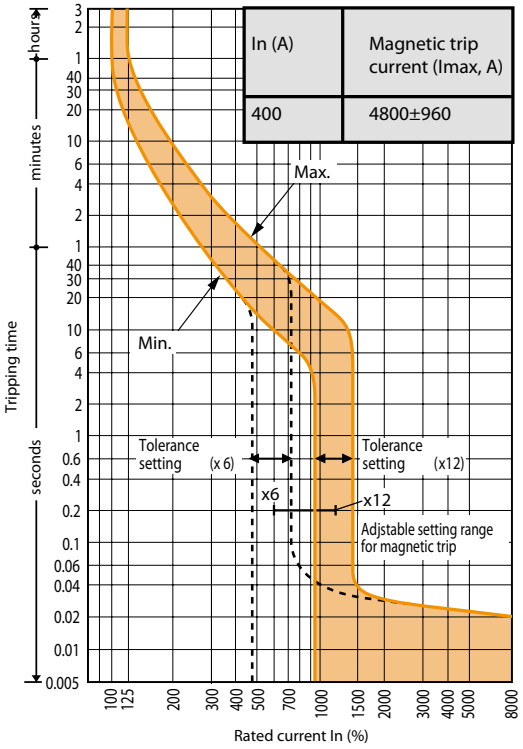


Special applications of thermal magnetic MCCBs

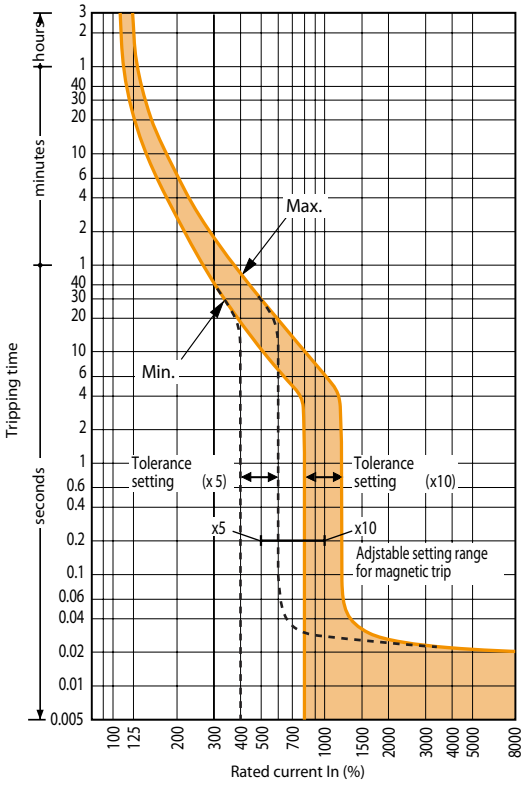
All standard thermal magnetic MCCBs are suitable for DC application up to 250 V DC.



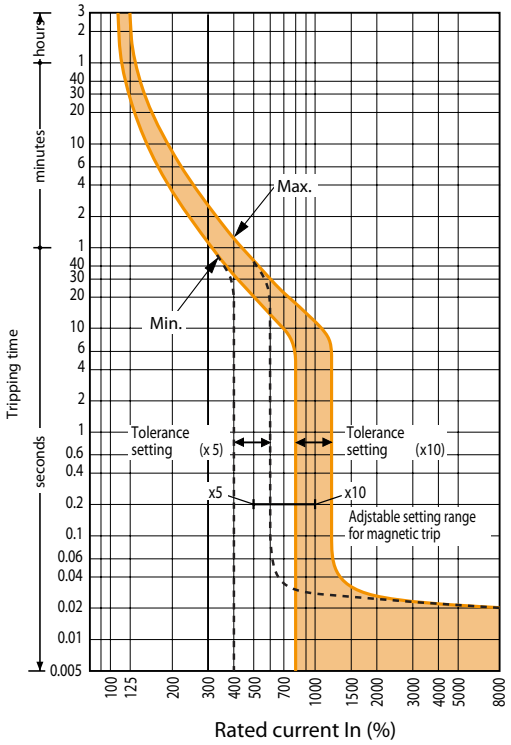
Time, current characteristics curves EB2 400 SF



Time, current characteristics curves EB2 800/LF 630A

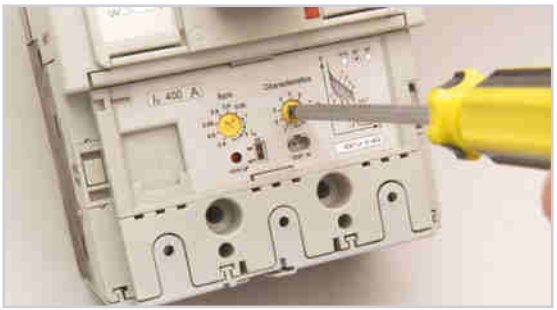


Time, current characteristics curves EB2 800/LF 800A

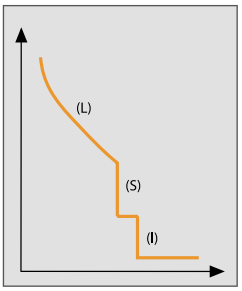


Microprocessor (electronic) based characteristics and adjustments EB2 series

Etibreak 2 MCCBs from 250A to 1600A frame sizes 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 flexibility 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 In.

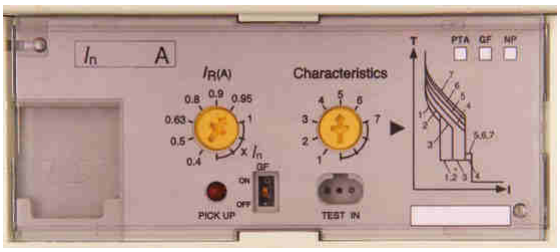


Selecting a Preset Characteristic for a 400A Etibreak 2 MCCB with Electronic Protection



Electronic protection characteristic

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



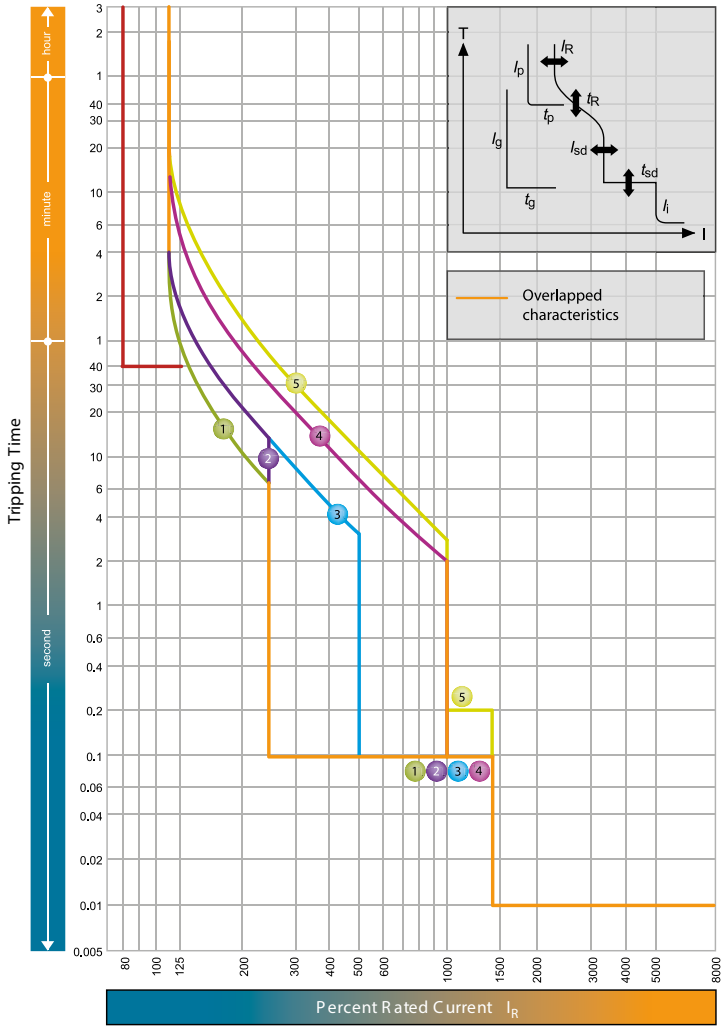
Adjustment dials

The left adjustment dial sets the rated current to match the conductor rating. The right adjustment dials select one of six on 630A models preset characteristics. The effects of the left adjustment dial (labelled IR(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 (LTD)	t_R	+/- 20%
Short Time Delay (STD)	I_{sd}	+/- 15%
	t_{sd}	Total clearnig time +50ms, resettable time - 20ms
Instantaneous (INST)	I_i	+/- 20%

EB2 250 LE &E



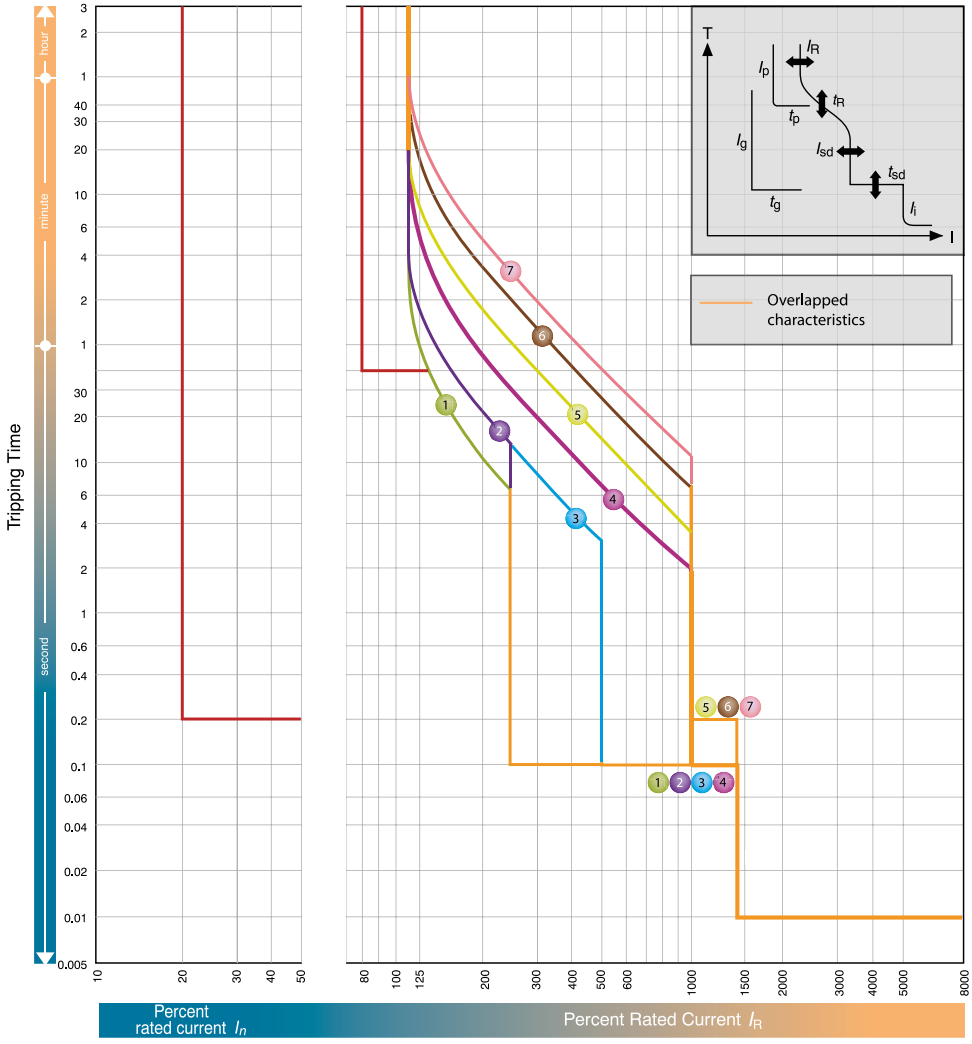
I_n = 40, 125, 160, 250

I_R (A)								
LTD Pick-up current I_R	xI_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0

	Characteristics		No.	1	2	3	4	5
Standard	LTD	Index t_R	Index (s)	11	21	21	5	7,5
				at 200 % x I_R			at 200 % x I_R	
	STD	Index I_{sd}	Index xI_R	2,5		5	10	
		Index t_{sd}	Index (s)	0,1				0,2
	INST	Index I_i	Index xI_R	14 (Max: 13 x I_n) Note (1)				

Note: (1) I_i max. = 12 x I_n.

EB2 400 E, LCD, HLCD

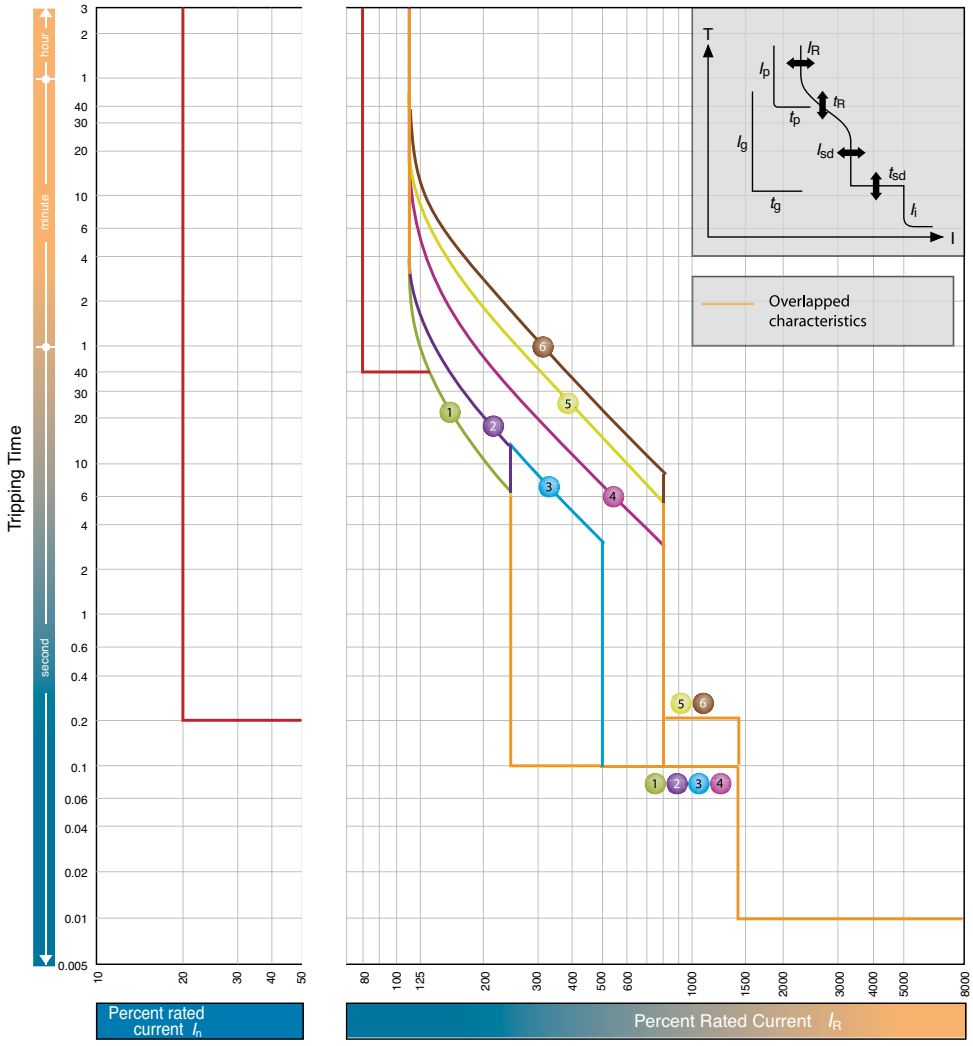


$I_n = 250^*, 400$

			I_R (A)							
			LTD Pick-up current I_R	xI_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0
			Characteristics	No.	1	2	3	4	5	6	7
Standard	LTD	Index t_R	Index (s)		11	21	21	5	10	19	29
					at 200 % x I_R			at 600 % x I_R			
	STD	Index I_{sd}	Index xI_R		2.5		5	10			
		Index t_{sd}	Index (s)		0.1				0.2		
	INST	Index I_i	Index xI_R		14 (Max: 13 x I_n)**						
Option	PTA	Index I_p	Index xI_R		0,8						
		Index t_p	Index (s)		40						
	GF	Index I_g	Index xI_n		0,2						
		Index t_g	Index (s)		0,2						
	NP	Index I_N	Index xI_R		1,0/0,5***						
		Index t_N	Index (s)		$t_N = t_R$						

Notes:
*GF is not available when In is 250A.
**I_i max. = 13 x I_n.
***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).
****When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2 630 LE, E, LCD, HLCD



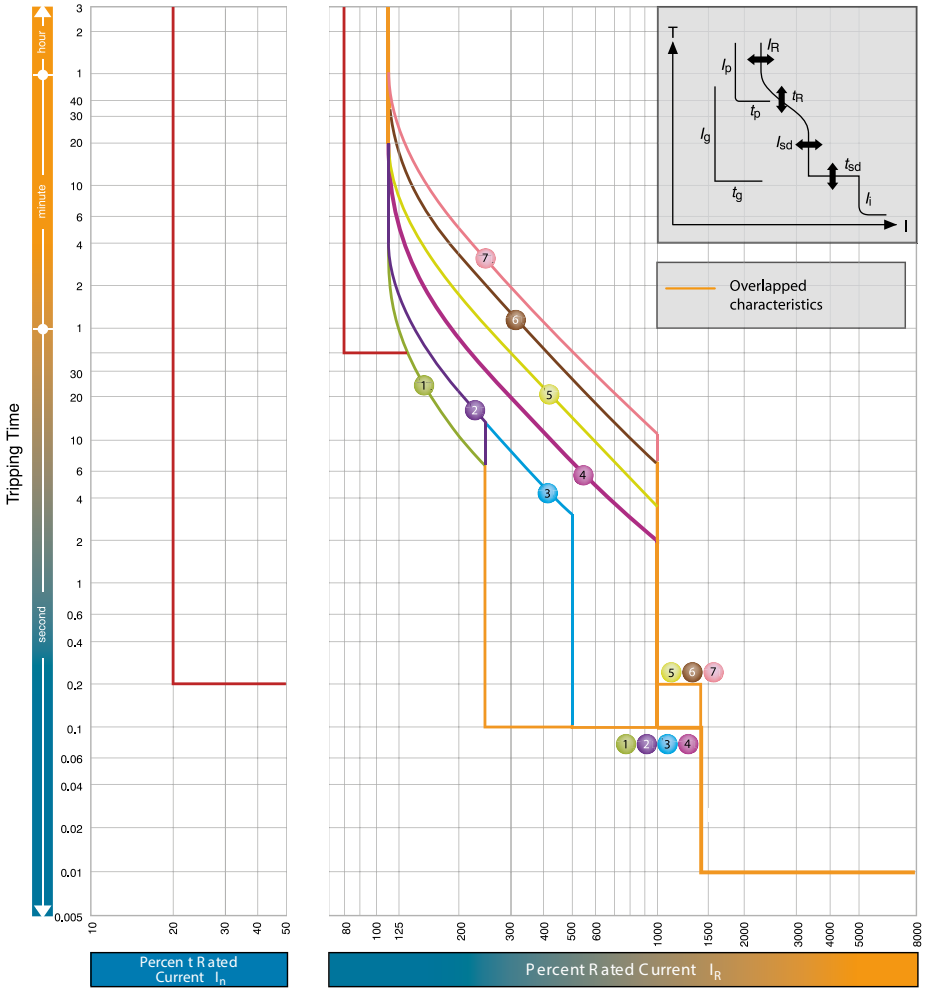
$I_n = 630A$

I_R (A)										
LTD Pick-up current I_R		xI_n	0.4	0.5	0.63	0.8	0.85	0.9	0.95	1.0

	Characteristics		No.	1	2	3	4	5	6
Standard	LTD	Index t_R	Index (s)	11	21	21	5	10	16
				at 200 % x I_R			at 600 % x I_R		
	STD	Index I_{sd}	Index xI_R	2.5		5	8		
		Index t_{sd}	Index (s)	0.1			0.2		
	INST	Index I_i	Index xI_R	14 (Max: 10 x I_n)*					
Option	PTA	Index I_p	Index xI_R	0,8					
		Index t_p	Index (s)	40					
	GF	Index I_g	Index xI_n	0,2					
		Index t_g	Index (s)	0,2					
	NP	Index I_N	Index xI_R	1,0/0,5**					
		Index t_N	Index (s)	$t_N = t_R$					

Notes:
*I_i max. = 10 x I_n.
**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).
***When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2 800 LE, E, HE



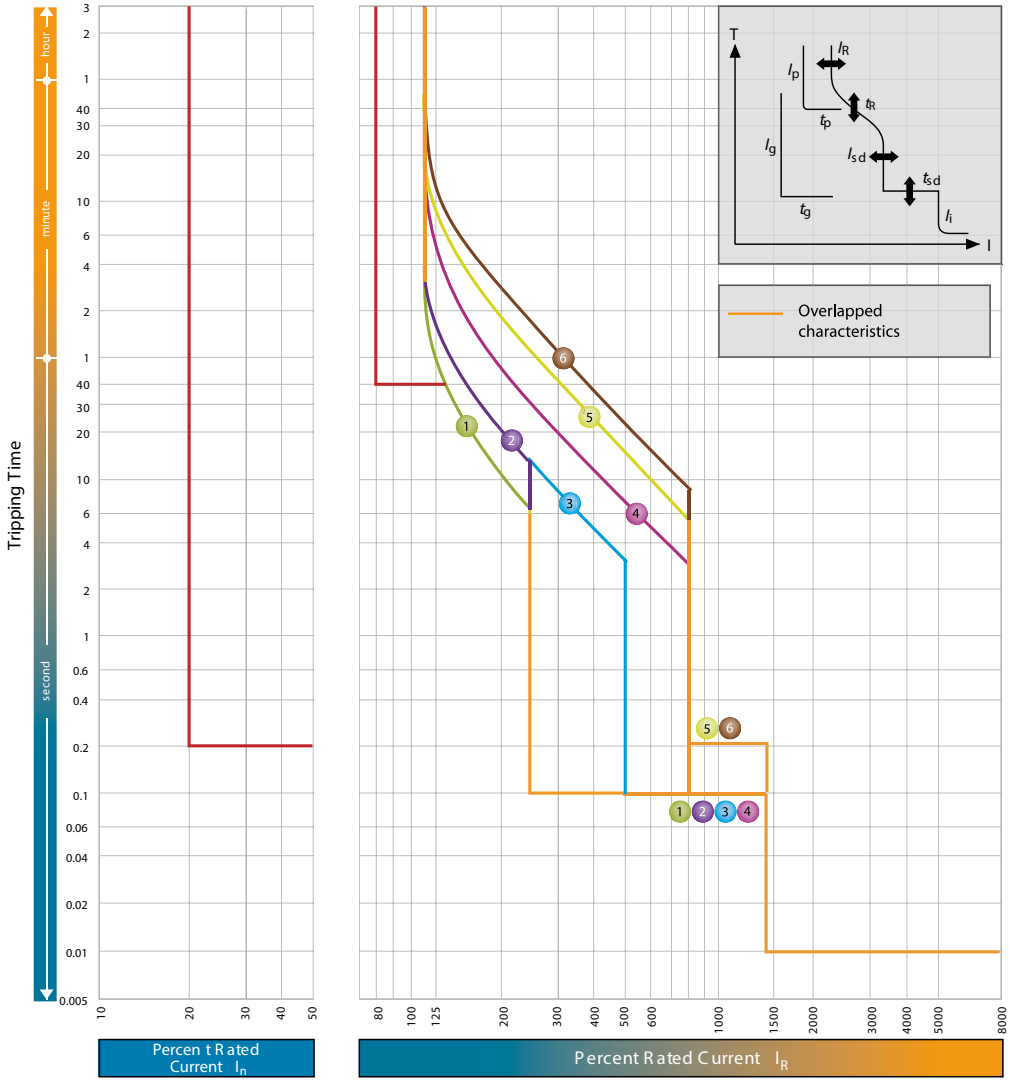
$I_n = 800$

	I_R (A)								
	LTD Pick-up current I_R	xI_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0

	Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	Index t_R	Index (s)	11	21	21	5	10	19	29
				at 200 % x I_R			at 600 % x I_R			
	STD	Index I_{sd}	Index xI_R	2.5		5	10			
		Index t_{sd}	Index (s)	0.1				0.2		
	INST	Index I_i	Index xI_R	14 (Max: 12 x I_n)*						
Option	PTA	Index I_p	Index xI_R	0,8						
		Index t_p	Index (s)	40						
	GF	Index I_g	Index xI_n	0,2						
		Index t_g	Index (s)	0,2						
	NP	Index I_N	Index xI_R	1,0/0,5***						
		Index t_N	Index (s)	$t_N = t_R$						

Notes:
*I_i max. = 12 x I_n.
**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).
***When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2 1000 LE, E



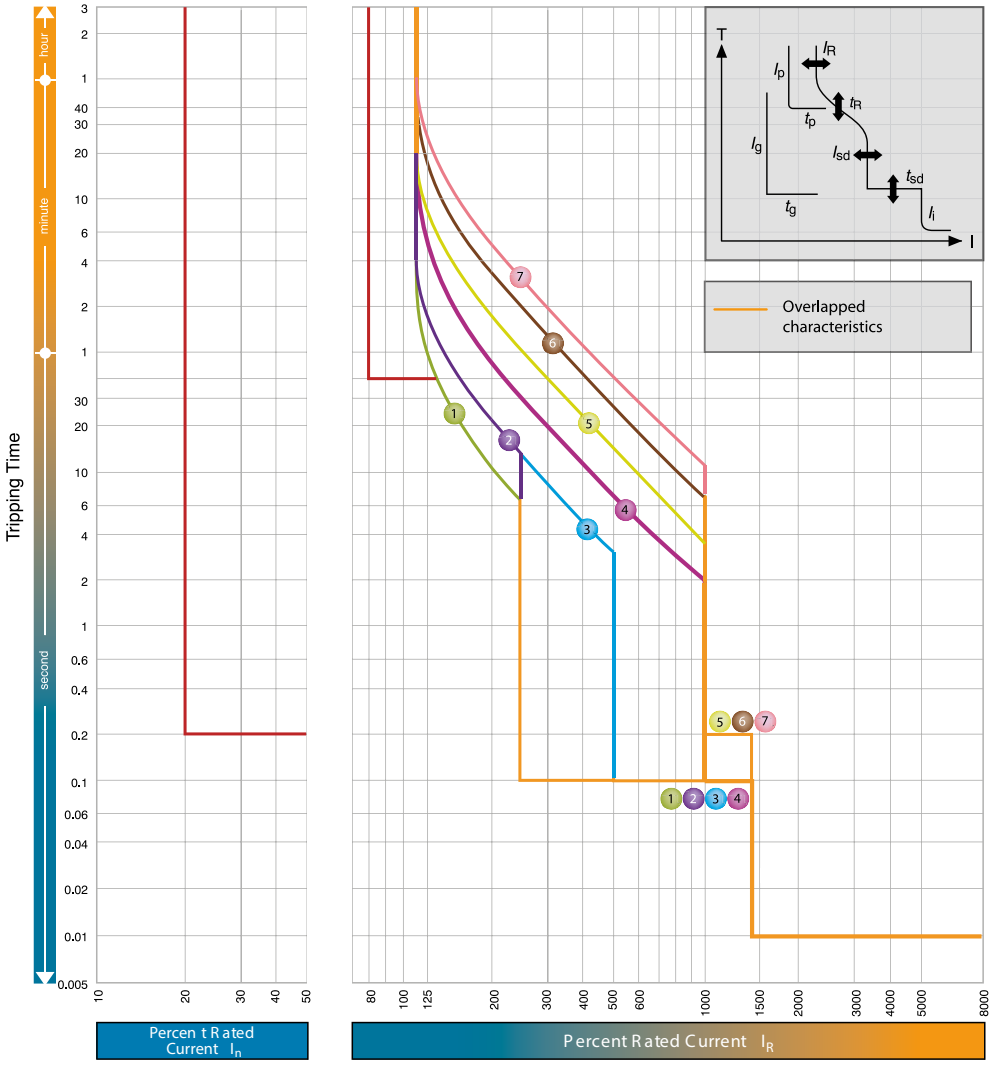
I_n = 1000A

I_R (A)									
LTD Pick-up current I_R		xI_n	0.4	0.5	0.63	0.8	0.85	0.9	0.95	1.0

	Characteristics		No.	1	2	3	4	5	6
Standard	LTD	Index t_R	Index (s)	11	21	21	5	10	16
				at 200 % x I_R			at 600 % x I_R		
	STD	Index I_{sd}	Index xI_R	2.5		5	8		
		Index t_{sd}	Index (s)	0.1					0.2
	INST	Index I_i	Index xI_R	14 (Max: 10 x I_n)*					
Option	PTA	Index I_p	Index xI_R	0,8					
		Index t_p	Index (s)	40					
	GF	Index I_g	Index xI_n	0,2					
		Index t_g	Index (s)	0,2					
	NP	Index I_N	Index xI_R	1,0/0,5***					
		Index t_N	Index (s)	t_N=t_R					

Notes:
*I_i max. = 10 x I_n.
**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).
***When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2 1250 LE, E



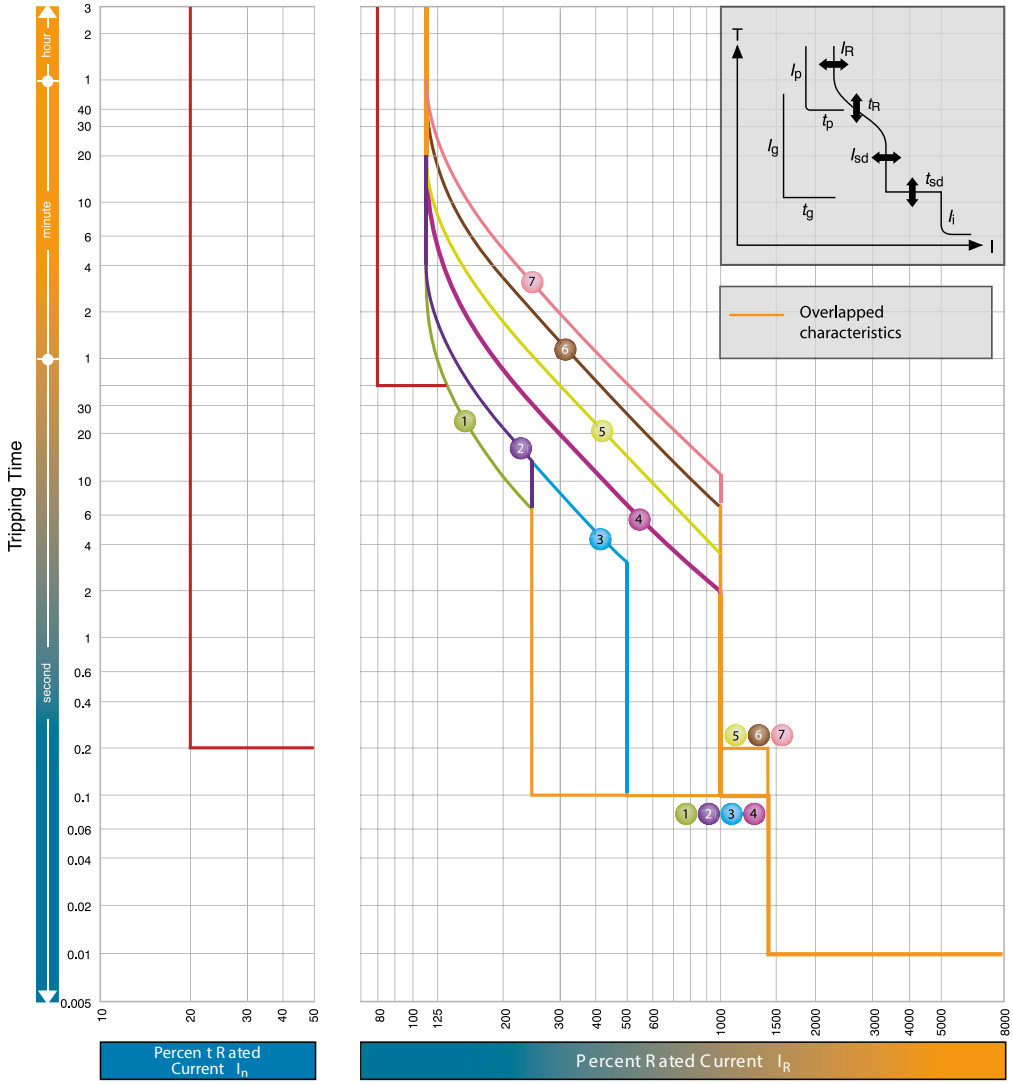
I_n = 1250

I_R (A)								
LTD Pick-up current I_R	xI_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0

	Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	Index t_R	Index (s)	11	21	21	5	10	19	29
				at 200 % x I_R			at 600 % x I_R			
	STD	Index I_{sd}	Index xI_R	2.5		5	10			
		Index t_{sd}	Index (s)	0.1				0.2		
	INST	Index I_i	Index xI_R	14 (Max: 12 x I_n)*						
Option	PTA	Index I_p	Index xI_R	0,8						
		Index t_p	Index (s)	40						
	GF	Index I_g	Index xI_n	0,2						
		Index t_g	Index (s)	0,2						
	NP	Index I_N	Index xI_R	1,0/0,5***						
		Index t_N	Index (s)	t_N=t_R						

Notes:
*I_i max. = 12 x I_n.
**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).
***When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2 1600 LE, E



I_n = 1600A

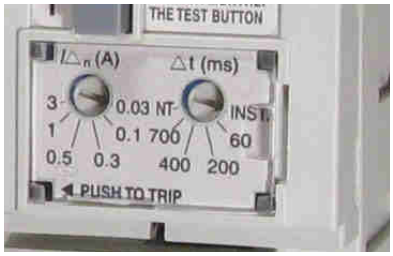
I_R (A)									
LTD Pick-up current I_R		xI_n	0.4	0.5	0.63	0.8	0.9	0.95	1.0

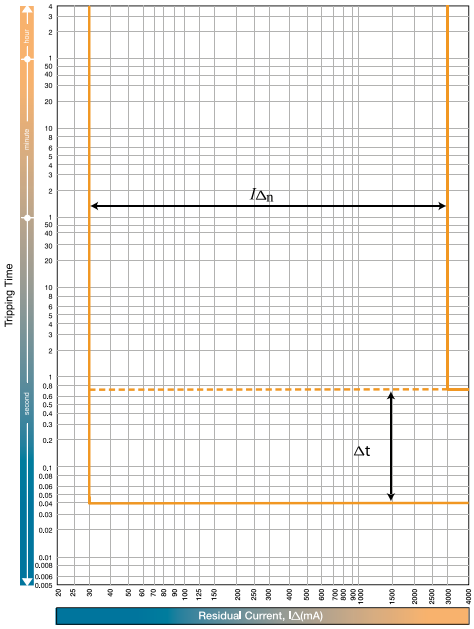
	Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	Index t_R	Index (s)	11	21	21	5	10	19	29
				at 200 % x I_R			at 600 % x I_R			
	STD	Index I_{sd}	Index xI_R	2.5		5	10			
		Index t_{sd}	Index (s)	0.1				0.2		
	INST	Index I_i	Index xI_R	14 (Max: 12 x I_n)*						
Option	PTA	Index I_p	Index xI_R	0,8						
		Index t_p	Index (s)	40						
	GF	Index I_g	Index xI_n	0,2						
		Index t_g	Index (s)	0,2						
	NP	Index I_N	Index xI_R	1,0/0,5***						
		Index t_N	Index (s)	t_N=t_R						

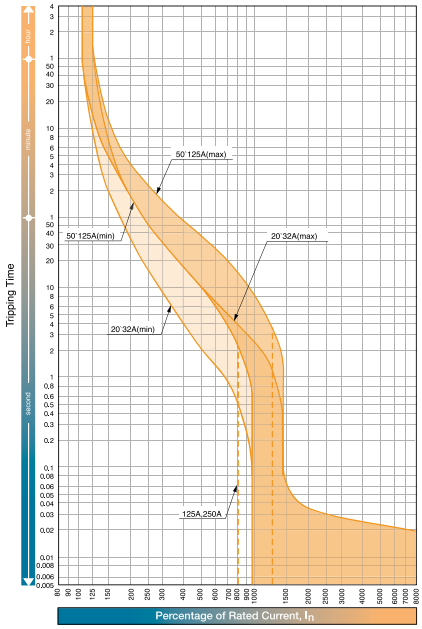
Notes:
*I_i max. = 12 x I_n.
**1,0 x I_R or 0,5 x I_R can be selected. Characteristic of neutral protection (t_N vs. I_N) is identical to characteristic of phase protection (t_R vs. I_R).
***When you specify gF on MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system. See terminal blocks in section 4.

EB2R adjustments

	Residual current $I_{\Delta n}$ is the adjustable tripping threshold for earth leakage protection. It can be set between 30mA and 3A. Available settings are 30mA, 100mA, 300mA, 500mA, 1000mA and 3000mA. Available settings are shown below	Time delay Δt is introduced to the residual current (earth leakage) protection characteristic. Available settings are; INST, 60ms, 200ms, 400ms, 700ms and NT. INST means EB2R set to time delay 0 (max. actual tripping time is 40ms) NT means No trip (tripping time is 0) The maximum breaking time is shown in brackets. Note that $I\Delta_n$ is set at 30mA, Δt defaults 0.	I_R is the adjustable tripping threshold for overload protection. It can be set between 0,63 and 1,0 times I_n. Available I_n ratings are shown below	I_i is the tripping threshold for short-circuit protection. It is fixed at the values shown below
Model	$I_{\Delta n}$	Δt (ms)	I_n (A)	I_i
EB2R 125	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 I_n (+/- 20%)
EB2R 125	0.03, 0.1, 0.3, 0.5, 1, 3	0(40), 60(195), 200(365), 400(620), 700(950), NT (∞)	125	10 x I_n (+/- 20%)
EB2R 250	0.03, 0.1, 0.3, 0.5, 1, 3	0(40), 60(195), 200(365), 400(620), 700(950), NT (∞)	160	13 x I_n (+/- 20%)
EB2R 250	0.03, 0.1, 0.3, 0.5, 1, 3	0(40), 60(195), 200(365), 400(620), 700(950), NT (∞)	250	10 x I_n (+/- 20%)



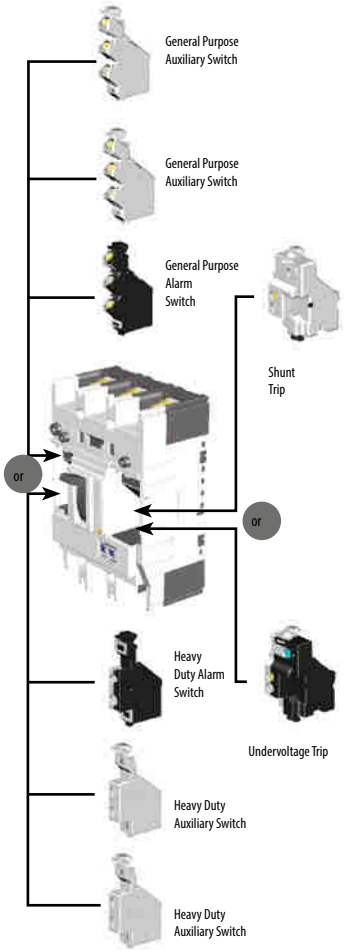




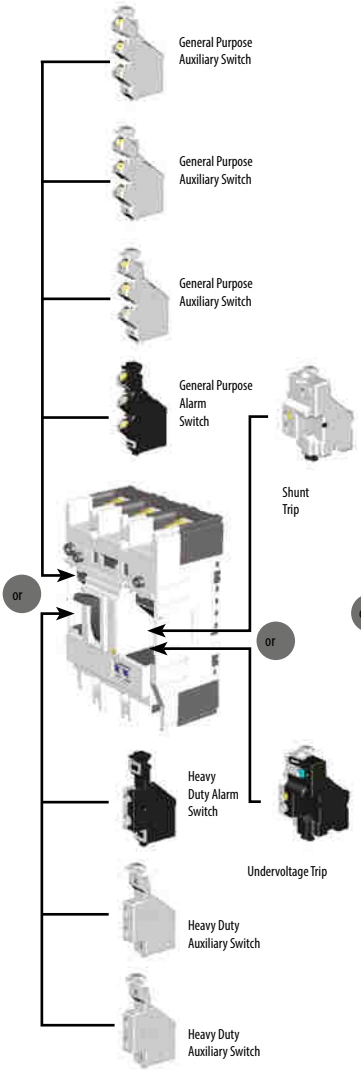
Internal accessories – series EB2

Ampere Frame size (A):

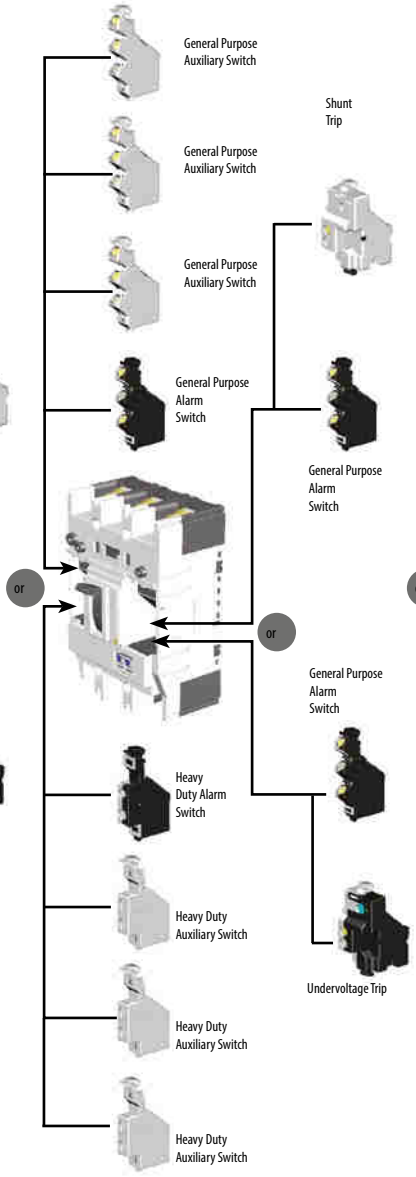
125, 160, 250



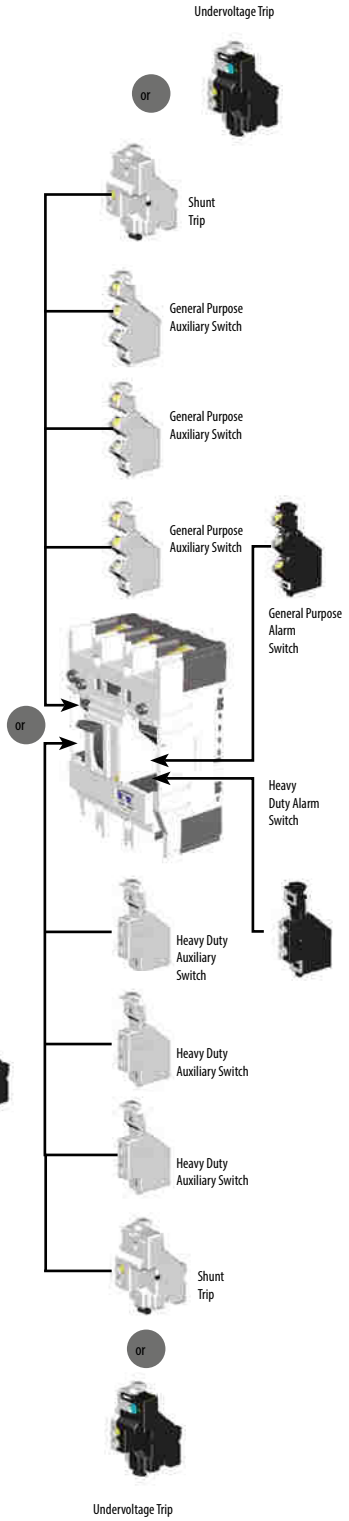
400, 630



800, 1000



1250, 1600

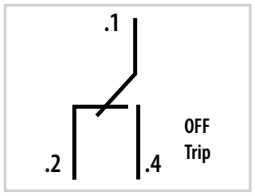


- Status indication switches mount in the left side of the MCCB. General purpose and heavy duty status indication switches cannot be mixed in the same MCCB. Only one alarm switch can be fitted to an MCCB.
- Shunt trips and undervoltage trips mount in the right side of the MCCB.
- It is not possible to install a shunt trip and an undervoltage trip in an MCCB as they occupy the same location. Undervoltage trips can provide remote tripping if necessary by wiring a normally closed contact or pushbutton in series with the protected supply.
- Undervoltage trips with time delays require an external time delay controller which clips to the side of the MCCB.

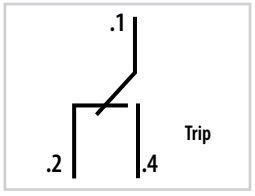
Internal accessories – series EB2

General Purpose Auxiliary Switch

General Purpose Alarm Switch



Terminal Designations and Function of General Purpose Auxiliary Switch



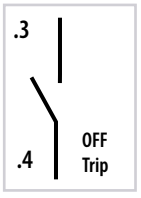
Terminal Designations and Function of General Purpose Alarm Switch

General purpose auxiliaries and alarm switch ratings

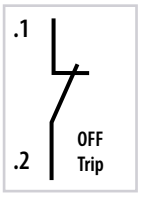
Volts (V)	AC Amperes (A)		Volts (V)	DC Amperes (A)		Minimum Load
	Resistive Load	Inductive Load		Resistive Load	Inductive Load	
440	-	-	250	-	-	100mA -> 15V DC.
240	3	2	125	0.4	0.05	
110	3	2	30	3	2	

Amperes (A)

Heavy Duty Auxiliary Switch

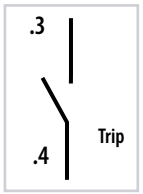


Terminal Designations and Function of Heavy Duty Auxiliary Switch NO contact

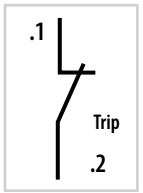


Terminal Designations and Function of Heavy Duty Auxiliary Switch, NC contact

Heavy Duty Alarm Switch



Terminal Designations and Function of Heavy Duty Alarm Switch, NO contact



Terminal Designations and Function of Heavy Duty Alarm Switch, NC contact

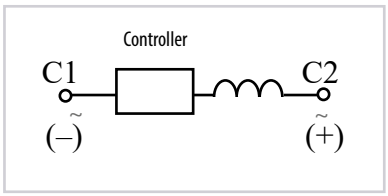
Ratings of Heavy Duty Auxiliary and Alarm switches

Volts (V)	AC Amperes (A)		Volts (V)	DC Amperes (A)	
	Resistive Load	Inductive Load		Resistive Load	Inductive Load
440	3	3	250	0.5	0.5
240	4	4	125	1	1
110	5	5	48	3	2.5
48	6	6	24	6	2.5

Shunt Trips

Ratings of Shunt Trips

Rated Voltage	Voltage AC		Voltage DC			
	200-240	380-450	24	48	100-120	200-240
Excitation Current (A)	0.014	0.0065	0.03	0.03	0.011	0.011

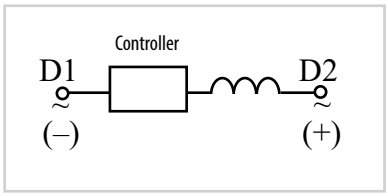


Terminal Designations of Shunt Trips

Undervoltage Trips

Ratings of Undervoltage Trips

Rated Voltage	Power supply capacity (VA) Voltage AC		Excitation current (mA) Voltage DC		
	200-240	380-450	24	100-120	200-240
Power Supply Capacity (A)	1.4	2.28	23	10	10



Terminal Designations of Undervoltage Trips

External accessories

IZ – Interpole barrier. Installed between MCCB teminal, which increases the distance between poles to reduce the possibility of creepage.

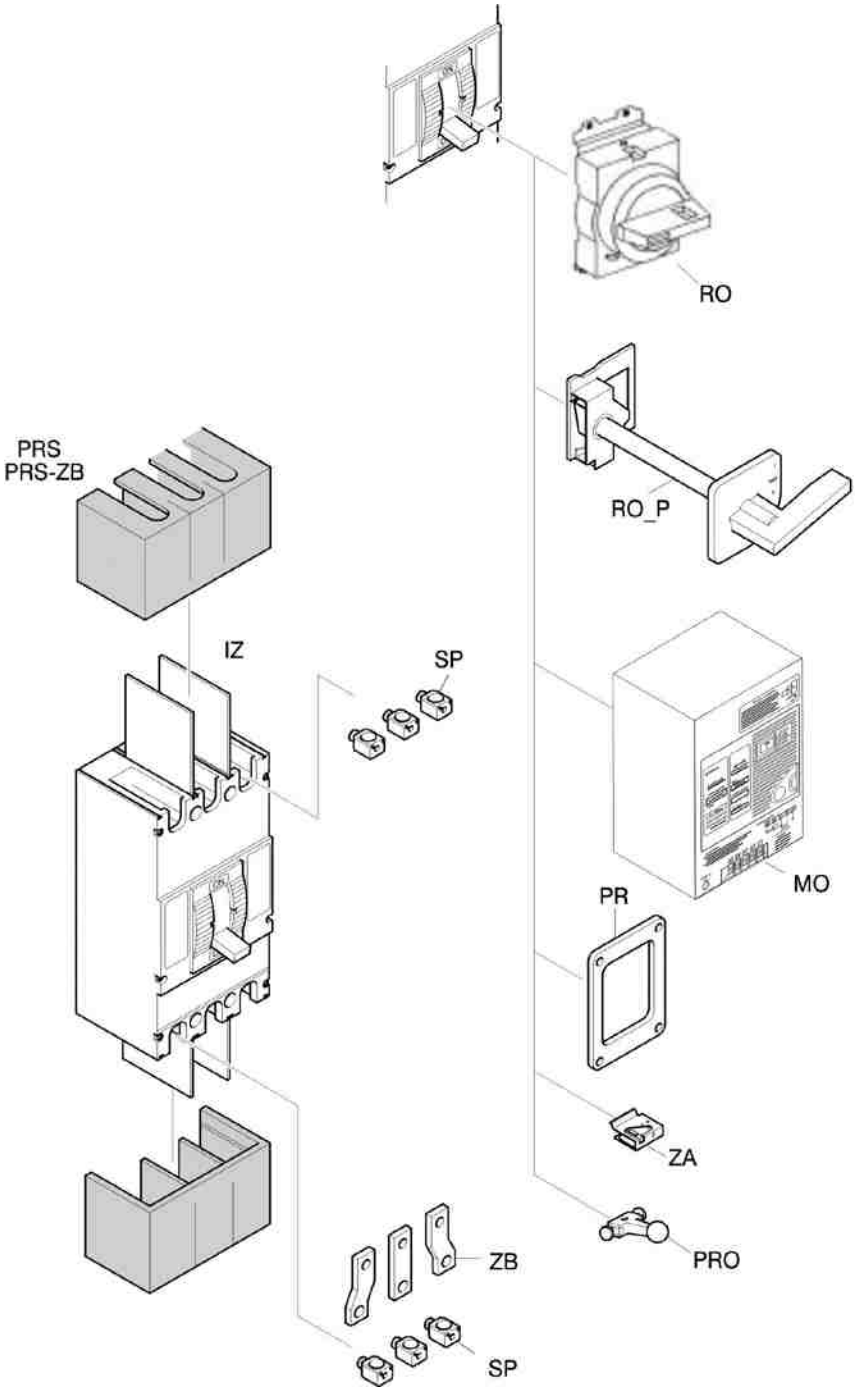
PRS – Terminal cover. The terminal covers are applied to the MCCB to prevent accidental contact with live parts and thereby protection against direct contact.

PRS-ZB – Terminal cover for att. Busbar. The terminal covers are applied to the MCCB to prevent accidental contact with live parts and thereby protection against direct contact. The width is different because of attach busbar.

SP – Solderless terminal

RO – Operating handle, breaker mounted. It's used when MCCB is installed in control centre/ switchboard

RO_P – Operating handle, panel mounted, variable depth. This consists of an operating mechanism mounted on the breaker, an operating handle mounted on the panel door and a square shaft to connect the mechanism with the handle.



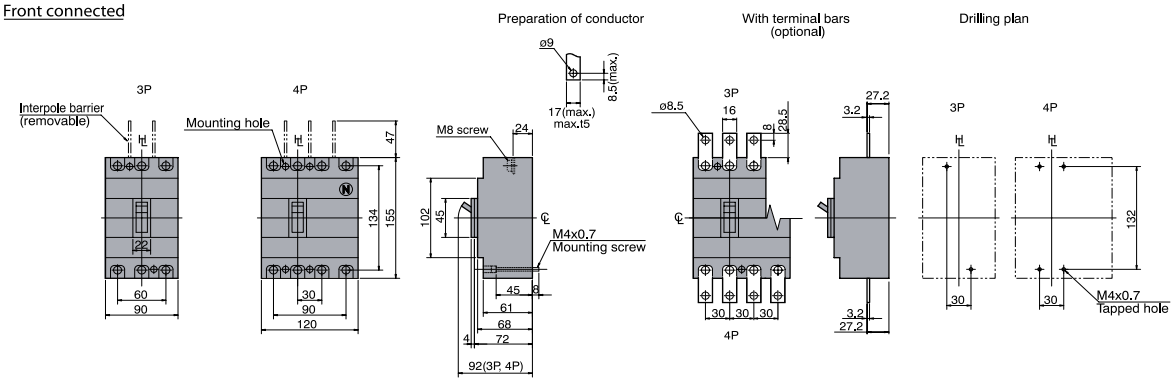
MO – Motor operator. Enabling to switch MCCB ON or OFF remotly.
PR – Door flange. Accessory for mounting on panel door.
ZA – Handle lock. Enables the MCCB to be padlocked in neither the ON or OFF position.

ZB – Attach busbar. Used for easier instalation on busbar systems (widen terminals).
PRO – Handle extension. Used for easier manipulation ON/OFF at bigger MCCB's.

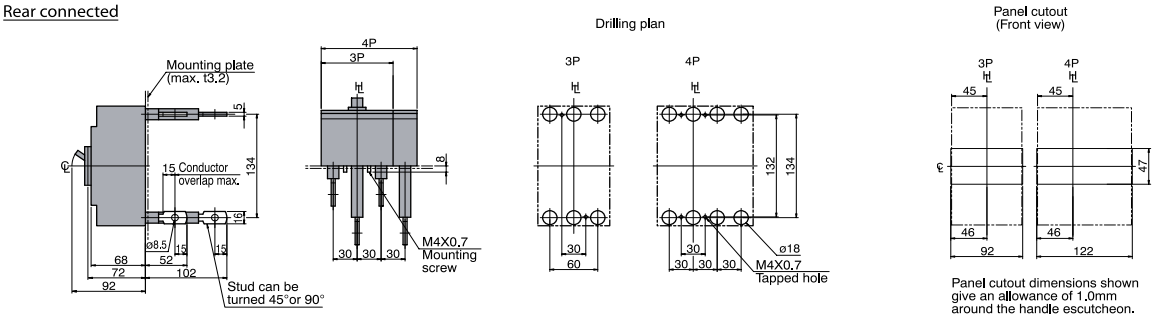
Dimensions

EB2 & EB2R 125

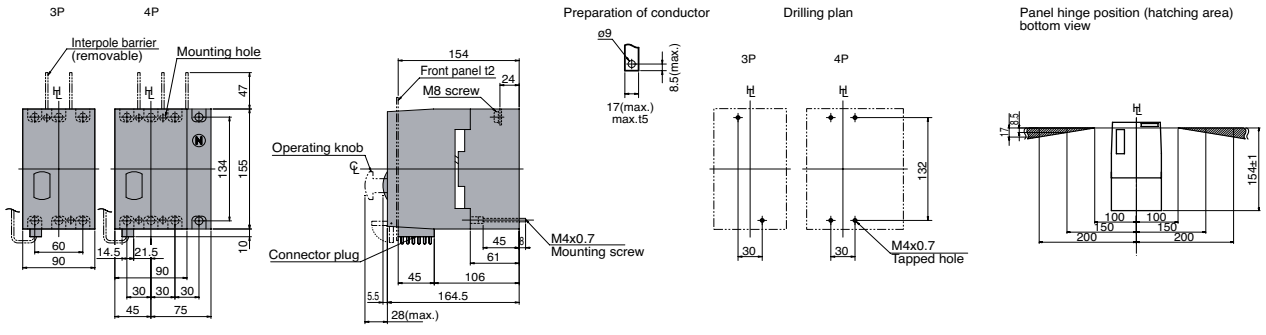
Front connected



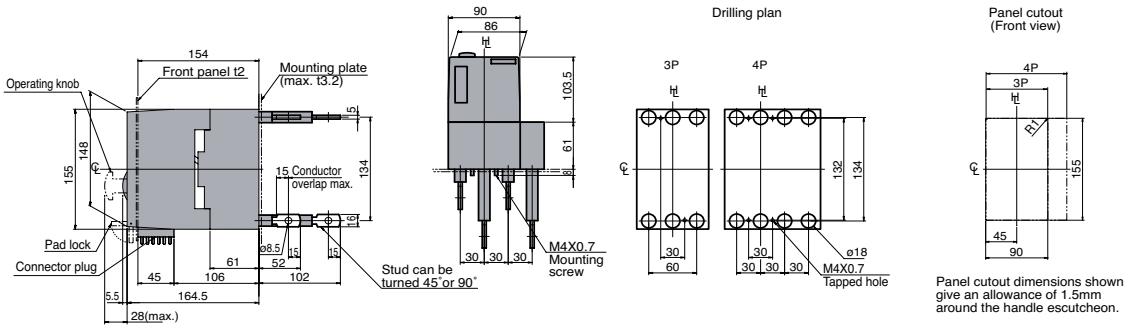
Rear connected



Front connected with Motor Operator

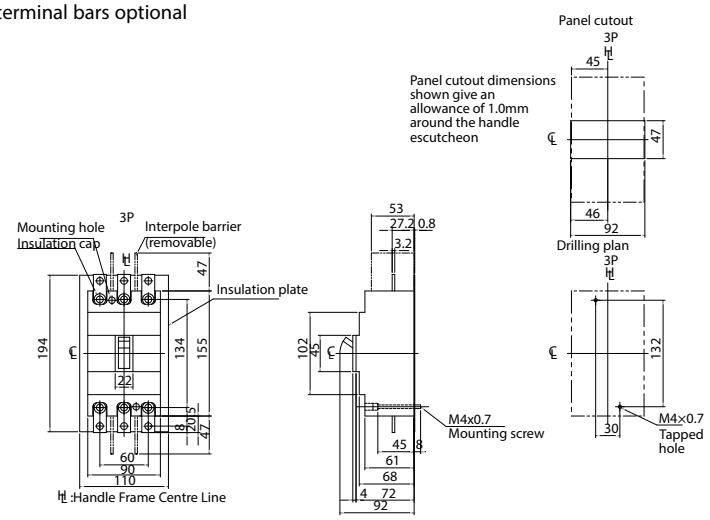


Rear connected with Motor Operator

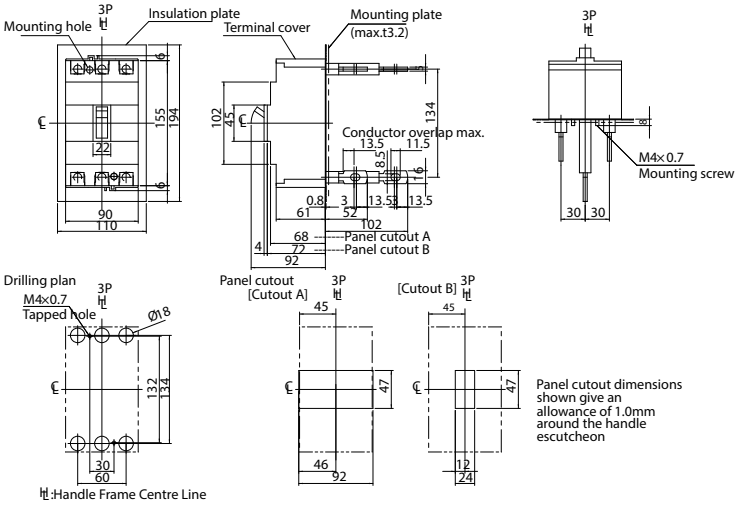


EB2 125 1000V

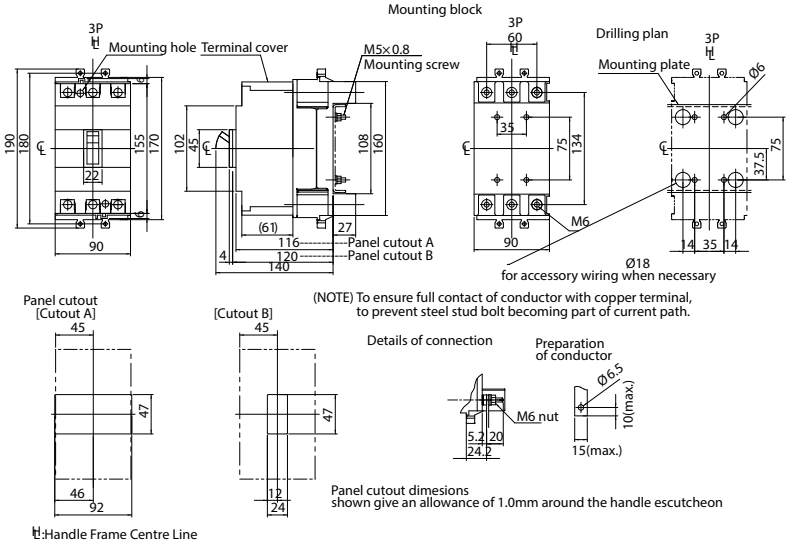
Front connected with terminal bars optional



Rear connected

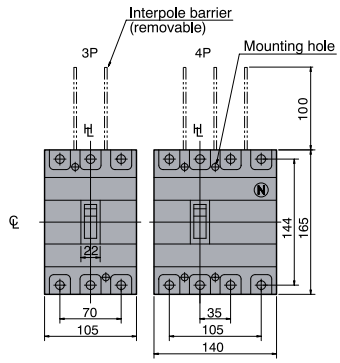


Plug in (PMB)

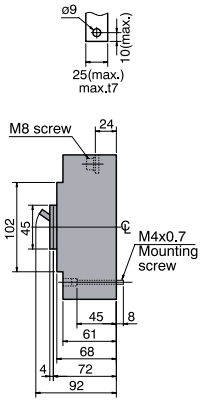


EB2 160, EB2 250 & EB2R 250

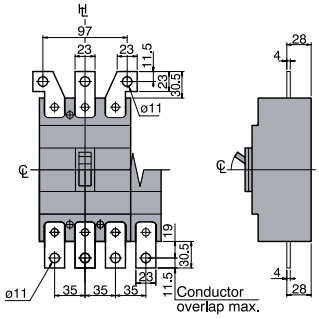
Front connected



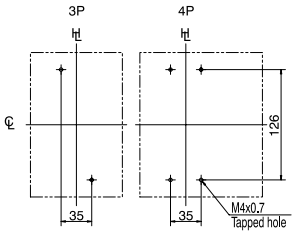
Preparation of conductor



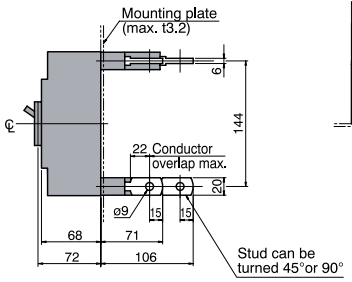
With terminal bars
(optional)

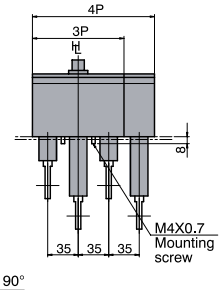


Drilling plan

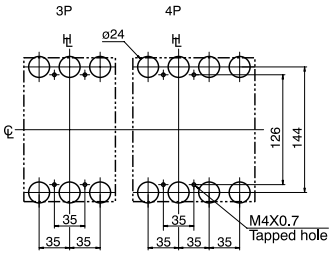


Rear connected

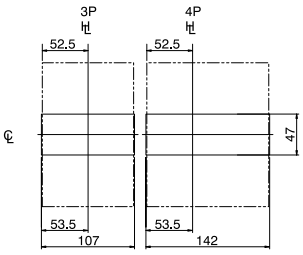




Drilling plan

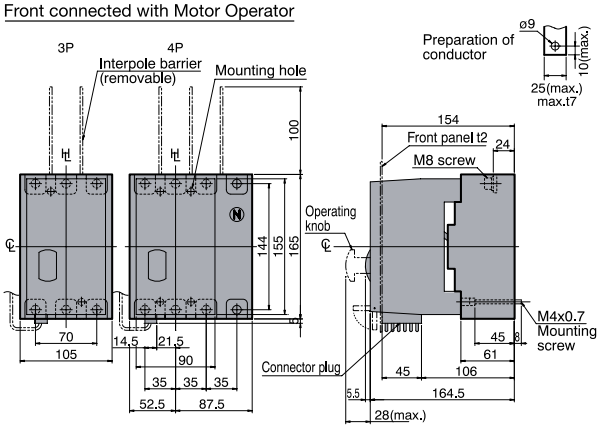


Panel cutout
(Front view)



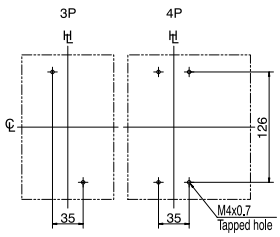
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Front connected with Motor Operator

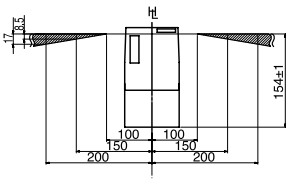


Preparation of
conductor

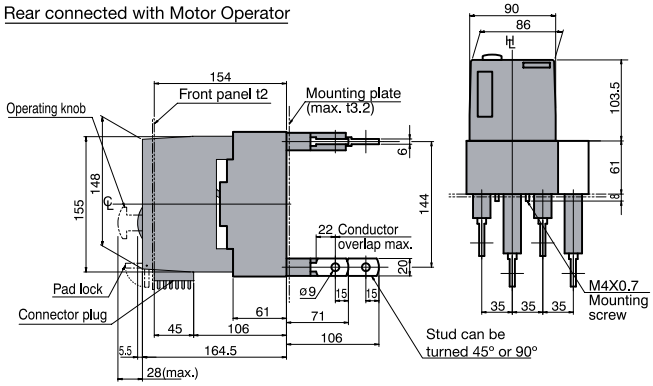
Drilling plan



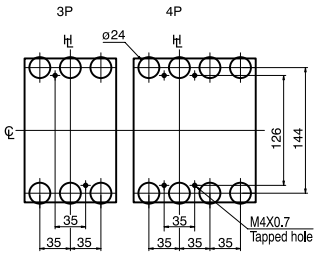
Panel hinge position (hatching area)
bottom view



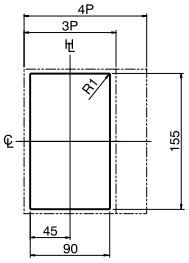
Rear connected with Motor Operator



Drilling plan



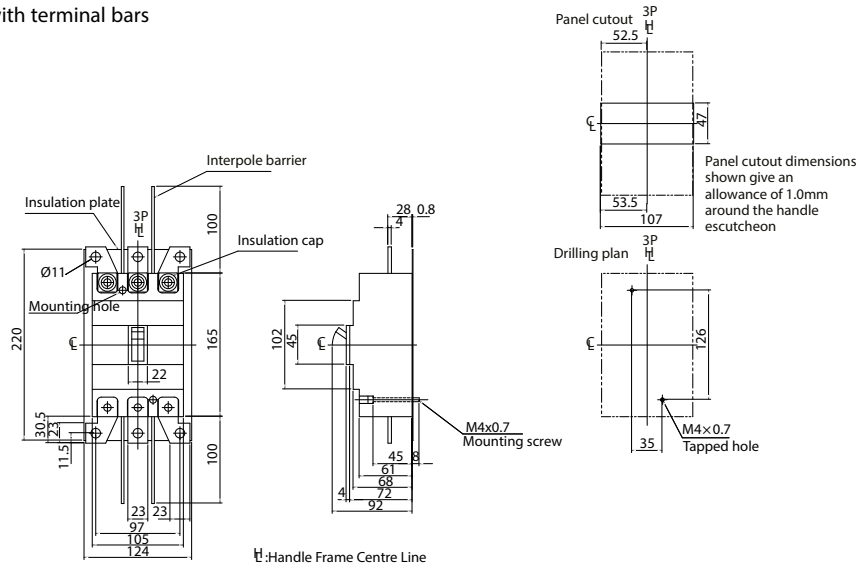
Panel cutout
(Front view)



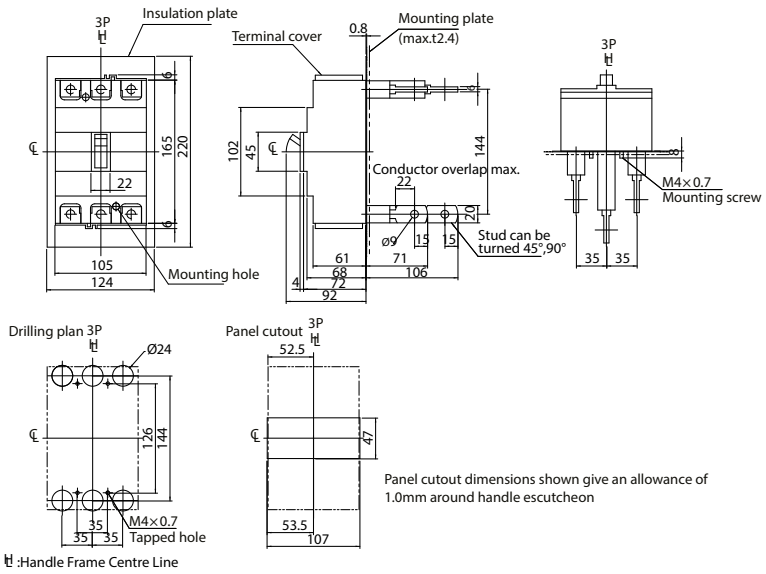
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

EB2 250 1000V

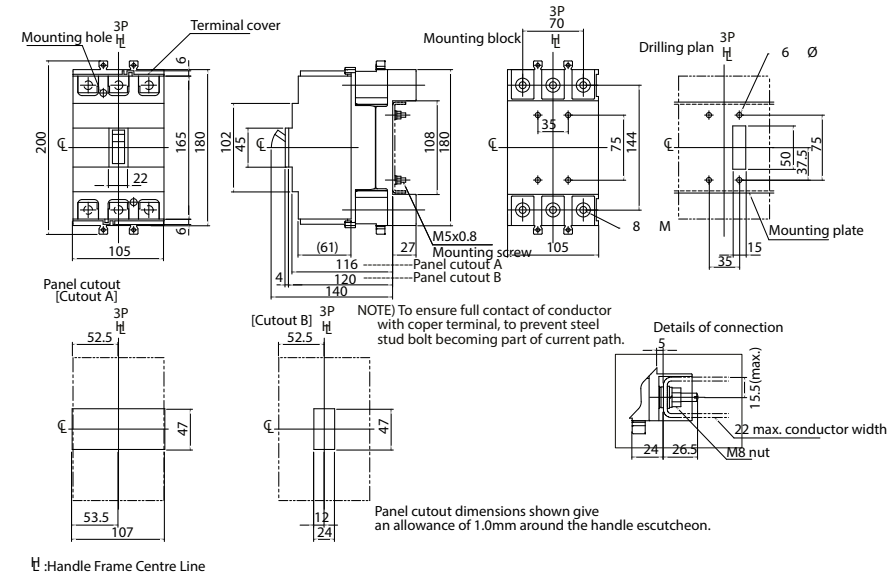
Front connected with terminal bars



Rear connected

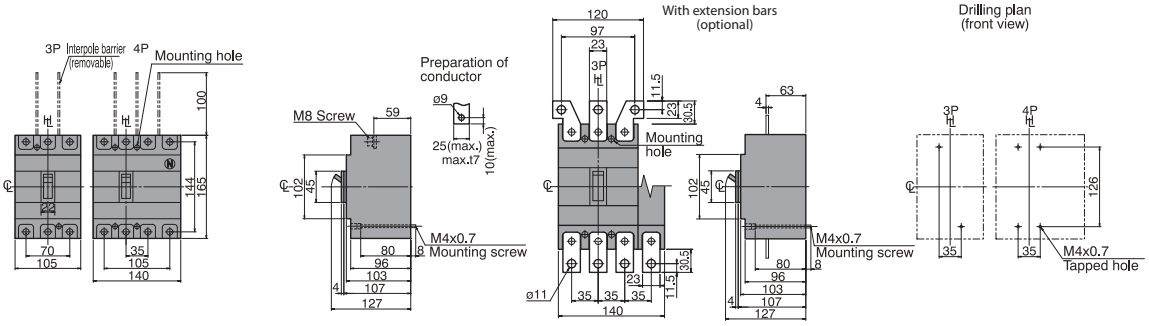


Plug in (PMB)

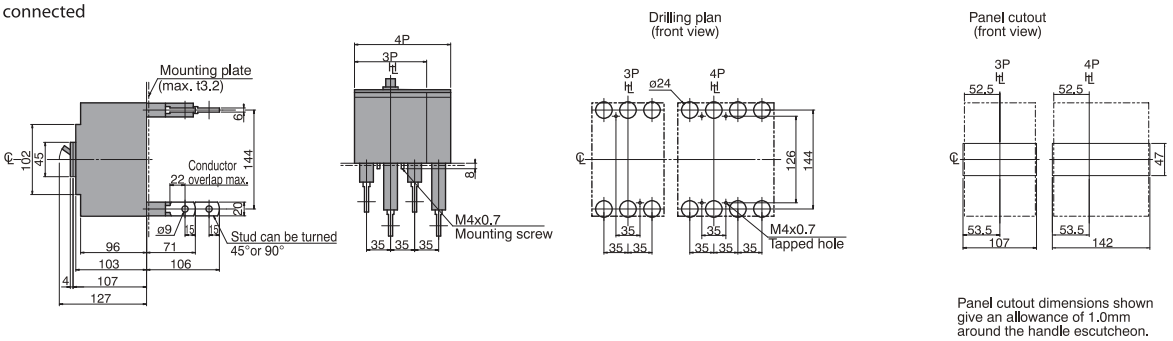


EB2 250/_E (Microprocessor's MCCBs)

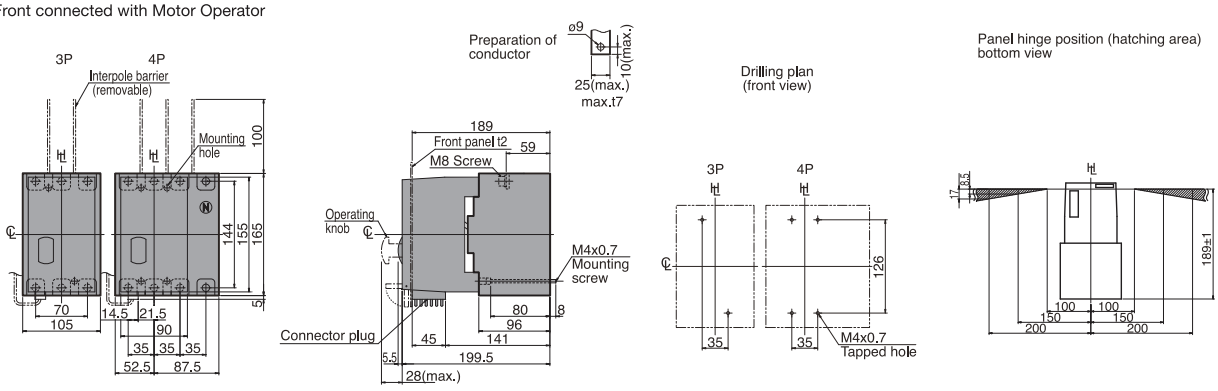
Front connected



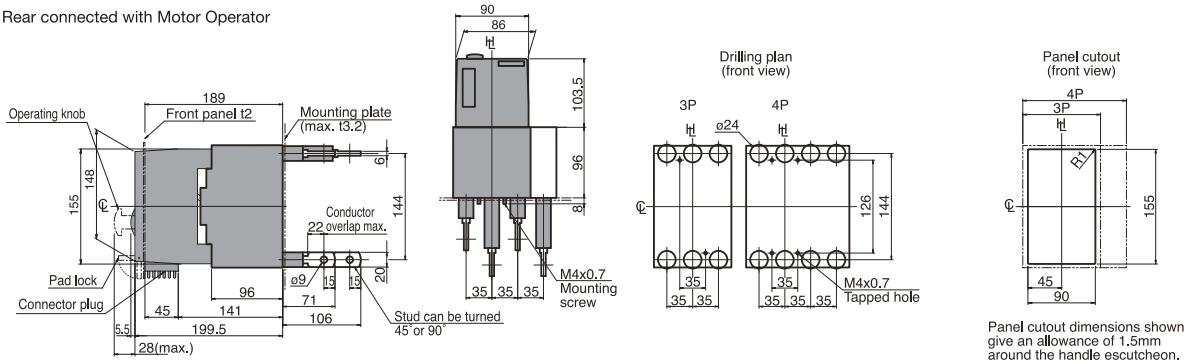
Rear connected



Front connected with Motor Operator

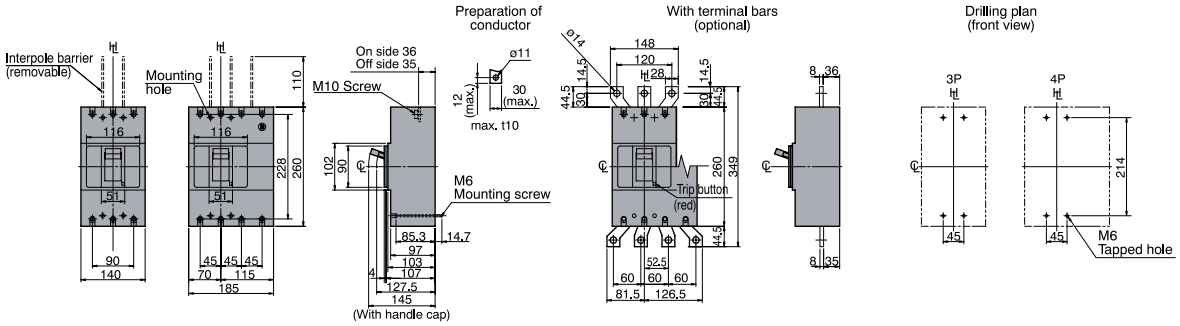


Rear connected with Motor Operator

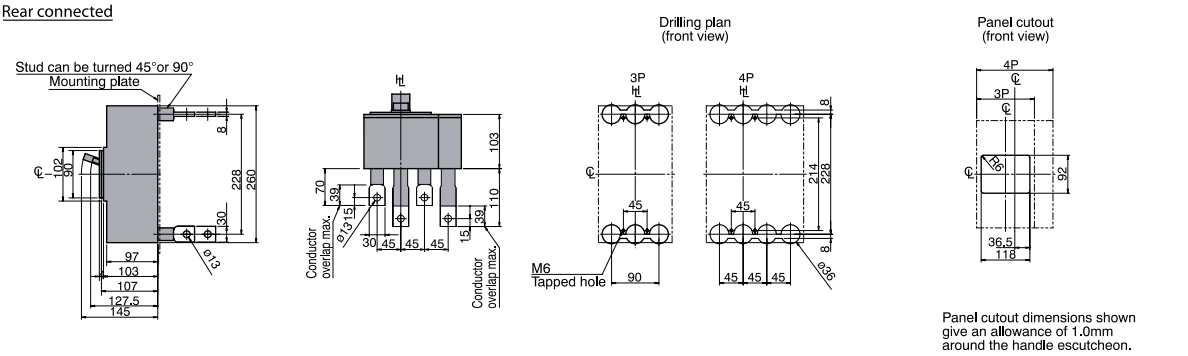


EB2 400

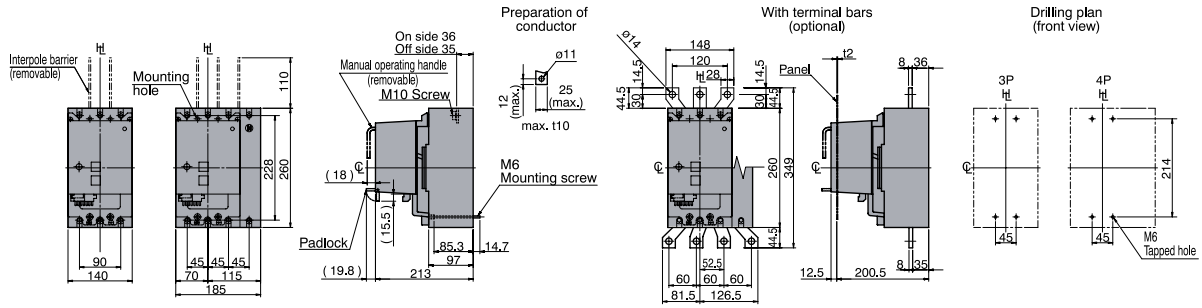
Front connected



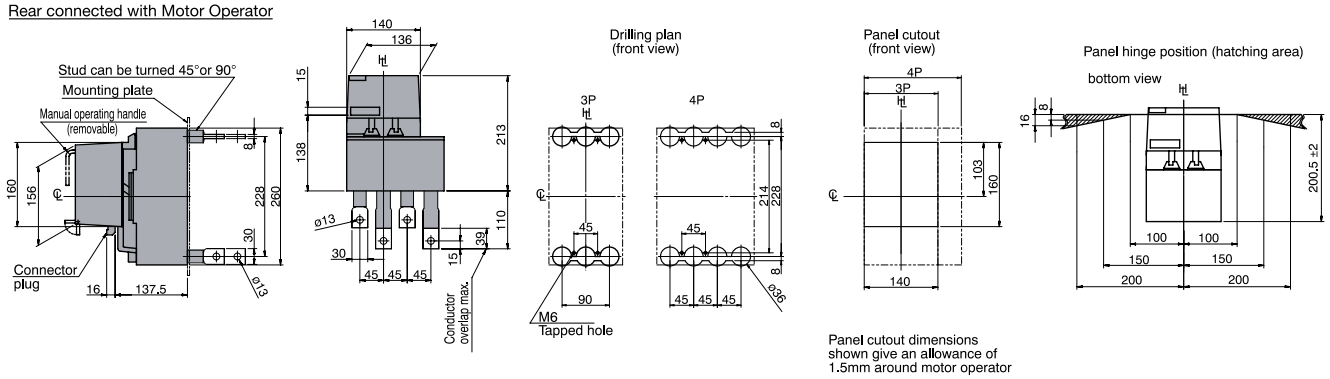
Rear connected



Front connected with Motor Operator

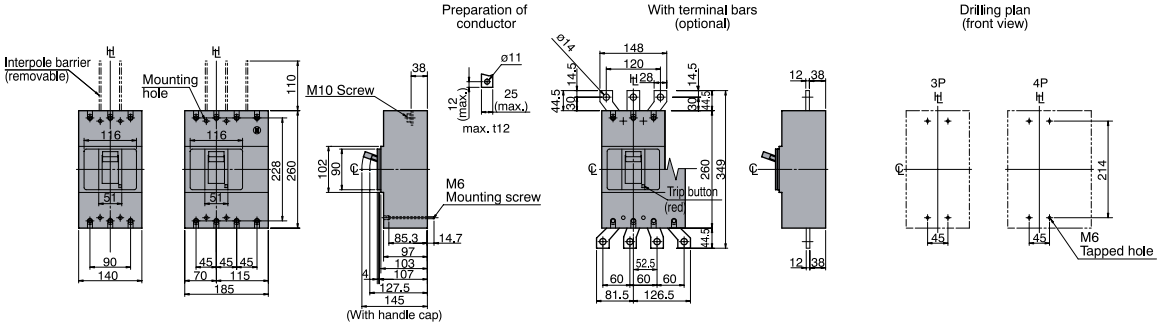


Rear connected with Motor Operator

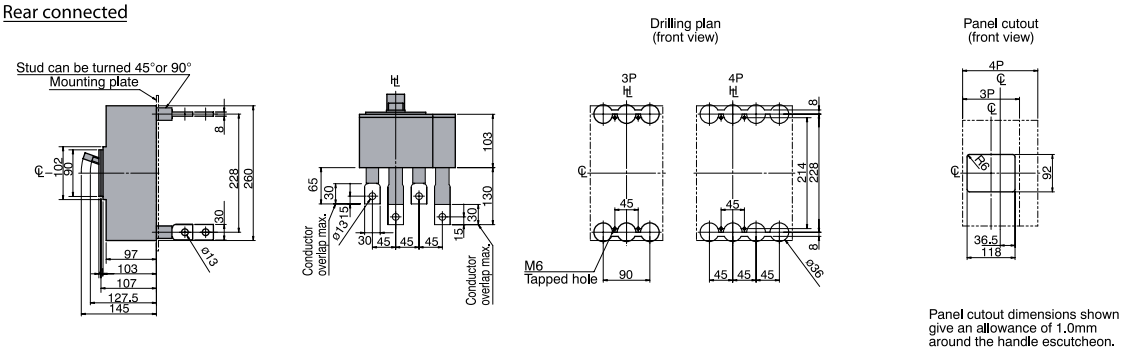


EB2 630

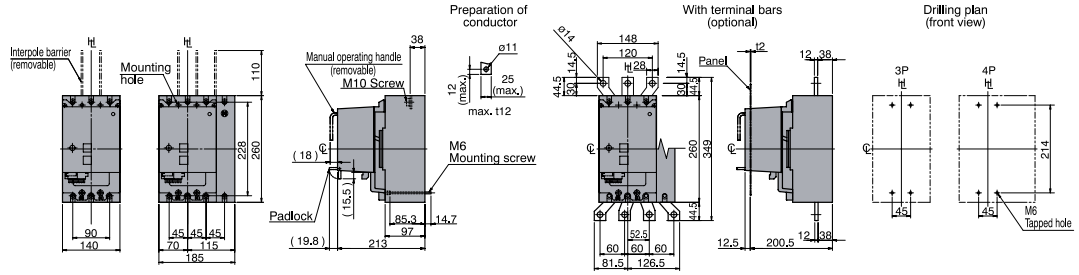
Front connected



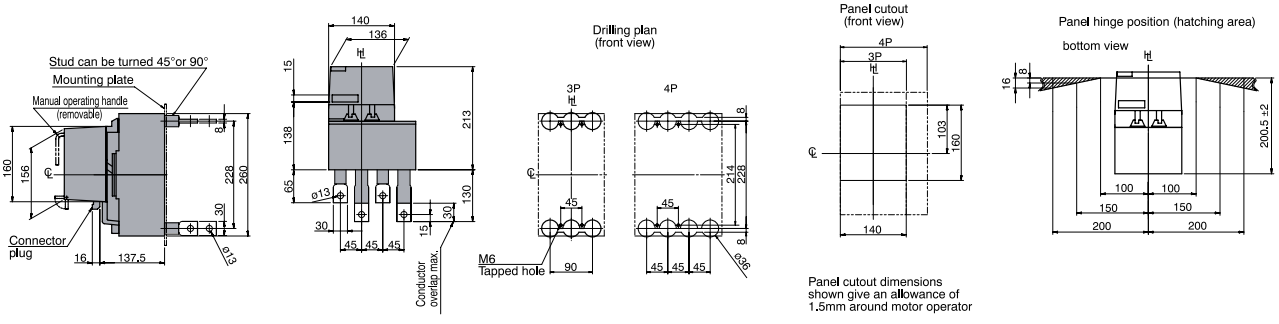
Rear connected



Front connected with Motor Operator

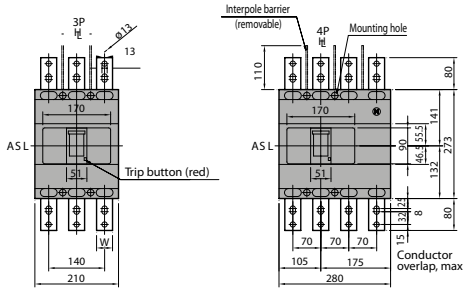


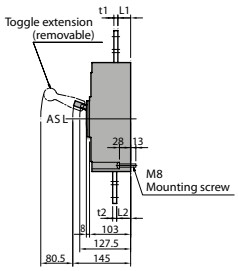
Rear connected with Motor Operator



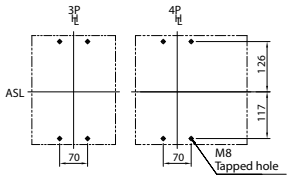
EB2 800

Front connected with extension bars (optional)



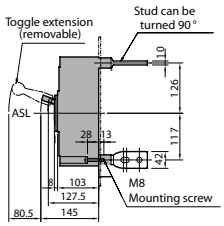


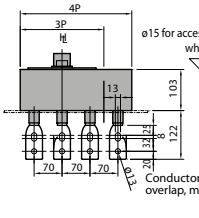
Drilling plan (front view)



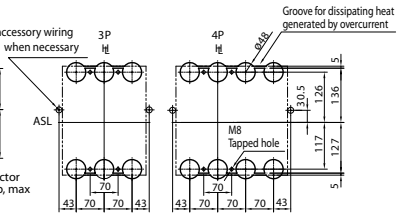
Breaker Type	Rated Current	t1	t2	L1	L2	W
EB2 800 Thermal magnetic	630A	8	8	32	34	40
	800A	10	10	32	35	40
EB2 800 Electronic	630A	8	8	32	36	40
	800A	10	10	32	36	40

Rear connected

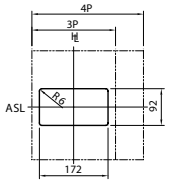




Drilling plan (front view)



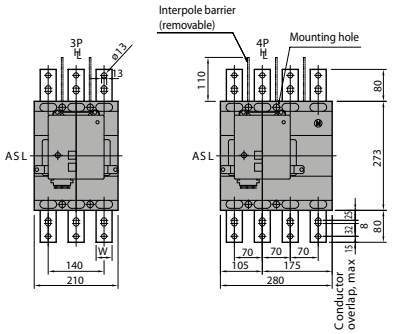
Panel cutout (front view)

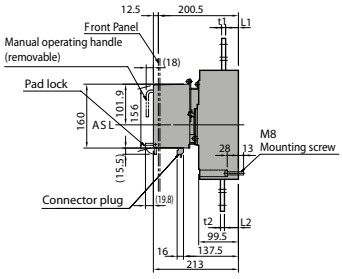


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

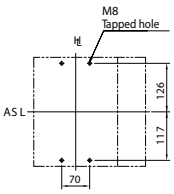
Note: Studs are factory installed in horizontal direction both on the line and load sides.

Front connected with Motor Operator

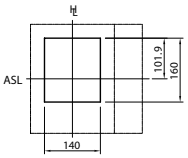




Drilling plan (front view)

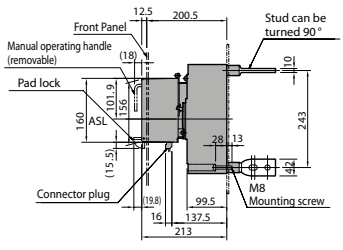


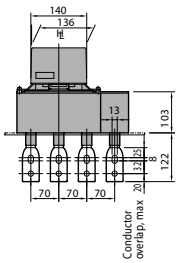
Panel cutout (front view)



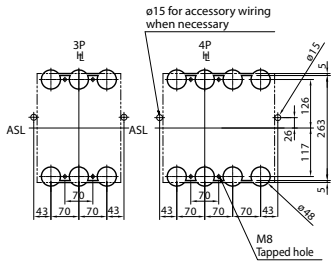
Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Rear connected with Motor Operator

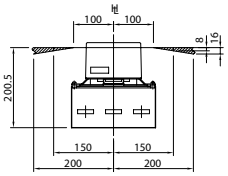




Drilling plan (front view)



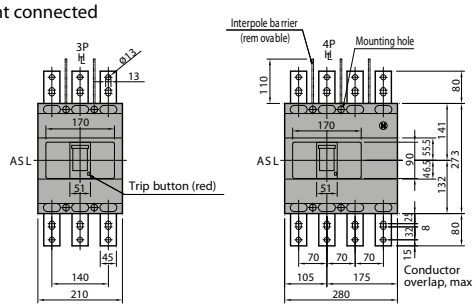
Panel hinge position (hatching area) (bottom view)

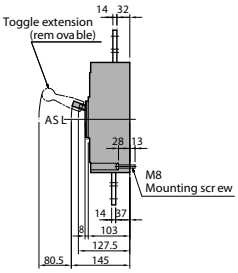


Note: Studs are factory installed in horizontal direction both on the line and load sides.

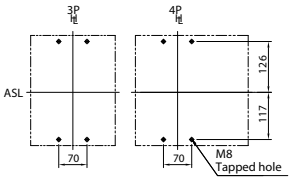
EB2 1000

Front connected

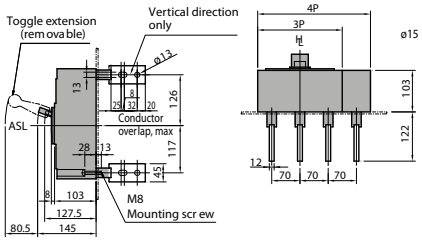




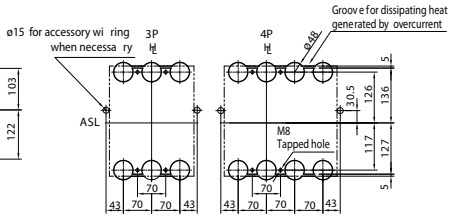
Drilling plan (front view)



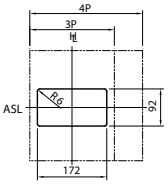
Rear connected



Drilling plan (front view)

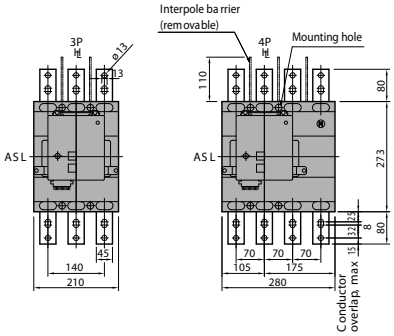


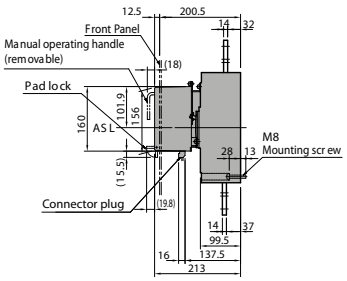
Panel cutout (front view)



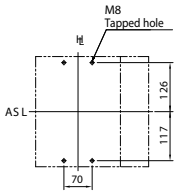
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Front connected with Motor Operator

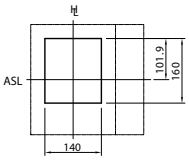




Drilling plan (front view)

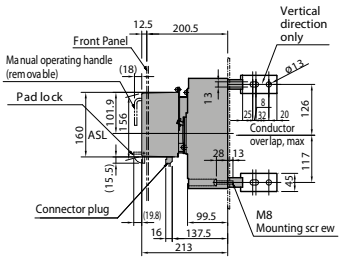


Panel cutout (front view)

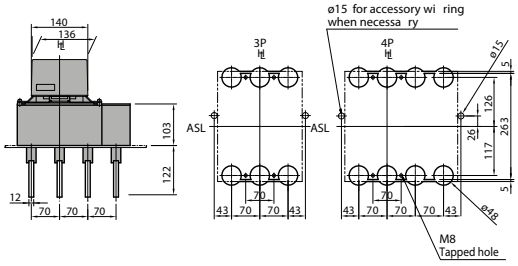


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

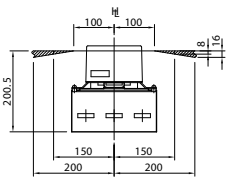
Rear connected with Motor Operator



Drilling plan (front view)



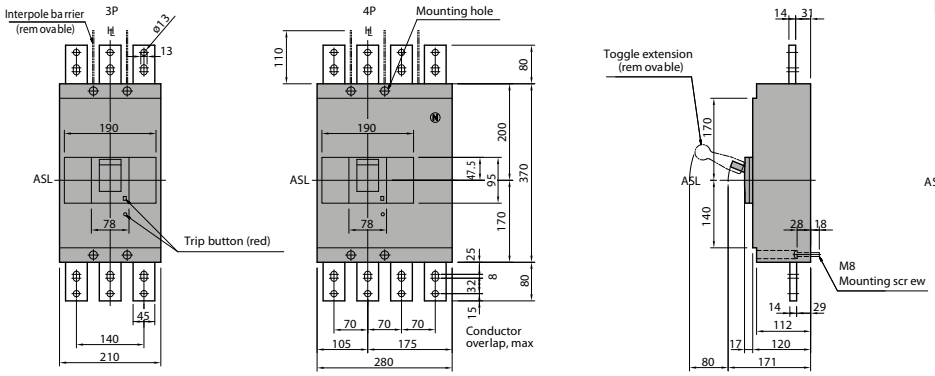
Panel hinge position (hatching area) (bottom view)



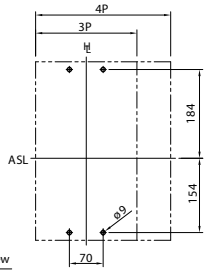
Note: Studs are factory installed in horizontal direction both on the line and load sides.

EB2 1250

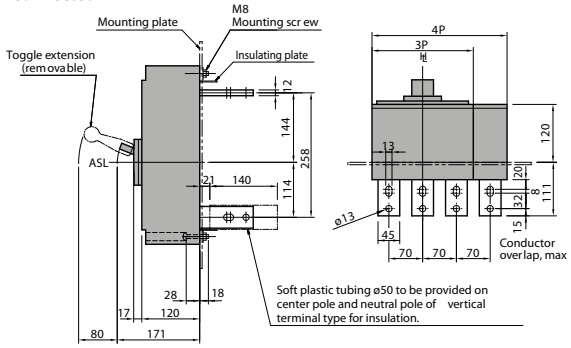
Front connected



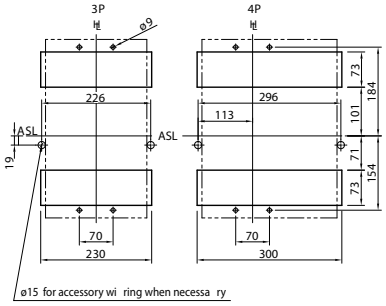
Drilling plan (front view)



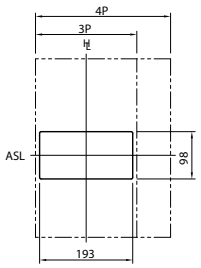
Rear connected



Drilling plan (front view)



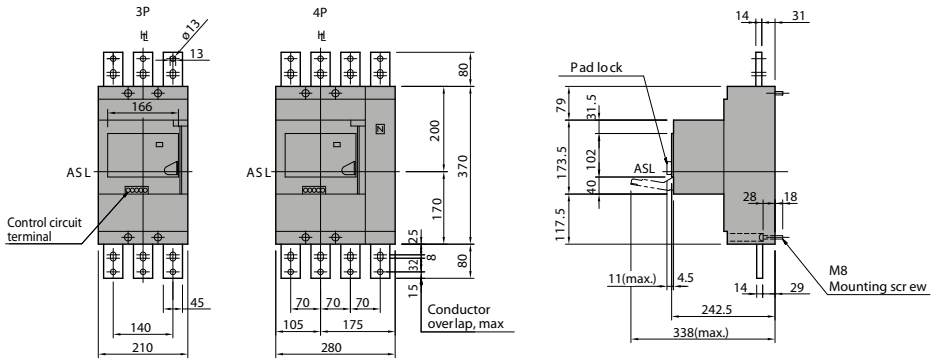
Panel cutout (front view)



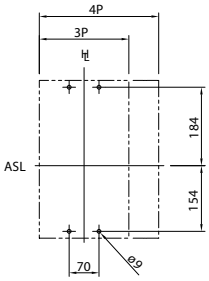
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

Note: Studs are factory installed in horizontal direction both on the line and load sides.

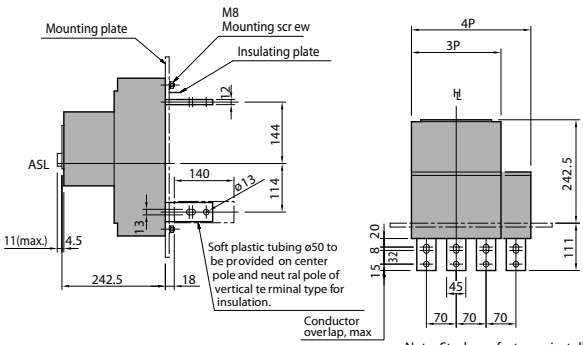
Front connected with Motor Operator



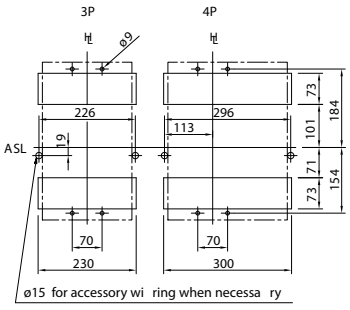
Drilling plan (front view)



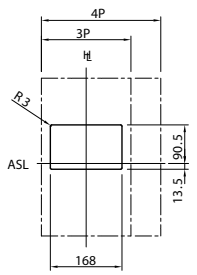
Rear connected with Motor Operator



Drilling plan (front view)



Panel cutout (front view)

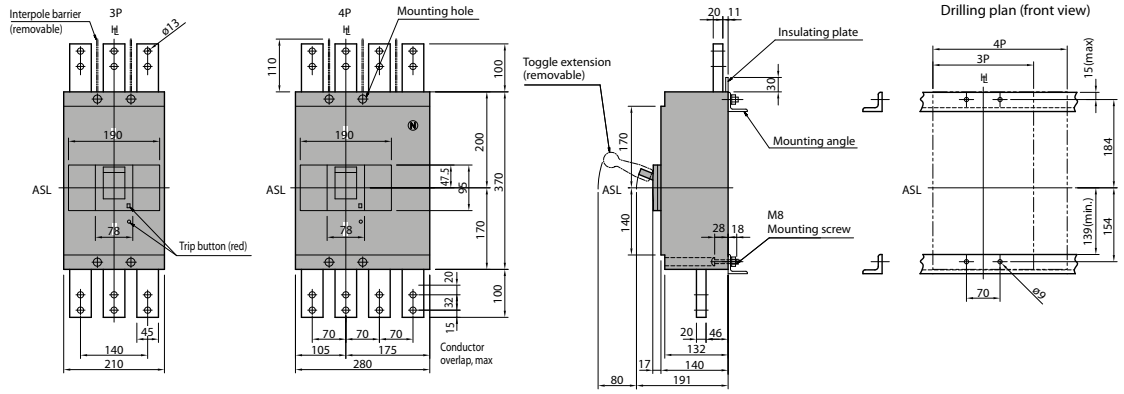


Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

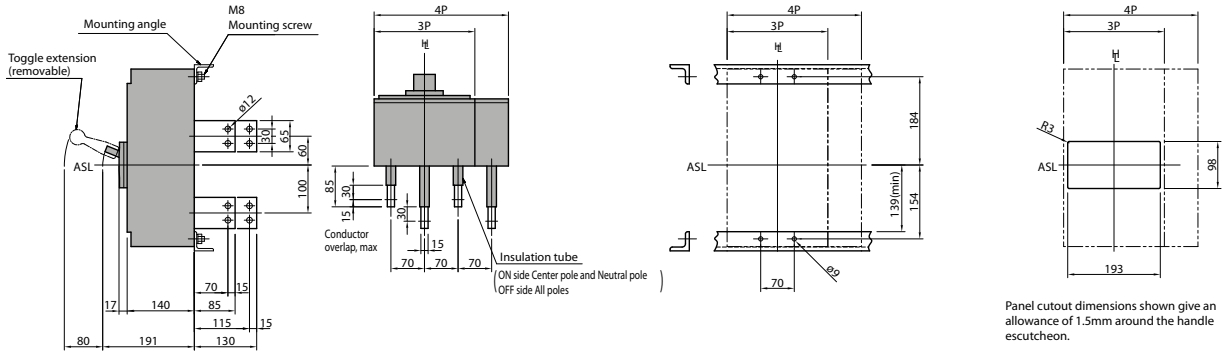
Note: Studs are factory installed in horizontal direction both on the line and load sides.

EB2 1600

Front connected

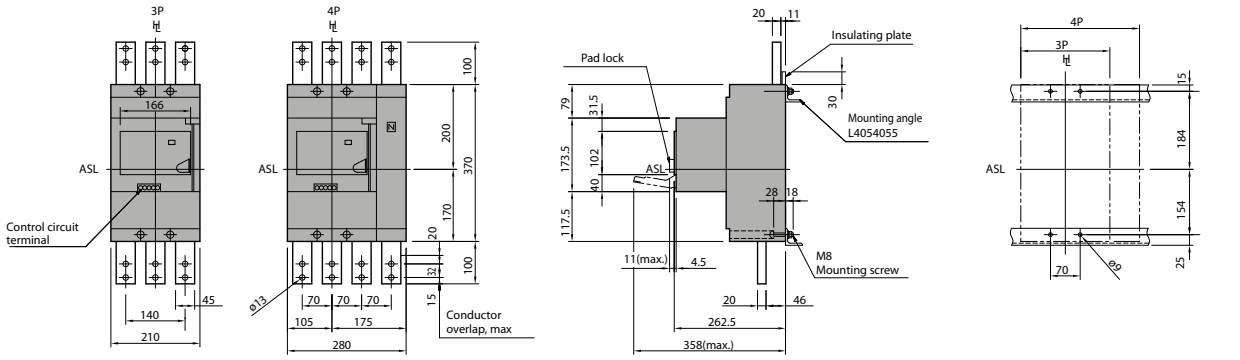


Rear connected

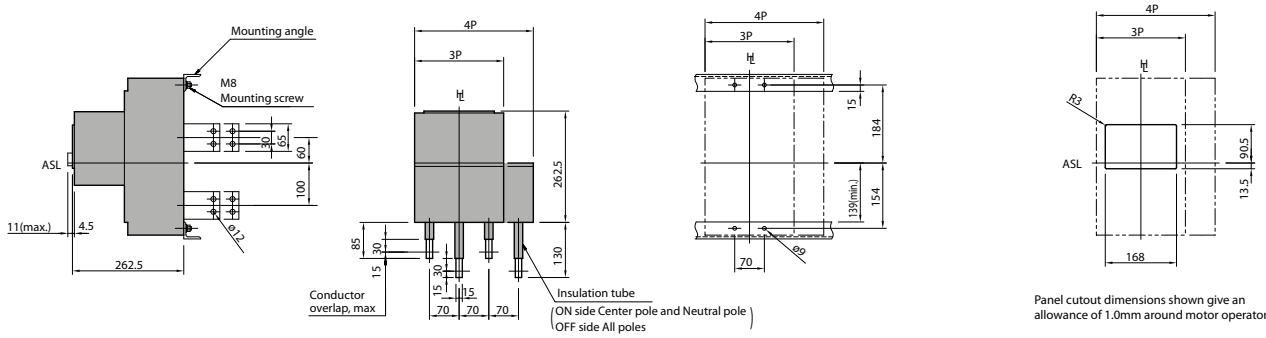


Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

Front connected with Motor Operator



Rear connected with Motor Operator



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