Etibreak range

ETIBREAK 2 MOULDED CASE CIRCUIT BREAKERS

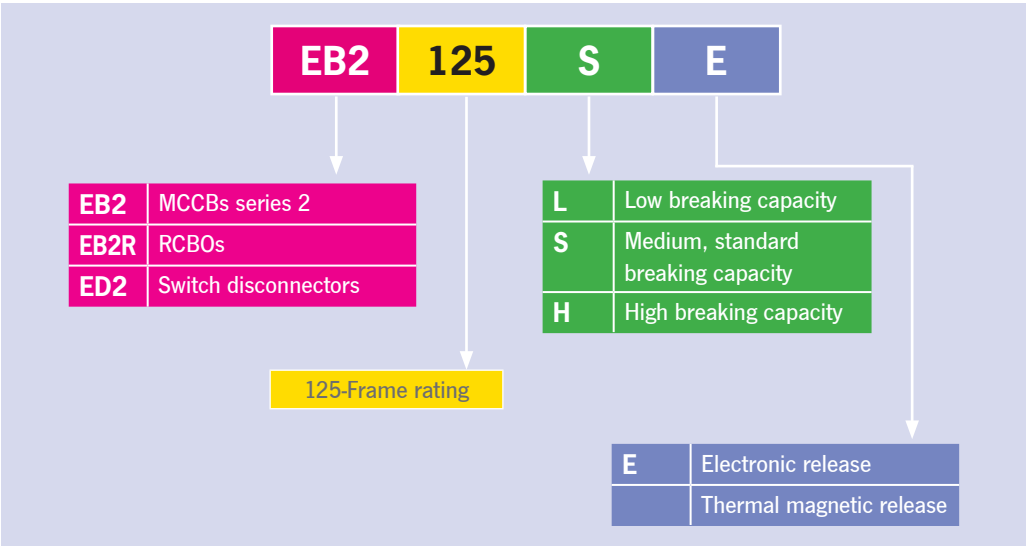
Rated current (I_n) from 20A to 1600A. Breaking Capacity (I_{cu}) from 25kA to 100kA at 400/415V AC.

Easy selection guide

The Etibreak range of products includes:

- Moulded Case Circuit Breakers (MCCBs)
- Switch-Disconnectors in the same compact moulded case frame sizes as MCCBs
- Low voltage MCCBs with residual current protection EB2R up to 250AF.
- A comprehensive range of accessories which are common to MCCBs and Switch-Disconnectors. Almost all internal accessories for EB2 are common to all sizes.

Key to Model and Type Designations

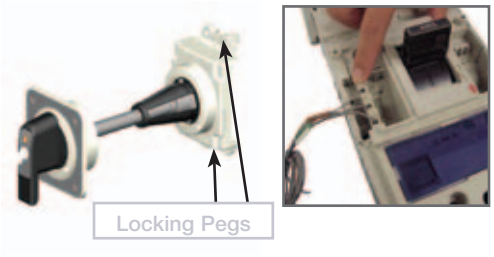


*All Etibreak 2 MCCBs limit short-circuit faults by opening in less than 5ms.

Advantages

1. Field-installable accessories

- Most accessories can be fitted by the switchboard builder or added by the end-user.
- Handles and motor operators up to 250AF size can be rapidly fitted using the locking pegs. It takes less than 10 seconds to secure a handle or motor to the MCCB – a great time saving compared to alternative products.
- All accessories are endurance tested to the same level as the host MCCB.



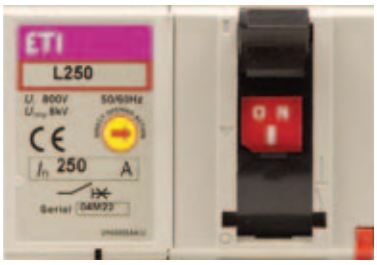
2. Superior temperature performance

Overheating is the most common cause of failure in electrical switch-gear. You can reduce the likelihood of overheating by using switchgear with superior temperature performance.

Our EB2 MCCBs can be used at 50 ^{0}C without derating from 20A to 1600A.

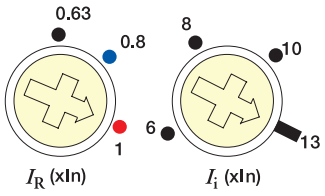
3. Direct Opening

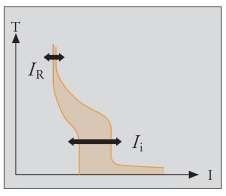
Under the heading "Measures to minimise the risk in the event of failure", IEC 60204-1 Safety of Machinery-Electrical Equipment of Machinery includes the following recommendation:
"-the use of switching devices having positive (or direct) opening operation."



4. Unsurpassed Flexibility

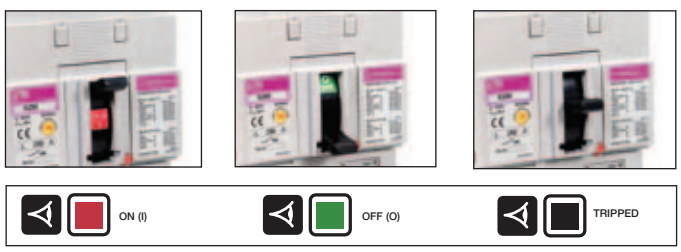
Overload protection is adjustable between 63% and 100% of the rating. Short-circuit protection is adjustable on all thermal magnetic models. Short-circuit protection settings are suitable for motor starting on all models, including the compact 125A frame.





5. Visual safety

Coloured indicators display the ON or OFF status. The indicators are fully covered if the breaker trips, and black is the only visible colour.



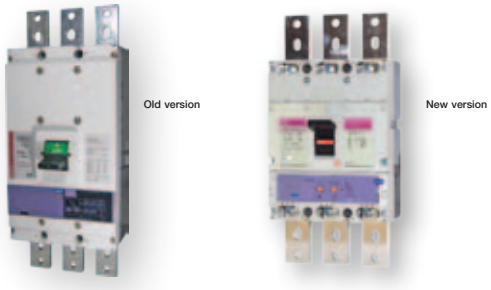
Advantages

6. Safety lock for plug-in version

The plug in MCCB is locked to the base when toggle is ON. It cannot be removed unless the toggle is OFF or TRIPPED. The safety lock prevents a trip occurring while the MCCB is being removed from the base. Safety lock is available on plug-in MCCBs up to 800A.

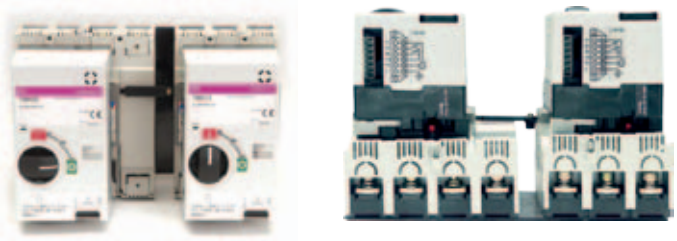
7. Smaller 1000A MCCB

The new 1000A MCCB is only 213mm high by 210mm wide - the same size as an 800A MCCB. This offers a cost-effective and space effective solution for large loads.



8. Compact interlocks

The mechanical interlock is installed on the front of the MCCB, and fits underneath motor operators and external operating handles. An automatic changeover system can be assembled in a few minutes by a switchboard builder or end-user. Compact interlocks are available on MCCBs up to 800A.

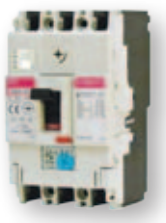


9. Circuit breaker with integral residual current protection (EB2R)

ETI EB2Rs deliver integrated protection from earth leakage faults, overloads and short-circuits in one device. Ideal for mining industry, temporary site supliers, heavy industry and commercial building use.

10. New 75mm wide MCCB up to 160A, 40kA

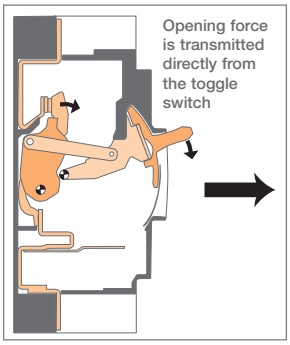
Save space and save money with our ETIBREAK EB2S up to 160A

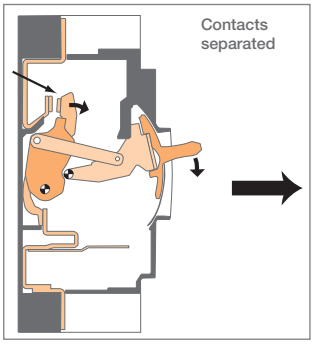


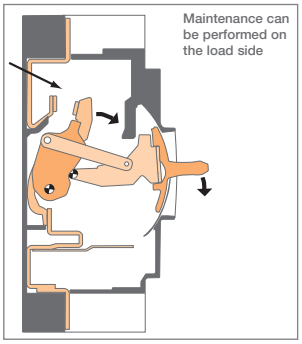
Some more advantages

Safety plus

Machine Safety







Etibreak MCCBs are marked with IEC symbol indicating Direct Opening Action. ⊖

The robust mechanism ensures that the force you apply to the toggle is transmitted directly to the contacts.

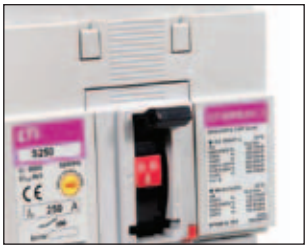
Under the heading “Measures to minimise risk in the event of failure”, IEC 60204-1 Safety of Machinery - Electrical Equipment of Machines includes the following recommendation:

“ - the use of switching devices having positive (or direct) opening operation.”

EB2 MCCBs help you to comply with the world’s most stringent safety standards. It is one of the safest switching devices for machinery.

Visual Safety

You can easily see if a breaker is open, closed or tripped. **SAFETY+** coloured indicators boldly display the ON or OFF status. The indicators are fully covered if a breaker trips, and black is the only visible colour. This is a unique safety feature. You can identify faulty circuits at a glance. The toggle position always matches the position of the main contacts.

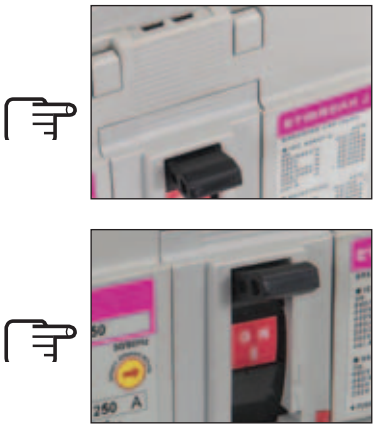


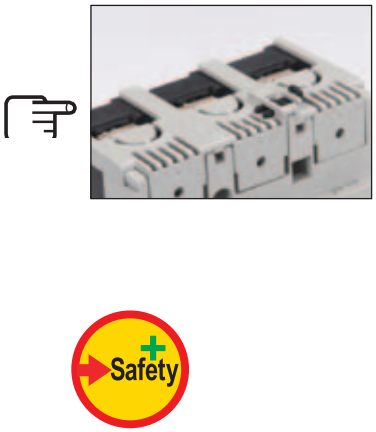
Some more advantages

Touch Safety

The risk of touching live parts has been minimised by design. These features reduce the risk of touching live parts:

- There are no exposed metal screws on the front face
- IP20 protection at the terminals
- IP30 protection at the toggle
- If the toggle is broken by accident or misuse, no live part is exposed
- No live parts are exposed when fitting accessories
- Double Insulation





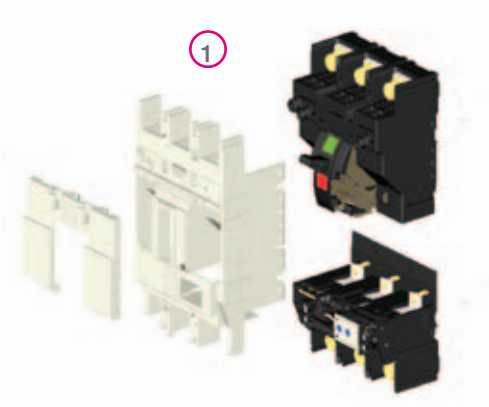
Safety

Reducing Environmental Impact

Longer Life Cycle

It makes good environmental sense to install a product with a long life expectancy. If you install an Etibreak 2 MCCB, you can expect it to stay in service for at least 30,000 mechanical operations (250A Frame). This is 22,000 more operations than recommended by IEC 60947-2, the international standard for circuit breakers. If a system must be upgraded in future, we have made the following provisions for recycling:

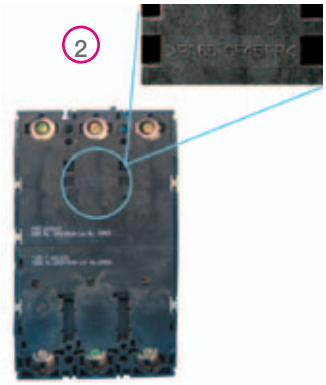
1. The modular design of Etibreak 2 allows component parts and accessories to be easily disassembled and separately disposed of. Moulded parts do not contain any embedded metal parts.
2. Materials are clearly marked to allow future identification for easy recycling.



Uses Eco-friendly Materials

The following materials are used in most Etibreak 2 circuit breakers:

- Thermoplastic resin not containing PBBs or PBDEs
- Lead-free solder
- Cadmium-free contacts



Lighter and Smaller

Components with low weight and volume make life easy for users, but high performance from smaller products also means less material used and less waste produced.

Standards
IEC 60947-1, IEC 60947-2, IEC 60947-3 (for ED2), IEC 60947-5-1 (for Accessories), IEC 60204-1 (Safety of Machinery), NEMA AB1, JIS C 8201-2-1 Ann.1

Etibreak

Moulded Case Circuit Breaker Etibreak EB2

Thermal magnetic
Thermal magnetic MCCBs are available in frame sizes from 125A to 800A. All frame sizes have adjustable both thermal and magnetic trip settings. Overload protection is adjustable between 63 % and 100 % of In, meanwhile short-circuit between 6-13xIn (more details in the technical part of catalogue).

ETIBREAK EB2 125

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 125/3L 20A 3p	20	004671021	3	25/19	0,63-1/ 6-12	1,1	1
EB2 125/3L 32A 3p	32	004671022			0,63-1/ 6-12		
EB2 125/3L 50A 3p	50	004671023			0,63-1/ 6-12		
EB2 125/3L 63A 3p	63	004671024			0,63-1/ 6-12		
EB2 125/3L 100A 3p	100	004671025			0,63-1/ 6-12		
EB2 125/3L 125A 3p	125	004671026			0,63-1/ 6-10		
EB2 125/4L 20A 4p	20	004671027	4		0,63-1/ 6-12	1,4	
EB2 125/4L 32A 4p	32	004671028			0,63-1/ 6-12		
EB2 125/4L 50A 4p	50	004671029			0,63-1/ 6-12		
EB2 125/4L 63A 4p	63	004671030			0,63-1/ 6-12		
EB2 125/4L 100A 4p	100	004671031			0,63-1/ 6-12		
EB2 125/4L 125A 4p	125	004671032			0,63-1/ 6-10		
EB2 125/3S 20A 3p	20	004671041	3	36/36	0,63-1/ 6-12	1,1	1
EB2 125/3S 32A 3p	32	004671042			0,63-1/ 6-12		
EB2 125/3S 50A 3p	50	004671043			0,63-1/ 6-12		
EB2 125/3S 63A 3p	63	004671044			0,63-1/ 6-12		
EB2 125/3S 100A 3p	100	004671045			0,63-1/ 6-12		
EB2 125/3S 125A 3p	125	004671046			0,63-1/ 6-10		
EB2 125/4S 20A 4p	20	004671047	4		0,63-1/ 6-12	1,4	
EB2 125/4S 32A 4p	32	004671048			0,63-1/ 6-12		
EB2 125/4S 50A 4p	50	004671049			0,63-1/ 6-12		
EB2 125/4S 63A 4p	63	004671050			0,63-1/ 6-12		
EB2 125/4S 100A 4p	100	004671051			0,63-1/ 6-12		
EB2 125/4S 125A 4p	125	004671052			0,63-1/ 6-10		
EB2 125/3H 20A 3p	20	004672101	3	65/36	0,63-1/ 6-12	1,1	1
EB2 125/3H 32A 3p	32	004672102			0,63-1/ 6-12		
EB2 125/3H 50A 3p	50	004672103			0,63-1/ 6-12		
EB2 125/3H 63A 3p	63	004672104			0,63-1/ 6-12		
EB2 125/3H 100A 3p	100	004672105			0,63-1/ 6-12		
EB2 125/3H 125A 3p	125	004672106			0,63-1/ 6-10		
EB2 125/4H 20A 4p	20	004672107	4		0,63-1/ 6-12	1,4	
EB2 125/4H 32A 4p	32	004672108			0,63-1/ 6-12		
EB2 125/4H 50A 4p	50	004672109			0,63-1/ 6-12		
EB2 125/4H 63A 4p	63	004672110			0,63-1/ 6-12		
EB2 125/4H 100A 4p	100	004672111			0,63-1/ 6-12		
EB2 125/4H 125A 4p	125	004672112			0,63-1/ 6-10		

Legend: EB2 -> series 2
L -> economic, lower short-circuit breaking capacity
S -> standard short-circuit breaking capacity
H -> high short-circuit breaking capacity

ETIBREAK EB2 160/250

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 250/3L 200A 3p	200	004671072	3	25/19	0,63-1/ 6-13	1,5	1
EB2 250/3L 250A 3p	250	004671073			0,63-1/ 6-10		
EB2 250/4L 200A 4p	200	004671075	4		0,63-1/ 6-13	1,9	
EB2 250/4L 250A 4p	250	004671076			0,63-1/ 6-10		
EB2 160/3S 160A 3p	160	004671061	3	36/36	0,63-1/ 6-13	1,5	1
EB2 250/3S 200A 3p	200	004671082			0,63-1/ 6-13		
EB2 250/3S 250A 3p	250	004671083			0,63-1/ 6-10		
EB2 160/3S 160A 4p	160	004671062	4		0,63-1/ 6-13	1,9	
EB2 250/4S 200A 4p	200	004671085			0,63-1/ 6-13		
EB2 250/4S 250A 4p	250	004671086			0,63-1/ 6-10		
EB2 160/3H 160A 3p	160	004672120	3	65/36	0,63-1 / 6-13	1,5	1
EB2 250/3H 160A 3p	160	004672130			0,63-1 / 6-13		
EB2 250/3H 200A 3p	200	004672131			0,63-1 / 6-13		
EB2 250/3H 250A 3p	250	004672132			0,63-1 / 6-10		
EB2 160/4H 160A 4p	160	004672121	4		0,63-1 / 6-13	1,9	
EB2 250/4H 160A 4p	160	004672133			0,63-1 / 6-13		
EB2 250/4H 200A 4p	200	004672134			0,63-1 / 6-13		
EB2 250/4H 250A 4p	250	004672135			0,63-1 / 6-10		

ETIBREAK EB2 400

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 400/3L 250A 3p	250	004671091	3	25/25	0,63-1/ 6-12	4,2	1
EB2 400/3L 400A 3p	400	004671092					
EB2 400/4L 250A 4p	250	004671093	4			5,6	
EB2 400/4L 400A 4p	400	004671094					
EB2 400/3S 250A 3p	250	004671101	3	50/50	0,63-1/ 6-12	4,3	1
EB2 400/3S 400A 3p	400	004671102					
EB2 400/4S 250A 4p	250	004671103	4			5,7	
EB2 400/4S 400A 4p	400	004671104					

ETIBREAK EB2 630/800

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 800/3L 630A 3p	630	004672150	3	36/36	0,63-1 / 5-10	8,5	1
EB2 800/3L 800A 3p	800	004672151					
EB2 800/4L 630A 4p	630	004672152	4			11,5	
EB2 800/4L 800A 4p	800	004672153					
EB2 800/3S 630A 3p	630	004672160	3	50/50	0,63-1 / 5-10	8,5	1
EB2 800/3S 800A 3p	800	004672161					
EB2 800/3S 630A 4p	630	004672162	4			11,5	
EB2 800/3S 800A 4p	800	004672163					
EB2 800/3H 630A 3p	630	004672170	3	70/50	0,63-1 / 5-10	8,5	1
EB2 800/3H 800A 3p	800	004672171					
EB2 800/4H 630A 4p	630	004672172	4			11,5	
EB2 800/4H 800A 4p	800	004672173					

Etibreak

Microprocessor's MCCBs
Microprocessor's MCCBs are available in frame sizes from 250 A up to 1600 A, with rated current from 40 A up to 1600 A. All frame sizes have adjustable thermal and magnetic protection.
Series 2: Protection against overload can be adjusted between 0,4 – 1 x In, meanwhile short-circuit protection has already preset different curves, which can be easily selected according to the type of load.
Optional Functions:
A - Standard relay with LSI Characteristic (where no letters are present then MCCB is A type)
P - Preferential Trip Alarm
G - Ground Fault
N - Neutral Protection

ETIBREAK EB2 250

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 250/3E 40A 3p	40	004671301	3	70/70	0,4-1/adjust.	2,5	1
EB2 250/3E 125A 3p	125	004671302					
EB2 250/3E 250A 3p	250	004671304					
EB2 250/4E 40A 4p	40	004671305	4			3,3	
EB2 250/4E 125A 4p	125	004671306					
EB2 250/4E 250A 4p	250	004671308					

ETIBREAK EB2 400

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 400/3E 250A 3p	250	004671111	3	50/50	0,4-1/adjust.	4,3	1
EB2 400/3E 400A 3p	400	004671112					
EB2 400/3E 400A 3p APG	400	004671115					
EB2 400/4E 250A 4p	250	004671113	4			5,7	
EB2 400/4E 400A 4p	400	004671114					
EB2 400/4E 400A 4p APGN	400	004671116					

ETIBREAK EB2 630

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 630/3LE 630A 3p	630	004671121	3	36/36	0,4-1/adjust.	3,75	1
EB2 630/4LE 630A 4p	630	004671122	4			4,95	
EB2 630/4LE 630A 4p APGN	630	004671123	4			6,5	
EB2 630/3E 630A 3p	630	004671127	3	50/50	0,4-1/adjust.	3,75	1
EB2 630/4E 630A 4p	630	004671128	4			4,95	
EB2 630/4E 630A 4p APGN	630	004671129	4			6,5	

ETIBREAK EB2 800

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 800/3LE 800A 3p	800	004672180	3	50/50	0,4-1 / adjust.	9,1	1
EB2 800/4LE 800A 4p	800	004672181	4			12,3	
EB2 800/4LE 800A 4p AGN	800	004672182	4			12,3	
EB2 800/4LE 800A 4p APGN	800	004672183	4			12,3	
EB2 800/3E 800A 3p	800	004672190	3	70/70	0,4-1 / adjust.	9,1	1
EB2 800/3E 800A 4p	800	004672191	4			12,3	
EB2 800/3HE 630A 3p	630	004672200	3	125/94	0,4-1 / adjust.	13,3	1
EB2 800/3HE 800A 3p	800	004672201				14,8	
EB2 800/4HE 630A 4p	630	004672202	4			16,8	
EB2 800/4HE 800A 4p	800	004672203				18,8	

ETIBREAK EB2 1000

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 1000/3LE 1000A 3p	1000	004672210	3	50/38	0,4-1 / adjust.	11	1
EB2 1000/4LE 1000A 4p	1000	004672211	4			14,8	
EB2 1000/4LE 1000A 4p APGN	1000	004672212	4			14,8	
EB2 1000/3E 1000A 3p	1000	004672220	3	70/50	0,4-1 / adjust.	11	1
EB2 1000/3E 1000A 4p	1000	004672221	4			14,8	
EB2 1000/4E 1000A 4p APGN	1000	004672222	4			14,8	

ETIBREAK EB2 1250

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 1250/3LE 1250A 3p	1250	004672230	3	50/38	0,4-1 / adjust.	19,8	1
EB2 1250/4LE 1250A 4p	1250	004672231	4			25	
EB2 1250/4LE 1250A 4p APGN	1250	004672232	4			25	
EB2 1250/3E 1250A 3p	1250	004672240	3	70/50	0,4-1 / adjust.	19,8	1
EB2 1250/3E 1250A 4p	1250	004672241	4			25	
EB2 1250/4E 1250A 4p APGN	1250	004672242	4			25	

ETIBREAK EB2 1600

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2 1600/3LE-FC 1600A 3p	1600	004672250	3	50/38	0,4-1 / adjust.	27	1
EB2 1600/4LE-FC 1600A 4p	1600	004672251	4			35	
EB2 1600/4LE-FC 1600A 4p APGN	1600	004672252	4			35	
EB2 1600/3LE-RC 1600A 3p	1600	004672270	3			27	
EB2 1600/4LE-RC 1600A 4p	1600	004672271	4			35	
EB2 1600/4LE-RC 1600A 4p APGN	1600	004672272	4			35	
EB2 1600/3E-RC 1600A 3p	1600	004672280	3	100/75	0,4-1 / adjust.	27	1
EB2 1600/4E-RC 1600A 4p	1600	004672281	4			35	
EB2 1600/4E-RC 1600A 4p APGN	1600	004672282	4			35	
EB2 1600/3E-FC 1600A 3p	1600	004672260	3			27	
EB2 1600/3E-FC 1600A 4p	1600	004672261	4			35	
EB2 1600/4E-FC 1600A 4p APGN	1600	004672262	4			35	

Low voltage switch disconnector ETIBREAK ED2

ETIBREAK ED2 125-1600							
Type	I_n [A]	Code No.	Poles	Peak/kA	U_r (AVC/DVC)	Weight [kg]	Packaging [pcs]
ED2 125/3	125	004671271	3	3,6	690/600	1	1
ED2 160/3	160	004671272	3	6	690/600	1,5	1
ED2 250/3	250	004671273	3	6	690/600	1,5	1
ED2 400/3	400	004671274	3	9	690/600	4,2	1
ED2 630/3	630	004671275	3	9	690/600	4,4	1
ED2 800/3	800	004672370	3	15	690/600	8,5	1
ED2 1250/3	1250	004672371	3	32	690/600	18,2	1
ED2 1600/3 FC	1600	004672372	3	45	690/600	24,9	1
ED2 125/4	125	004671276	4	3,6	690/600	1,4	1
ED2 160/4	160	004671277	4	6	690/600	1,9	1
ED2 250/4	250	004671278	4	6	690/600	1,9	1
ED2 400/4	400	004671279	4	9	690/600	5,6	1
ED2 630/4	630	004671280	4	9	690/600	5,8	1
ED2 800/4	800	004672380	4	15	690/600	11,5	1
ED2 1250/4	1250	004672381	4	32	690/600	23,4	1
ED2 1600/4 FC	1600	004672382	4	45	690/600	32,9	1

Note:
All internal and external accessories for MCCBs can also be mounted to corresponding type of switch disconnectors.

Low voltage moulded case circuit breakers with residual current protection

Main advantages:

- Combined protection against overloads, short circuits and earth leakage integrated in one device
- The new EB2R save the space
- The EB2R has the same dimensions and fixing as the EB2 MCCBs
- The EB2R eliminates the need for either an external relay with current transformers or add-on block
- Residual current is adjustable
- Earth leakage protection time delay is adjustable
- Wide range of accessories (as MCCB – only shunt/undervoltage trip units can not be fitted to EB2R)

ETIBRAK EB2R 125

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2R 125/3L 20A 3P	20	004671501	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 32A 3P	32	004671502	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 50A 3P	50	004671503	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 63A 3P	63	004671504	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 100A 3P	100	004671505	3	25/19	0.63-1/12	1,1	1
EB2R 125/3L 125A 3P	125	004671506	3	25/19	0.63-1/10	1,1	1
EB2R 125/4L 20A 4P	20	004671507	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 32A 4P	32	004671508	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 50A 4P	50	004671509	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 63A 4P	63	004671510	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 100A 4P	100	004671511	4	25/19	0.63-1/12	1,4	1
EB2R 125/4L 125A 4P	125	004671512	4	25/19	0.63-1/10	1,4	1

Note: all internal and external accessories can be used with EB2R – only exceptions are DA shunt trip unit and NA under-voltage trip unit (cannot be fitted to EB2R)

ETIBRAK EB2R 250

Type	I_n [A]	Code No.	Poles	Icu/Ics 400V(kA)	Adjustment thermal/magnetic	Weight [kg]	Packaging [pcs]
EB2R 250/3L 160A 3P	160	004671581	3	25/19	0.63-1/13	1,5	1
EB2R 250/3L 250A 3P	250	004671582	3	25/19	0.63-1/10	1,5	1
EB2R 250/4L 160A 4P	160	004671583	4	25/19	0.63-1/13	1,9	1
EB2R 250/4L 250A 4P	250	004671584	4	25/19	0.63-1/10	1,9	1

Note: all internal and external accessories can be used with EB2R – only exceptions are DA shunt trip unit and NA under-voltage trip unit (cannot be fitted to EB2R)

Etibreak

Internal accessories

NA2

Undervoltage trip for EB2 125-630

Internal accessories can be mounted by customer	Code No.	Description	Poles	Packaging [pcs]
Undervoltage trip unit NA2 125-630AF AC200-240V	004671153	200-240 V AC	3p ,4p	1/1
Undervoltage trip unit NA2 125-630AF AC380-450V	004671154	380-450 V AC	3p ,4p	1/1
Undervoltage trip unit NA2 125-630AF DC24V	004671155	24 V DC	3p ,4p	1/1
Undervoltage trip unit NA2 125-630AF DC100-120V	004671156	100-120 V DC	3p ,4p	1/1
Undervoltage trip unit NA2 125-630AF DC200-240V	004671157	200-240 V DC	3p ,4p	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker

PS2

Undervoltage trip for EB2 800-1600

Internal accessories can be mounted by customer	Code No.	Description	Poles	Packaging [pcs]
Undervoltage trip unit NA2 800-1600AF AC220-240V	004672300	AC 220-240 V	3p ,4p	1/1
Undervoltage trip unit NA2 800-1600AF AC415-450V	004672301	AC 415-450 V	3p ,4p	1/1
Undervoltage trip unitNA2 800-1600AF DC24V	004672302	24 V DC	3p ,4p	1/1
Undervoltage trip unit NA2 800-1600AF DC100-120V	004672303	100-120 V DC	3p ,4p	1/1
Undervoltage trip unit NA2 800-1600AF DC200-240V	004672304	200-240 V DC	3p ,4p	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker

SS2

Auxiliary & Alarm switch for EB2 125-1600

Internal accessories can be mounted by customer	Code No.	Description	Poles	Packaging [pcs]
Auxiliary switch, PS2 125-1600AF	004671141	1 changeover contact	3p ,4p	1/1
Auxiliary switch, heavy duty PS2-NO 125-1600AF	004671142	1 contact, NO	3p ,4p	1/1
Auxiliary switch, heavy duty PS2-NC 125-1600AF	004671143	1 contact, NC	3p ,4p	1/1
Alarm switch SS2 125-1600AF	004671144	1 changeover contact	3p ,4p	1/1
Alarm switch, heavy duty SS2-NO 125-1600AF	004671145	1 contact, NO	3p ,4p	1/1
Alarm switch, heavy duty SS2-NC 125-1600AF	004671146	1 contact, NC	3p ,4p	1/1

DA2

Shunt trip for EB2 125-1000A

Internal accessories can be mounted by customer	Code No.	Description	Poles	Packaging [pcs]
Shunt trip unit DA2 125-1000AF AC200-240V	004671147	AC200-240V	3p ,4p	1/1
Shunt trip unit DA2 125-1000AF AC380-450V	004671148	AC380-450V	3p ,4p	1/1
Shunt trip unit DA2 125-1000AF DC24V	004671149	DC24V	3p ,4p	1/1
Shunt trip unit DA2 125-1000AF DC48V	004671150	DC48V	3p ,4p	1/1
Shunt trip unit DA2 125-1000AF DC110-120V	004671151	DC110-120V	3p ,4p	1/1
Shunt trip unit DA2 125-1000AF DC 200-240V	004671152	DC 200-240V	3p ,4p	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker

Shunt trip for EB2 1250 & 1600A

Internal accessories can be mounted by customer	Code No.	Description	Poles	Packaging [pcs]
Shunt trip unit DA2 1250-1600AF AC200-240V	004671135	AC200-240V	3p ,4p	1/1
Shunt trip unit DA2 1250-1600AF AC380-450V	004671136	AC380-450V	3p ,4p	1/1
Shunt trip unit DA2 1250-1600AF DC24V	004671137	DC24V	3p ,4p	1/1
Shunt trip unit DA2 1250-1600AF DC48V	004671138	DC48V	3p ,4p	1/1
Shunt trip unit DA2 1250-1600AF DC110-120V	004671139	DC110-120V	3p ,4p	1/1
Shunt trip unit DA2 1250-1600AF DC 200-240V	004671140	DC 200-240V	3p ,4p	1/1

Important note: The shunt trip unit DA and undervoltage trip unit NA cannot be mounted in the same breaker

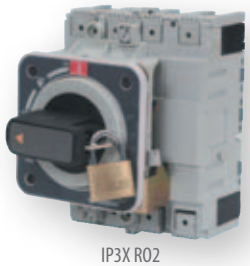
External accessories

PSHUV

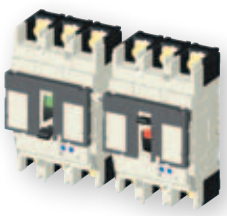
PSHUV

ZB2

MO2



IP3X RO2



MLR+MLL

Accessories for EB2 125-1600

	Code No	Poles	Packaging [pc
Plug for aux. And alarm switches SS 125-1600AF, PSPSS 125-1600AF	004671457	3p ,4p	1/1
Plug for shunt trips and underv. trips SHT and UVT 125-1600AF, PSHUV 125-1600AF	004671458	3p ,4p	1/1
Socket – for internal accessories 125-1600AF, PIO 125-1600AF	004671459	3p ,4p	1/1
Mechanical interlock, MW cable 1m	004671178	3p ,4p	1/1
Mechanical interlock, MW cable 1,5m	004671179	3p ,4p	1/1
OCR checker 200-240V AC	004672310	3p ,4p	1/1

Accessories for EB2, ED2 125

	Code No	Poles	Packaging [pcs]
Attach busbar, ZB2 125/3	004671161	3p	3
Attach busbar, ZB2 125/4	004671162	4p	3
Solderless Terminal, SP2 125/3	004671163	3p	4
Solderless Terminal, SP2 125/4	004671164	4p	4

Accessories for EB2, ED2 125

	Code No	Poles	Packaging [pcs]
Motor Operator, MO2 125 AC230-240V	004671165	3p, 4p	1
Motor Operator, MO2 125 AC100-110V	004671311	3p, 4p	1
Motor Operator, MO2 125 DC24V	004671313	3p, 4p	1
Motor Operator, MO2 125 DC48V	004671314	3p, 4p	1
Motor Operator, MO2 125 DC100V	004671315	3p, 4p	1
Motor Operator, MO2 125 AC230-240V, reset	004671166	3p, 4p	1
Motor Operator, MO2 125 AC100-110V, reset	004671316	3p, 4p	1
Motor Operator, MO2 125 DC24V, reset	004671318	3p, 4p	1
Motor Operator, MO2 125 DC48V, reset	004671319	3p, 4p	1
Motor Operator, MO2 125 DC100V, reset	004671320	3p, 4p	1

Accessories for EB2, ED2 125

	Code No	Poles	Packaging [pcs]
Door Flange, PR2 125-250	004671167	3p, 4p	1
Door Flange, PR2 - mot 125-250	004671472	3p, 4p	1
Breaker mounted handle IP3X, RO2 125, black	004671168	3p, 4p	1
Breaker mounted handle IP3X, RO2 125, keylock (cylindrical), black	004671169	3p, 4p	1
Breaker mounted handle IP3X, RO2 125, red	004671321	3p, 4p	1
Breaker mounted handle IP3X, RO2 125, keylock (cylindrical), red	004671322	3p, 4p	1
Door mounted handle IP54, RO2 125P, black	004671170	3p, 4p	1
Door mounted handle IP54, RO2 125P, keylock (cylindrical), black	004671171	3p, 4p	1
Door mounted handle IP54, RO2 125P, red	004671323	3p, 4p	1
Door mounted handle IP54, RO2 125P, keylock (cylindrical), red	004671324	3p, 4p	1

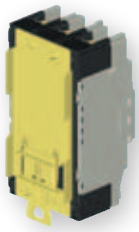
Handle operating mechanism can be padlocked in OFF

Accessories for EB2, ED2 125

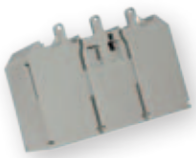
	Code No	Poles	Packaging [pcs]
Slide mechanical interlock, MS 125 3P, MO or RO assembly not possible	004671172	3p	1
Slide mechanical interlock, MS 125 4P, MO or RO assembly not possible	004671173	4p	1
Link mechanical interlock, MLR 125 right, MO or RO assembly possible	004671174	3p, 4p	1
Link mechanical interlock, MLL 125 left 3p, MO or RO assembly possible	004671175	3p	1
Link mechanical interlock, MLL 125 left 4p, MO or RO assembly possible	004671176	4p	1
Wire mechanical interlock, MW 125, mechanism, MO or RO assembly possible	004671177	3p, 4p	1

Link mechanical configuration; MLR_right + MLL_left
Wire mechanical configuration; MW_mech. + MW_cable

Etibreak

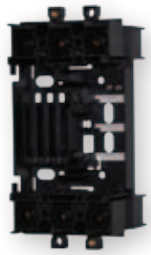


DIN 125



PRS2

Accessories for EB2, ED2 125			
	Code No	Poles	Packaging [pcs]
Handle locks, ZA2 125-250	004671180	3p, 4p	1
Terminal cover, PRS2 125/3, front	004671181	3p	1
Terminal cover, PRS2 125/4, front	004671182	4p	1
Terminal cover, PRS2-SP 125/3, cable clamps	004671183	3p	1
Terminal cover, PRS2-SP 125/4, cable clamps	004671184	4p	1
Terminal cover, PRS2-NPF 125/3, plug-in	004671473	3p	1
Terminal cover, PRS2-NPF 125/4, plug-in	004671474	4p	1
Interpol barrier, IZ2 125	004671185	3p, 4p	1
DIN rail adapter, DIN 125	004671186	3p, 4p	1

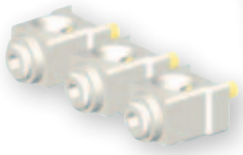


NPF

NPI

Accessories for EB2, ED2 125			
	Code No	Poles	Packaging [pcs]
Fixed plug-in 3-p, NPF 125	004671451	3p	1
Fixed plug-in 4-p, NPF 125	004671452	4p	1
Plug-in Conversion 3-p, NPI 125	004671453	3p	1
Plug-in Conversion 4-p, NPI 125	004671454	4p	1
Extension terminal for fixed Plug-in 3-p, SK3 250	004671455	3p	3
Extension terminal for fixed Plug-in 4-p, SK4 250	004671456	4p	4

- basic configuration: fixed plug-in + plug-in conversion
- extension terminals is used when fixed part of plug-in is under mounting plate - not used for basic configuration
- if additional accessories are installed in MCCB, plugs and sockets are required



SP2

ZB2

Accessories for EB2, ED2 160 and EB2, ED2 250			
	Code No	Poles	Packaging [pcs]
Attach busbar ZB2 250/3	004671191	3p	3
Attach busbar, ZB2 250/4	004671192	4p	3
Solderless Terminal, SP2 250/3	004671193	3p	4
Solderless Terminal, SP2 250/4	004671194	4p	4
Busbar adapter 3p, DA-60/250/3/FE-5	001696162	3p	1
Busbar adapter 4p, DA-60/250/4/FE-5	001696163	4p	1

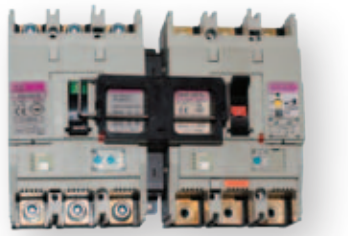
MO2

Accessories for EB2, ED2 160 and EB2, ED2 250			
	Code No	Poles	Packaging [pcs]
Motor Operator, MO2 250 AC230-240V	004671195	3p, 4p	1
Motor Operator, MO2 250 AC100-110V	004671331	3p, 4p	1
Motor Operator, MO2 250 DC24V	004671333	3p, 4p	1
Motor Operator, MO2 250 DC48V	004671334	3p, 4p	1
Motor Operator, MO2 250 DC100V	004671335	3p, 4p	1
Motor Operator, MO2 250, AC230-240, reset	004671196	3p, 4p	1
Motor Operator, MO2 250 AC100-110V, reset	004671336	3p, 4p	1
Motor Operator, MO2 250 DC24V, reset	004671338	3p, 4p	1
Motor Operator, MO2 250 DC48V, reset	004671339	3p, 4p	1
Motor Operator, MO2 250 DC100V, reset	004671340	3p, 4p	1

IP3X RO2

Accessories for EB2, ED2 160 and EB2, ED2 250			
	Code No	Poles	Packaging [pcs]
Breaker mounted handle IP3X, RO2 250, black	004671197	3p, 4p	1
Breaker mounted handle IP3X, RO2 250, keylock (cylindrical), black	004671198	3p, 4p	1
Breaker mounted handle IP3X, RO2 250, red	004671341	3p, 4p	1
Breaker mounted handle IP3X, RO2 250, keylock (cylindrical), red	004671342	3p, 4p	1
Door mounted handle IP54, RO2 250P, black	004671199	3p, 4p	1
Door mounted handle IP54, RO2 250P, keylock (cylindrical), black	004671200	3p, 4p	1
Door mounted handle IP54, RO2 250P, red	004671343	3p, 4p	1
Door mounted handle IP54, RO2 250P, keylock (cylindrical), red	004671344	3p, 4p	1

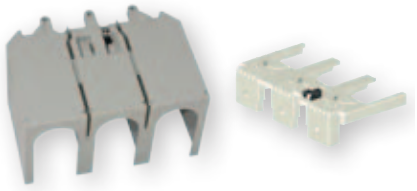
Handle operating mechanism can be padlocked in OFF



MS

Accessories for EB2, ED2 160 in EB2, ED2 250			
	Code No	Poles	Packaging [pcs]
Slide mechanical interlock, MS 250 3P, MO or RO assembly not possible	004671201	3p	1
Slide mechanical interlock, MS 250 4P, MO or RO assembly not possible	004671202	4p	1
Link mechanical interlock, MLR 250 right, MO or RO assembly possible	004671203	3p, 4p	1
Link mechanical interlock, MLL 250 left 3p, MO or RO assembly possible	004671204	3p	1
Link mechanical interlock, MLL 250 left 4p, MO or RO assembly possible	004671205	4p	1
Wire mechanical interlock, MW 250, mechanism, MO or RO assembly possible	004671206	3p, 4p	1

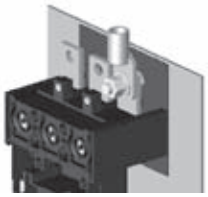
Link mechanical interlock configuration; MLR_right + MLL_left
Wire mechanical interlock configuration; MW_mech. + MW_cable



PRS2

Accessories for EB2, ED2 160 and EB2, ED2 250			
	Code No	Poles	Packaging [pcs]
Terminal cover, PRS2 250/3, front	004671207	3p	1
Terminal cover, PRS2 250/4, front	004671208	4p	1
Terminal cover, PRS2-SP 250/3, cable clamps	004671209	3p	1
Terminal cover, PRS2-SP 250/4, cable clamps	004671210	4p	1
Terminal cover, PRS2-NPF 250/3, plug-in	004671475	3p	1
Terminal cover, PRS2-NPF 250/4, plug-in	004671476	4p	1

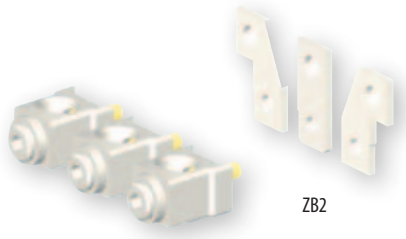
IZ2



SK3

Accessories for EB2, ED2 160 and EB2, ED2 250			
	Code No	Poles	Packaging [pcs]
Interpol barrier, IZ2 250	004671211	3p, 4p	1
Lateral block, LTBL 250, left	004671212	3p. 4p	1
Lateral block, LTBR 250, right	004671213	3p, 4p	1
Fixed plug-in 3-p, NPF 250	004671460	3p	1
Fixed plug-in 4-p, NPF 250	004671461	4p	1
Plug-in Conversion 3-p, NPI 250 for use with EB2 160/3S, 250/3L_S	004671462	3p	1
Plug-in Conversion 4-p, NPI 250 for use with EB2 160/4S, 250/4L_S	004671463	4p	1
Plug-in Conversion 3-p, NPI 250_E for use with EB2 250/3E	004671485	3p	1
Plug-in Conversion 4-p, NPI 250_E for use with EB2 250/4E	004671486	4p	1
Extension terminal for fixed Plug-in 3-p, SK3 250	004671464	3p	set = 3 pcs
Extension terminal for fixed Plug-in 4-p, SK4 250	004671465	4p	set = 4 pcs

- basic configuration: fixed plug-in + plug-in conversion
- extension terminals is used when fixed part of plug-in is under mounting plate - not used for basic configuration
- if additional accessories are installed in MCCB, plugs and sockets are required,



ZB2

SP2

Accessories for EB2, ED2 400 and EB2, ED2 630			
	Code No	Poles	Packaging [pcs]
Attach busbar, ZB2 400/3	004671221	3p	set = 3 pcs
Attach busbar, ZB2 400/4	004671222	4p	set = 4 pcs
Attach busbar, ZB2 630/3	004671223	3p	set = 3 pcs
Attach busbar, ZB2 630/4	004671224	4p	set = 4 pcs
Solderless Terminal, SP2 400/3	004671225	3p	set = 3 pcs
Solderless Terminal, SP2 400/4	004671226	4p	set = 4 pcs

MO2

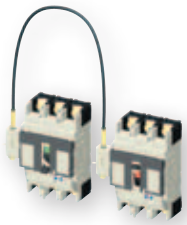
Accessories for EB2, ED2 400 and EB2, ED2 630			
	Code No	Poles	Packaging [pcs]
Motor Operator, MO2 630, AC100-240V	004671227	3p, 4p	1
Motor Operator, MO2 630 DC24V	004671441	3p, 4p	1
Motor Operator, MO2 630 DC100-120V	004671442	3p, 4p	1
Motor Operator, MO2 630, AC100-240V, reset	004671228	3p, 4p	1
Motor Operator, MO2 630 DC24V, reset	004671443	3p, 4p	1
Motor Operator, MO2 630 DC100-120V, reset	004671444	3p, 4p	1

Etibreak

IP54, RO2

Accessories for EB2, ED2 400 and EB2, ED2 630			
	Code No	Poles	Packaging [pcs]
Breaker mounted handle IP3X, RO2 630, black	004671229	3p, 4p	1
Breaker mounted handle IP3X, RO2 630, keylock (cylindrical), black	004671230	3p, 4p	1
Breaker mounted handle IP3X, RO2 630, red	004671445	3p, 4p	1
Breaker mounted handle IP3X, RO2 630, keylock (cylindrical), red	004671446	3p, 4p	1
Door mounted handle IP54, RO2 630 P, black	004671231	3p, 4p	1
Door mounted handle IP54, RO2 630P, keylock (cylindrical), black	004671232	3p, 4p	1
Door mounted handle IP54, RO2 630P, red	004671447	3p, 4p	1
Door mounted handle IP54, RO2 630P, keylock (cylindrical), red	004671448	3p, 4p	1

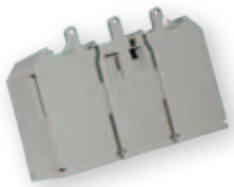
Handle operating mechanism can be padlocked in OFF



MW

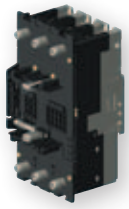
Accessories for EB2, ED2 400 and EB2, ED2 630			
	Code No	Poles	Packaging [pcs]
Slide mechanical interlock, MS 630 3P, MO or RO assembly not possible	004671233	3p	1
Slide mechanical interlock, MS 630 4P, MO or RO assembly not possible	004671234	4p	1
Link mechanical interlock, MLR 630 right , MO or RO assembly possible	004671235	3p, 4p	1
Link mechanical interlock, MLL 630 left 3p, MO or RO assembly possible	004671236	3p	1
Link mechanical interlock, MLL 630 left 4p, MO or RO assembly possible	004671237	4p	1
Wire mechanical interlock, MW 630, mechanism, MO or RO assembly possible	004671238	3p, 4p	1

Link mechanical interlock configuration; MLR_right + MLL_left
Wire mechanical interlock configuration; MW_mech. + MW_cable



PRS2

Accessories for EB2, ED2 400 and EB2, ED2 630			
	Code No	Poles	Packaging [pcs]
Handle locks, ZA2 400/630	004671239	3p, 4p	1
Terminal cover, PRS2 630/3, front	004671240	3p	1
Terminal cover, PRS2 630/4, front	004671241	4p	1
Terminal cover, PRS2-SP 630/3, cable clamps	004671242	3p	1
Terminal cover, PRS2-SP 630/4, cable clamps	004671243	4p	1
Interpol barrier, IZ2 630	004671244	3p, 4p	1
Lateral block, LTBL 630, left	004671245	3p, 4p	1
Lateral block, LTBR 630, right	004671246	3p, 4p	1
Door Flange , PR2 400-630	004671449	3p, 4p	1



NPF

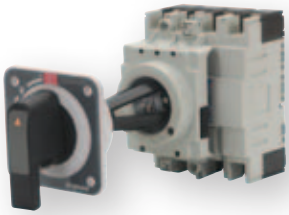
Accessories for EB2, ED2 400 and EB2, ED2 630			
	Code No	Poles	Packaging [pcs]
Fixed plug-in 3-p, NPF 400-630	004671466	3p	1
Fixed plug-in 4-p, NPF 400-630	004671467	4p	1
Plug-in Conversion 3-p, NPI 400-630	004671468	3p	1
Plug-in Conversion 4-p, NPI 400-630	004671469	4p	1
Extension terminal for fixed Plug-in 3-p, SK3 400-630	004671470	3p	set = 3 pcs
Extension terminal for fixed Plug-in 4-p, SK4 400-630	004671471	4p	set = 4 pcs

- basic configuration: fi xed plug-in + plug-in conversion
- extension terminals is used when fi xed part of plug-in is under mounting plate - not used for basic configuration
- if additional accessories are installed in MCCB, plugs and sockets are required,

ZB2

Accessories for EB2 800 and EB2 1000			
	Code No	Poles	Packaging [pcs]
Attach busbar, ZB2 S800-630/3	004672320	3p ,4p	set = 3 pcs
Attach busbar, ZB2 S800-630/4	004672321	3p ,4p	set = 4 pcs
Attach busbar, ZB2 S800-800/3	004672322	3p ,4p	set = 3 pcs
Attach busbar, ZB2 S800-800/4	004672323	3p ,4p	set = 4 pcs

Accessories for EB2 800 and EB2 1000			
	Code No	Poles	Packaging [pcs]
Motor Operator, MO2 800-1000, AC100-240V	004672324	3p ,4p	1
Motor Operator, MO2 800-1000 DC24-48V	004672325	3p ,4p	1
Motor Operator, MO2 800-1000 DC100-120V	004672326	3p ,4p	1

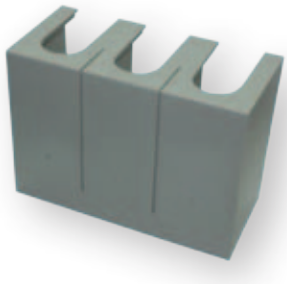


Door mounted handle
(door interlock handle)

Accessories for EB2 800 and EB2 1000			
	Code No	Poles	Packaging [pcs]
Handle Operating Mechanism, RO2 800-1000, black	004672327	3p ,4p	1
Handle Operating Mechanism, RO2 800-1000, key lock (cylindrical), black	004672328	3p ,4p	1
Handle Operating Mechanism, RO2 800-1000, red	004672329	3p ,4p	1
Handle Operating Mechanism, RO2 800-1000, key lock (cylindrical), red	004672330	3p ,4p	1
External Handle Operating Mechanism, RO2 800-1000 P, black	004672331	3p ,4p	1
External Handle Operating Mechanism, RO2 800-1000P, red	004672332	3p ,4p	1

Mechanical Interlock

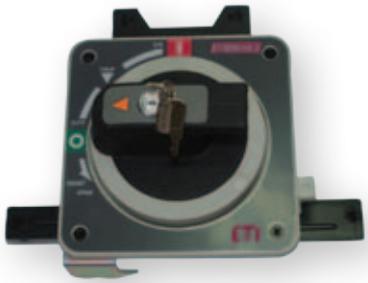
Accessories for EB2 800 and EB2 1000			
	Code No	Poles	Packaging [pcs]
Slide mechanical interlock, MS 800 3P, MO or RO assembly not possible	004672333	3p	1
Slide mechanical interlock, MS 800 4P, MO or RO assembly not possible	004672334	4p	1
Link mechanical interlock, MLR 800-1000 right , MO or RO assembly possible	004672335	3p ,4p	1
Link mechanical interlock, MLL 800-1000 left 3p, MO or RO assembly possible	004672336	3p	1
Link mechanical interlock, MLL 800-1000 left 4p, MO or RO assembly possible	004672337	4p	1
Wire mechanical interlock, MW 800-1000, mechanism, MO or RO assembly possible	004672338	3p ,4p	1



Terminal Cover

Accessories for EB2 800 and EB2 1000			
	Code No	Poles	Packaging [pcs]
Terminal cover, PRS2 800/3, front	004672339	3p	1
Terminal cover, PRS2 800/4, front	004672340	4p	1
Interpol barrier, IZ2 630	004671244	3p ,4p	1
Lateral block, LTBL 630, left	004671245	3p	1
Lateral block, LTBR 630, right	004671246	4p	1

Accessories for EB2 1250 and EB2 1600			
	Code No	Poles	Packaging [pcs]
Motor Operator, MO2 1250-1600, AC240V	004672350	3p ,4p	1
Motor Operator, MO2 1250-1600 DC24-48V	004672351	3p ,4p	1
Motor Operator, MO2 1250-1600 DC100-110V	004672352	3p ,4p	1



Handle Operating Mechanism

Accessories for EB2 1250 and EB2 1600			
	Code No	Poles	Packaging [pcs]
Handle Operating Mechanism, RO2 1250-1600, black	004672353	3p ,4p	1
Handle Operating Mechanism, RO2 1250-1600, key lock (cylindrical), black	004672354	3p ,4p	1
Handle Operating Mechanism, RO2 1250-1600, red	004672355	3p ,4p	1
Handle Operating Mechanism, RO2 1250-1600, key lock (cylindrical), red	004672356	3p ,4p	1
External Handle Operating Mechanism, RO2 1250-1600 P, black	004672357	3p ,4p	1
External Handle Operating Mechanism, RO2 1250-1600P, red	004672358	3p ,4p	1

Accessories for EB2 1250 and EB2 1600			
	Code No	Poles	Packaging [pcs]
Slide mechanical interlock, MS 1250 3P, MO or RO assembly not possible	004672359	3p	1
Slide mechanical interlock, MS 1250 4P, MO or RO assembly not possible	004672360	4p	1

Terminal Cover

Accessories for EB2 1250 and EB2 1600			
	Code No	Poles	Packaging [pcs]
Terminal cover, PRS2 1250/3, front	004672361	3p	1
Terminal cover, PRS2 1250/4, front	004672362	4p	1
Interpol barrier, IZ2 630	004671244	3p ,4p	3/4

Ratings and Specifications

Low voltage moulded case circuit breaker

Product series	description	unit	condition	EB2 125			EB2 160	
Model-type				L	S	H	S	H
Number of poles				3, 4			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	690	690
			DC	250	250	250	250	250
Rated insulation voltage	U_i	(V)		800	800	800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8
Ultimate breaking capacity	I_{cu}	(kA)	690V AC	-	6	6	7.5	7.5
(IEC, JIS, AS/NZS)			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)	690V AC	-	6	6	7.5	7.5
(IEC, JIS, AS/NZS)			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	
Installation								
Front connection				■	■		■	
Attached flat bar				•	•		•	
Solderless terminal (cable clamp)				•	•		•	
Rear connection				•	•		•	
Plug-in				•	•		•	
Draw- out				-	-		-	
DIN rail mounting				•	•		-	
Dimensions	h	(mm)		155	155		165	
	w	(mm)	3 pole	90	90		105	
			4 pole	120	120		140	
	d	(mm)		68	68		68	
Weight	W	(kg)	3 pole	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	
	Mechanical	cycles		30000	30000		30000	
Standards	IEC 60947-2, EN 60947-2							

■ Standard • Optional - Not Available

Ratings and Specifications

Product series	description	unit	condition	EB2 250			EB2 250
Model-type				L	S	H	E
Number of poles					3, 4		3, 4
Nominal current ratings							
	I_n	(A)	50°C		200, 250		40, 125, 160, 250
Electrical characteristics							
Rated operational voltage	U_e	(V)	AC 50/60 Hz	690	690	690	690
			DC	250	250	250	-
Rated insulation voltage	U_i	(V)		800	800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8
Ultimate breaking capacity	I_{cu}	(kA)	690V AC	-	7.5	7.5	20
(IEC, JIS, AS/NZS)			525V AC	10	25	25	35
			440V AC	15	25	50	50
			400/415V AC	25	36	65	70
			220/240V AC	35	65	85	125
			250V DC	25	40	40	-
Service breaking capacity	I_{cs}	(kA)	690V AC	-	7.5	7.5	15
(IEC, JIS, AS/NZS)			525V AC	7.5	25	25	35
			440V AC	12	25	25	50
			400/415V AC	19	36	36	70
			220/240V AC	27	65	85	125
			250V DC	19	40	40	-
Rated breaking capacity (NEMA)		(kA)	480V AC	10	22	25	35
			240VAC	35	65	85	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
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
	w	(mm)	3 pole	105	105		105
		(mm)	4 pole	140	140		140
	d	(mm)		68	68		103
Weight	W	(kg)	3 pole	1.5	1.5		2.5
			4 pole	1.9	1.9		3.3
Operation							
Direct Opening Action				■	■		■
Toggle operation				■	■		■
Variable depth / direct mount operating handle				•	•		•
Motor operator				•	•		•
Endurance	Electrical	cycles	415V AC	10000	10000		10000
	Mechanical	cycles		30000	30000		30000
Standards					IEC 60947-2, EN 60947-2		

■ Standard • Optional - Not Available

Ratings and Specifications

Product series	description	unit	condition	EB2 400		EB2 400	EB2 630		
Model-type				L	S	E	LE	E	HE
Number of poles				3, 4	3, 4	3,4	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*
			DC	250	250	-	-	-	-
Rated insulation voltage	U_i	(V)		800	800	800	800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8	8
Ultimate breaking capacity	I_{cu}	(kA)	690V AC	-	20	20	10*	20*	20*
(IEC, JIS, AS/NZS)			525V AC	15	30	30	15	30	30
			440V AC	22	45	45	25	45	65
			400/415V AC	25	50	50	36	50	70
			220/240V AC	35	85	85	50	85	100
			250V DC	25	40	-	-	-	-
Service breaking capacity	I_{cs}	(kA)	690V AC	-	15	15	10*	15*	15*
(IEC, JIS, AS/NZS)			525V AC	15	30	30	15	30	30
			440V AC	22	45	45	25	45	50
			400/415V AC	25	50	50	36	50	50
			220/240V AC	35	85	85	50	85	85
			250V DC	19	40	-	-	-	-
Rated breaking capacity (NEMA)		(kA)	480V AC	15	25	25	15	25	30
			240VAC	35	85	85	50	85	100
Rated short-time withstand current	I_{cw}	(kA)	0.3 s	-	-	5	-	-	
Protection									
Adjustable thermal, adjustable magnetic				■	■				
Fixed thermal, fixed magnetic									
Microprocessor						■	■	■	■
Utilisation category				A	A	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
	w	(mm)	3 pole	140	140	140	140	140	140
		(mm)	4 pole	185	185	185	185	185	185
	d	(mm)		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	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
	Mechanical	cycles		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

Ratings and Specifications

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
	Icu	(kA)	690V AC	10*	20*	25*	20*	25*	25*	20*	25*	20*	25*	20*	45*
Ultimate breaking capacity			525V AC	15*	30	45	30	35	40	30	45	30	45	30	65
(IEC, JIS, AS/NZS)			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	-	-	-	-	-	-	-	-	-
	Ics	(kA)	690V AC	10*	20*	20*	20*	20*	20*	15*	20*	15*	20*	15*	34*
Service breaking capacity			525V AC	15*	30	34	30	30	34	23	34	23	34	23	50
(IEC, JIS, AS/NZS)			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	-	-	-	-	-	-	-	-	-
		(kA)	480V AC	15	30	45	30	35	40	30	45	30	45	30	65
Rated breaking capacity (NEMA)			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

Ratings and Specifications

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

Ratings and Specifications

Low voltage switch disconnector

Product series	description	unit	condition	ED2	ED2	ED2	ED2	ED2
Model-type				125	160	250	400	630
Number of Poles				3, 4	3, 4	3,4	3,4	3, 4
Nominal current ratings								
	I_n	(A)		125	160	250	400	630
Electrical characteristics								
Rated operational voltage	U_e	(V)	AC 50/60 Hz	690	690	690	690	690
			DC	600	600	600	600	600
Rated insulation voltage	U_i	(V)		800	800	800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		8	8	8	8	8
Rated short-circuit making capacity	I_{cm}	(kA peak)		3,6	6	6	9	9
Rated short-time withstand current	I_{cw}	(kA rms)	0.3s	2	3	3	5	5
			AC	AC-23A	AC-23A	AC-23A	AC-23A	AC-23A
			DC	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
	w	(mm)	3 pole	90	105	105	140	140
		(mm)	4 pole	120	140	140	185	185
	d	(mm)		68	68	68	103	103
Weight	W	(kg)	3 pole	1.1	1.5	1.5	4.2	4.4
			4 pole	1.4	1.9	1.9	5.6	5.8
Operation								
Direct Opening Action				■	■			
Toggle operation				■	■			
Variable depth / direct mount operating handle				•	•			
Motor operator				•	•			
Endurance	Electrical	cycles	415V AC	30000	20000	10000	4500	4500
	Mechanical	cycles		30000	30000	30000	15000	15000
Standards	IEC 60947-2, EN 60947-2							

Ratings and Specifications

Product series	description	unit	condition	ED2	ED2	ED2
Model-type				800	1250	1600
Number of Poles				3, 4	3, 4	3,4
Nominal current ratings						
	I_n	(A)		800	1250	1600
Electrical characteristics						
Rated operational voltage	U_e	(V)	AC 50/60 Hz	690	690	690
			DC	600	600	600
Rated insulation voltage	U_i	(V)		800	800	800
Rated impulse withstand voltage	U_{imp}	(kV)		15	32	45
Rated short-circuit making capacity	I_{cm}	(kA peak)		9,6	15	20
Rated short-time withstand current	I_{cw}	(kA rms)	0.3sec.	2	3	3
			AC	AC-23A	AC-23A	AC-23A
			DC			
Installation						
Front connection				■	■	■
Attached flat bar				•	•	•
Solderless terminal				-	-	-
Rear connection				-	-	-
Plug-in				-	-	-
Draw- out				-	-	-
DIN rail mounting				-	-	-
Dimensions	h	(mm)		273	370	370
	w	(mm)	3 pole	210	210	210
		(mm)	4 pole	280	280	280
	d	(mm)		103	120	140
Weight	W	(kg)	3 pole	8.5	18.2	24.9
			4 pole	11.5	23.4	32.9
Standards	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.

Characteristics

Thermal Magnetic Protection

Etibreak MCCBs from 125A frame to 800A frame are available with thermal magnetic protection units. All 3 pole and 4 pole models have adjustable thermal and adjustable magnetic characteristics.

3 Pole MCCB with Adjustable Thermal and Adjustable Magnetic Characteristics

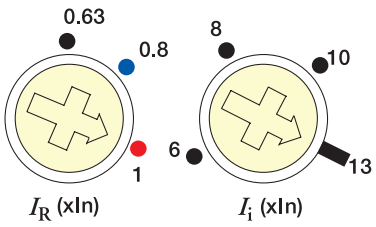
An adjustable magnetic characteristic allows short-circuit protection to be matched to the load and supply characteristics, for example motor inrush current or generator short-circuit current.

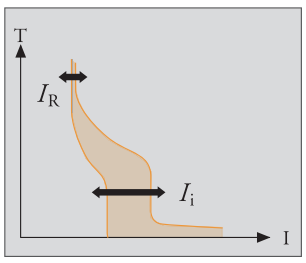
Lowering the short-circuit tripping threshold can allow a higher earth-loop impedance in an installation and provide end-of-cable protection with correct disconnection times.

Adjustment Dials

1. 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 In.

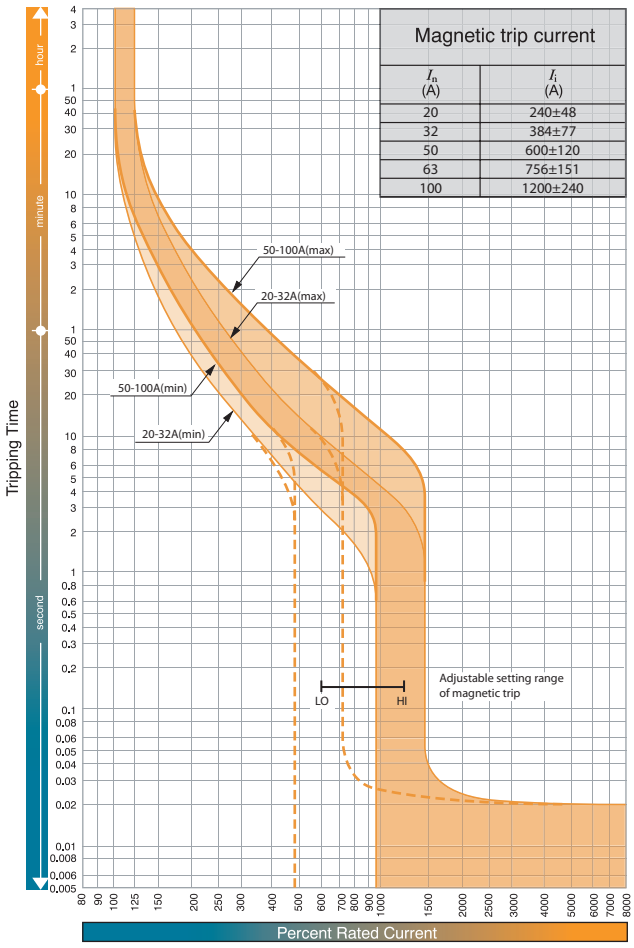
2. I_i is the magnetic element adjustment dial and is used to set the short circuit tripping threshold to suit the application.
   I_i can be set between 6 and 12 times I_n on 125A and 400A frame models.
   I_i can be set between 5 and 13 times I_n, depending on the frame size and rated current (please see tables in commercial data).



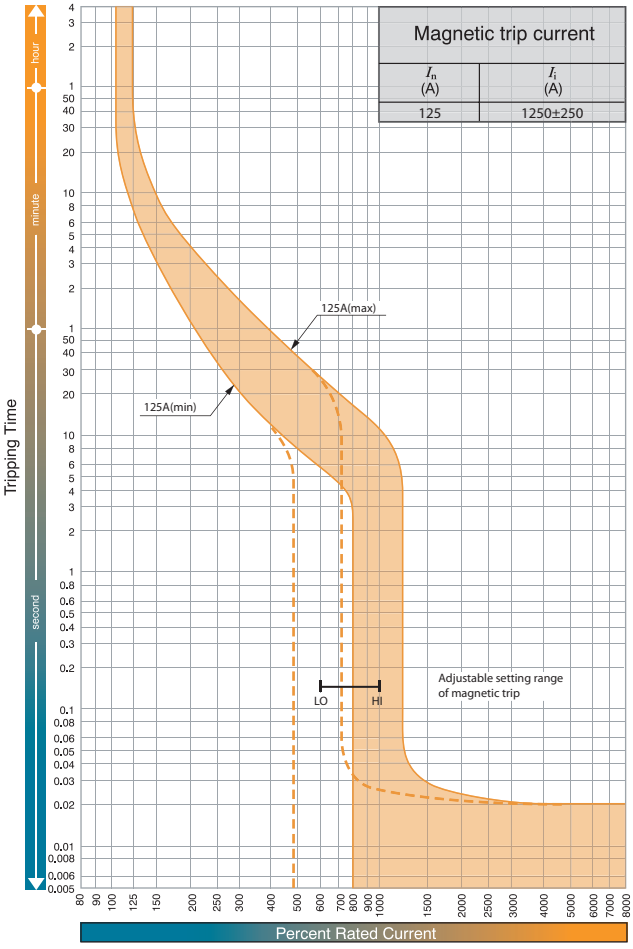


Operating characteristics

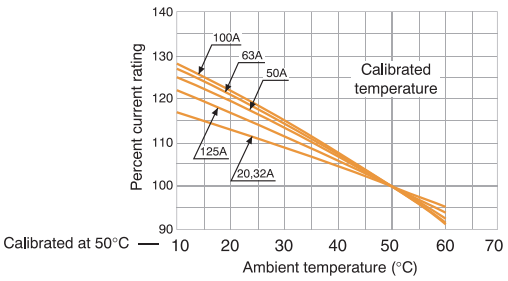
Time/current characteristic curves
EB2 125/S, EB2 125/H



Time/current characteristic curves
EB2 125



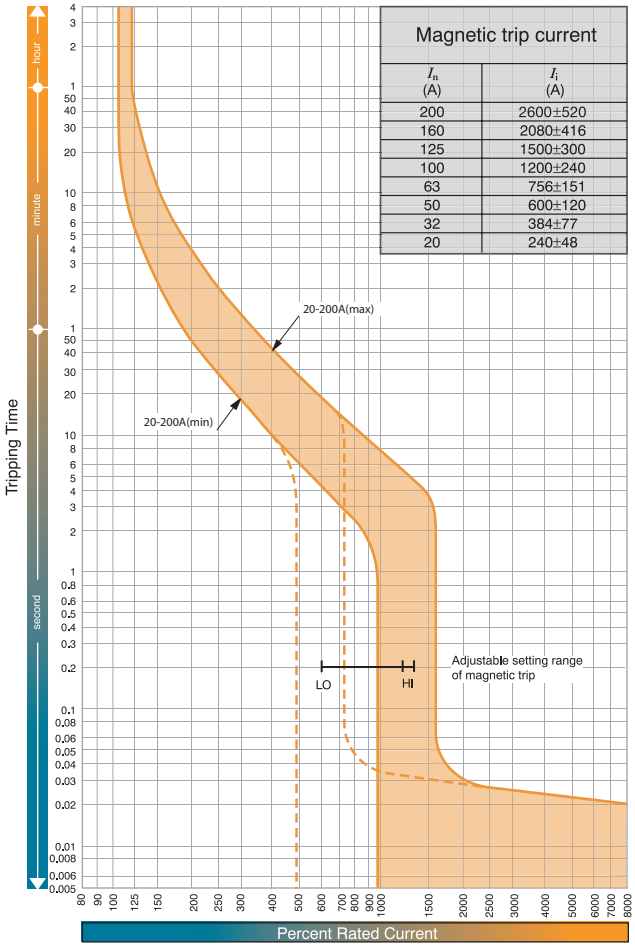
Ambient compensating curves



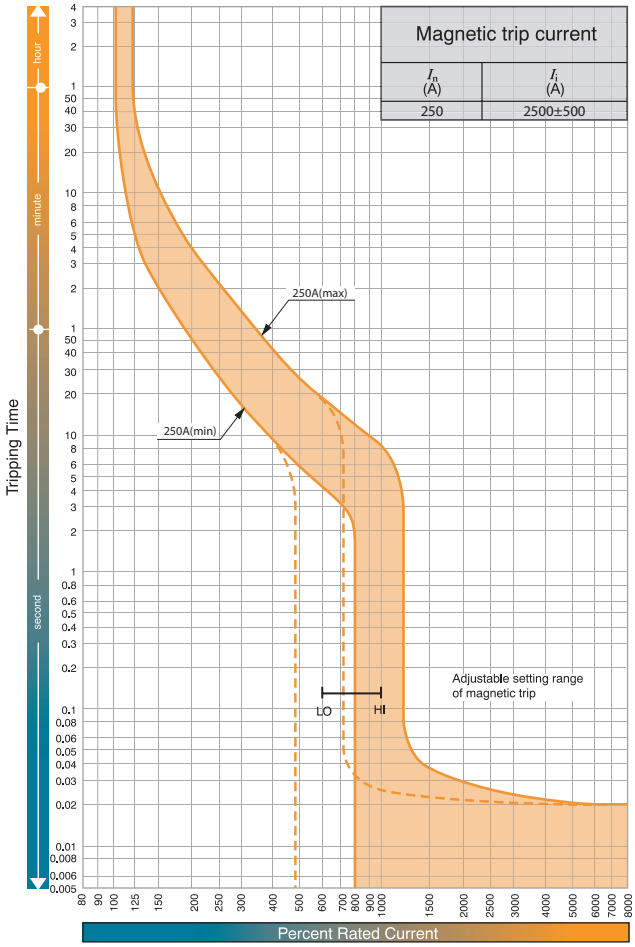
Characteristics

Operating characteristics

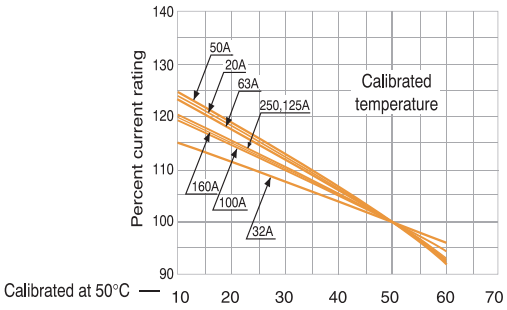
Time/current characteristic curves
EB2 160/S, H & EB2 250/L, S, H, E



Time/current characteristic curves
EB2 250/L, S, H



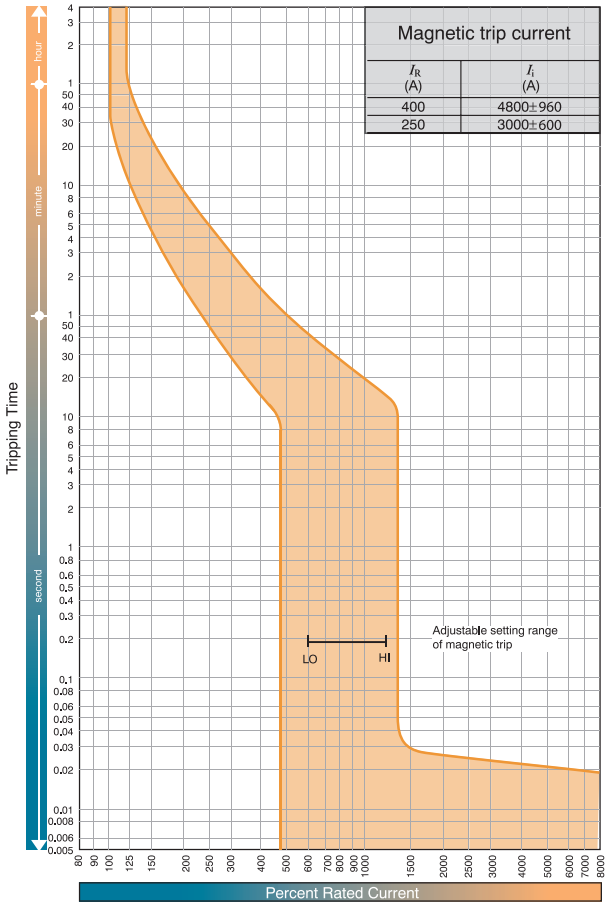
Ambient compensating curves



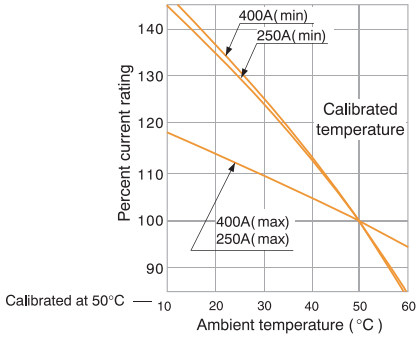
Operating characteristics

Time/current characteristic curves

EB2 400



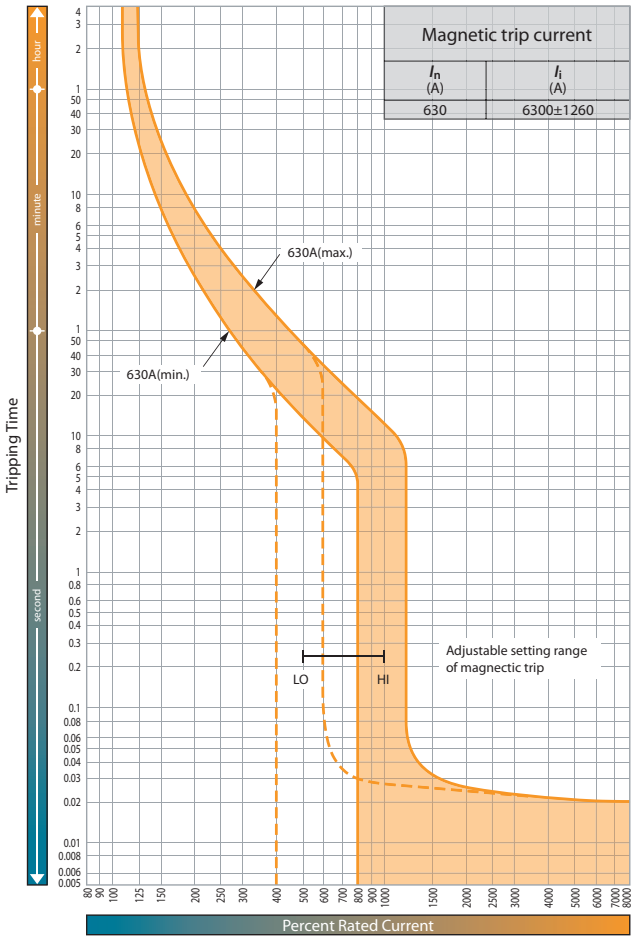
Ambient compensating curves



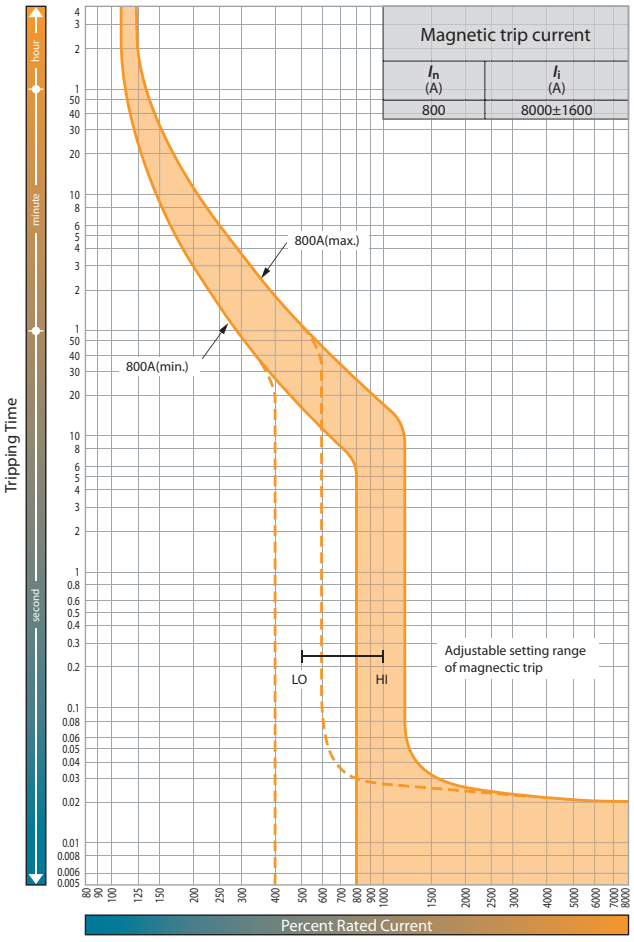
Characteristics

Operating characteristics

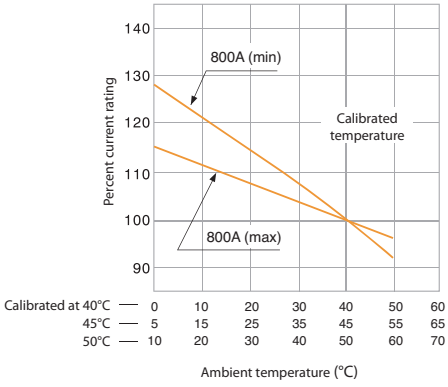
Time/current characteristic curves
EB2 800/L, S, H



Time/current characteristic curves
EB2 800/L, S, H

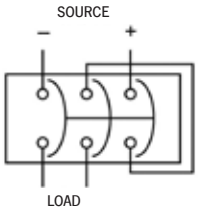


Ambient compensating curves



Special applications of thermal magnetic MCCBs

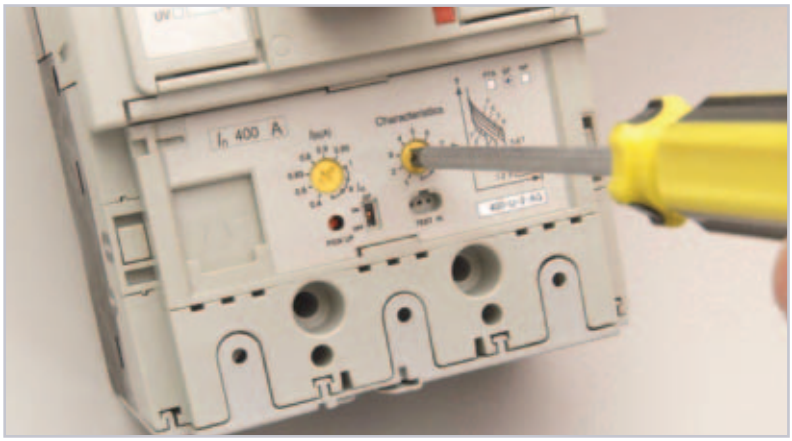
All standard thermal magnetic MCCBs are suitable for DC application up to 250 V DC.



Microprocessor Protection

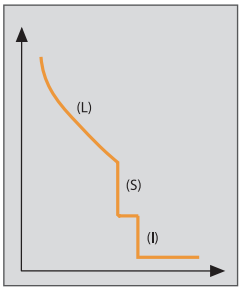
Etibreak 2 MCCBs from 250A frame to 1600A frame are available with electronic protection units. Current ratings, I_n, of 40A, 125A, 160A, 250A, 400A, 630A, 800A, 1000A, 1250A and 1600A are available. These offer great flexibility as their characteristics can be set to suit a wide range of application conditions. Overload protection can be set between 0.4 and 1.0 times In.

ETI offers one of the most adaptable protection units on the market:



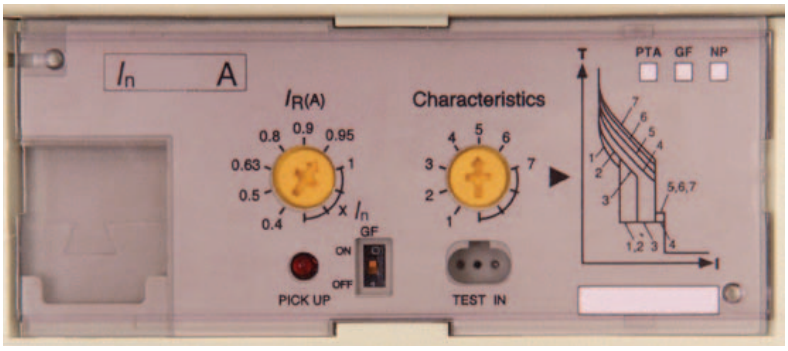
Selecting a Preset Characteristic for a 400A Etibreak MCCB with Electronic Protection

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



Electronic Protection Characteristic

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 I_R(A)), and the right adjustment dial (labelled Characteristics) are detailed in the tables shown underneath each time/current graph.

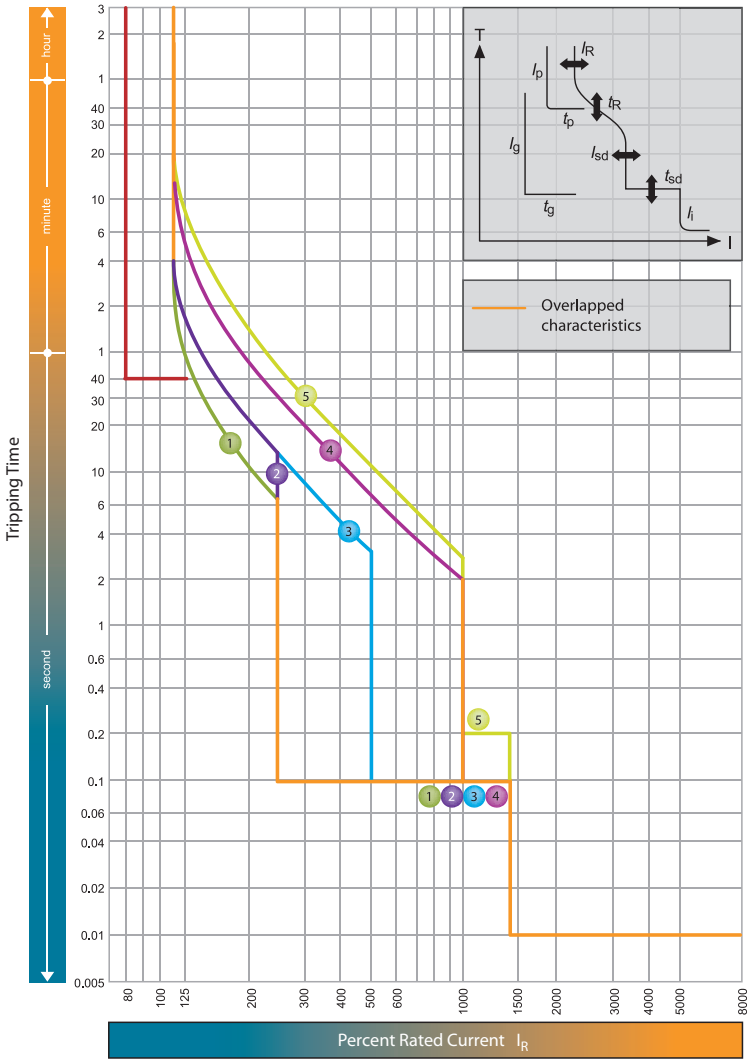
Tolerances of Characteristics

Characteristics		Tolerance
Long Time Delay	t_R	+/- 20%
Short Time Delay	I_{sd}	+/- 15%
	t_{sd}	Total clearing time +50ms, resettable time -20ms
Instantaneous	I_i	+/- 20%

Characteristics

Operating characteristics

EB2 250 E



I_n = 40, 125, 160, 250

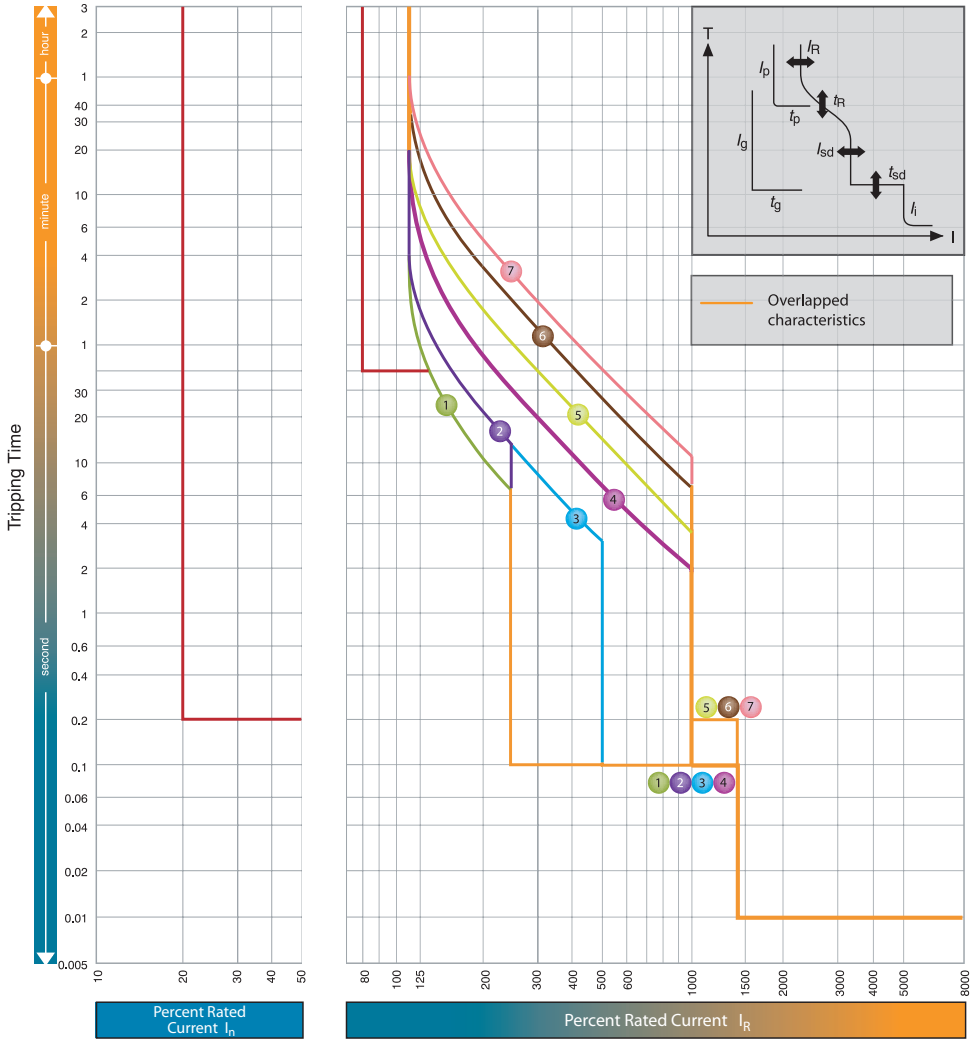
I_R (A)								
LTD Pick-up current I_R	xIn	0.4	0.5	0.63	0.8	0.9	0.95	1.0

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) Note (1)						

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

Operating characteristics

EB2 400 E



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

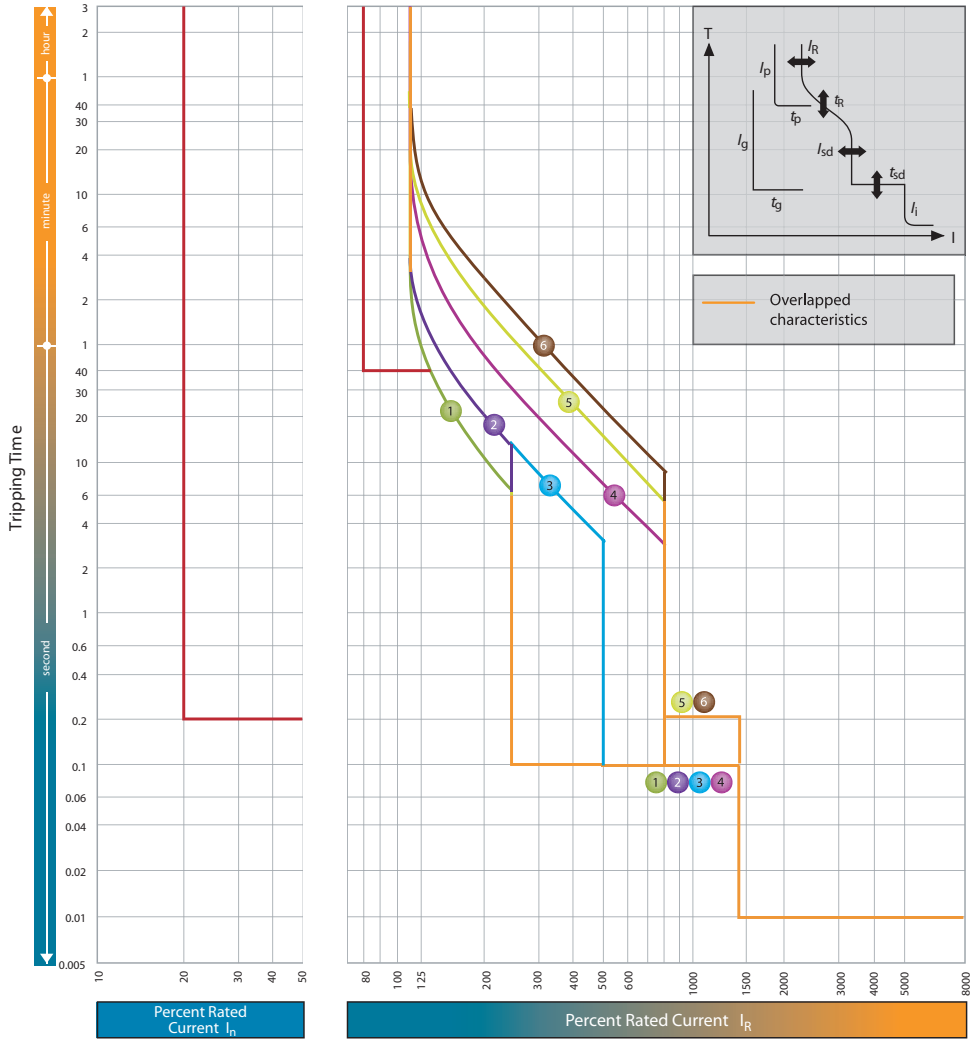
	Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	index t_R	index (s)	11	21	21	5	10	19	29
				at 200% x I_R			at 600% x I_R			
	STD	index I_{sd}	index xI_R	2.5		5	10			
		index t_{sd}	index (s)	0.1				0.2		
	INST	index I_i	index xI_R	14 (Max: 13 x I_n) Note (1)						

Note: (1) I_i max. = 13 x I_n.

Characteristics

Operating characteristics

EB2 630 E



I_n = 630A

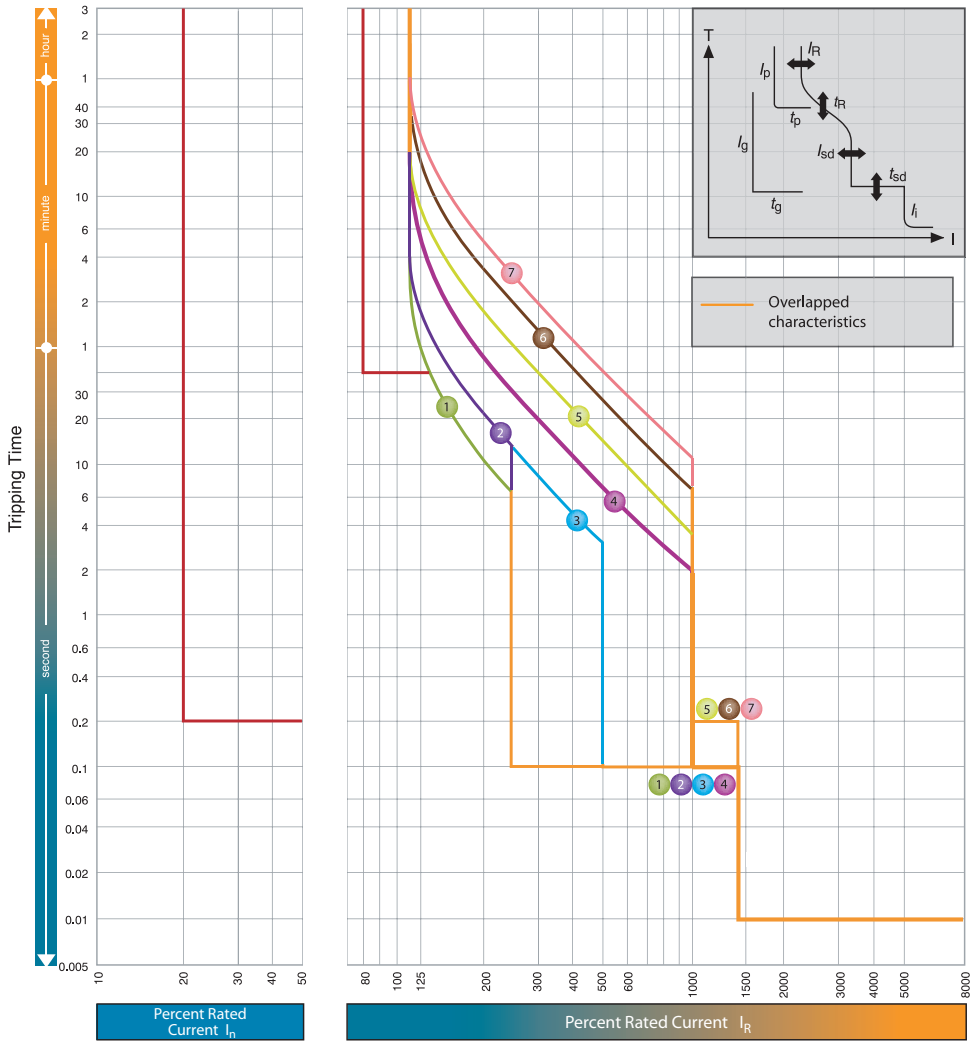
I_R (A)									
LTD Pick-up current I_R	xI_n	0.4	0.5	0.63	0.8	0.85	0.9	0.95	1.0

	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) Note (1)					

Note: (1) I_i max. = 10 x I_n.

Operating characteristics

EB2 800 E



I_n = 800A

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

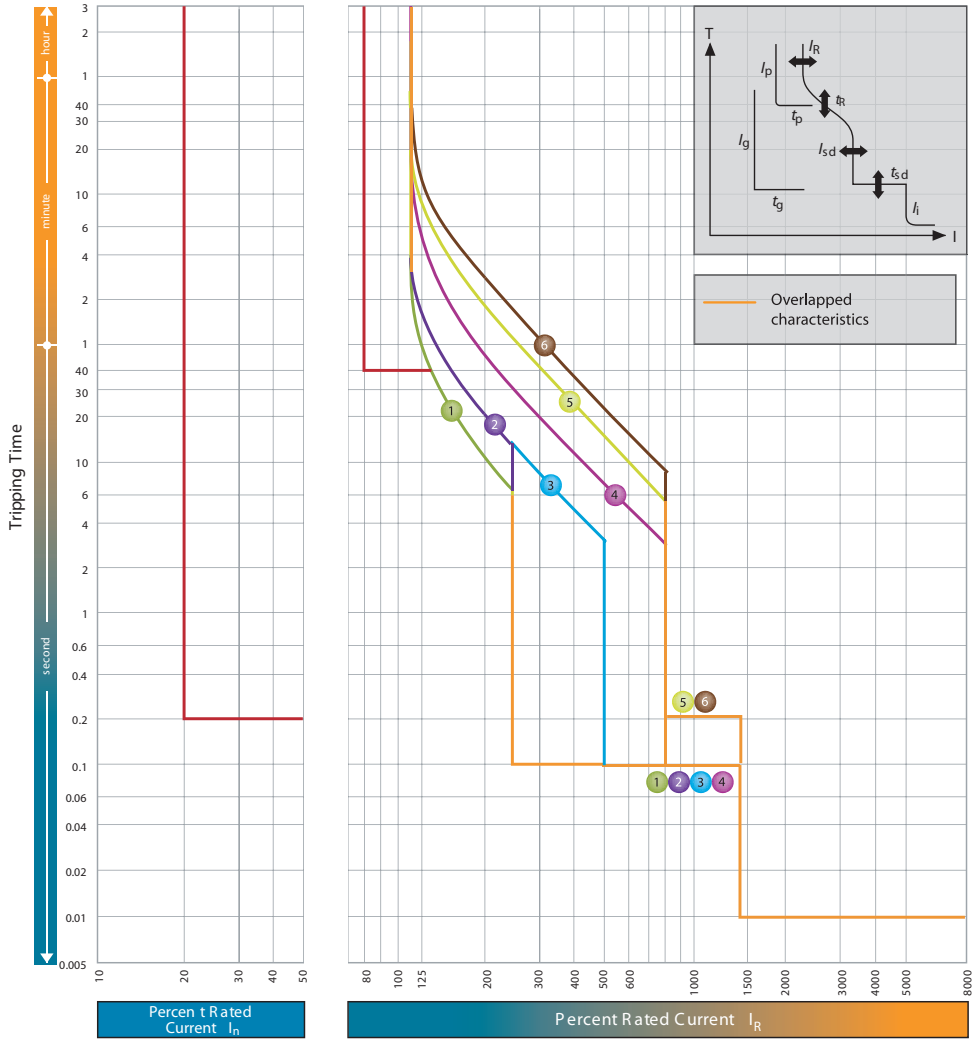
	Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	index t_R	index (s)	11	21	21	5	10	19	29
				at 200 % x I_R			at 600 % x I_R			
	STD	index I_{sd}	index xI_R	2.5		5	10			
		index t_{sd}	index (s)	0.1			0.2			
	INST	index I_i	index xI_R	14 (Max: 12 x I_n) Note (1)						

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

Characteristics

Operating characteristics

EB2 1000 E



I_n = 1000A

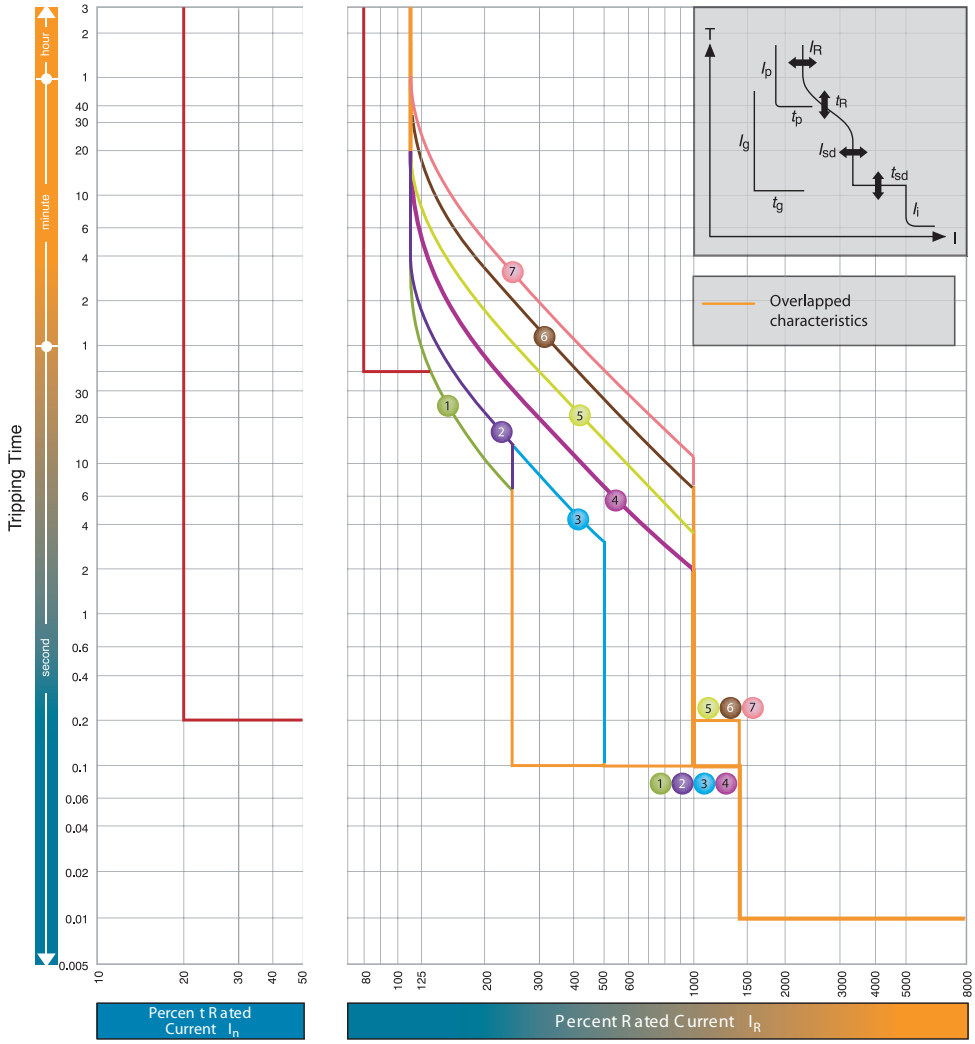
I_R (A)									
LTD Pick-up current I_R	xI_n	0.4	0.5	0.63	0.8	0.85	0.9	0.95	1.0

	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) Note (1)					

Note: (1) I_i max. = 10 x I_n.

Operating characteristics

EB2 1250 E



I_n = 1250A

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

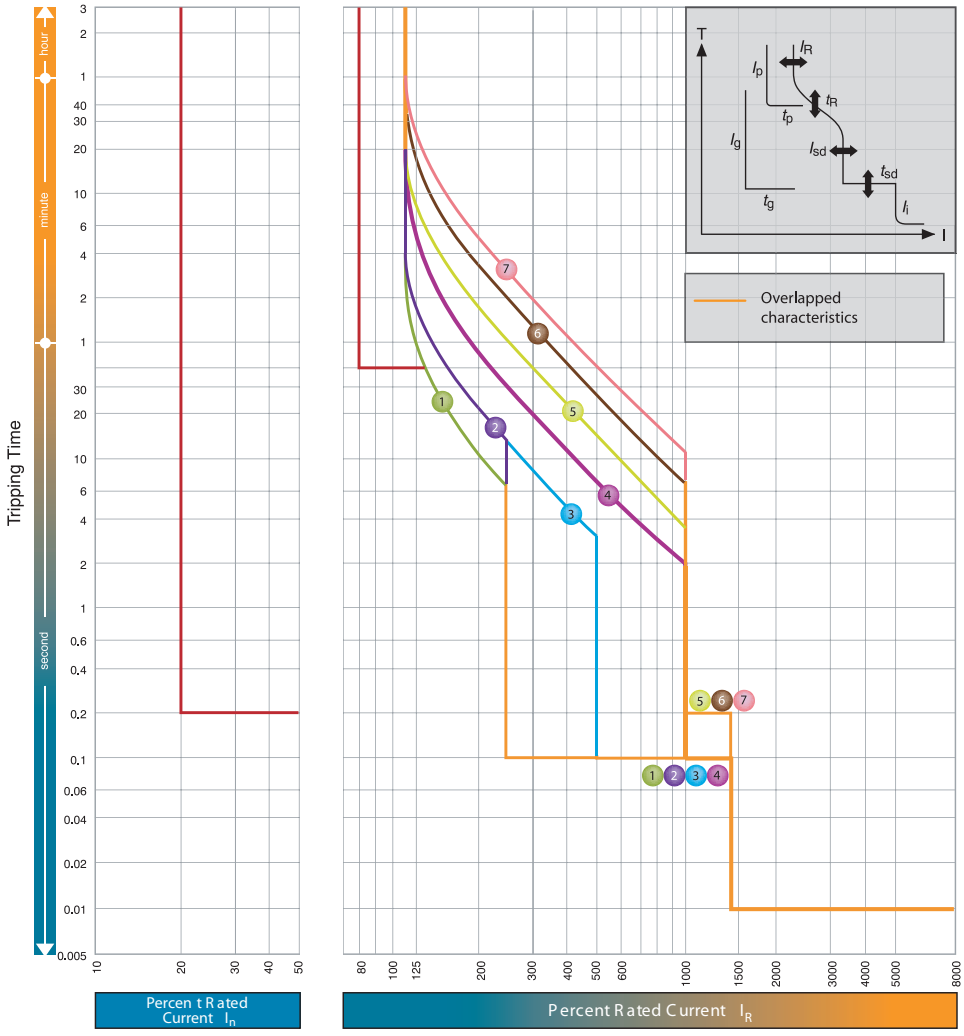
	Characteristics		No.	1	2	3	4	5	6	7
Standard	LTD	index t_R	index (s)	11	21	21	5	10	19	29
				at 200 % x I_R			at 600 % x I_R			
	STD	index I_{sd}	index xI_R	2.5		5	10			
		index t_{sd}	index (s)	0.1			0.2			
	INST	index I_i	index xI_R	14 (Max: 12 x I_n) Note (1)						

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

Characteristics

Operating characteristics

EB2 1600 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) Note (1)						

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

Residual (earth leakage) current protection

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

3-Pole RCBO with Adjustable Settings

Circuit Breakers with Integral Residual Current Protection (RCBOs) are the ultimate safeguards against the hazards of earth leakage.

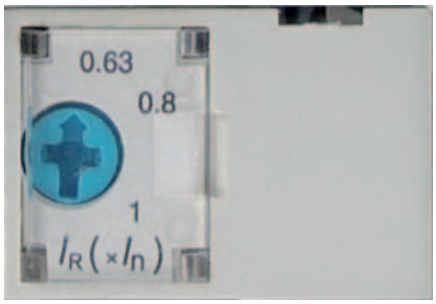
The EB2 RCBO range is available in 2 frame sizes, 125A and 250A. Interrupting capacities of 25kA, 36kA and 65kA are offered in 3 and 4 poles versions with adjustable thermal and fixed magnetic protection characteristics. RCBO residual current protection settings are shown on the following page.

Residual Current Monitor and Pre Trip Module (Optional)

- Normally open alarm contact (2A, 250V AC) closes on detection of residual current. Alarm threshold is adjustable.
- Green LED indicates voltage is present.
- Red LED provides visual indications of residual current.
- Can be configured to provide trip + alarm or alarm only.
- Remote trip terminals allow tripping by push-button.
- Can be configured to provide voltage drop 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:

Δt (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 /Δt is set at 30mA, Δt defaults to 0.

$/_R$ (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:

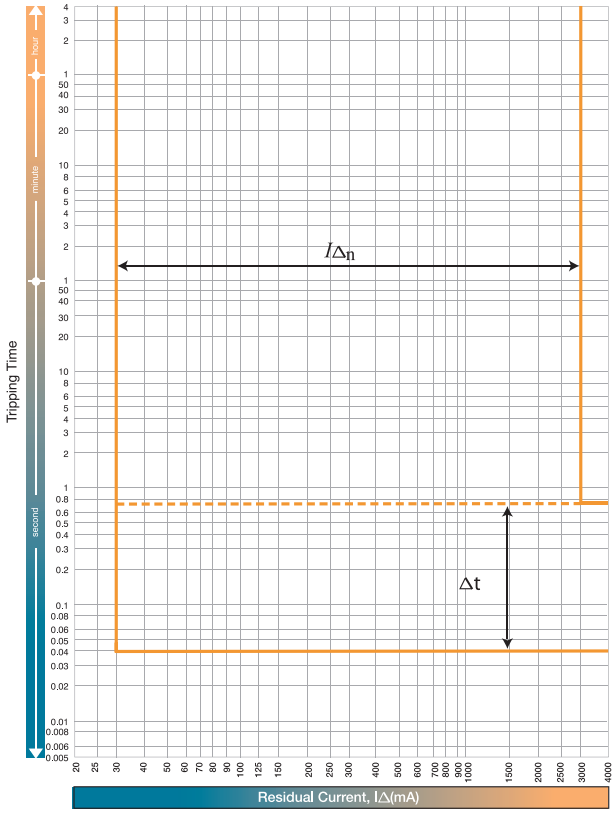
$/_i$ is the tripping threshold for short-circuit protection. It is fixed at the values shown below:

Models, Ratings and Settings

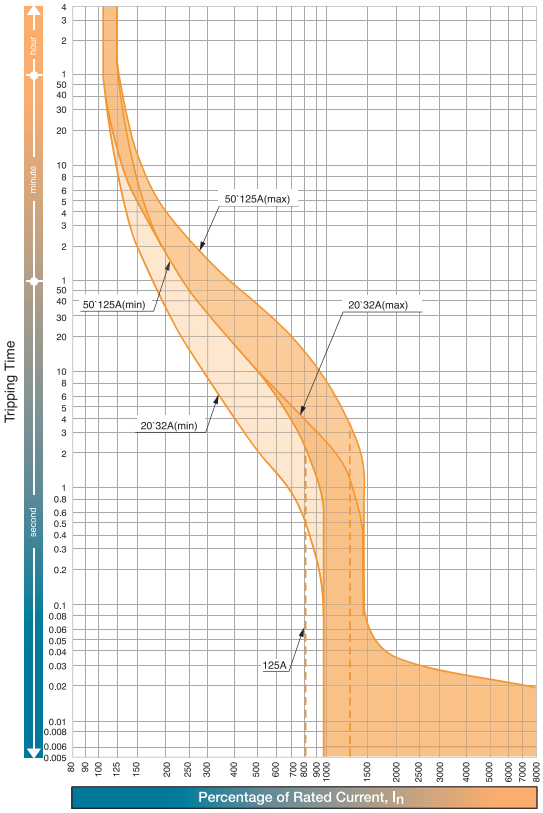
Model	Type	IΔn (A)	Δt (ms)	Rated current In(A)	Magnetic trip current (A)
EB2R 125	/L	0.03, 0.1, 0.3, 0.5, 1, 3	0 (40), 60 (195), 200 (365), 400 (620) 700 (950), NT∞	20, 32, 50, 63, 100	12 x in
				125	10 x in
EB2R 125	/S	0.03, 0.1, 0.3, 0.5, 1, 3	0 (40), 60 (195), 200 (365), 400 (620) 700 (950), NT∞	20, 32, 50, 63, 100 125	12 x in 10 x in
EB2R 125	/H	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
EB2R 250	/L	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
EB2R 250	/S	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
EB2R 250	/H	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

Characteristics

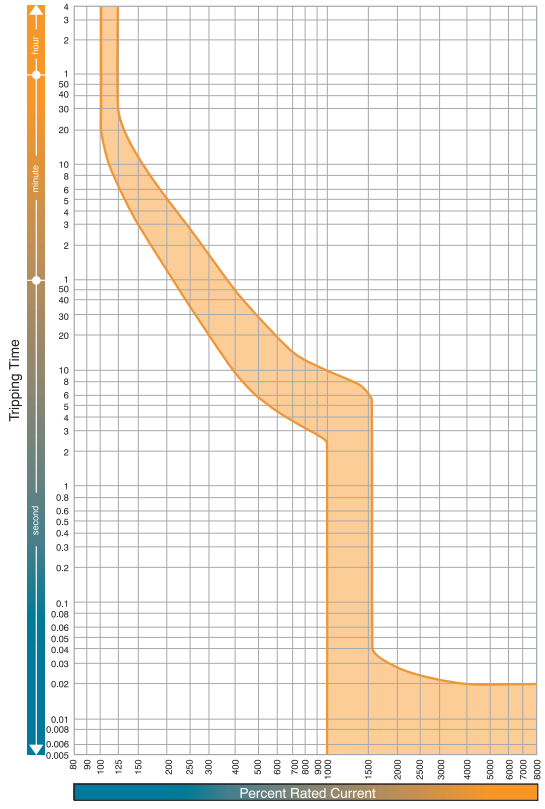
EB2R 125, 250



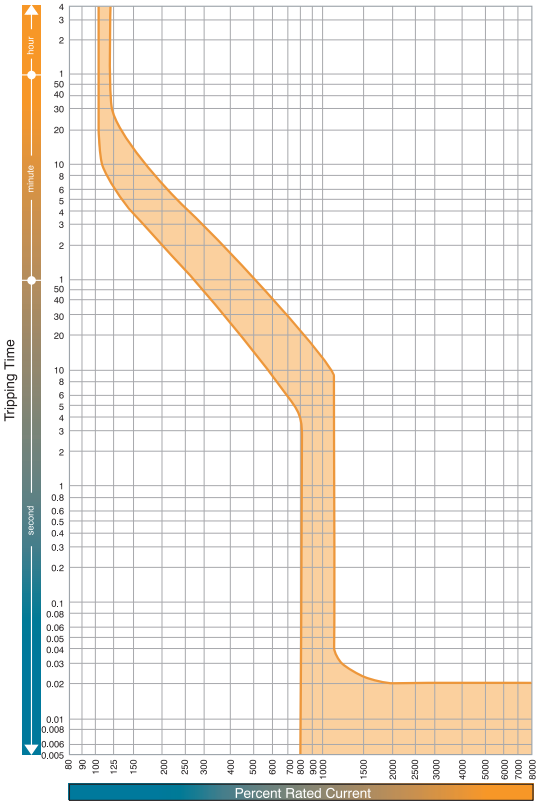
EB2R 125



EB2R 250, 160A



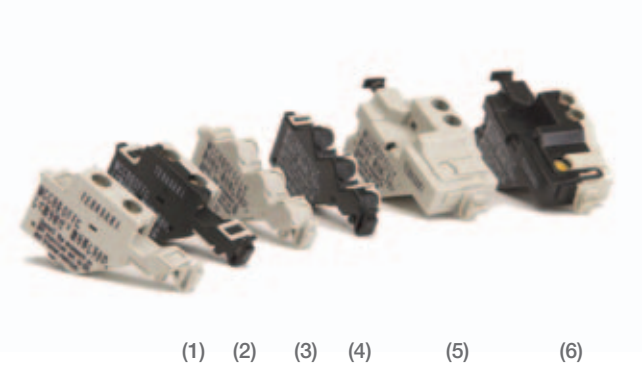
EB2R 250, 250A



Internal accessories

Internal accessories - series 2 up to 1600AF

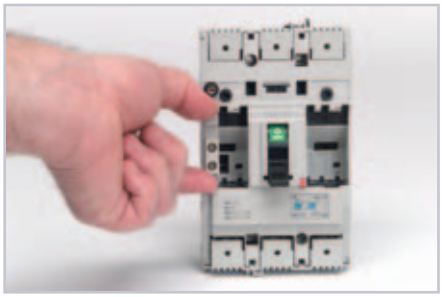
Electrical control accessories for EB2 are designed with the installer in mind. Status and alarm contacts, remote tripping coils and under-voltage protection coils are of modular design and convenient to use.



(1) (2) (3) (4) (5) (6)

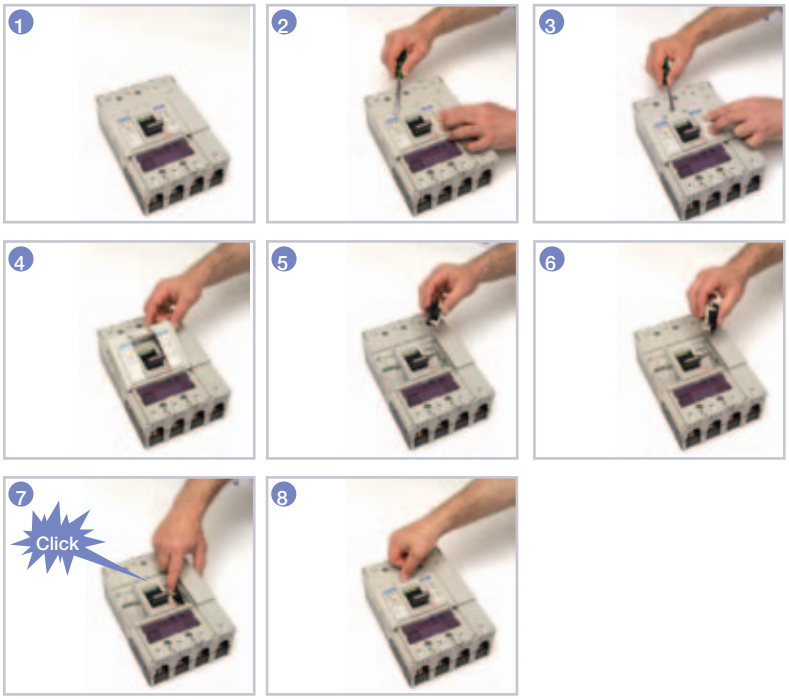
1) Heavy-duty auxiliary switch
2) Heavy-duty alarm switch
3) General-purpose auxiliary switch
4) General-purpose alarm switch
5) Shunt trip
6) Undervoltage trip

- All auxiliary and alarm switches are common up to 1600A. Shunt trips and undervoltage trips are split between frame sizes (please see commercial part of the catalogue).
- All accessories are endurance tested to the same level as MCCBs.
- Etibreak 2 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. Alternatively a terminal block which clips to the side of the MCCB is available.



Installing Accessories

The internal accessories can be easily installed in the field without special tools or product training.



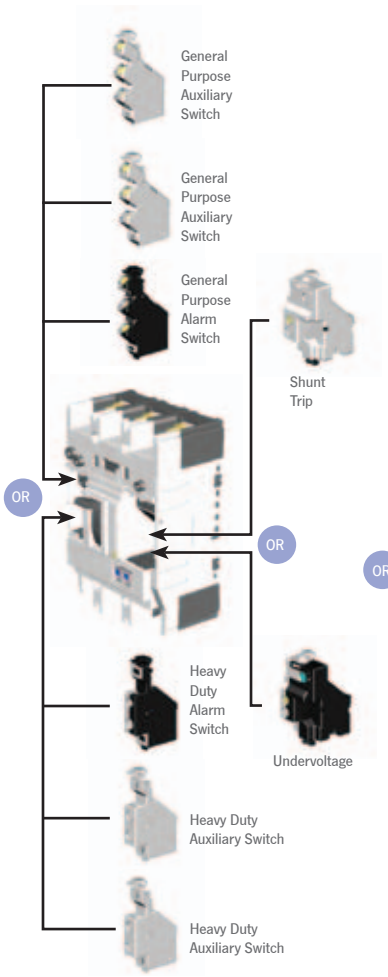
Easy field-Installation of Accessories

- 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 Click

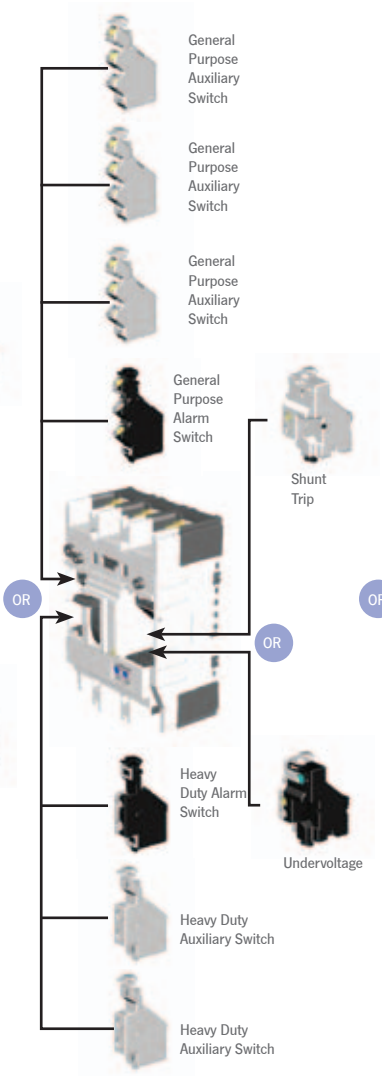
Internal accessories

Frame size (A)

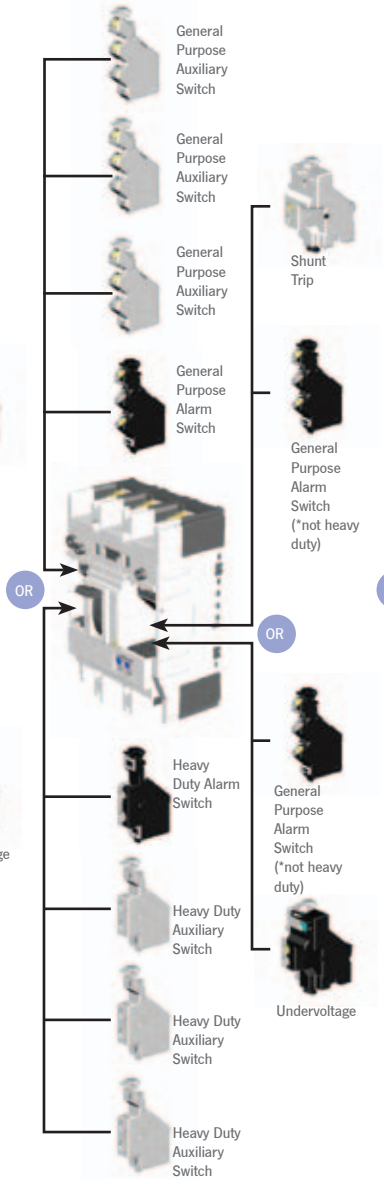
125, 160, 250



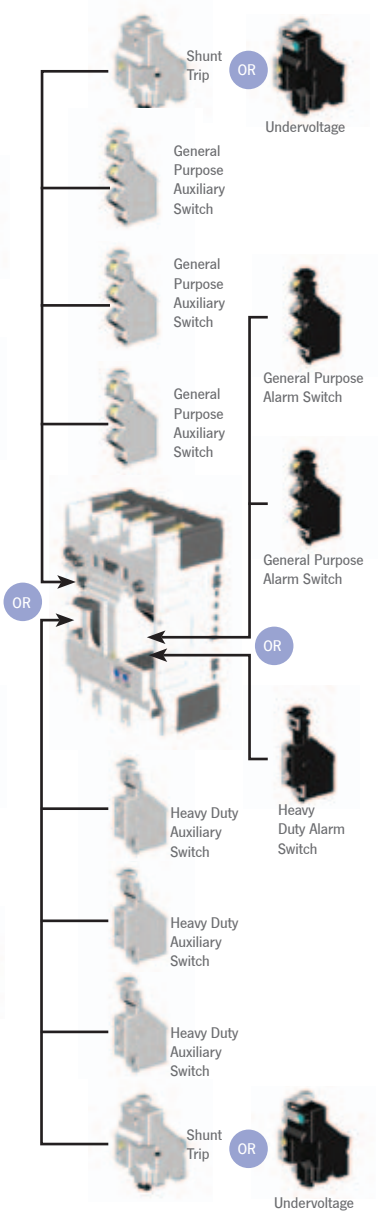
400, 630



800, 1000



1250, 1600



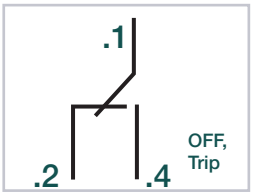
- Status indication switches mount in the left side of the MCCB. General purpose and heavy duty status indication switches cannot be mixed in the same MCCB. Only one alarm switch can be fitted to an MCCB.
- Shunt trips and undervoltage trips mount in the right side of the MCCB.

- 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

Status Indication Switches

General Purpose Auxiliary Switch

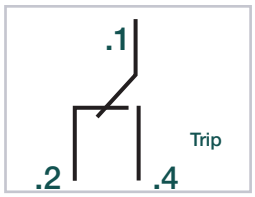


Terminal Designations and Function of General Purpose Auxiliary Switch

General Purpose Auxiliary Switch (PS)

An auxiliary switch electrically indicates the ON or OFF status of the MCCB. The general purpose type is a changeover switch with 3 terminals.
Auxiliary switches are colour coded grey. The cable capacity of the terminals is 0.5 to 1.25mm^2. The general purpose auxiliary switch meets the requirements of IEC 61058-1.
A microcurrent version is also available for switching currents as low as 1mA.

General Purpose Alarm Switch



Terminal Designations and Function of General Purpose Alarm Switch

General Purpose Alarm Switch (SS)

An alarm switch electrically indicates the TRIP status of the MCCB. The general purpose type is a changeover switch with 3 terminals.
Alarm switches are colour coded grey and black. The cable capacity of the terminals is 0.5 to 1.25mm^2. The general purpose alarm switch meets the requirements of IEC 61058-1.
A microcurrent version is also available for switching currents as low as 1mA

General purpose auxiliaries and alarm switch ratings

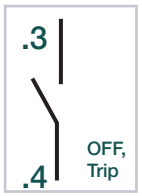
Volts (V)	AC Amperes (A) Resistive Load	AC Amperes (A) Inductive Load	Volts (V)	DC Amperes (A) Resistive Load	DC Amperes (A) Inductive Load	Minimum Load
440	-	-	250	-	-	100mA at
240	3	2	125	0.4	0.05	15V DC.
110	3	2	30	3	2	

Microcurent version

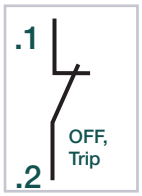
Volts (V)	DC Amperes (A) Resistive Load	Minimum Load
30	0.1	1mA at 5V DC and 30V DC

Internal accessories

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

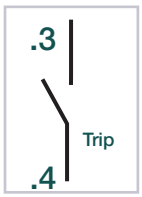
Heavy Duty Auxiliary Switch (PS)

The heavy duty auxiliary switch has an impulse withstand voltage (Uimp) of 6kV and is suitable for isolating safety circuits. The auxiliary switch electrically indicates the ON or OFF status of the MCCB. The heavy duty type is a bridge switch with two terminals. It is available in either normally open or normally closed configurations.

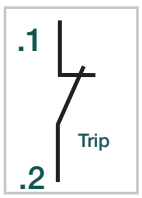
Heavy duty auxiliary switches are colour coded grey. The cable capacity of the terminals is 1.25 to 2.5mm^2. The heavy duty auxiliary switch meets the requirements of IEC 60947-5-1.

It has direct opening action, recommended by IEC 60204-1 Safety of Machinery - Electrical Equipment for Machines.

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

Heavy Duty Alarm Switch (SS)

The heavy duty alarm switch has an impulse withstand voltage (Uimp) of 6kV and is suitable for isolating control circuits. The alarm switch electrically indicates the TRIP status of the MCCB. The heavy duty type is a bridge switch with two terminals. It is available in either normally open or normally closed configurations.

Heavy duty auxiliary switches are colour coded grey and black. The cable capacity of the terminals is 1.25 to 2.5mm^2. The heavy duty alarm switch meets the requirements of IEC 60947-5-1. It has direct opening action, recommended by IEC 60204-1 Safety of Machinery - Electrical Equipment for Machines.

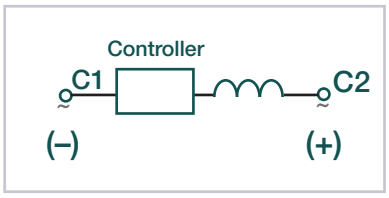
Ratings of Heavy Duty Auxiliary and Alarm Switches

Volts (V)	AC Amperes (A)		Volts (V)	DC Amperes (A)	
	Resistive Load	Inductive Load		Resistive Load	Inductive Load
500	1	1	-	-	-
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

Internal accessories

Remote Tripping Devices

Shunt Trips



Terminal Designations of Shunt Trips

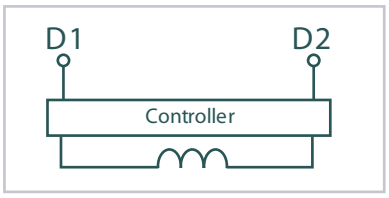
Shunt Trip (DA)

A shunt trip allows an MCCB to be tripped remotely on the application of the rated coil voltage across the shunt trip terminals. Etibreak 2 shunt trips 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 1.25mm^2. Shunt trips are colour coded grey.

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

Undervoltage Trips



Terminal Designations of Undervoltage Trips

Under Voltage Trip (UVT)

An undervoltage trip will trip the 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 trip 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 trips 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 1.25mm^2. Undervoltage trips are colour coded grey and black.

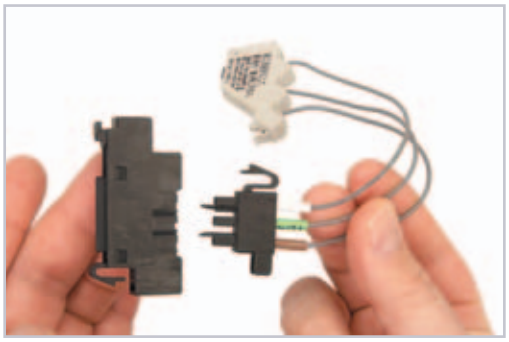
Ratings of Undervoltage Trips

MCCB Model	Rated Voltage	Power supply capacity (VA)			Excitation current (mA)		
		Voltage AC			Voltage DC		
		100-120	200-240	380-450	24	100-120	200-240
125, 160, 250, 400 and 630AF		1,4	2,8	2,3	23	10	10

MCCB Model	Rated Voltage	Voltage AC						Voltage DC		
		100-110	115-120	200-220	230-240	380-415	440-450	24	100-120	200-240
800, 1000, 1250 and 1600AF		1,5	1,6	2,4	2,9	2,1	2,3	29	13	11

Termination of Control Wiring

Terminal blocks are for optional use with all types of internally mounted accessory.



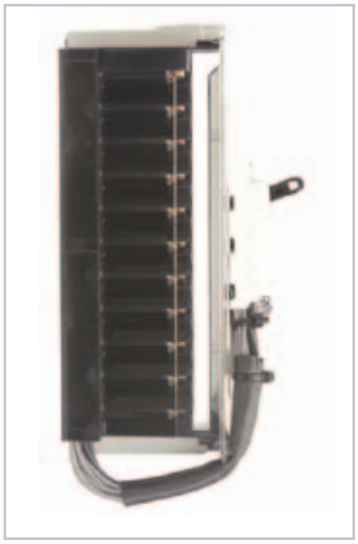
Terminal Block for Plug-in MCCBs

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 or 800A frame MCCB. 1250A MCCBs utilise different terminal block arrangement from 800A model and below. Contact ETI for more details



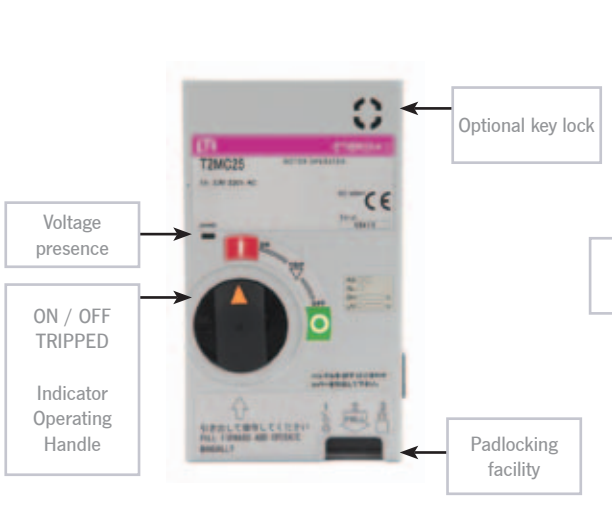
Terminal Block for Front-Connected and Rear-Connected MCCBs

Terminal Block for Front-Connected

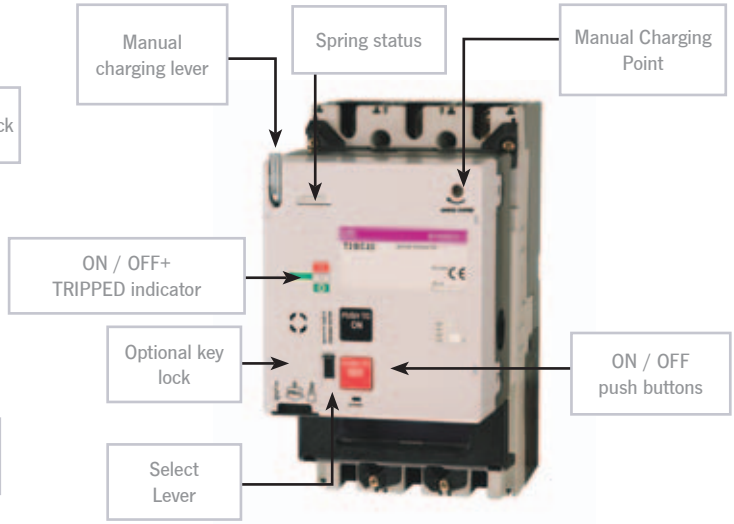
A terminal block facilitates convenient and accessible control wiring to internally mounted accessories. It allows the use of control wiring cables with larger cross-sectional area than permitted by the internal accessories themselves. This terminal block can be clipped to either side of the MCCB. If mounted on the left incoming wiring will be
fed vertically up to the terminals. If mounted on the right, the incoming wiring will be fed vertically down to the terminals. Terminal blocks are pre-fitted with outgoing wiring which can be terminated directly on each internal accessory.
The maximum incoming cable size to the terminal block is 2.0mm^2. Terminal blocks have 11 terminals.

Electrical Control Using Motorised operation up to 1000A

Overview – Motor Operators (MO)



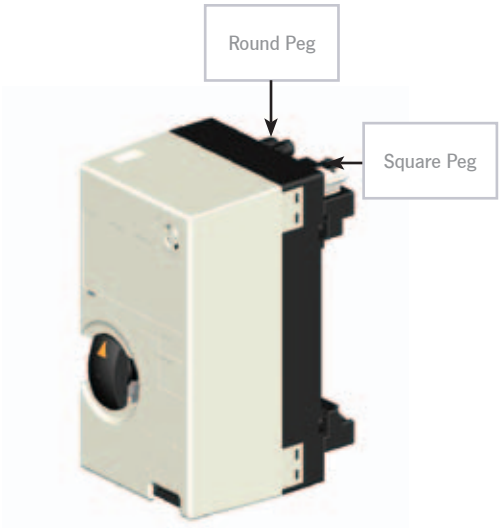
Motor Operator for 125A and 250A Frame MCCB's



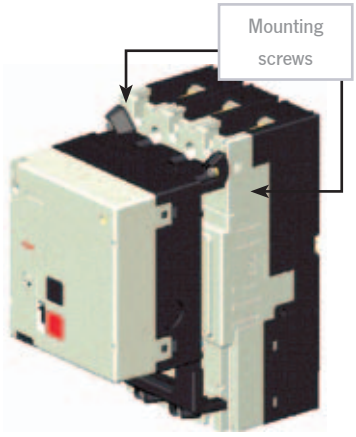
Motor Operator for 400A and 630A Frame MCCB's

Motor operators provide the possibility of opening and closing an MCCB on application of electrical control signals. ETIBREAK 2 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).
- Optional keylock.
- Versions available with automatic reset function.
- Voltage presence indication.



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



Motor Operator for 400A and 630A 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 and 630A frame motor operators are held in place with mounting screws. They can be installed easily in the field.

Electrical Control Using Motorised operation up to 1000A

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 for 400A and 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

Frame size of host MCCB (A)		125, 160, 250	400, 630	800
Rated operating voltage	200-220 V AC	■	■	■
	230-240 V AC	■	■	■
	24 V DC	■	■	■
	48 V DC	■	■	■
	100-110 V DC	■	■	■
Operating current/ Starting current Peak value (A)	200-220 V AC	4/8	ON–/2.3 OFF, RESET 1.1/3.5	ON–/2.2 OFF, RESET 1.3/3.5
	230-240 V AC	3.5/7	ON–/2.3 OFF, RESET 1.1/3.5	ON–/2.2 OFF, RESET 1.3/3.5
	24 V DC	18/26	ON–/7.2 OFF, RESET 3.9/8.1	ON–/12 OFF, RESET 6.0/11.5
	48 V DC	12/18	ON–/7.2 OFF, RESET 2.0/5.1	ON–/7 OFF, RESET 3.2/6.5
	100-110 V DC	2.2/6	ON–/2.4 OFF, RESET 1.2/3.8	ON–/2.2 OFF, RESET 1.3/3.5
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, 0.1A, Opening voltage 44V, current 4mA	100V, 0.1A, Opening voltage 48V, current 1mA	
Power supply required		300VA minimum	300VA minimum	300VA minimum
Dielectric properties (1 min)		1500V AC (1000V AC for 24V DC and 48V DC motors)		
Weight		1.4kg	3.5kg	3.5kg

■ = Available

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.

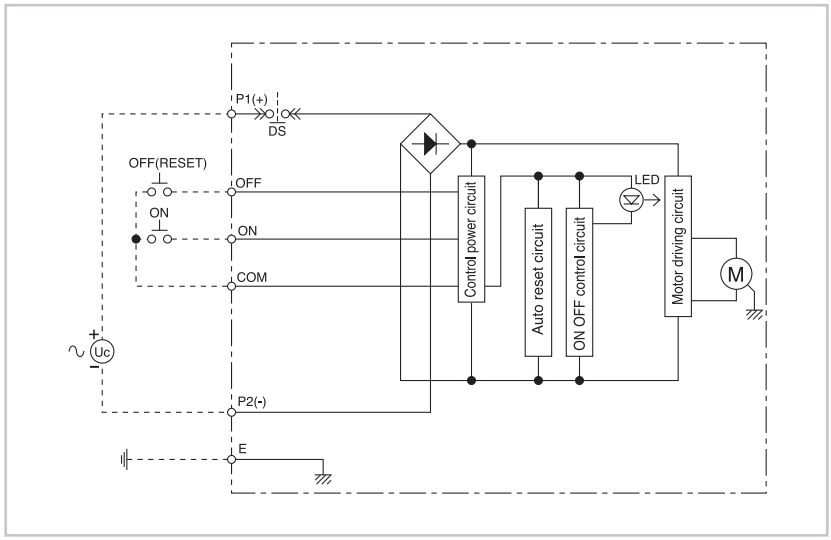
Electrical Control Using Motorised operation up to 1000A

Motor Operator Control Circuits

MCCB and Motor Operator Showing Control Wiring Socket

Control Wiring Plug

The Control circuits for Motor Operators are connected using a simple plug and socket system.



Control circuit for Motor Operators

Operation

The motor operator incorporates a self-hold circuit for the closing and opening signals. Therefore a momentary 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 a NA is used with a motor operator, design the control circuit so that the NA 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 NA (undervoltage trip) to energise.

When a shunt trip is used with a motor operator, design the control circuit so that the shunt trip 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.

Auto- reset

Two types of motor operator are available: motor operators without auto-reset and motor operators with auto-reset. The correct type of motor operator should be selected for the application. MCCB auxiliary and alarm switches do not have to be used in the control circuits for motor operators whether they have auto-reset or not, saving cost and space.

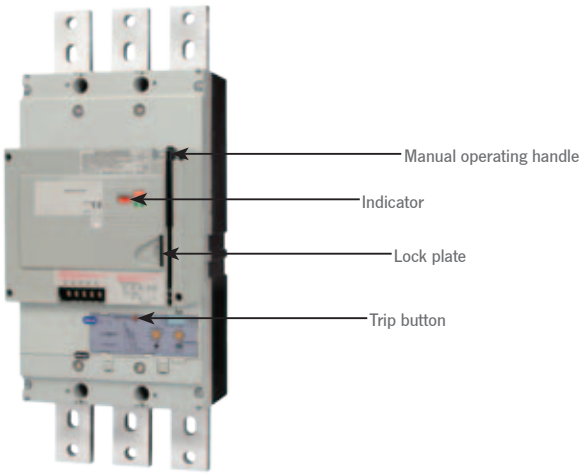
Electrical Control Using Motorised Operation 1250A and 1600A

- 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

Frame size of host MCCB (A)			1250 & 1600A
Rated operating voltage	AC	100-115V; 50/60Hz	■
		200-230V; 50/60Hz	■
	DC	100-110V	■
		24V	■
Lock in OFF position (standard)			■
Manual Tripp Button		200-220 V AC	*
Steady-state r.m.s. Amp/inrush Amp(a)	AC 100-115V	ON**	-/3.1
		OFF, RESET **	1.8/6.0
	AC 200-230V	ON***	-/1.2
		OFF, RESET ***	1.0/3.2
	DC 100-110V	ON****	-/0.8
		OFF, RESET ****	1.1/4.2
	DC 24V	ON	-/4.5
		OFF, RESET	4.0/12.0
Type of operation			Spring charged
Operating time (s)		ON (Maximum values)	0.06
		OFF, RESET *****	3
Control Switch ratings			250V, 5A
Power Source Capacity (VA)			300VA
Dielectric withstand voltage The value in brackets for 24V DC			AC 1500V (AC 500V)
Weight			6.4kg

■ = Available

* Trip button on breaker to be used (accessible with motor fitted)

NOTE

** max values at AC115V, 50Hz

*** max values at AC230V, 50Hz

**** max values at DC110V

***** max values at the rated operating voltages

Electrical Control Using Motorised Operation 1250A and 1600A

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.

Manual Operation

ON, OFF (RESET)

The breaker can be opened (OFF or RESET) and closed (ON) alternately by pulling the operating lever down in one full stroke. ON/OFF operation of the breaker is possible without charging or releasing the closing 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.

Electrical Control Using Motorised Operation 1250A and 1600A

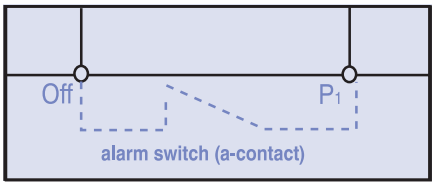
Automatic Reset

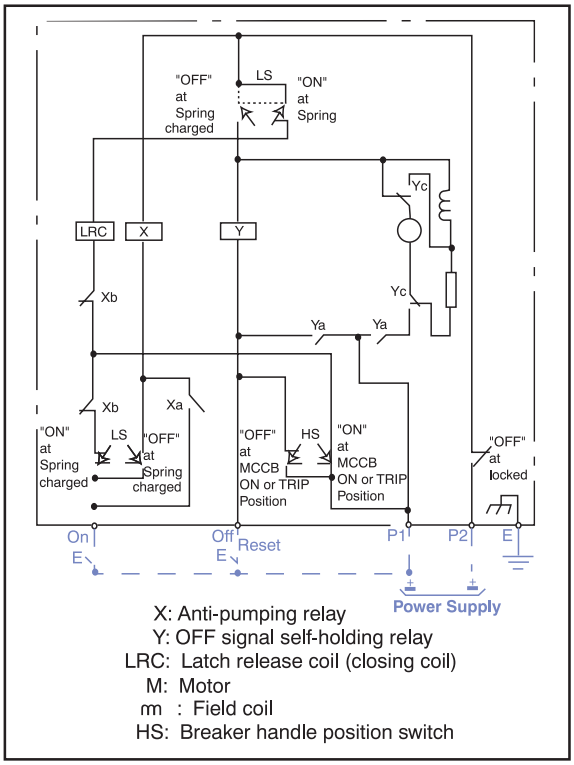
An alarm switch (a-contact) fitted in the breaker, can be used to induce recharging of the closing spring and automatically reset the MCCB. Connect the automatic reset circuit as shown below.

If the alarm switch is used, a pulse signal will be produced in the automatic reset circuit when the alarm is activated. Be sure to use a self-hold circuit to avoid possible problems caused by this pulse signal.

It is recommended that a time delay of approximately 3 minutes is introduced to the automatic reset circuit for thermal magnetic MCCB's In the event of an overload trip this will prevent the motor operator repeatedly driving the MCCB between the tripped and reset positions while the thermal element is hot.

If an alarm signal is also required for external control, use a 2 alarm switch combination.





Note: Customer wiring shown in blue

External accessories

Operating handles & LOCKING DEVICES

ETIBREAK 2 handles are extremely reliable, having been designed to endure the same switching duty as the host MCCB. It is easy to fit the operating unit to the MCCB. Fitting involves three easy steps:

1. Align breaker toggle with operating mechanism
2. Push handle into position (the handle's round pegs locate securely in the breaker's round holes
   and the handle's* square pegs in the breaker's square holes).
3. Twist locking screws through 45 degrees.*

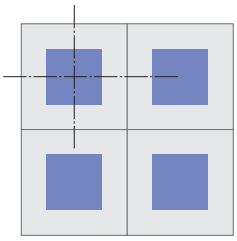
MCCB ON

MCCB ON

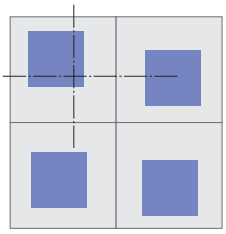
Safety Features

- Door interlock mechanism with override facility included as standard
- IP55 as standard (door mounted version), IP3X as standard (breaker mounted version)
- IP65 optional, IP5X optional
- Locks OFF with up to 3 padlocks (8mm hasps)
- Optional keylock in OFF position
- Available grey handle with black base or red handle with yellow base
- A trip test can be performed with the external operating handle fitted to the MCCB

Cubicle Door Cutouts



Using Etibreak 2 Operating Handles

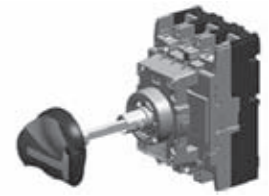


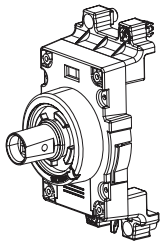
Using other MCCB Operating Handles

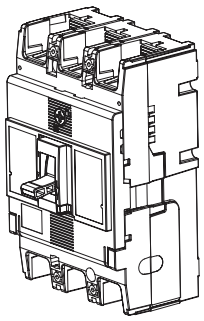
Orientation

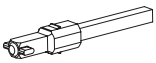
To switch the breaker from OFF to ON the handle is rotated through 90 degrees in a clockwise direction.
The ON (I) and OFF (O) indication of the handle can be re-oriented in steps of 90 degrees with respect to the operating mechanism. This allows the indication position to remain the same whether the 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 handle is re-oriented. The 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.

Operating handles & LOCKING DEVICES









Square shaft

Operating unit

Shaft support

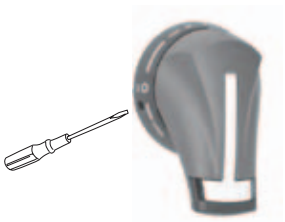
Gasket for IP 65

Operating handle

Handle cover

Door Mounted Handle

The door mounted operating handle is used to operate a circuit breaker mounted inside a cubicle from outside the door 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 external operating handle keeps the panel door locked when in the ON position.

OFF open type
The handle is turned to the OFF position to open the panel door.

• Door interlock release button
The release button enables the panel door to be opened with the handle in the ON position.

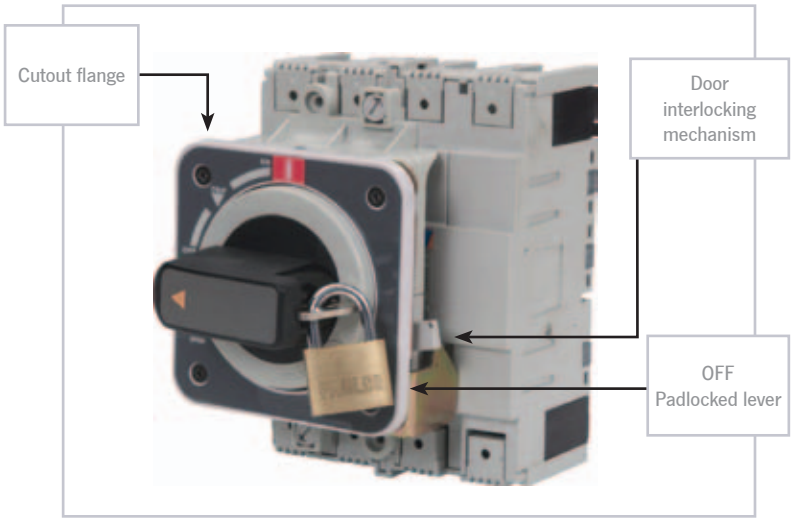
To release: push the release button on the side of the operating handle with a flat-bladed screwdriver.

Handle Lock Mechanism

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

External accessories

Operating handles & LOCKING DEVICES



Breaker Mounted Handle Padlocked in the OFF Position

Breaker Mounted Handle

This 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 handle which covers the cutout from the front.
Padlocking and keylocking is possible in the OFF position or both the ON and OFF position depending on the mounting direction.

S250 Locked OFF

S400 Locked OFF

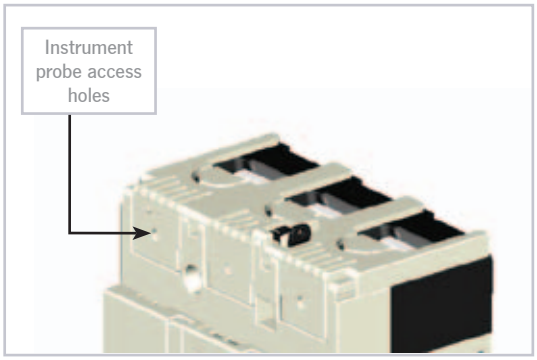
Locking Devices

Toggle locking devices allow MCCBs to be locked ON or OFF using up to three padlocks. Locking devices for 125A, 160A and 250A frame models accept padlocks with 5mm hasp diameter. Locking devices for 400A and 630A frame models accept padlocks with 8mm hasp diameter.

Fittings for Castell and Fortress locks are available. They are suitable for use on toggle-operated MCCBs, or on door mounted handles for MCCBs.

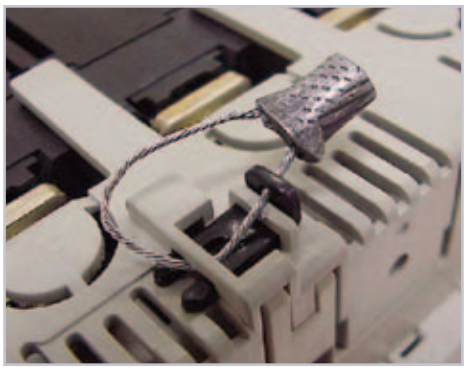
Terminal Covers up to 1250A

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.



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.
- All terminal covers have an IP20 ingress protection rating
- **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 an instrument probe access hole of 4mm diameter on each phase.



Terminal Cover Lock with Lead Seal

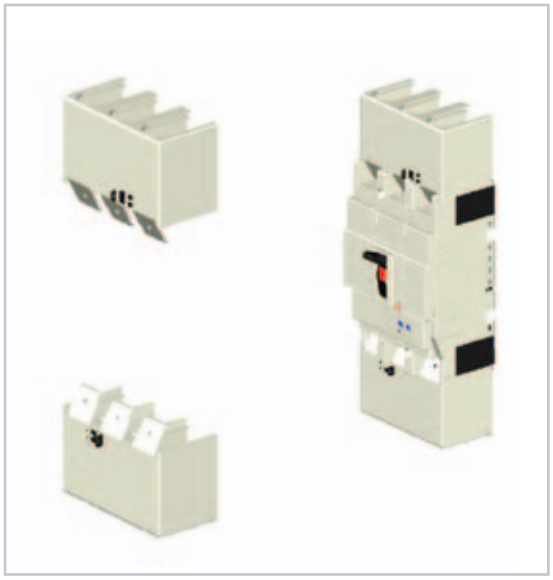
Options

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

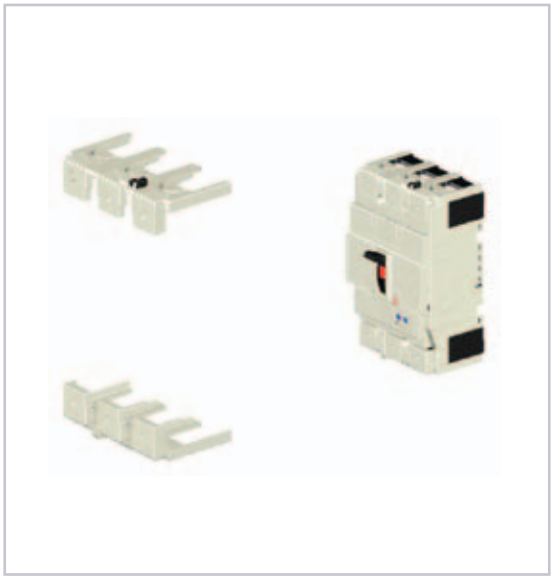
External accessories

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 Covers for Front Connection

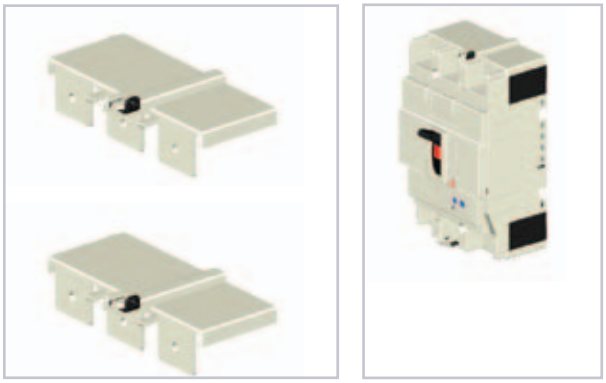


Flush Terminal Covers

Flush Terminal Covers

Flush terminal covers are available for 125A to 630A frame models and are useful for increasing the ingress protection rating at the terminals without increasing the overall length. They can be used with busbar and for direct entry of stranded cable (with solderless cable clamp terminals.

Flush terminal covers are identical to rear terminal covers for 400A and 630A frame model. The user can remove a section of the rear terminal cover using a tool to allow entry of the conductor.

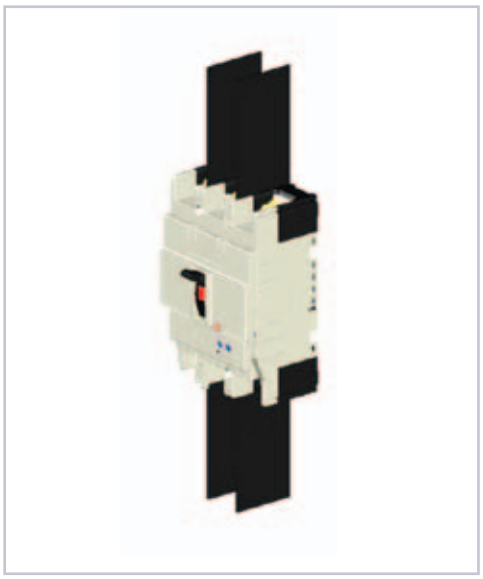


Terminal Covers for Rear Connection

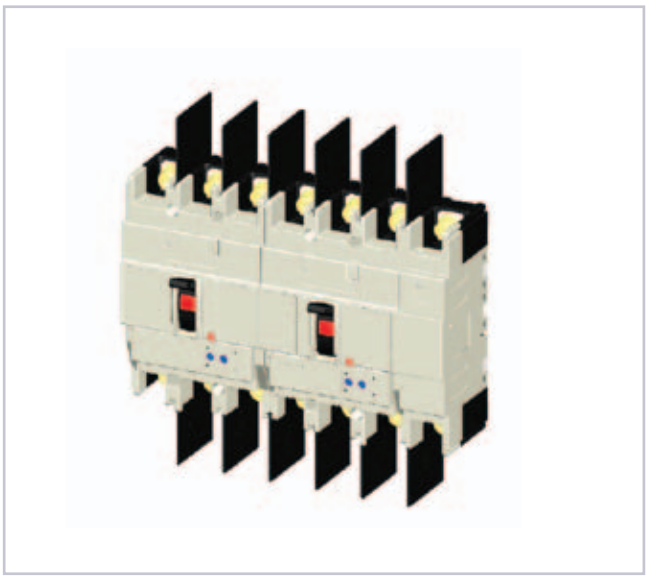
Terminal covers for Rear Connection

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

Interpole Barriers (BA)



MCCB Fitted with Interpole Barriers on Both Ends



Interpole Barriers between Adjacent MCCBs

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 moulds have been designed to accept an additional interpole barrier between two adjacent MCCBs.

Accessories for Dual Supply Changeover Systems

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 Interlock (ML)

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. The ETIBREAK 2 link interlock is an innovative design breakthrough 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
- An automatic changeover pair consisting of an interlocked pair of MCCBs with internal control accessories and motor operators can be assembled in a few minutes!

Changeover Pair with Link Interlock and Motor Operators

Viewed from Below

Accessories for Dual Supply Changeover Systems

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.
Front link-type and wire-type interlocks operate 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 Dual Supply Changeover Systems

Wire Interlock (MW)

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 compartment or on different planes.

Changeover Pair with Wire Interlock and Motor Operators

View from above

The ETIBREAK 2 wire interlock is an innovative design breakthrough which will save space, time and money for switchboard builders in that:

- Installation is extremely simple. Wire interlocks are field-installable.
- 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
- An automatic changeover pair consisting of an interlocked pair of MCCBs with internal control accessories and motor operators can be assembled in a few minutes!

Accessories for Dual Supply Changeover Systems

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.
Front link-type and wire-type interlocks operate 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

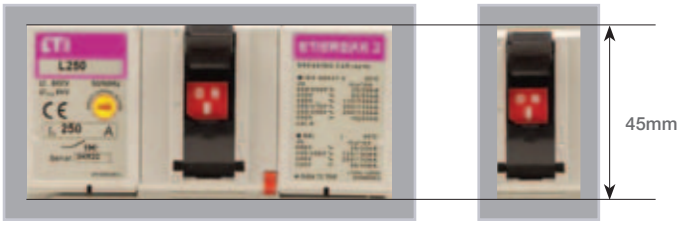
The electrical control system of an automatic changeover scheme which uses these interlocks should not attempt to switch the MCCBs to a combination indicated as “NOT ALLOWED” in the above table otherwise damage to the motor operations will occur.

Slide Interlock Installed Between two MCCBs

Slide Interlock (MS)

Slide interlocks are manually operated toggle locking devices which can be installed between two adjacent MCCBs (no possibilitiy of motor operator mounting). Depending on the position of the slide, one or other of the MCCBs on either side of a slide interlock is inhibited from being in the ON position. Slide interlocks can be used between MCCBs of the same number of poles and of the same frame size. Slide interlocks can be installed in the field and are padlockable in both positions.

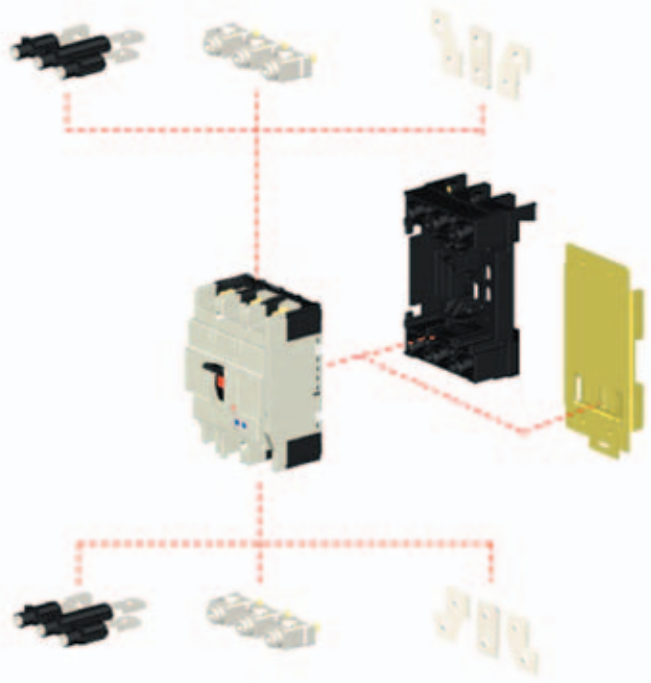
Connection and Mounting Options and Accessories



Optional 45mm Cutout Patterns

Etibreak 2 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. 125A and 160A/250A frame models have a choice of 45mm front cutout patterns

Connection and mounting options overview diagram



Overview of Connection and Mounting Accessories

Note that one set of mounting screws is supplied as standard with every circuit breaker or switch disconnector purchased.

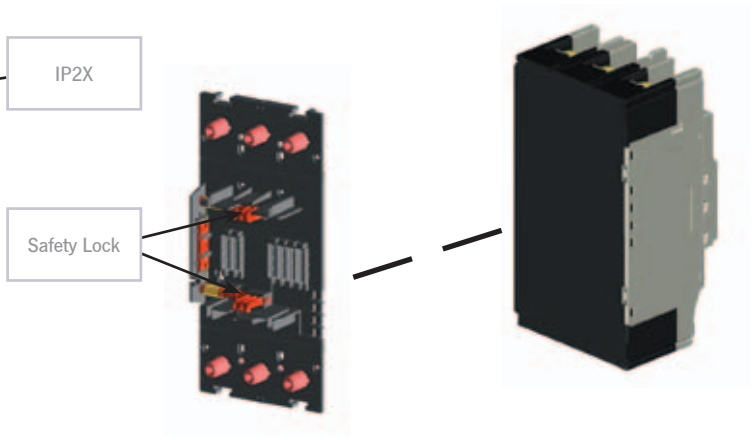
Plug-in Mounting

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

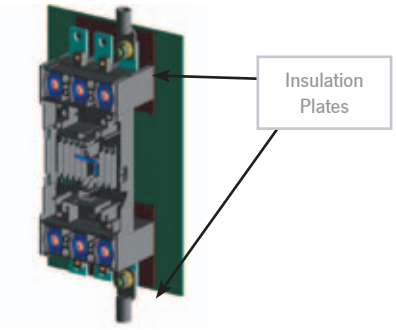
The plug-in MCCB body is automatically locked to the base when the contacts are closed (toggle ON). It cannot be removed unless the contacts are in the isolated position (toggle OFF or TRIPPED). This system ensures safe removal of the MCCB from the base. Plug-in safety lock is available from 125A to 800A frame models.

Plug-in MCCB and base



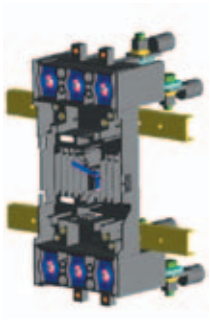
Plug-in connections and safety lock are fitted to the back of the MCCB

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.

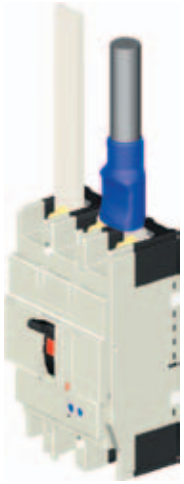


3. Mounted on angle bars. Connection bars are mounted for rear access.

Installation

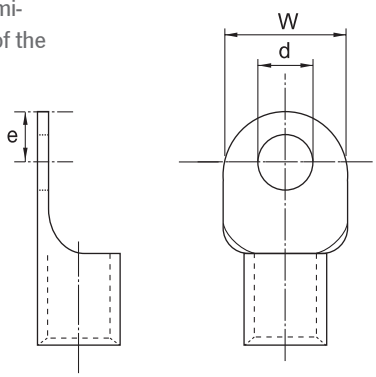
Connection of Busbars and Terminated Cables

This connection method is standard for all front connected MCCB models. Solid conductors or cables terminated with crimp lug terminals can be used.



Serrated Terminal Surface

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 Compression Terminals			
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, e(mm)	8.5	10	12

Connection of Large Conductors and Multiple Conductors

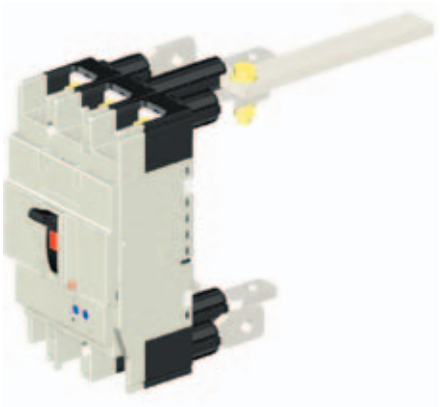
Flat bars are terminal extensions which can be fitted to line or load side terminals and are used to connect large conductors and multiple conductors. Available for field fitting in sets of 3 or 4 bars.

Direct Entry of Stranded Cable

Solderless clamp terminals can be used to secure stranded cable directly to the MCCB. Available for field fitting in sets of 3 or 4.

MCCB Model	Cable Capacity (mm^2)
125AF	1.5 to 50 (1 cable)
160 and 250 AF	35 to 120 (1 cable)
400 and 630 AF	80 to 240 (1 cable)
	60 to 120 (2 cables)

Termination in Separate Compartment



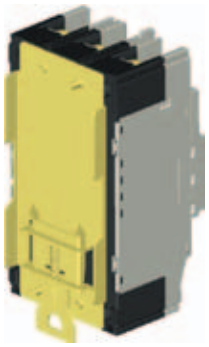
Rear connections allow termination of conductors in different switchboard compartment to the MCCB body.

The stud can be rotated in steps of 45 degrees on 125A to 630A frame MCCBs.

Installation

Mounting on 35mm DIN Rail

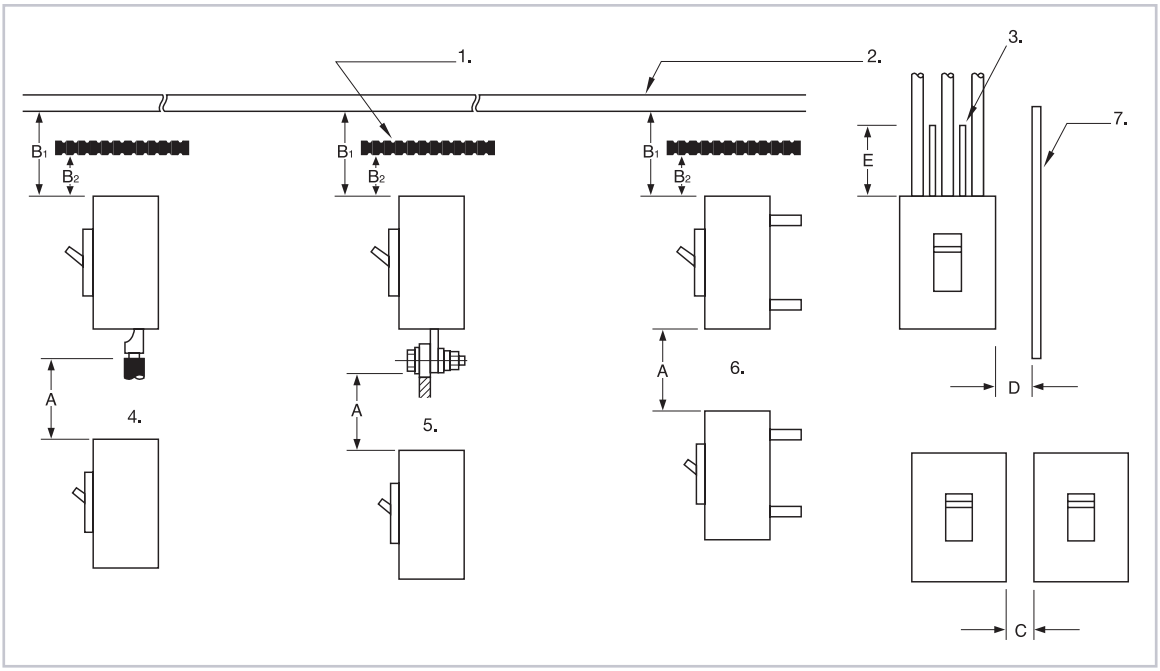
The DIN rail adaptor is easily fitted to the rear of 3 pole EB2 125A and 250A models to allow clip mounting of the MCCB to 35mm DIN rail. The 45mm cutout of Etibreak 2 devices makes them suitable for mounting alongside modular devices in distribution boards.



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.



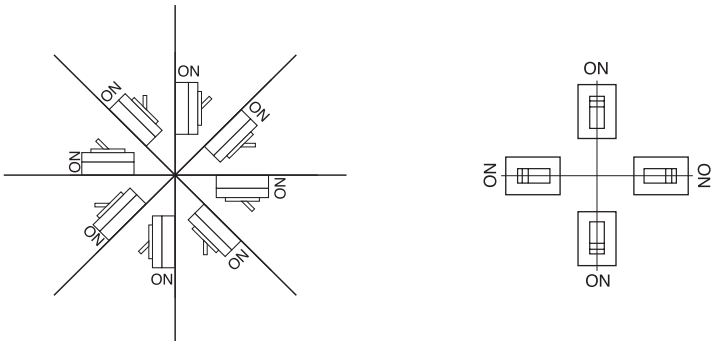
1. Insulation plate
2. Top plate (earthed metal)
3. Interpole barrier
4. Front-connected type
5. Front-connected type with extension bar
6. Rear-connected type, plug-in type
7. Side panel
8. A. Distance from lower breaker to exposed live part of upper breaker terminal (front-connected type) or distance 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

Model	Type	A	B1	B2	C (4)	D	E
EB2 125	L, S	50	40 (2)	10	0	25	* (1)
	H	75	45	25	0	25	* (1)
EB2 160	S	50	40	30	0	25	* (1)
	H	100	80	60	0	50	* (1)
EB2 250	L, S	50	40	30	0	25	* (1)
	H	100	80	30	0	25	* (1)
	E	100	80	60	0	50	* (1)
EB2 400	L, S, E	100	80	40	0	30	* (1)
EB2 630	LE, E, HE	120	100	80	0	80	* (1)
EB2 800	L, S, LE	120	100	80	0	80	* (1)
	H, E	150	120	80	0	80	* (1)
	HE	120 (3)	120	80	0	80	* (1)
EB2 1000	LE, E	150	120	80	0	80	* (1)
EB2 1250	LE, E	150	120	80	0	80	* (1)
EB2 1600	LE, E	150	150	100	0	100	* (1)

Installation

Mounting Angle

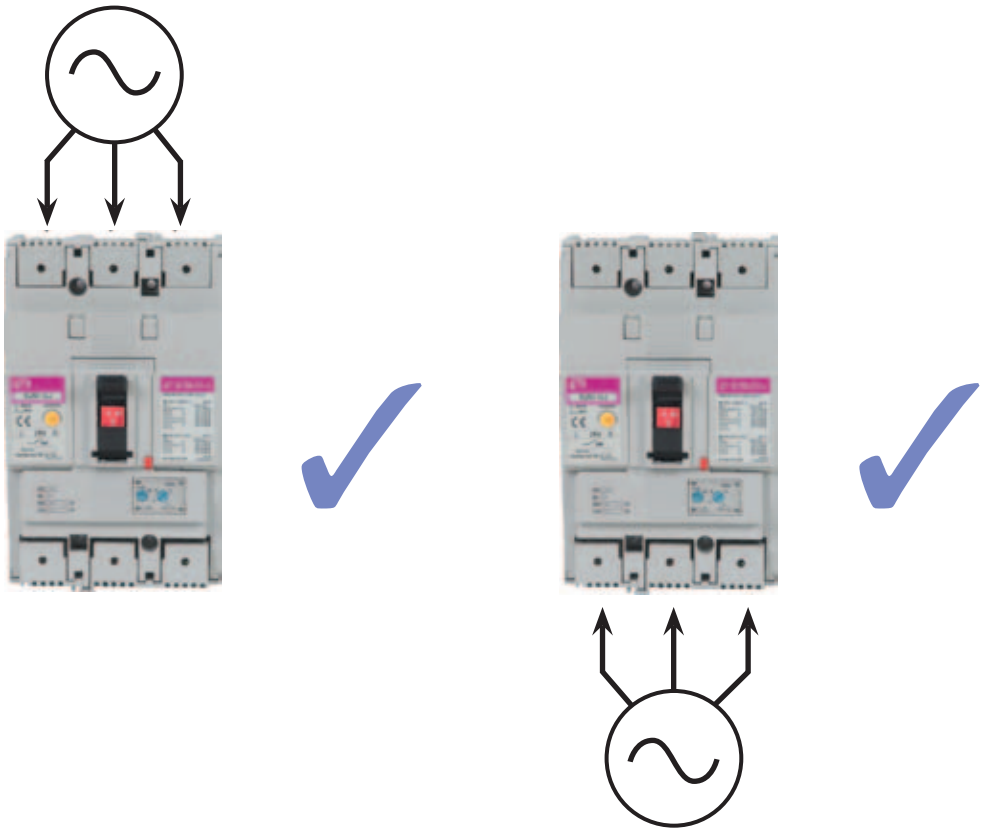
ETIBREAK 2 MCCBs may be mounted at any angle without affecting performance.



Mounting angle does not affect performance.

Direction of Power Supply

Power can be supplied through ETIBREAK 2 MCCBs in either direction without loss of performance.



Standard Installation Environment and Special Treatments

ETIBREAK 2 MCCBs are intended for installation in the following conditions as standard:

- Operating ambient temperature -10°C to 50°C.
- Relative humidity of up to 85%.
- Altitude up to 2000m.
- Atmospheres free from dust, smoke, corrosive gases, inflammable gases, moisture and salt.

For installation in conditions more onerous than those described above, contact ETI for details.

The following special treatments have been developed for installation in specific environmental conditions:

Low temperature treatment.
For installation at temperatures down to -40°C for storage and -20°C for operation.
The environment must be free from rapid changes in temperature that result in the formation of condensation

Fungus-moisture proofing.
For installation at temperatures up to 65°C and relative humidity of up to 95%.
The environment must be free from rapid changes in temperature.

Anti-corrosion treatment.
MCCB is surface treated to increase resistance to corrosion. If the MCCB is to be installed in atmosphere that contains excessive volumes of corrosive gases or moisture, it should be house in an airtight enclosure.

Installation

Temperature Ratings

Calibration temperature 50°C

Thermal Magnetic protection	Connection Type	Rating at calibration temperature (50°C)	Rated Current (A)			
			50°C	55°C	60°C	65°C
EB2 125L EB2 125S EB2 125H	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
EB2 160S EB2 160H	Front, Rear, Plug-in	160A	160	151	146	141
EB2 250L, EB2 250S, EB2 250H	Front, Rear, Plug-in	160A	160	151	146	141
		250A	250	235	227	219
EB2 400L EB2 400S	Front, Rear, Plug-in	250A	250	237	230	223
		400A	400	380	369	358
EB2 800L, EB2 800S, EB2 800H	Front, Rear, Plug-in	630	630	600,1	584,7	569,4
		800	800	758,9	737,9	716,9

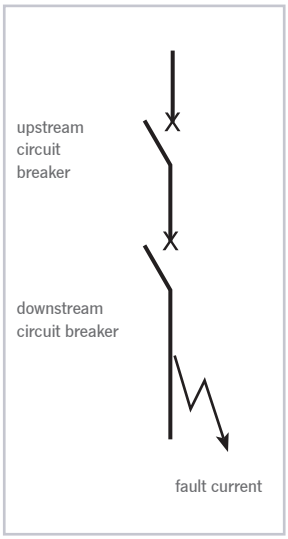
Electronic protection	Connection Type	Rating	Rated Current (A)					
			30°C	40°C	50°C	55°C	60°C	65°C
EB2 250E	Front, Rear	250A	250	250	237,5	225	200	200
EB2 400E	Front, Rear, Plug-in	250A	250	250	250	250	225	200
		400A	400	400	400	380	360	320
EB2 630LE, EB2 630E, EB2 630HE	Front, Rear	630A	630	630	630	598,5	567	504
EB2 800LE EB2 800E	Front	800A	800	800	800	720	640	504
	Rear, Plug-in	800A	800	800	760	720	640	504
EB2 800HE	Front, Rear, Plug-in	630A	630	630	630	598,5	567	504
		800A	800	800	720	640	567	504
EB2 1000LE(1) EB2 1000E(1)	Front, Rear	1000A	1000	1000	900	800	630	630
EB2 1250LE(1) EB2 1250E(1)	Front	1250A	1250	1250	1250	1000	787	787
	Rear	1250A	1250	1250	1125	1000	787	787
EB2 1600LE(1) EB2 1600E(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

Selectivity

WHAT IS selectivity?

Discrimination, also called selectivity, is the co-ordination of protective devices such that a fault is cleared by the protective device installed immediately upstream of the fault, and by that device alone.



Total selectivity

Selectivity is said to be total if the downstream circuit breaker opens and the upstream circuit breaker remains closed. This ensures maximum availability of the system.

Partial selectivity

Selectivity is partial if the above condition is not fulfiled up to the prospective short-circuit current, but to a lesser value, termed the selectivity limit current (Is).
Above this value both circuit breakers could open, resulting in loss of selectivity.

How to read the selectivity tables

Boxes containing the letter “T” indicate total selectivity between the relevant upstream and downstream circuit-breakers. Total selectivity applies for all fault levels up to the breaking capacity of the upstream or the downstream circuit breaker, whichever is the lesser. For the other boxes, selectivity is either partial or there is no selectivity.
If selectivity is partial then the value of the selectivity limit current, Is, is shown in the box.

Worked Examples

Q (1) A Sub distribution board requires a 630A MCCB feeding a 250A MCCB. The fault level is 65kA. What combination of protective devices would provide total selectivity?

A (1) Using a ETIBREAK 2 S630 MCCB feeding a ETIBREAK 2 S250 would provide total selectivity up to 65kA.

Q (2) A final distribution board contains a 125A MCCB incomer feeding a 32A Type B MCB. Is discrimination between these devices possible?

A (3) A ETIBREAK 2 MCCB type S160/125A feeding a ETIMAT 32A type B MCB would provide total selectivity.

Alternatively ANY OTHER MCB can be used provided it has energy limiting ability of class 3 in accordance with EN 60898.

Application Data

Selectivity tables

Upstream: Etibreak 2 MCCB (thermal-magnetic)
Downstream: MCB

Upstream MCCB

Downstream MCB	S125 (36kA) L125 (25kA)						S160 (36kA)						
In	20A	32A	50A	63A	100A	125A	20A	32A	50A	63A	100A	125A	160A
6A	260	T	T	T	T	T	260	T	T	T	T	T	T
10A	260	420	T	T	T	T	260	420	T	T	T	T	T
16A	260	420	650	T	T	T	260	420	650	T	T	T	T
20A	260	420	650	1000	T	T	260	420	650	1000	T	T	T
25A	260	420	650	1000	T	T	260	420	650	1000	T	T	T
32A	260	420	650	1000	1500	2000	260	420	650	1000	1500	T	T
40A	260	420	650	1000	1500	2000	260	420	650	1000	1500	2000	T
50A	260	420	650	1000	1500	2000	260	420	650	1000	1500	2000	3000
63A	260	420	650	1000	1500	2000	260	420	650	1000	1500	2000	3000

Upstream MCCB

Downstream MCB	S250 (36kA) L250 (25kA)									S400	
In	20A	32A	50A	63A	100A	125A	160A	200A	250A	250A	400A
6A	260	T	T	T	T	T	T	T	T	T	T
10A	260	420	T	T	T	T	T	T	T	T	T
16A	260	420	650	T	T	T	T	T	T	T	T
20A	260	420	650	1000	T	T	T	T	T	T	T
25A	260	420	650	1000	T	T	T	T	T	T	T
32A	260	420	650	1000	1500	2000	T	T	T	T	T
40A	260	420	650	1000	1500	2000	T	T	T	T	T
50A	260	420	650	1000	1500	2000	3000	T	T	T	T
63A	260	420	650	1000	1500	2000	3000	2600	T	T	T

T= Total Selectivity

Notes:
1. MCBs can be of any manufacture provided they are Energy class three as defined in EN 60898.
2. Table based on type B MCBs
3. MCBs can be 6kA or 10kA at 400V
4. The above table is in accordance with IEC 60947-2, Annex A.
5. All values shown at 400V AC.
6. I_s expressed in A.

Application Data

Upstream: ETIPOWER ACB
Downstream: ETIBREAK 2 MCCB.

Upstream ACB

Frame			800A	1250A		1600A			2000A			2500A		3200A		4000A	5000A	6300A	
	Model		EP208S	EP212S	EP212H	EP216S	EP216H	EP316H	EP220S	EP220H	EP320H	EP325S	EP325H	EP332S	EP332H	EP440SB	EP650S	EP663S	EP663H
		Breaking Capacity	65kA	65kA	80kA	65kA	80kA	100kA	65kA	80kA	100kA	85kA	100kA	85kA	100kA	100kA	120kA	120kA	135kA
EB2 125	125S	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	125H	65kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EB2 250	160S	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	160H	65kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250S	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250H	65kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EB2 400	250E	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	400L	25kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	400S	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	400E	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	400HLCD	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EB2 630	630LE	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	630E	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	630HE	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EB2 800	800L	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	800S	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	800H	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	800LE	50kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	800E	70kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	800HE	125kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EB2 1000	1000LE	50kA	–	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1000E	70kA	–	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EB2 1250	1250LE	50kA	–	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1250E	70kA	–	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
EB2 1600	1600LE	50kA	–	–	–	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1600E	100kA	–	–	–	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	E 630	50kA	-	-	-	-												T	T

Downstream MCCB

T= Total Selectivity

Notes:
1. All ACB's have Ii set at NON, MCR ON
2. Assuming ACB time setings are greater than MCCB
3. External relay can be used - contact ETI for further details
4. T = total selectivity

Application Data

ETIBREAK 2 MCCB (Electronic)

Selectivity Tables According to IEC 60947-2, Annex A, At 400V AC

Upstream MCCB

Downstream MCCB

Frame			EB2 250	EB2 400		EB2 630			EB2 800			EB2 1000		EB2 1250		EB2 1600	
	Model		250E	400E	400HLCD	630LE	630E	630HLCD	800LE	800E	800HE	1000LE	1000E	1250LE	1250E	1600LE	1600E
		Breaking Capacity	70kA	50kA	70kA	36kA	50kA	70kA	50kA	70kA	125kA	50kA	70kA	50kA	70kA	50kA	100kA
EB2 125	125S	36kA	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	125H	65kA	T	T	T	T	T	T	T	50	T	T	T	T	T	T	T
EB2 250	160S	36kA	–	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	160H	65kA	–	T	T	T	T	T	36	36	T	T	50	T	T	T	T
	250S	36kA	–	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	250H	65kA	–	T	T	T	T	T	36	36	T	T	50	T	T	T	T
EB2 400	250E	70kA	–	–	–	T	T	T	36	36	T	T	50	T	T	T	T
	400L	25kA	–	–	–	10	10	10	T	T	T	T	T	T	T	T	T
	400S	50kA	–	–	–	10	10	10	25	25	25	30	30	36	36	T	T
	400E	50kA	–	–	–	10	10	10	25	25	25	30	30	36	36	T	T
	400HLCD	70kA	–	–	–	10	10	10	25	25	25	30	30	36	36	T	50
EB2 630	630LE	36kA	–	–	–	–	–	–	–	–	–	–	–	T	T	T	T
	630E	50kA	–	–	–	–	–	–	–	–	–	–	–	36	36	T	T
	630HE	70kA	–	–	–	–	–	–	–	–	–	–	–	36	36	T	50
EB2 800	800L	36kA	–	–	–	–	–	–	–	–	–	–	–	–	–	20	20
	800S	50kA	–	–	–	–	–	–	–	–	–	–	–	–	–	20	20
	800H	70kA	–	–	–	–	–	–	–	–	–	–	–	–	–	20	20
	800LE	50kA	–	–	–	–	–	–	–	–	–	–	–	–	–	20	20
	800E	70kA	–	–	–	–	–	–	–	–	–	–	–	–	–	20	20

T= Total Selectivity

Notes:
1. All pick-up current and time delay settings are to be set at maximum for upstream MCCBs
2. Is expressed in kA
3. T = Total Selectivity

Cascade

WHAT IS Cascading?

Cascading is a technique where the current limiting capability of upstream circuit breakers is used to permit the installation of lower rated and therefore lower cost circuit breakers downstream.
The upstream ETIBREAKk 2 circuit breaker acts as a resistance against short-circuit currents. With this assistance, downstream circuit breakers with breaking capacities lower than the prospective short-circuit at their point of installation can interrupt the reduced short-circuit current.
Since the current is limited downstream of the limiting circuit breaker, cascading applies to all switchgear in the downstream circuit. It is not restricted to two consecutive devices.
Cascading is recognised by the following standards related to electrical installations:
IEC 60364
BS 7671
AS/NZS 3000

The Advantages

Installation of a single limiting circuit-breaker results in considerable simplifications and savings for the entire downstream installation:
- Simplification of selection of devices using the cascading tables
- Savings on downstream devices. Cascading allows circuit-breakers with lower ratings to be used.

In addition the application of cascading will reduce both electrodynamic and thermal stress within the installation.

How to Read the Cascade Tables

The value shown in the table is the increased breaking capacity, expressed in kA, that can be achieved if the downstream MCCB is backed up by the appropriate upstream MCCB.

ETIBREAK 2 MCCB

Cascade Tables According to IEC 60947-2, Annex A, At 400V AC

Upstream MCCB

Downstream MCCB									
Frame			EB2 125		EB2 250				
	Model		125S	125H	160S	160H	250S	250H	250E
		Breaking Capacity	36kA	65kA	36kA	65kA	36kA	65kA	70kA
EB2 125	125S	36kA	–	65	–	65	–	65	65
	125H	65kA	–	–	–	–	–	–	70
EB2 250	160S	36kA	–	–	–	65	–	65	65
	160H	65kA	–	–	–	–	–	–	70
	250S	36kA	–	–	–	–	–	65	65
	250H	65kA	–	–	–	–	–	–	70
	250E	70kA	–	–	–	–	–	–	–

Notes: 1. Cascade fault level limit is expressed in kA

Application Data

Upstream MCCB

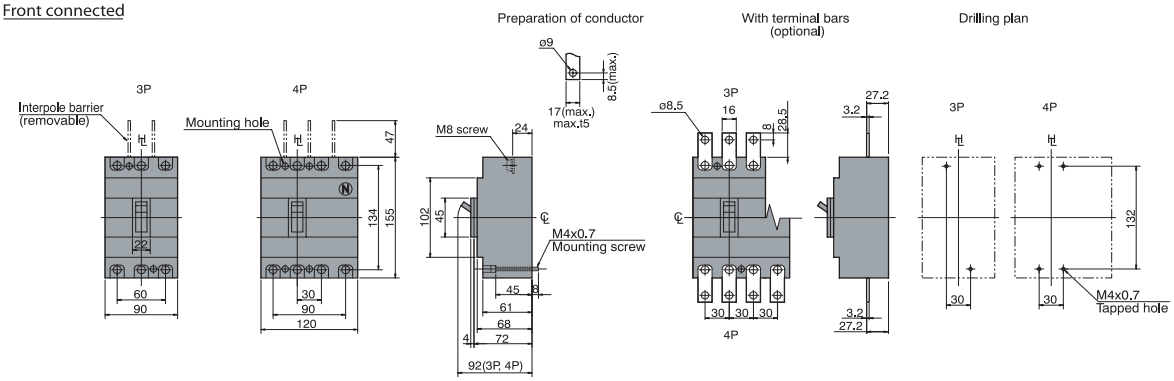
Downstream MCCB

Frame			EB2 400			EB2 630			EB2 800						EB2 1000		EB2 1250		EB2 1600	
	Model		400S	400E	400HLCD	630LE	630E	630HE	800L	800S	800LE	800H	800E	800HE	1000LE	1000E	1250LE	1250E	1600LE	1600E
		Breaking Capacity	50kA	50kA	70kA	36kA	50kA	70kA	36kA	50kA	50kA	70kA	70kA	125kA	50kA	70kA	50kA	70kA	50kA	100kA
EB2 125	125S	36kA	50	50	65	–	50	65	–	50	50	50	50	–	–	–	–	–	–	–
	125H	65kA	–	–	70	–	–	70	–	–	–	70	70	–	–	–	–	–	–	–
EB2 250	160S	36kA	50	50	65	–	50	65	–	50	50	70	70	50	50	70	–	–	–	–
	160H	65kA	–	–	70	–	–	70	–	–	–	70	70	70	–	70	–	–	–	–
	250S	36kA	50	50	65	–	50	65	–	50	50	70	70	50	50	70	–	–	–	–
	250H	65kA	–	–	70	–	–	70	–	–	–	70	70	70	–	70	–	–	–	–
	250E	70kA	–	–	–	–	–	–	–	–	–	–	–	85	–	–	–	–	–	–
EB2 400	400L	25kA	36	36	50	36	36	50	30	36	36	50	50	36	36	36	36	36	36	36
	400S	50kA	–	–	70	–	–	70	–	–	–	70	70	70	–	70	–	70	–	70

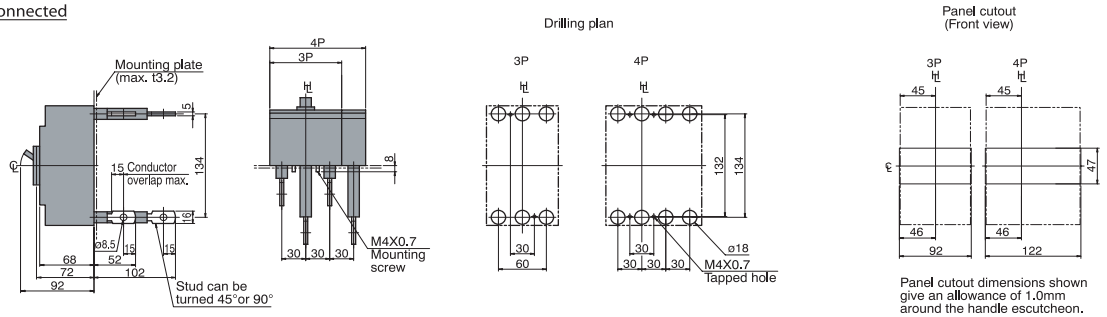
Notes: 1. Cascade fault level limit is expressed in kA

MCCB's dimmensions EB2 125 /L, S, H

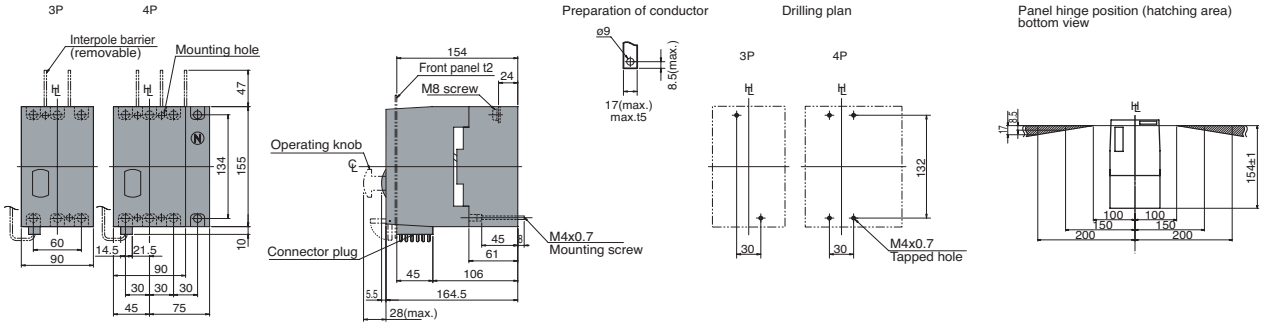
Front connected



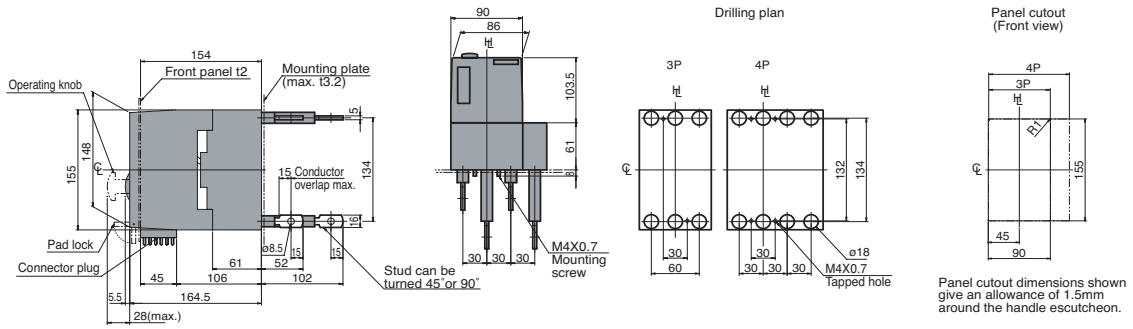
Rear connected



Front connected with Motor Operator



Rear connected with Motor Operator

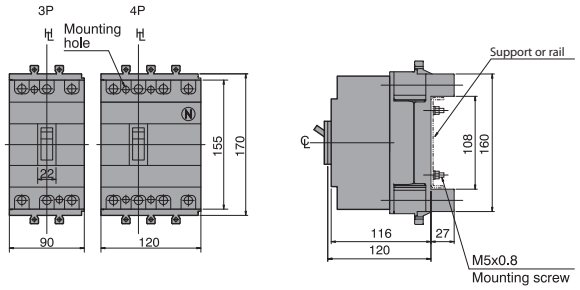


Dimensions

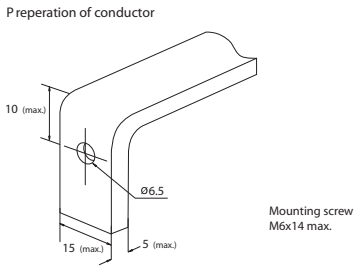
MCCB's dimmensions

EB2 125 /L, S, H
Plug-in version

Outline Dimensions

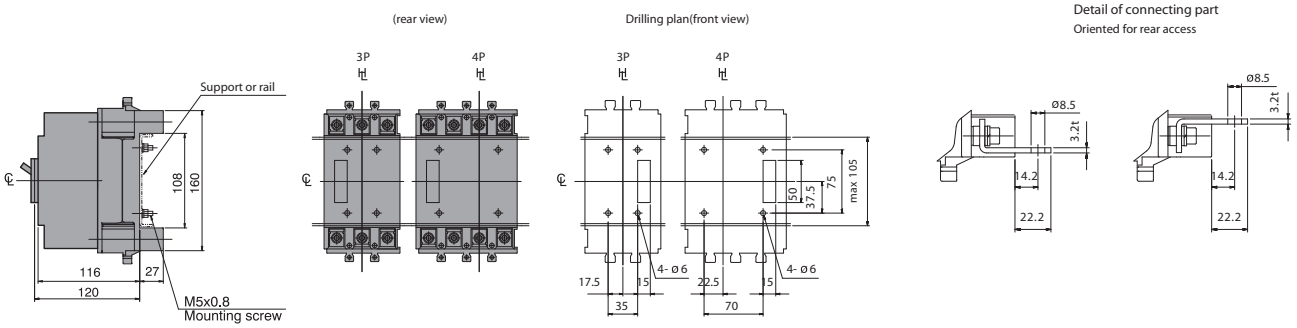


Termination of Busbar



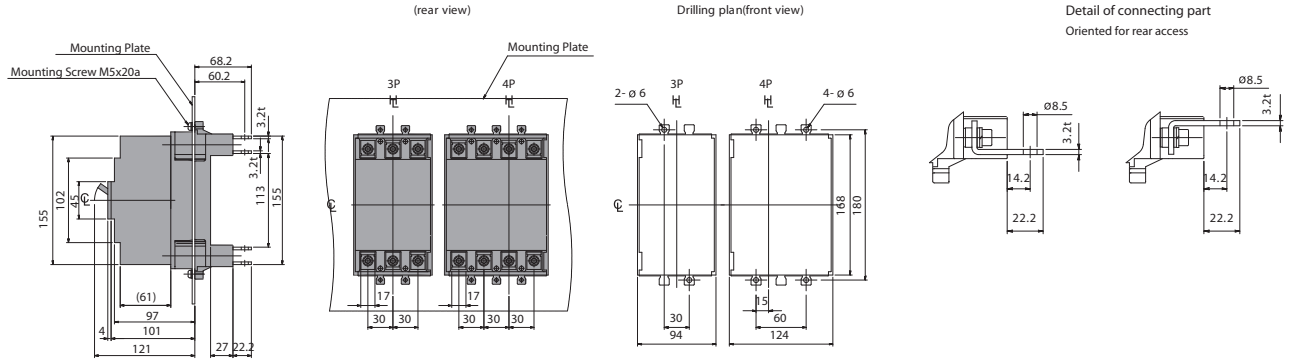
Mounting on a support or rails

(shown with optional connection bars oriented for rear access)



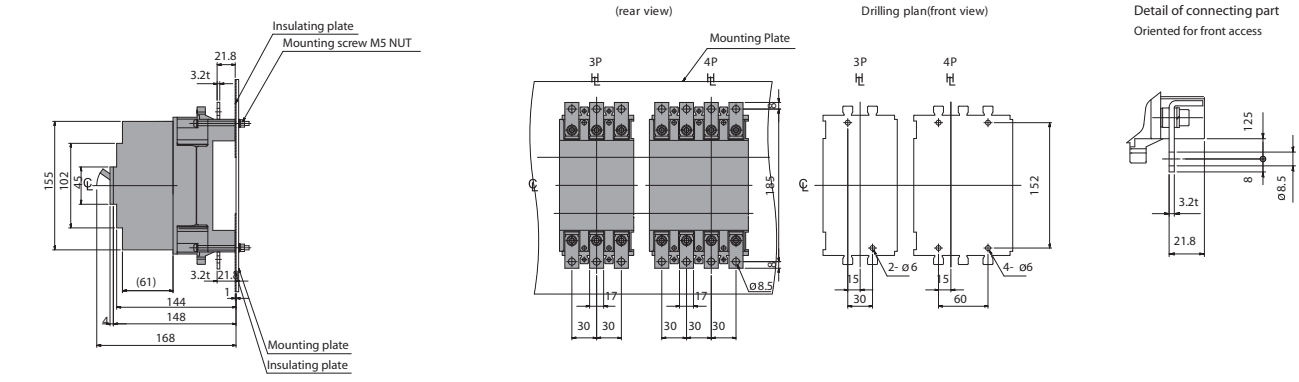
Mounting through the backplate

(shown with optional connection bars oriented for rear access)



Mounting on the backplate

(optional connection bars must be oriented for front access)

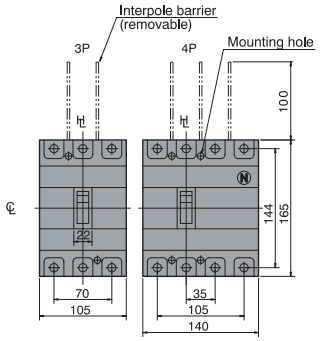


Note that the insulation plate (supplied as standard) must be fitted between the base and the backplate.

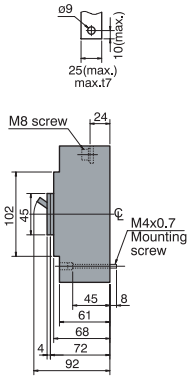
MCCB's dimmensions

EB2 160 /S, H
EB2 250 /L, S, H

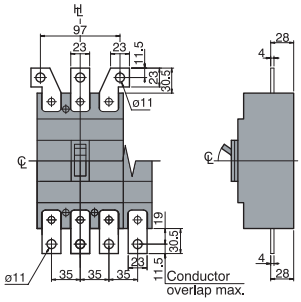
Front connected



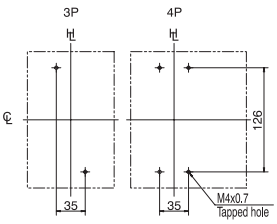
Preparation of conductor



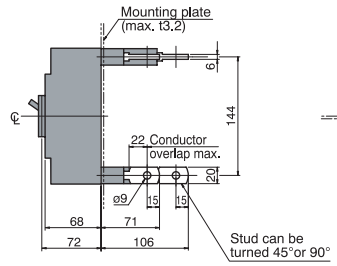
With terminal bars
(optional)

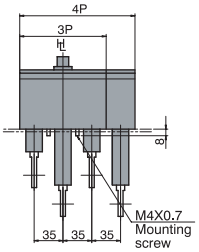


Drilling plan

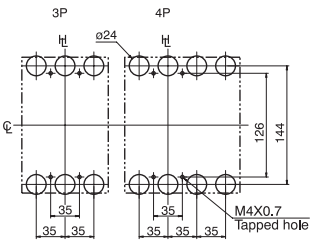


Rear connected

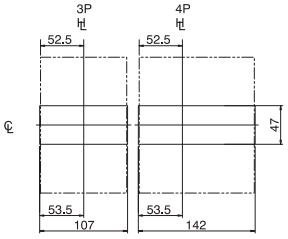




Drilling plan

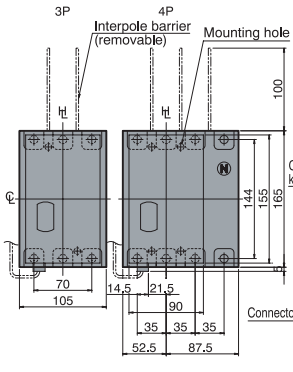


Panel cutout
(Front view)

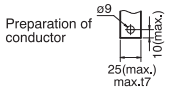


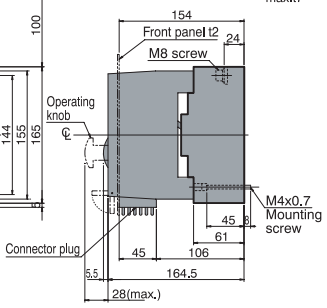
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Front connected with Motor Operator

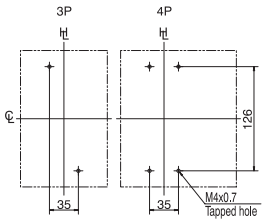


Preparation of
conductor

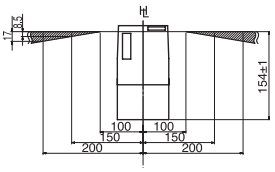




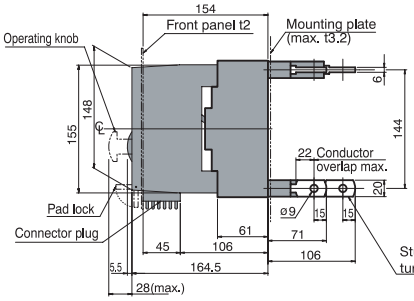
Drilling plan

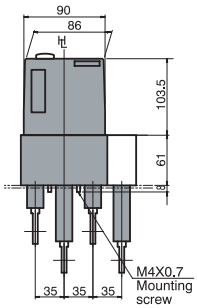


Panel hinge position (hatching area)
bottom view

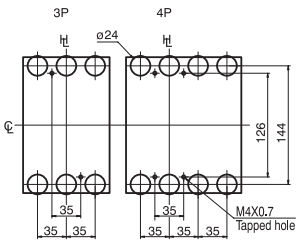


Rear connected with Motor Operator

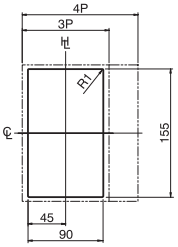




Drilling plan



Panel cutout
(Front view)



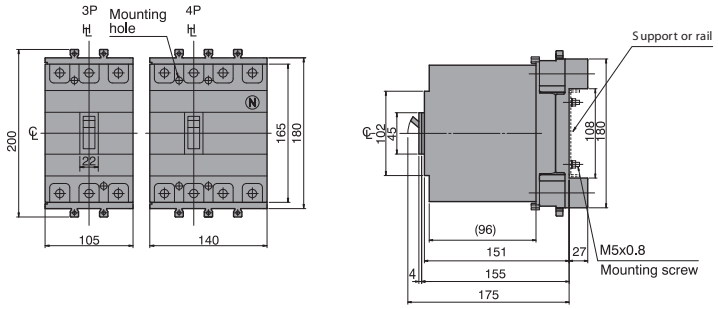
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

Dimensions

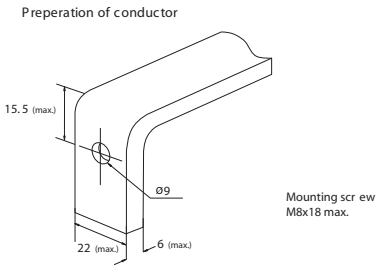
MCCB's dimmensions

EB2 160 /S, H
EB2 250 /L, S, H
Plug-in version

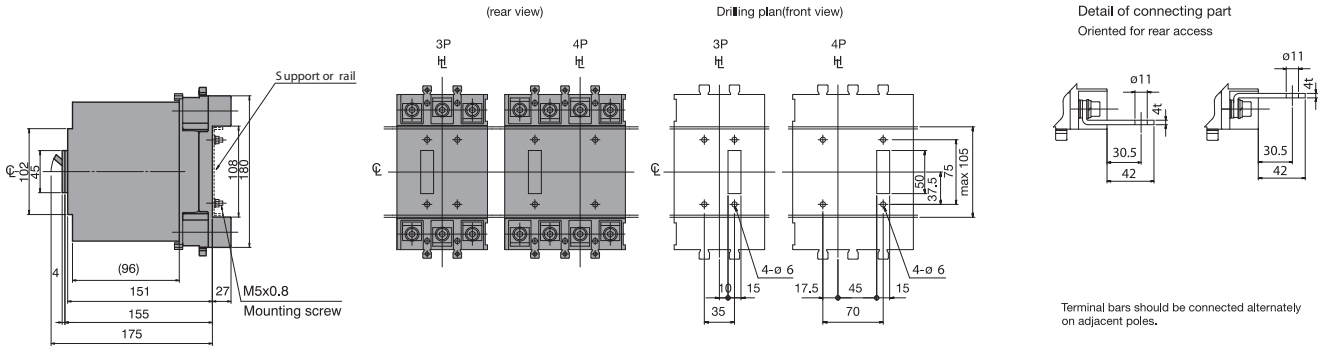
Outline Dimensions



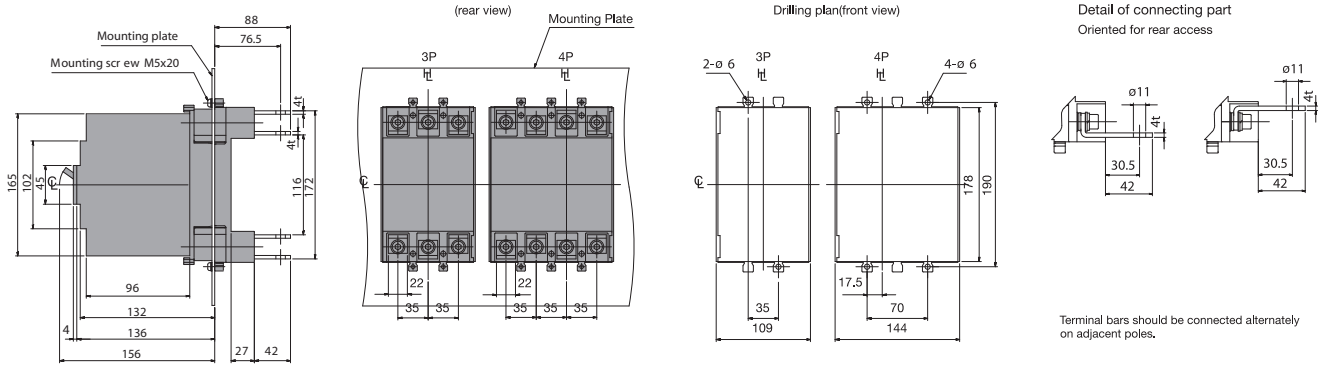
Termination of Busbar



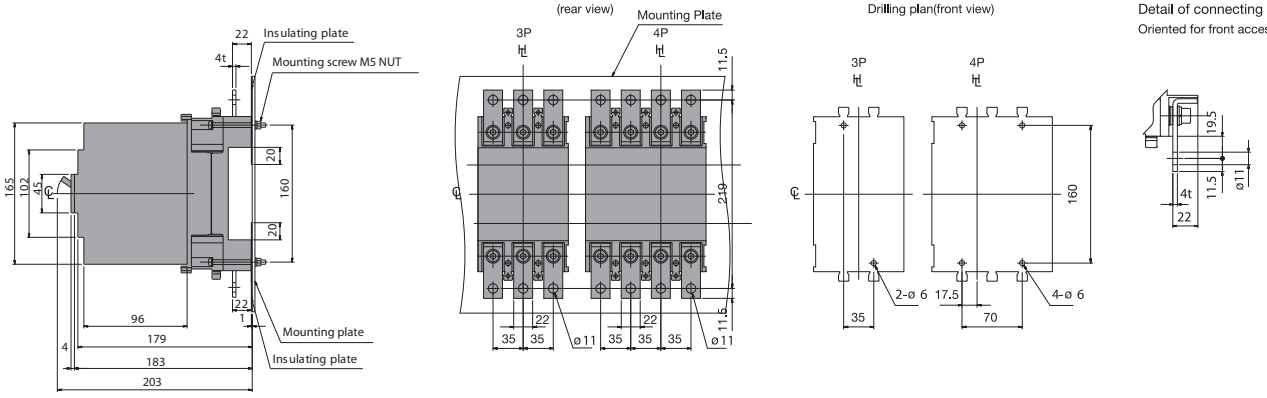
Mounting on a support or rails (shown with optional connection bars oriented for rear access)



Mounting through the backplate (shown with optional connection bars oriented for rear access)



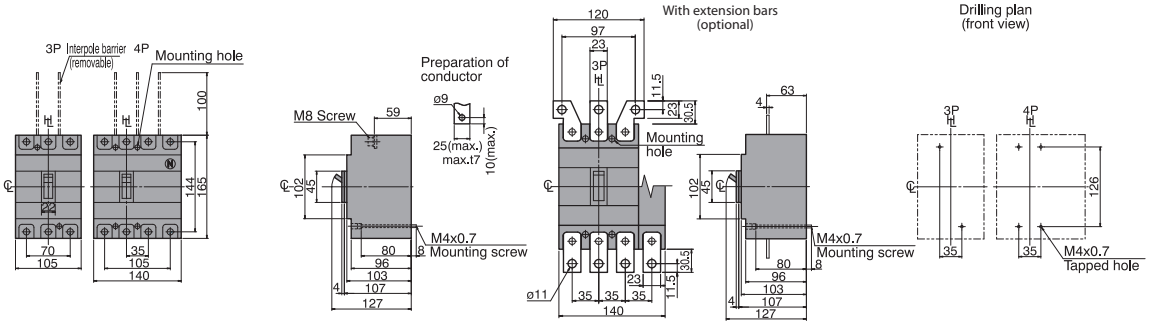
Mounting on the backplate (optional connection bars must be oriented for front access)



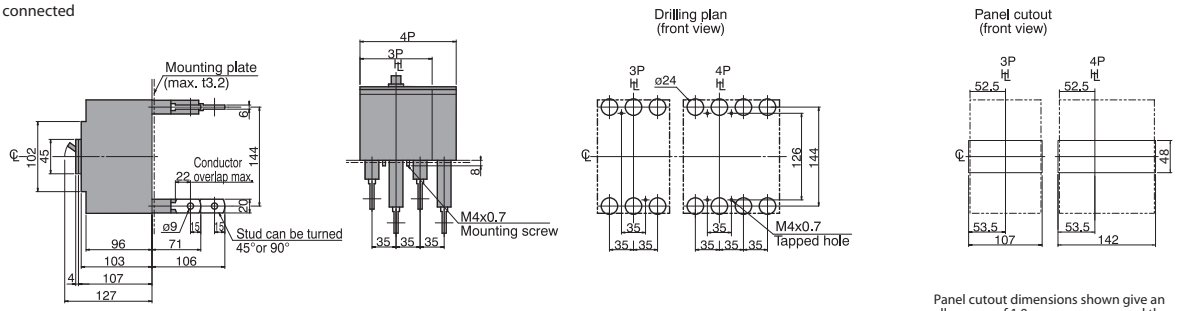
Dimensions

MCCB's dimmensions EB2 250/E

Front connected

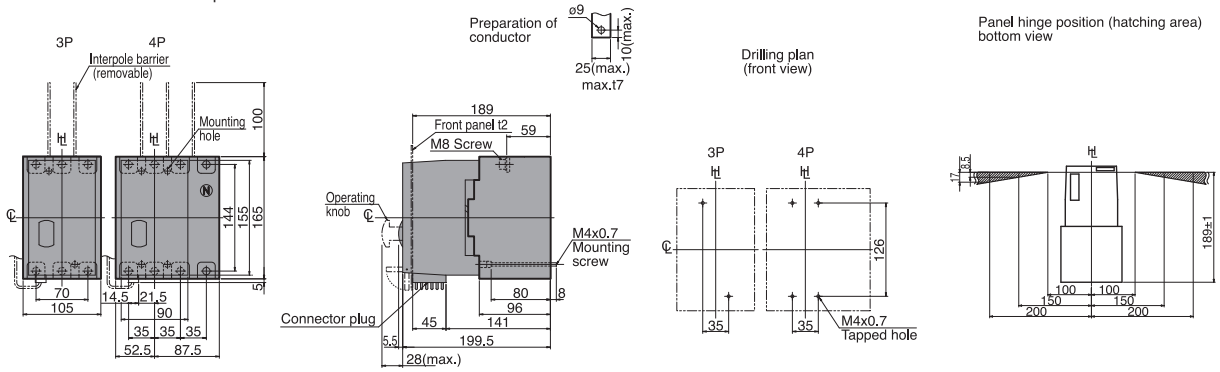


Rear connected

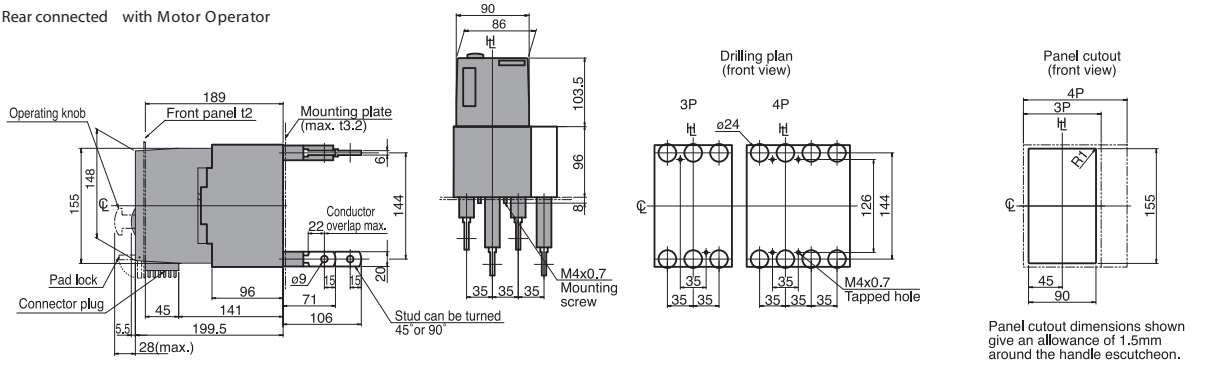


Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.

Front connected with Motor Operator



Rear connected with Motor Operator

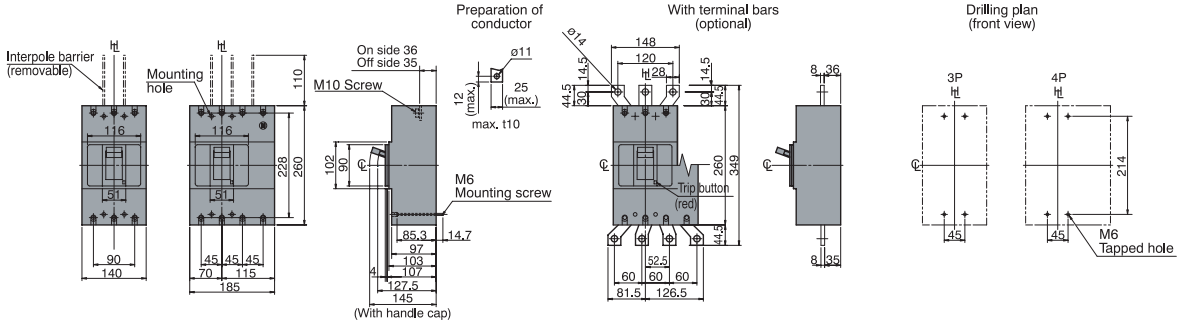


Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

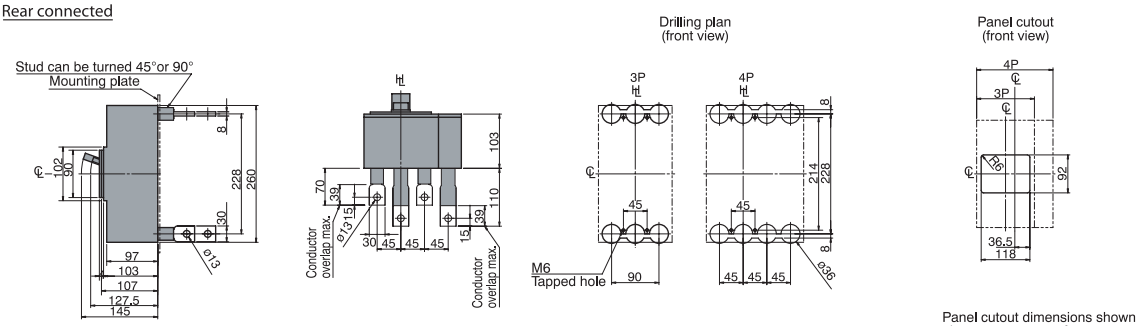
Dimensions

MCCB's dimmensions EB2 400 /L, S, E, HLCD

Front connected

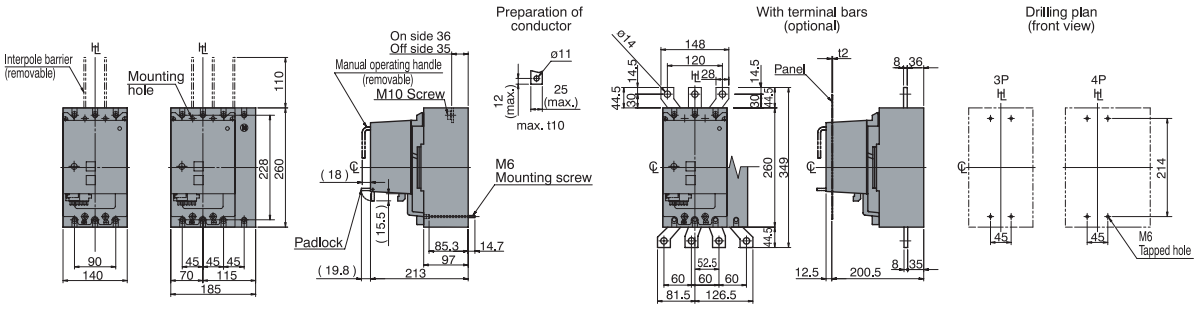


Rear connected

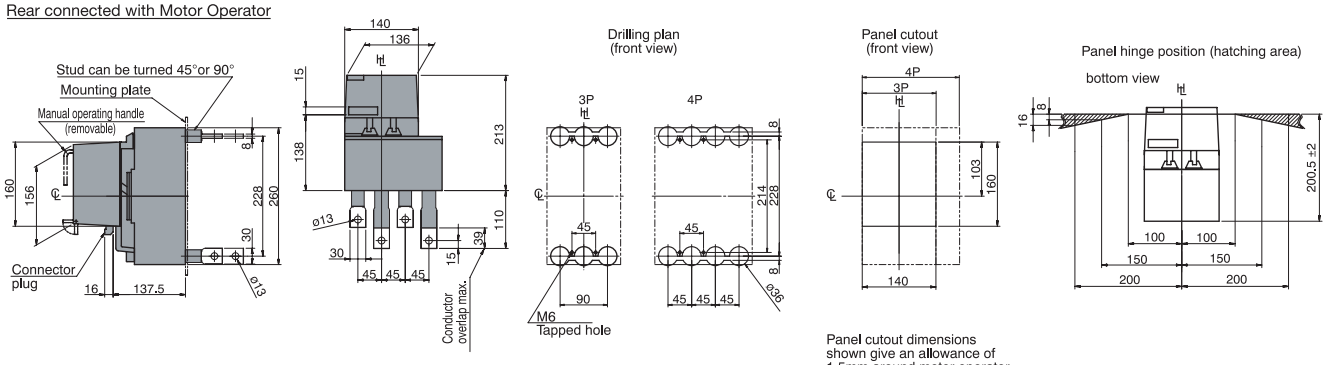


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Front connected with Motor Operator



Rear connected with Motor Operator

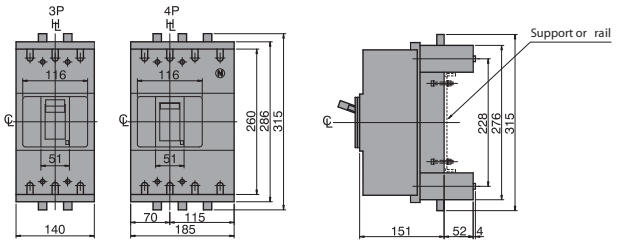


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator

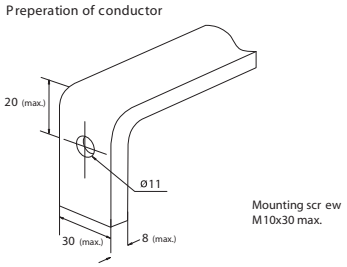
MCCB's dimmensions

EB2 400 /L, S, E, HLCD Plug-in version

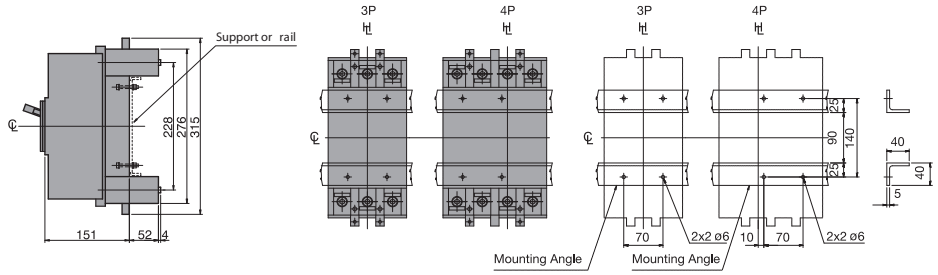
Outline Dimensions



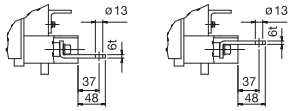
Termination of Busbar



Mounting on a support or rails (shown with optional connection bars oriented for rear access)

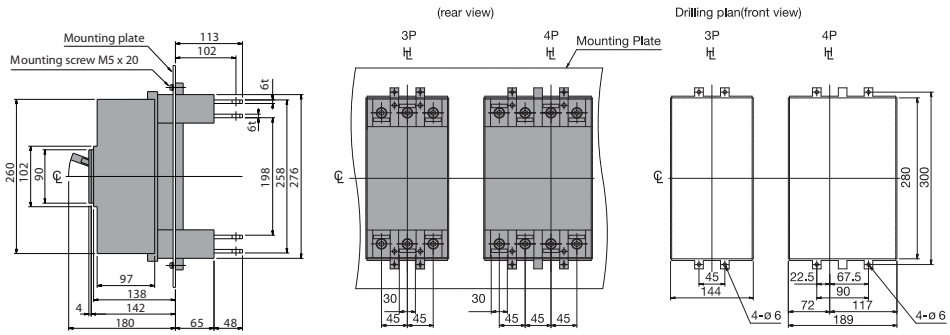


Detail of connecting part
Oriented for rear access

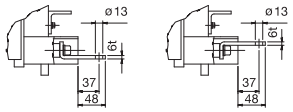


Terminal bars should be connected alternately on adjacent poles.

Mounting through the backplate (shown with optional connection bars oriented for rear access)

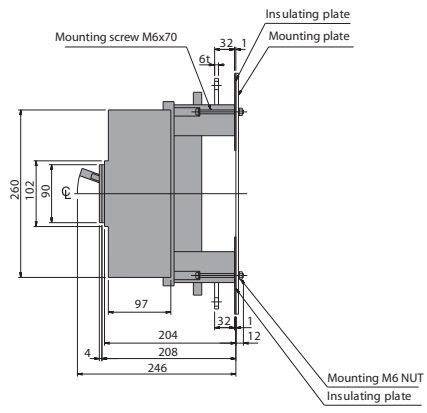


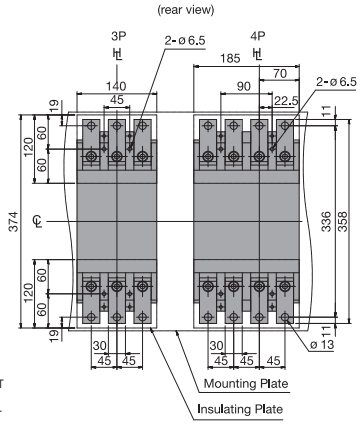
Detail of connecting part
Oriented for rear access

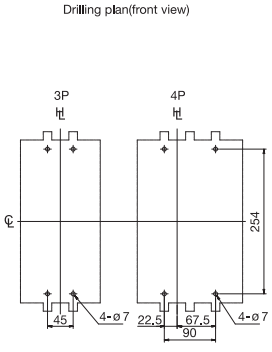


Terminal bars should be connected alternately on adjacent poles.

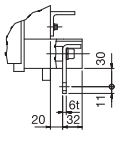
Mounting on the backplate (optional connection bars must be oriented for front access)







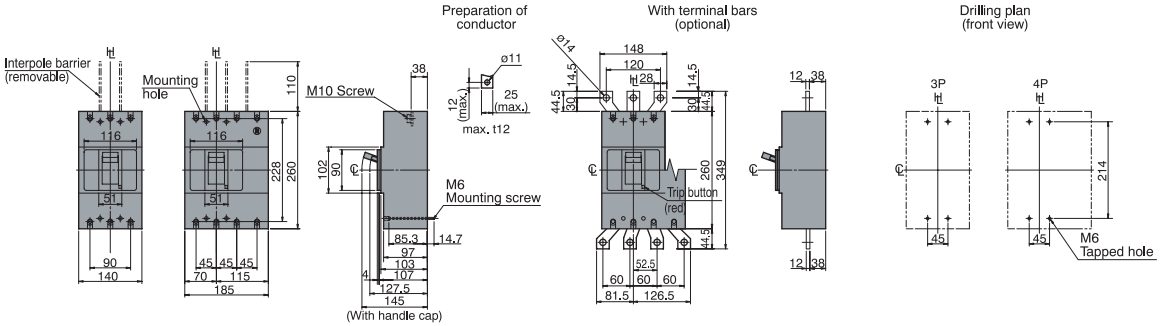
Detail of connecting part
Oriented for front access



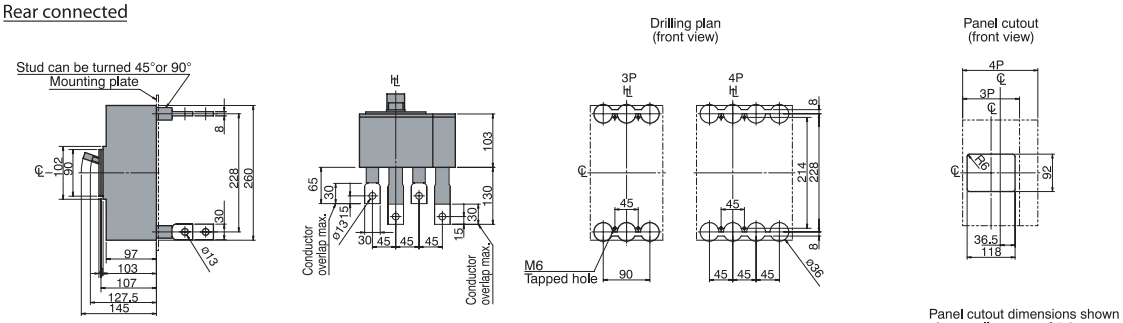
Dimensions

MCCB's dimmensions EB2 630 /LE, E, HE

Front connected

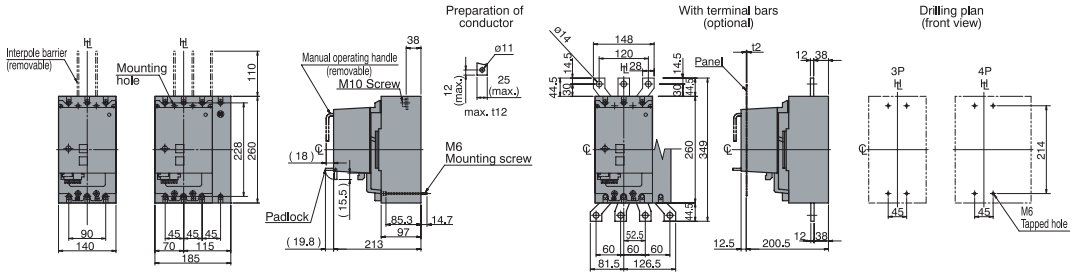


Rear connected

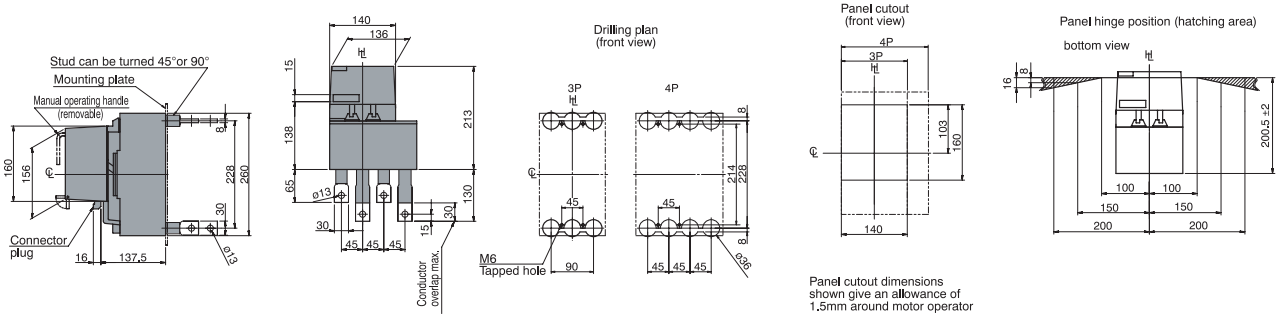


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

Front connected with Motor Operator



Rear connected with Motor Operator

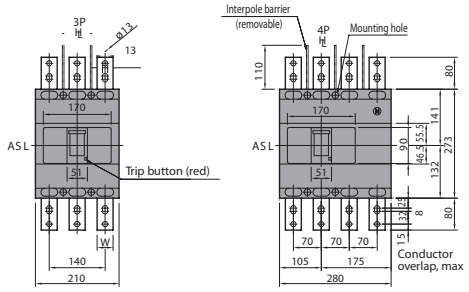


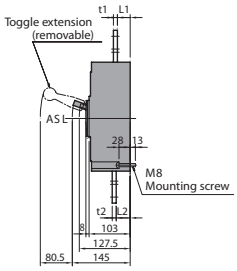
Panel cutout dimensions shown give an allowance of 1.5mm around motor operator

Dimensions

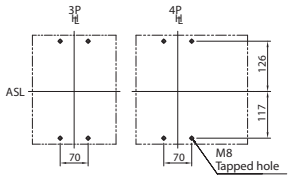
MCCB's dimmensions EB2 800 /L, S, H, LE, E

Front connected with extension bars (optional)



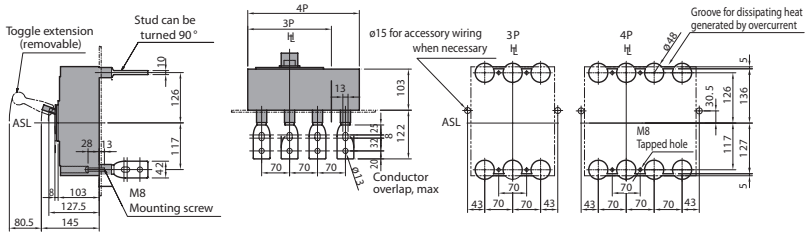


Drilling plan (front view)



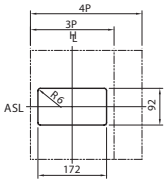
Breaker Type	Rated Current	t1	t2	L1	L2	W
EB2 800 Thermal magnetic	630A	8	8	32	34	40
	800A	10	10	32	35	40
EB2 800 Electronic	630A	8	8	32	36	40
	800A	10	10	32	36	40

Rear connected



Drilling plan (front view)

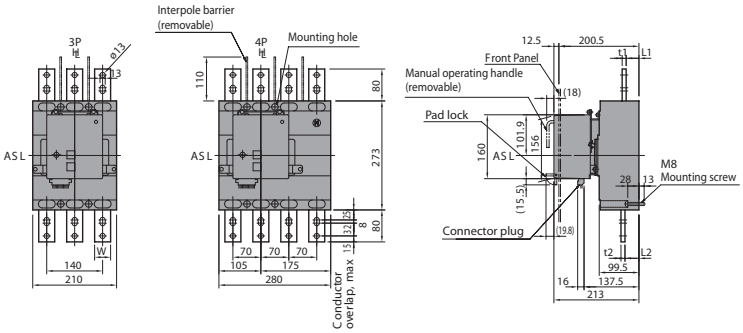
Panel cutout (front view)



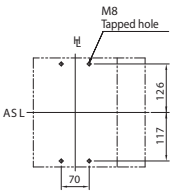
Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

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

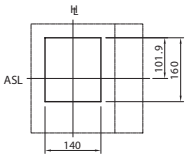
Front connected with Motor Operator



Drilling plan (front view)

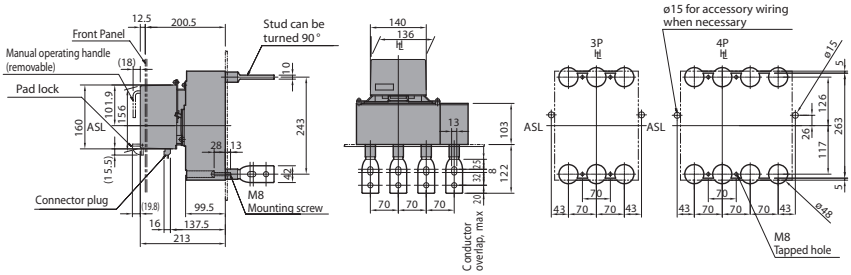


Panel cutout (front view)



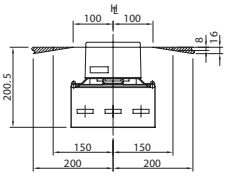
Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

Rear connected with Motor Operator



Drilling plan (front view)

Panel hinge position (hatching area) (bottom view)

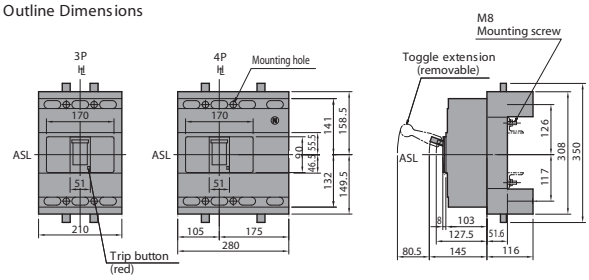


Note: Studs are factory installed in horizontal direction both on the line and load sides.

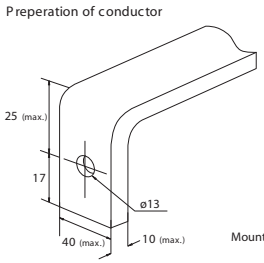
Dimensions

MCCB's dimmensions EB2 800 /L, S, H, LE, E Plug-in version

Outline Dimensions

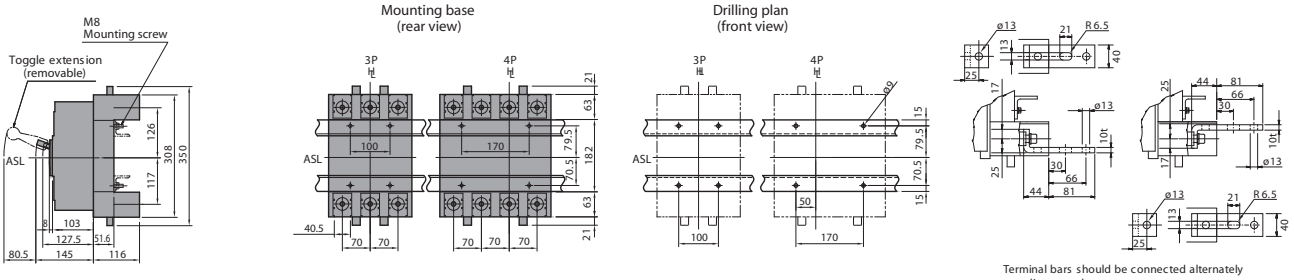


Termination of Busbar



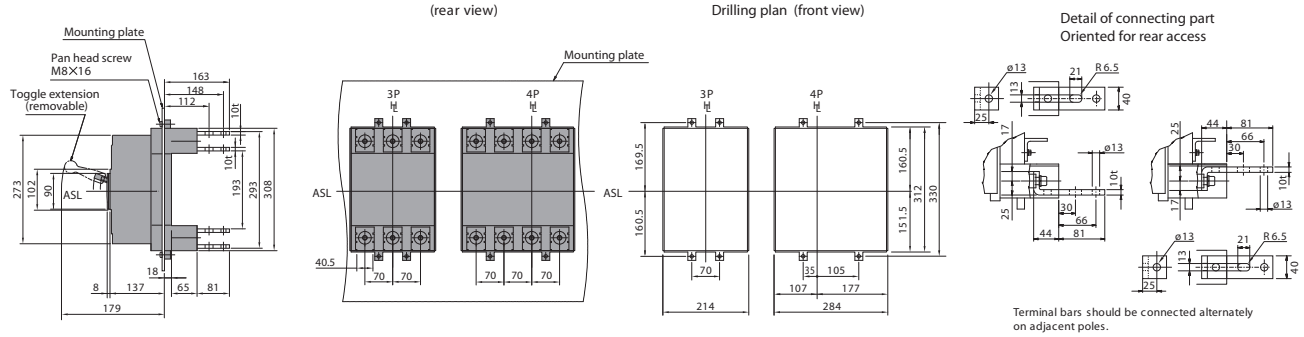
Mounting scr ew M12X25 max. Hex. sec. head bolt.

Mounting on a support or rails



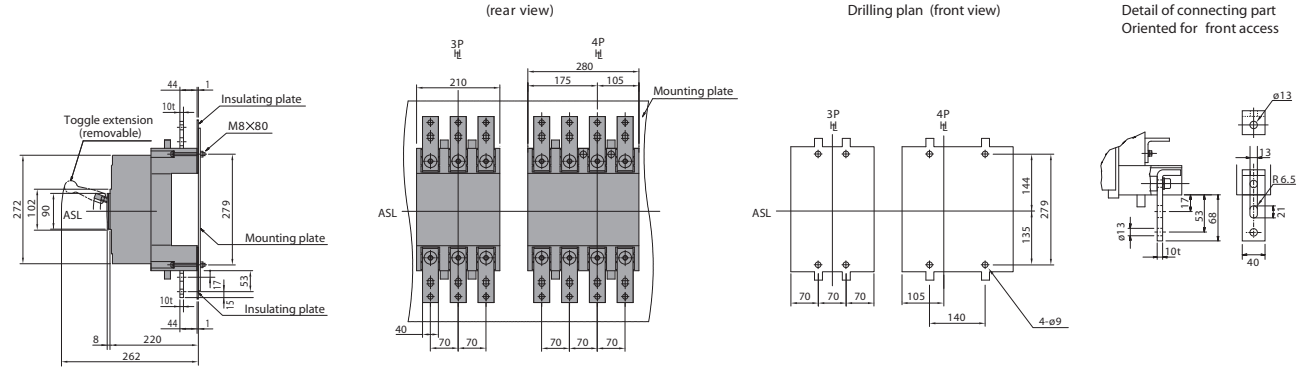
Terminal bars should be connected alternately on adjacent poles.

Mounting through the backplate (shown with optional connection bars oriented for rear access)



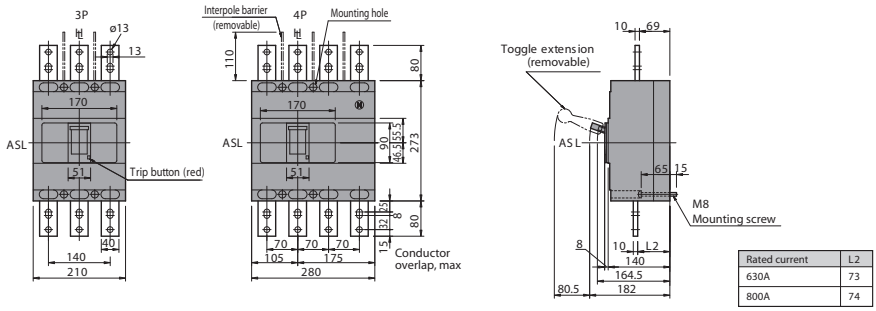
Terminal bars should be connected alternately on adjacent poles.

Mounting on the backplate (optional connection bars must be oriented for front access)



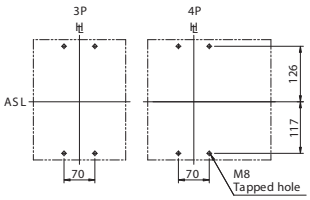
MCCB's dimmensions EB2 800 /HE

Front connected

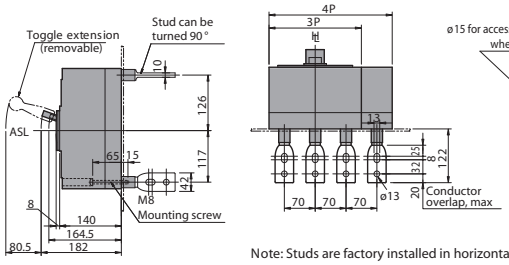


Rated current	L2
630A	73
800A	74

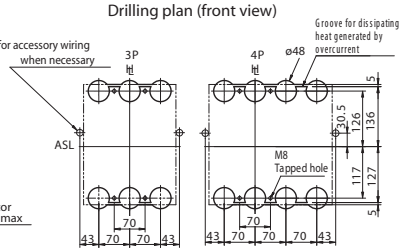
Drilling plan (front view)



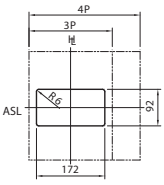
Rear connected



Drilling plan (front view)



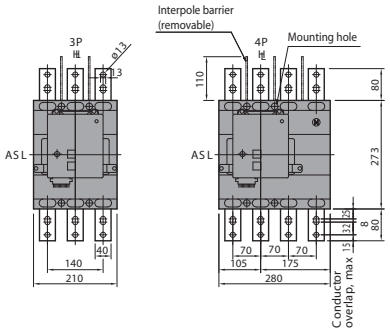
Panel cutout (front view)

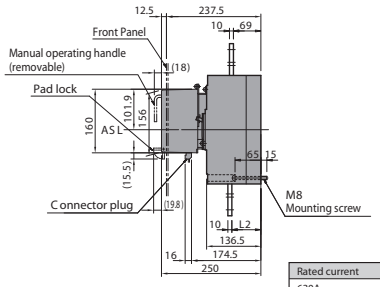


Note: Studs are factory installed in horizontal direction both on the line and load sides.

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

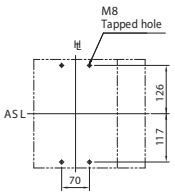
Front connected with Motor Operator



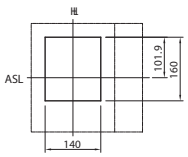


Rated current	L2
630A	73
800A	74

Drilling plan (front view)

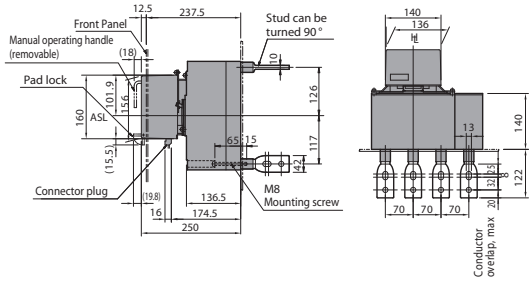


Panel cutout (front view)

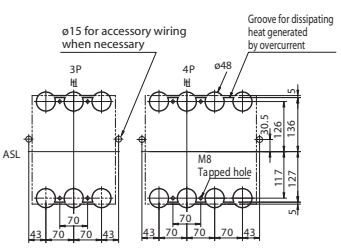


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

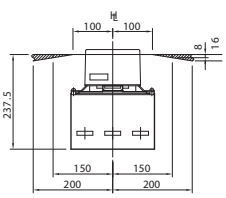
Rear connected with Motor Operator



Drilling plan (front view)



Panel hinge position (hatching area) (bottom view)



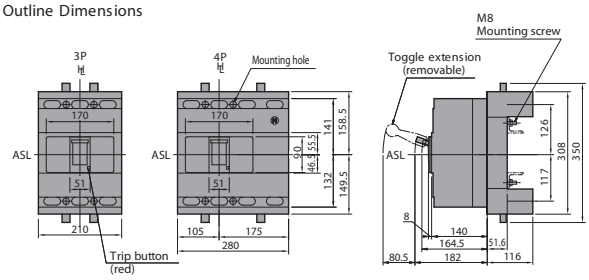
Note: Studs are factory installed in horizontal direction both on the line and load sides.

Dimensions

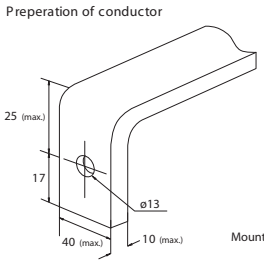
MCCB's dimmensions

EB2 800 /HE
Plug-in version

Outline Dimensions

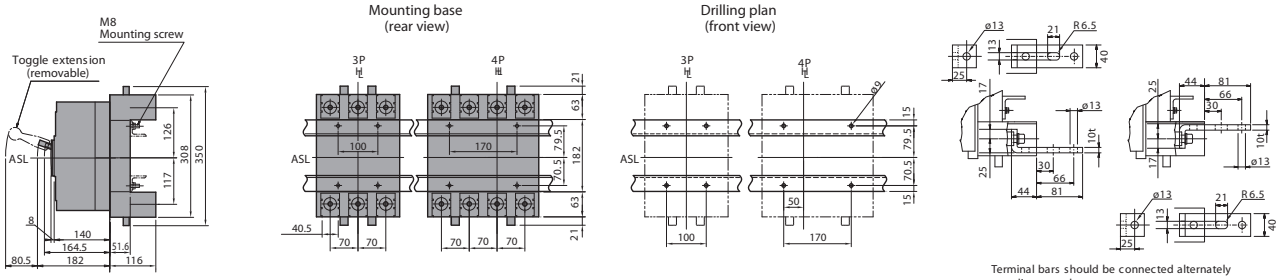


Termination of Busbar



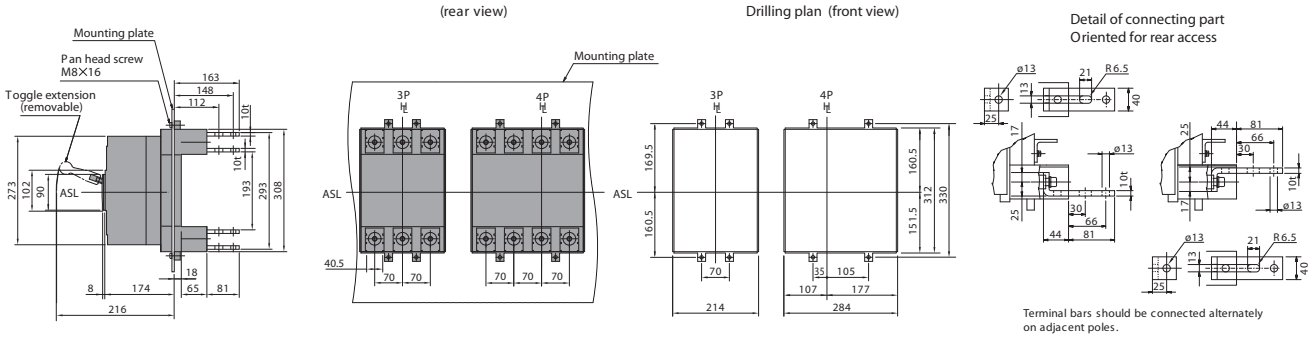
Mounting scr ew M12X25 max. Hex. sec. head bolt.

Mounting on a support or rails



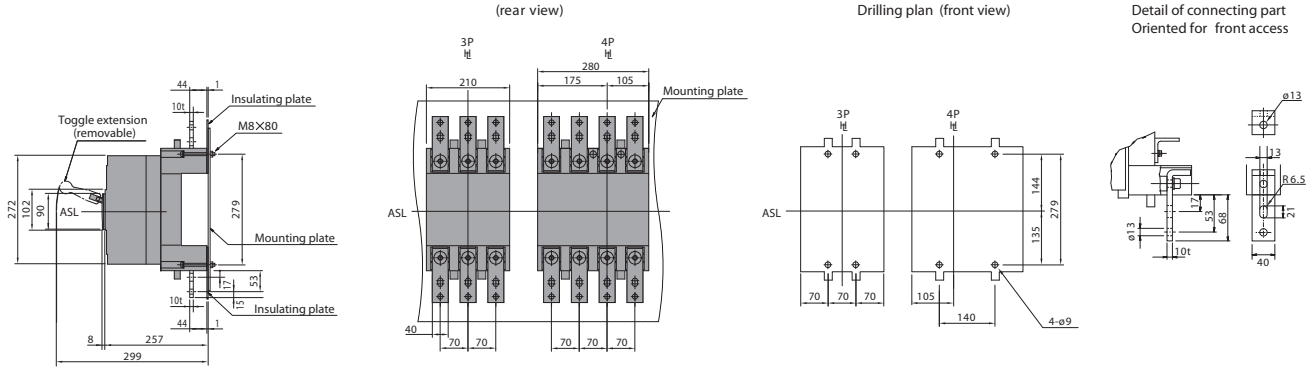
Terminal bars should be connected alternately on adjacent poles.

Mounting through the backplate (shown with optional connection bars oriented for rear access)



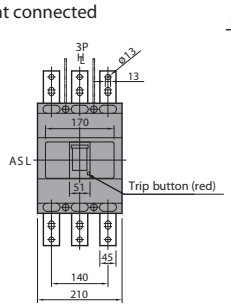
Terminal bars should be connected alternately on adjacent poles.

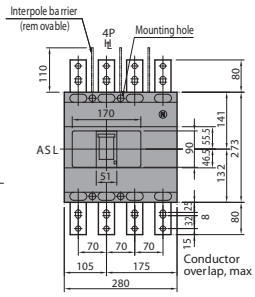
Mounting on the backplate (optional connection bars must be oriented for front access)

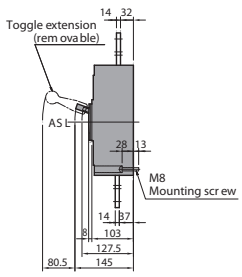


MCCB's dimmensions EB2 1000 /LE, E

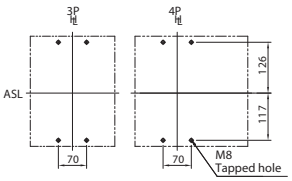
Front connected



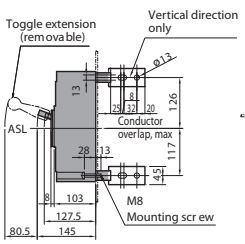


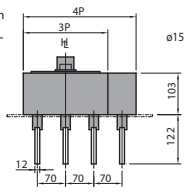


Drilling plan (front view)

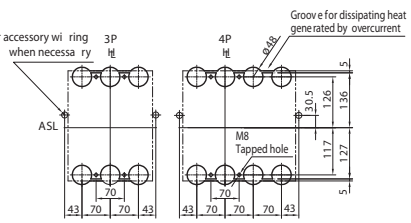


Rear connected

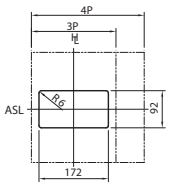




Drilling plan (front view)

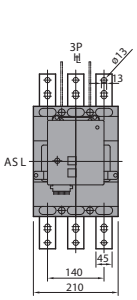


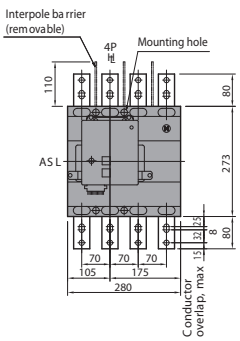
Panel cutout (front view)

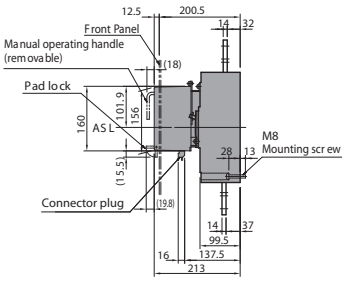


Panel cutout dimensions shown give an allowance of 1.0mm around the handle escutcheon.

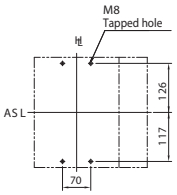
Front connected with Motor Operator





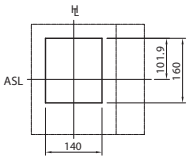


Drilling plan (front view)



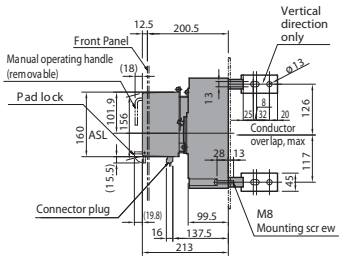
Insulator

Panel cutout (front view)

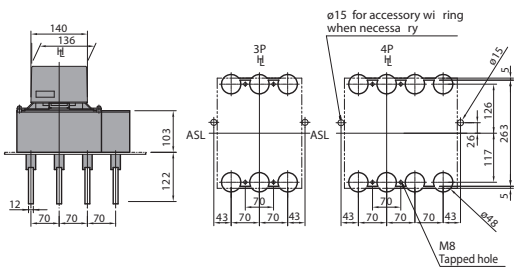


Panel cutout dimensions shown give an allowance of 1.5mm around motor operator.

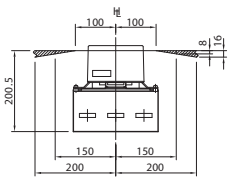
Rear connected with Motor Operator



Drilling plan (front view)



Panel hinge position (hatching area) (bottom view)

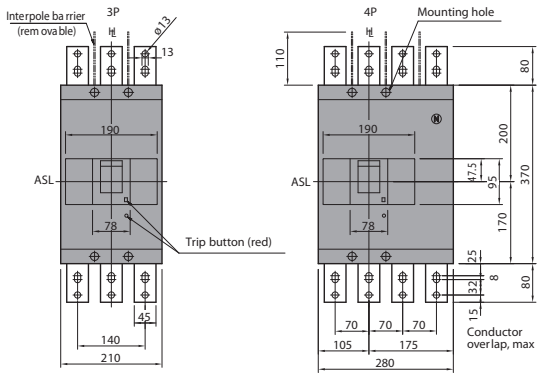


Note: Studs are factory installed in horizontal direction both on the line and load sides.

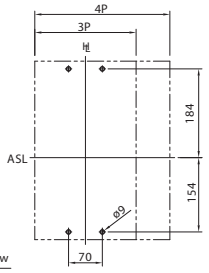
Dimensions

MCCB's dimmensions EB2 1250 /LE, E

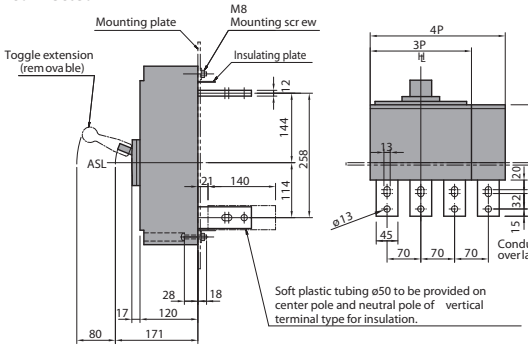
Front connected



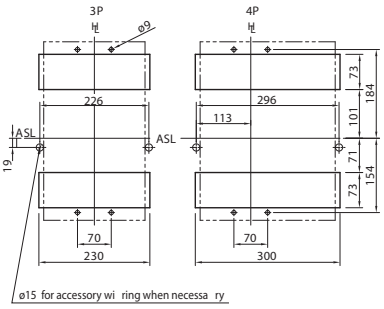
Drilling plan (front view)



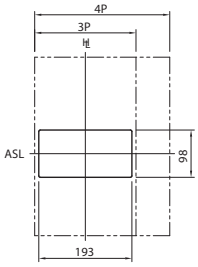
Rear connected



Drilling plan (front view)



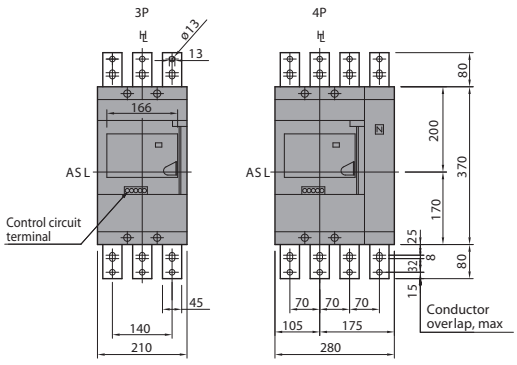
Panel cutout (front view)



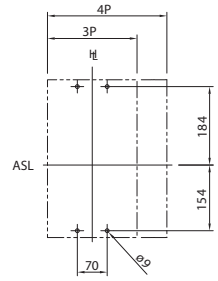
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

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

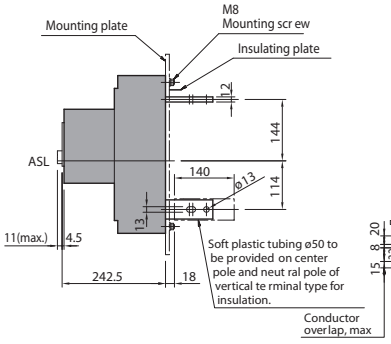
Front connected with Motor Operator



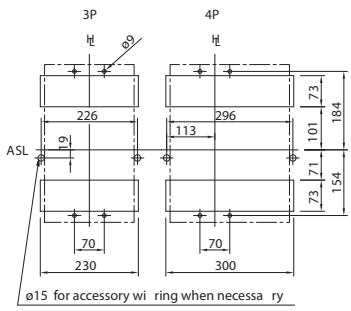
Drilling plan (front view)



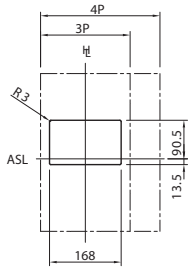
Rear connected with Motor Operator



Drilling plan (front view)



Panel cutout (front view)



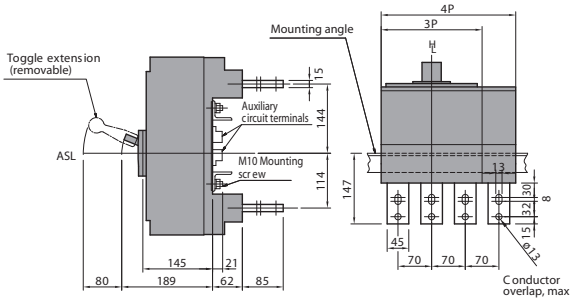
Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

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

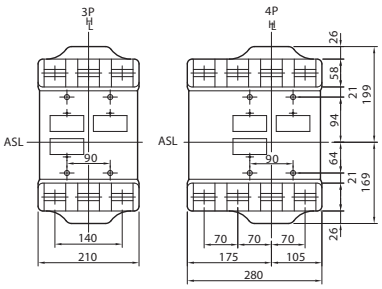
MCCB's dimmensions

EB2 1250 /LE, E
Plug-in version

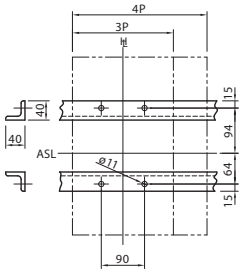
Plug-in



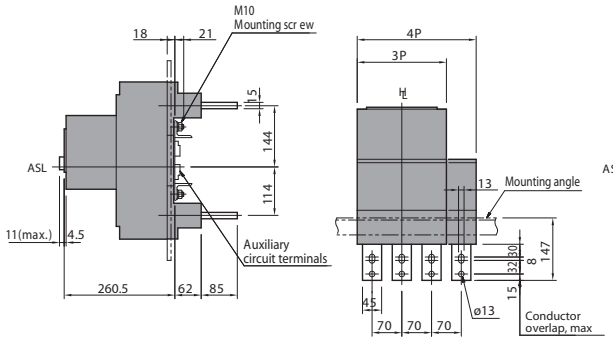
Mounting base (rear view)



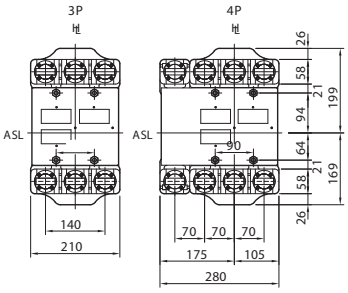
Drilling plan (front view)



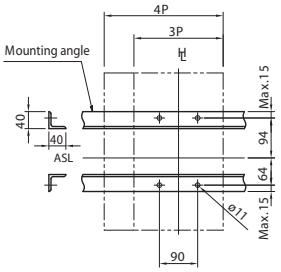
Plug- in with Motor Operator



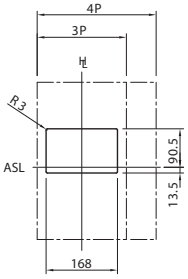
Mounting base (rear view)



Drilling plan (front view)



Panel cutout (front view)



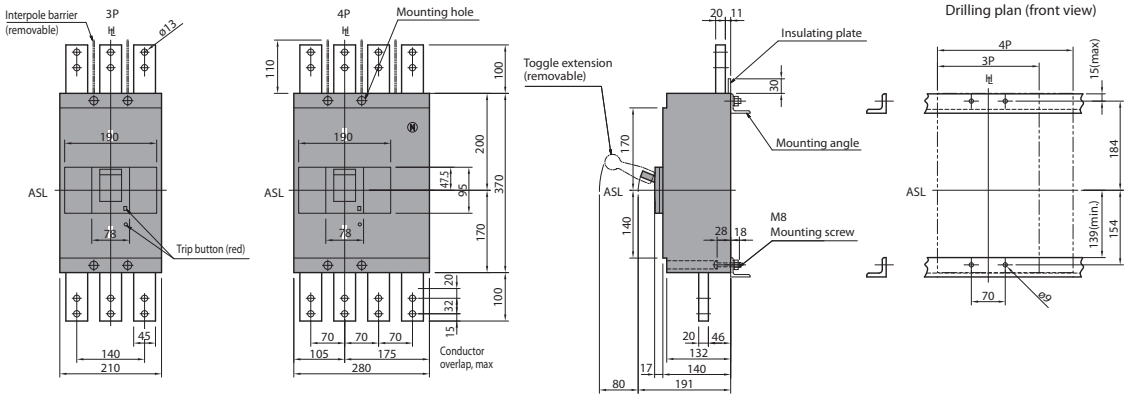
Panel cutout dimensions shown give an allowance of 1.0mm around motor operator.

Dimensions

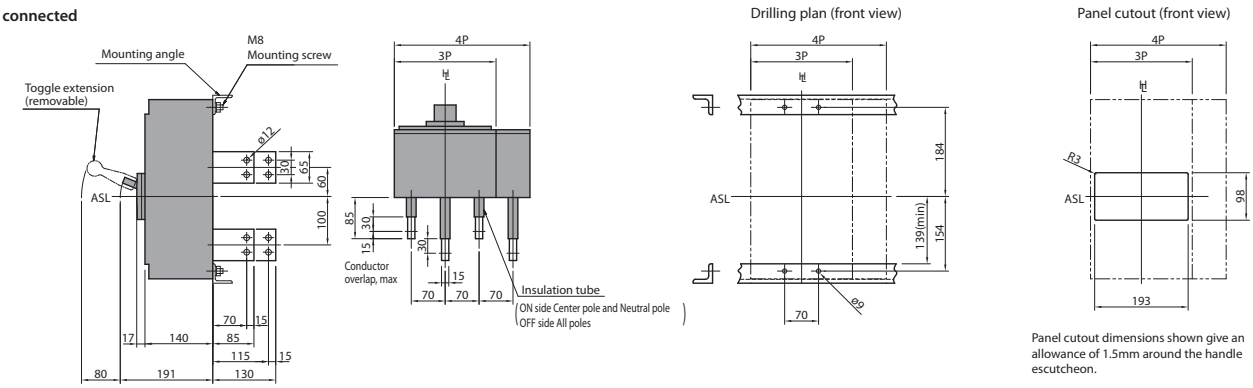
MCCB's dimmensions EB2 1600 /LE, E

ASL: Arrangement Standard Line
HL : Handle Frame Centre Line

Front connected

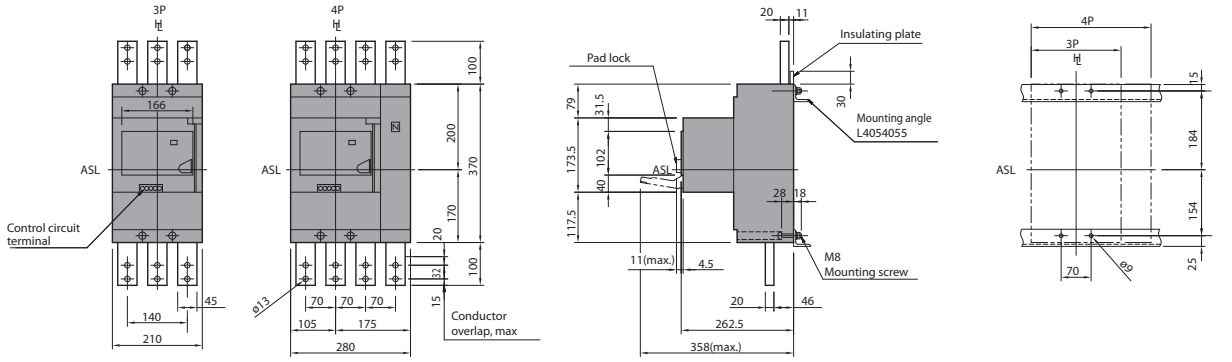


Rear connected

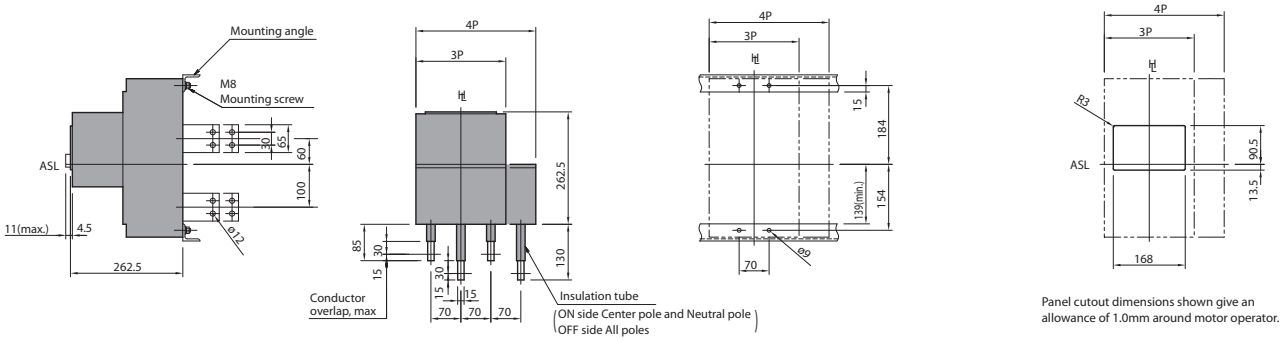


Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

Front connected with Motor Operator



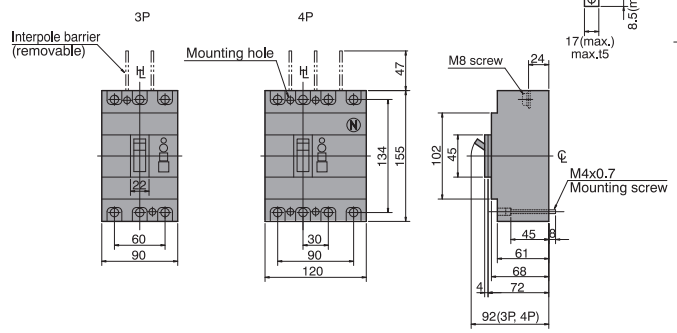
Rear connected with Motor Operator



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

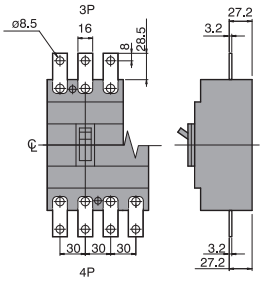
MCCB's dimmensions EB2R 125

Front connected

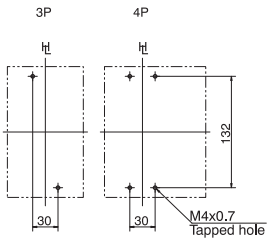


Preparation of conductor

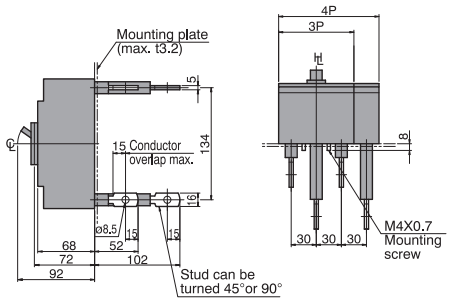
With extension bars (optional)



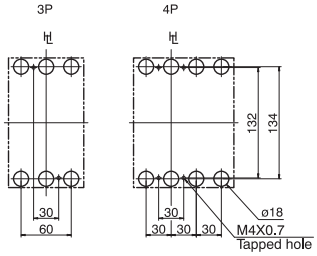
Drilling plan



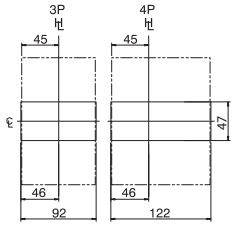
Rear connected



Drilling plan



Panel cutout (Front view)

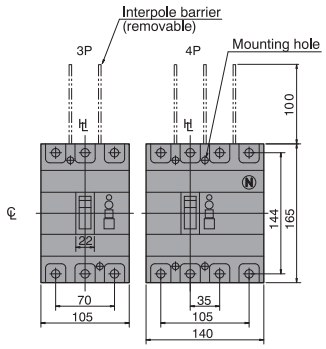


Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.

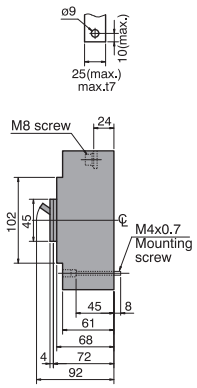
Dimensions

MCCB's dimmensions EB2R 250

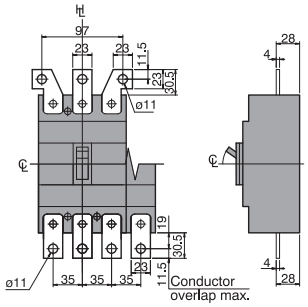
Front connected



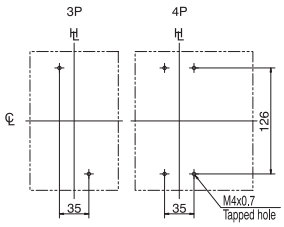
Preparation of conductor



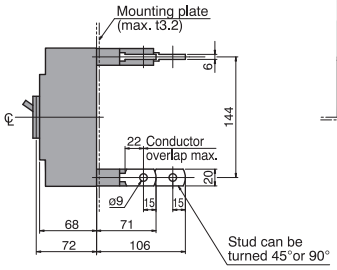
With extension bars
(optional)

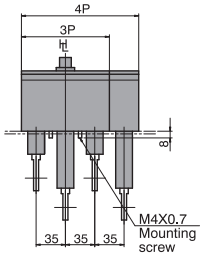


Drilling plan

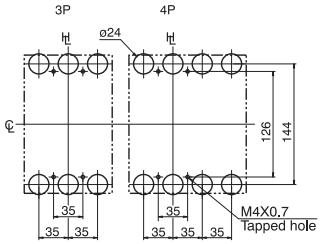


Rea r connected

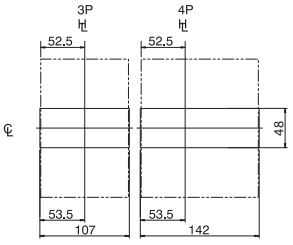




Drilling plan

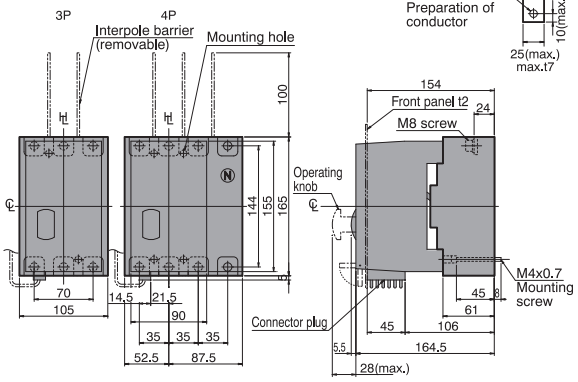


Panel cutout
(Front view)



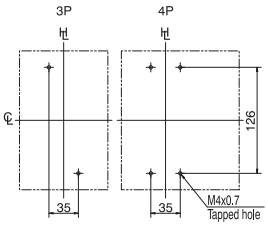
Panel cutout dimensions shown give an allowance of 1.0mm or more around the handle escutcheon.

Front connected with Motor Operator

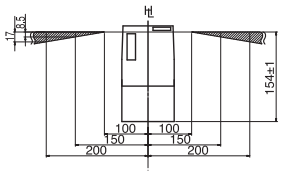


Preparation of
conductor

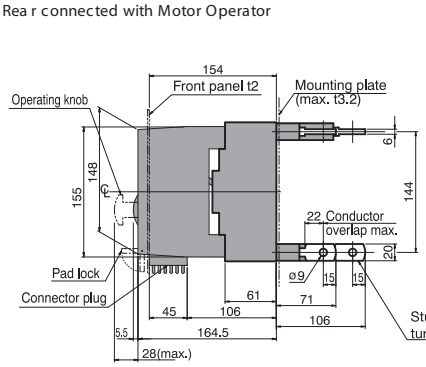
Drilling plan

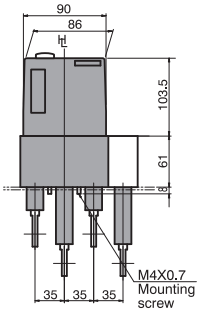


Panel hinge position (hatching area)
bottom view

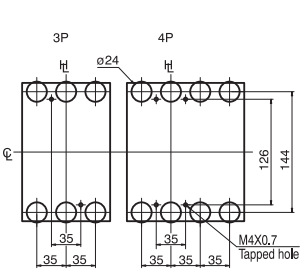


Rea r connected with Motor Operator

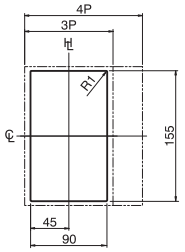




Drilling plan

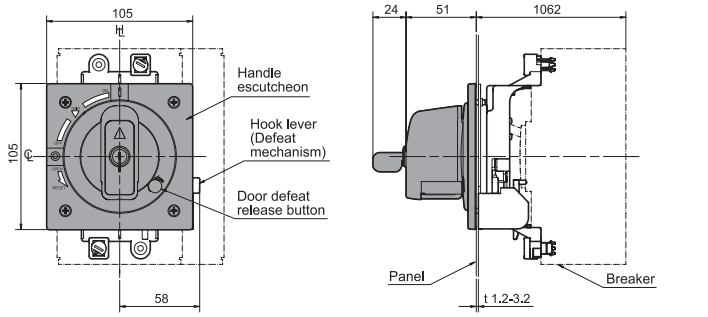


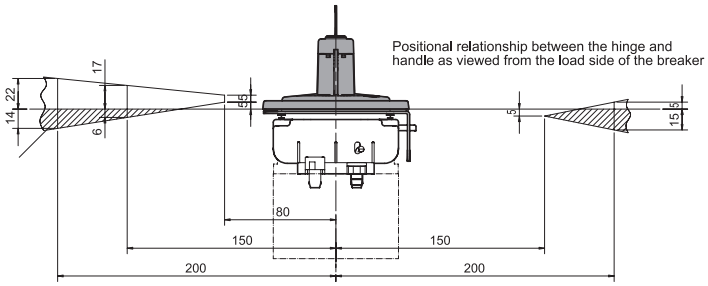
Panel cutout
(Front view)



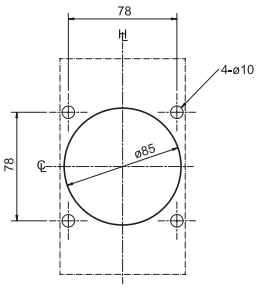
Panel cutout dimensions shown give an allowance of 1.5mm around the handle escutcheon.

Breaker Mounted Handle

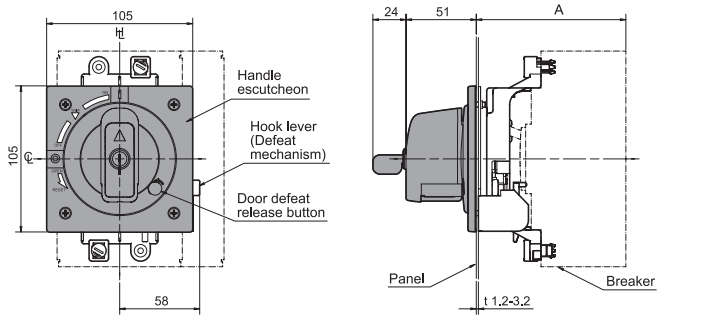


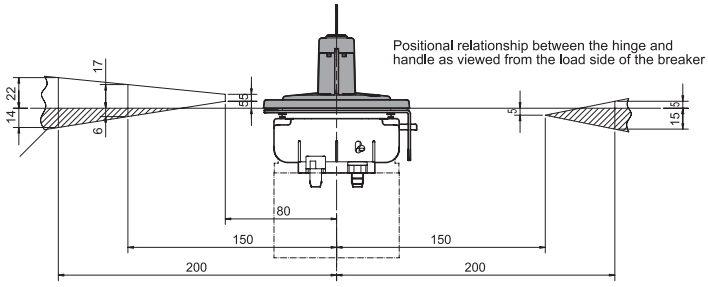


Panel cutout

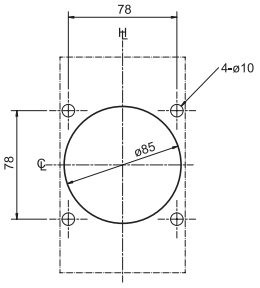


Applicable MCCB
EB2 125





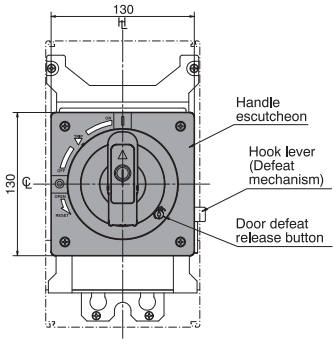
Panel cutout

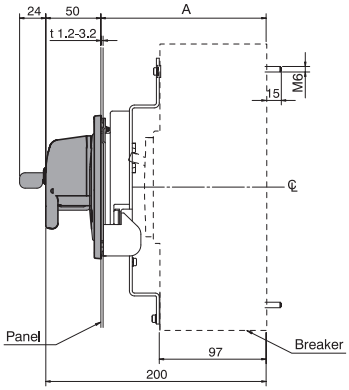


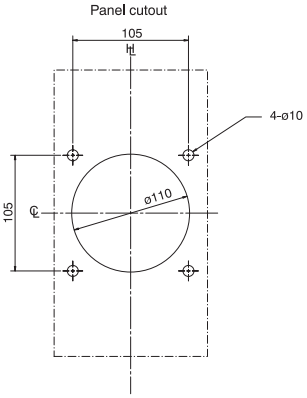
Applicable MCCB	A
EB2 160/S, EB2 250/L, S, H	106±2
EB2 250/E	141±2

Dimensions

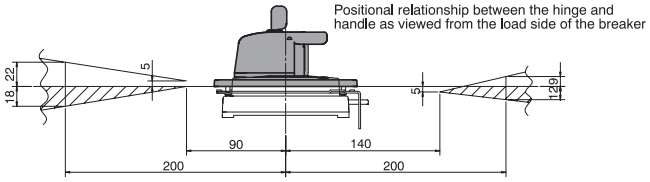
Breaker Mounted Handle



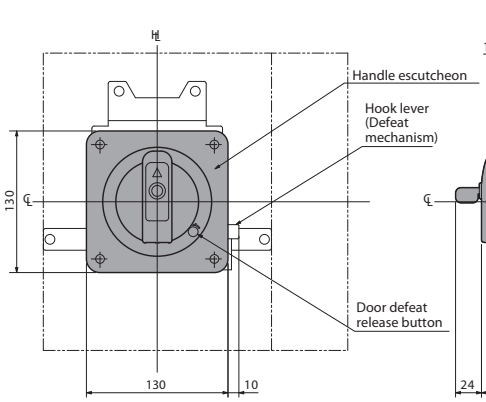


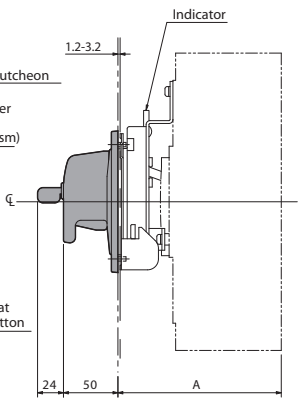


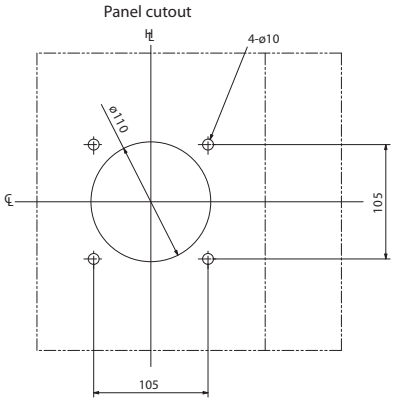
Applicable MCCB	A
EB2 400, EB2 630	150±2

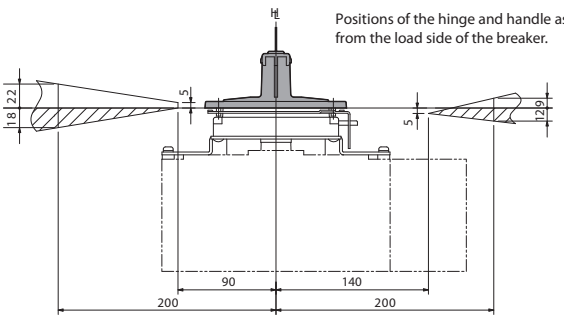


Breaker Mounted Handle



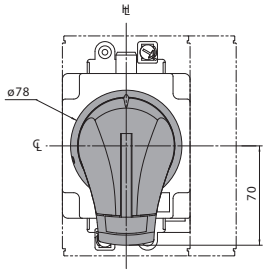


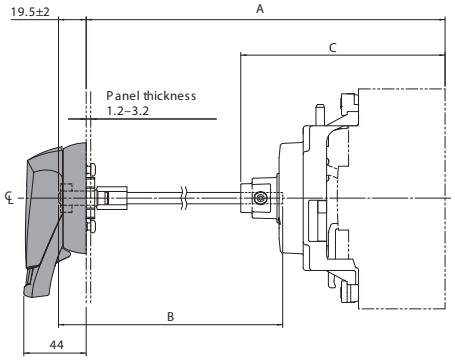




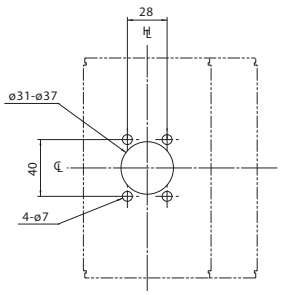
Applicable MCCB	A
EB2 800/L, S, H, LE, E, EB2 1000	150±2
EB2 800/HE	187±2

Door Mounted Handle

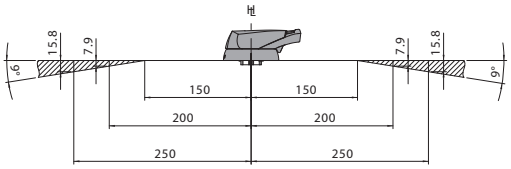




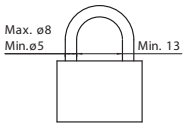
Panel cutout



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)



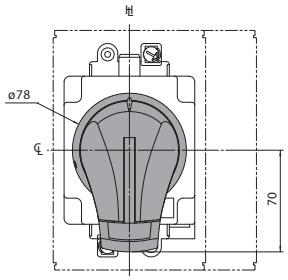
Applicable MCCB	A*1	B	C
EB2 125	175 min 453 max	80 358	144 144

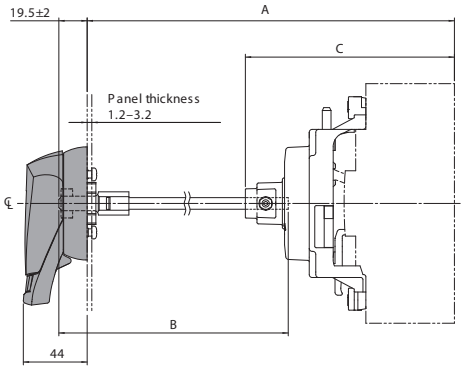
Min. means the minimum length for A. by cutting the shaft.
*1: Max. means the maximum length fot A without cutting the shaft.
+ The shaft can be cut to the required length.

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

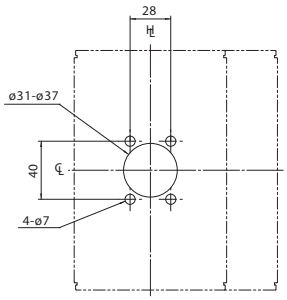
Dimensions

Door Mounted Handle

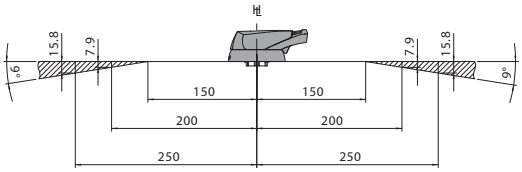




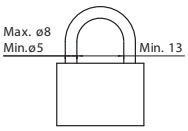
Panel cutout



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)

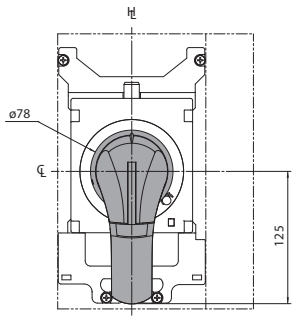


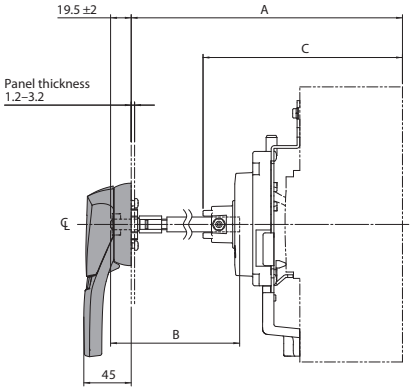
Applicable MCCB	A*1	B	C
EB2 160/S, EB2 250/L, S, H	175 min	80	144
	453 max.	358	144
EB2 250/E	210 min	80	144
	488 max	358	179

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.

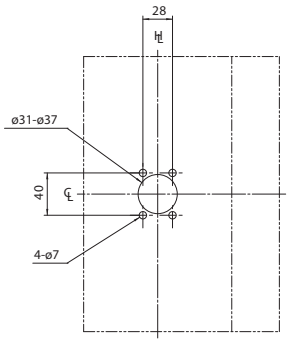
A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

Door Mounted Handle

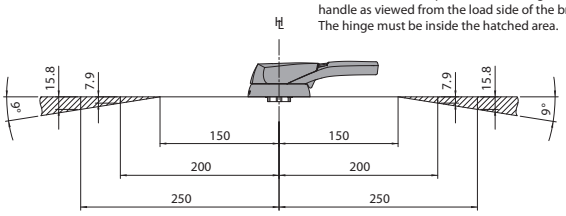




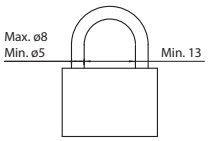
Panel cutout



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)



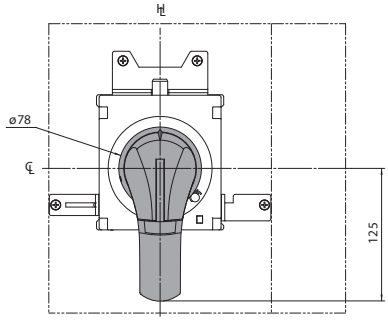
Applicable MCCB	A*1	B	C
EB2 400, EB2 630	220 min.	86	188,5
	456 max.	322	188,5

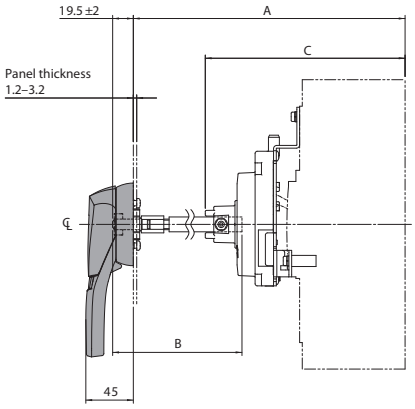
*1: Min. means the minimum length for A by cutting the shaft.
Max. means the maximum length fot A without cutting the shaft.
+ The shaft can be cut to the required length.

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

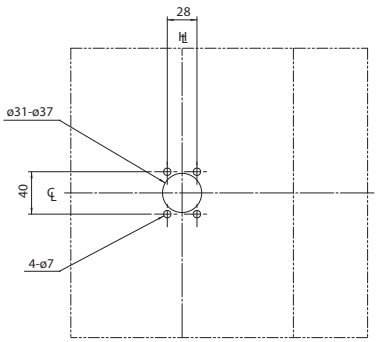
Dimensions

Door Mounted Handle

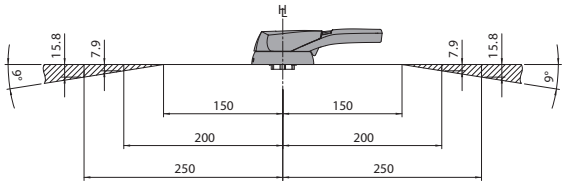




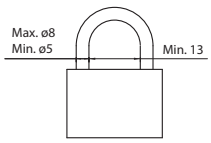
Panel cutout



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)

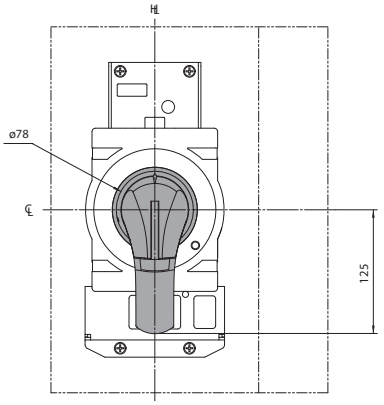


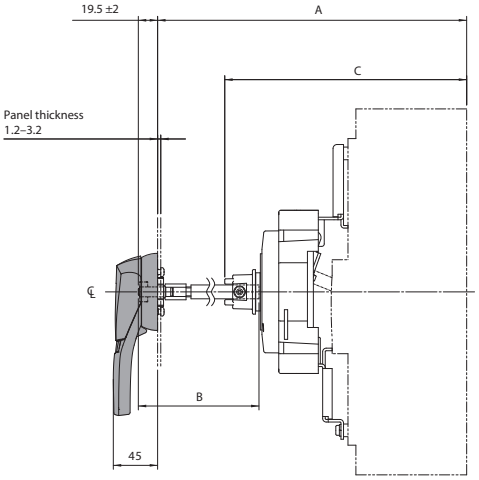
Applicable MCCB	A*1	B	C
EB2 800/L, S, H, LE, E EB2 1000	220 min.	86	188,5
	456 max.	322	188,5
EB2 800/HE	257 min.	86	225,5
	493 max.	322	225,5

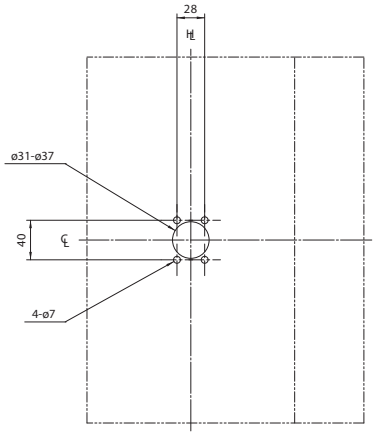
*1: Min. means the minimum length for A by cutting the shaft.
Max. means the maximum length fot A without cutting the shaft.
+ The shaft can be cut to the required length.

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

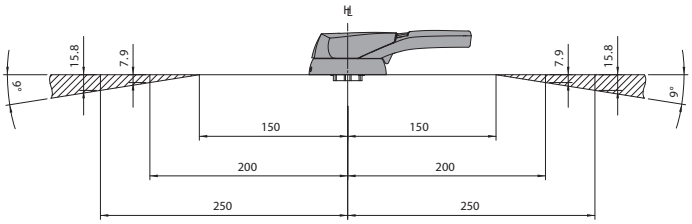
Door Mounted Handle



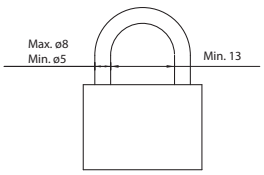




Positional relationship between the hinge and handle as viewed from the load side of the breaker. The hinge must be inside the hatched area.



Padlock dimensions (mm)



Applicable MCCB	A*1	B	C
EB2 1250	276.5min.	86	245
	512.5max.	322	245
EB2 1600	296.5min.	86	265
	532.5max.	322	265

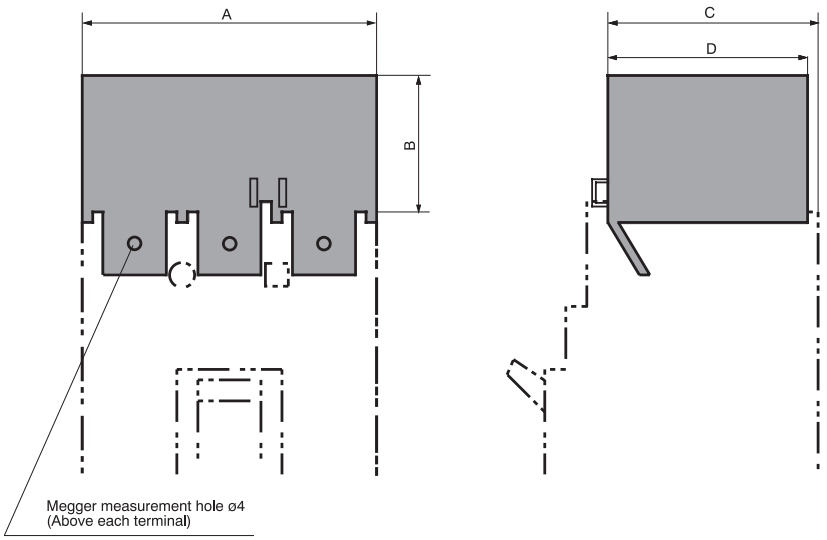
*1: Min. means the minimum length for A by cutting the shaft.
Max. means the maximum length fot A without cutting the shaft.
+ The shaft can be cut to the required length.

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

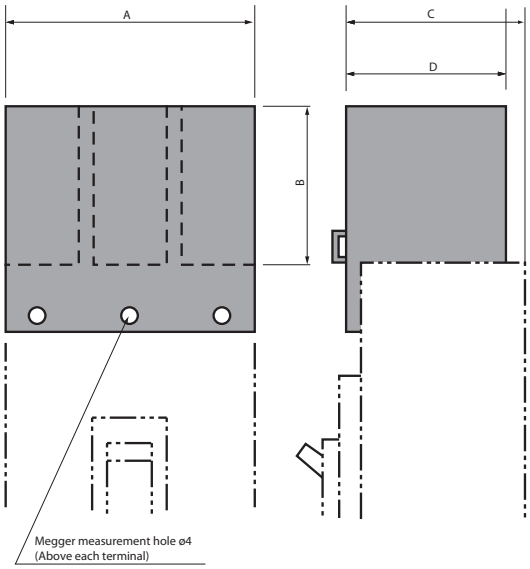
Dimensions

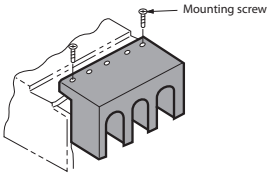
Terminal Covers

Terminal covers for Front connected MCCB's



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

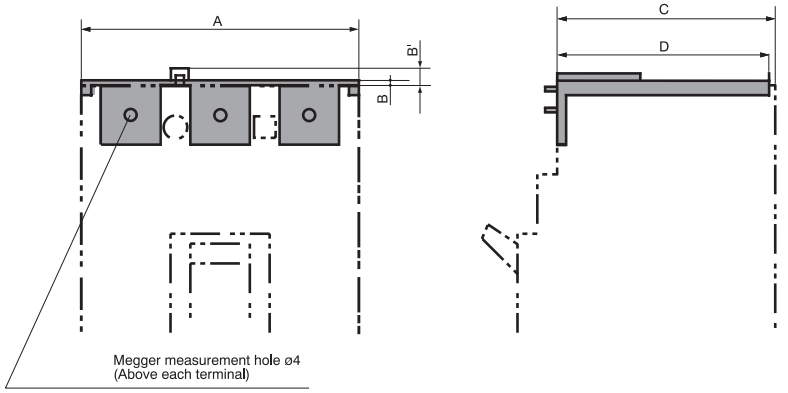




Screw-mounted version
The terminal covers for 630 to 1000AF are mounted to the breakers using tapping screws. The terminal cover for 1250AF is mounted using insert nuts on the breaker cover using screws. The insert nuts do not come standard with the breaker. Please be sure to state “with terminal cover (CF)” when ordering the breaker.

Terminal Covers

Terminal covers for Solderless terminal type MCCB's



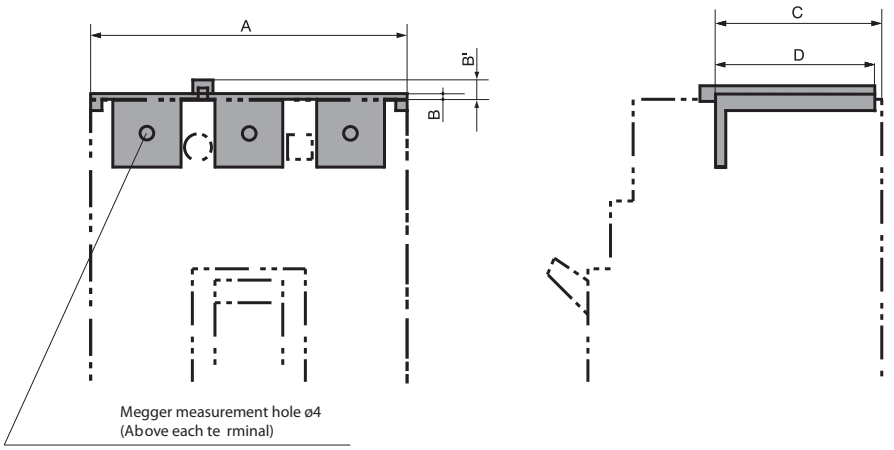
MCCB type	Connection	A			B			B'	C			D			Mounting:	
		1P	3P	4P	1P	3P	4P	3P, 4P	1P	3P	4P	1P	3P	4P	Plug-in	Screw
EB2 125	Front conn.	30	90	120	40	40	40	o	48	48	48	46	46	46	õ	–
	Cable clamp	30	90	120	2,5	2,5	2,5	6	62,5	61	61	60	59,5	59,5	õ	–
EB2 160/S, H EB2 250/L, S, H	Front conn. (1)	35	105	140	55	55	55	o	54	54	54	52	52	52	õ	–
	Cable clamp	35	105	140	2,5	2,5	2,5	6	63	61	61	49,5	59,5	59,5	õ	–
EB2 250/E	Front conn. (1)	o	105	140	o	55	55	o	o	89	89	o	87	87	õ	–
	Cable clamp	o	105	140	o	2,5	2,5	4,5	o	96	96	o	59,5	59,5	õ	–
EB2 400/L, S, E, LCD, HLCD EB2 630/LE, E, HE	Front conn. Wide type	o	180	240	o	110	114	o	o	97	98	o	96	98	õ	–
	Front conn. Straight type	o	140	185	o	85	85	o	o	97	97	o	94,5	94,5	õ	–
	Cable clamp	o	140	185	o	3	3	4,5	o	97	97	o	93	93	õ	–
EB2 800/L, S, H, LE, E EB2 1000/LE, E	Front conn. (3)	–	215	285	–	130	130	–	–	99.5 (102)	99.5 (102)	–	99 (101.5)	99 (101.5)	–	õ
EB2 800/HE	Front conn. (2) (3)	–	215	285	–	130	130	–	–	99.5 (139)	99.5 (139)	–	99 (101.5)	99 (101.5)	–	õ
EB2 1250/LE, E	Front conn. (3)	–	215	285	–	130	130	–	–	115	115	–	99 (102.5)	99 (102.5)	–	õ

Notes:
(1) Not suitable when extension bars (ZB) are fitted.
(2) There will be an approx. 40 mm gap between the bottom of the terminal cover and the breaker mounting surface.
(3) Values in brackets indicate the distance to the head of terminal cover mounting screws.

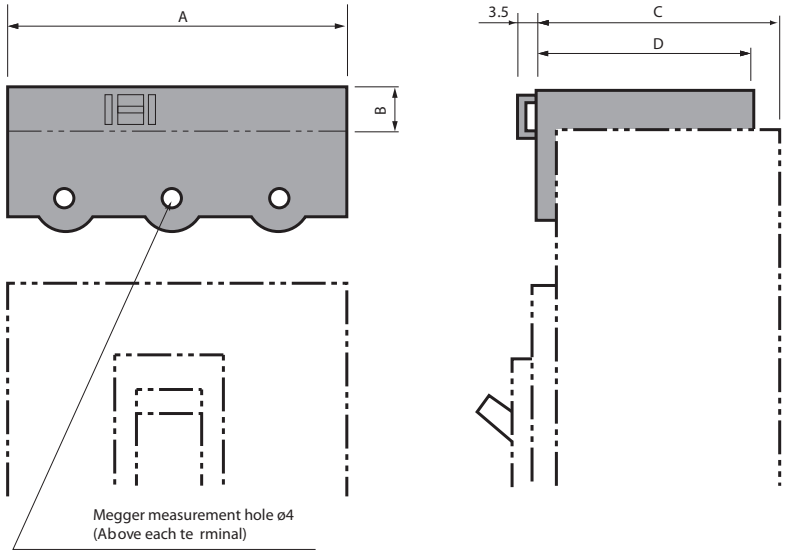
Dimensions

Terminal Covers

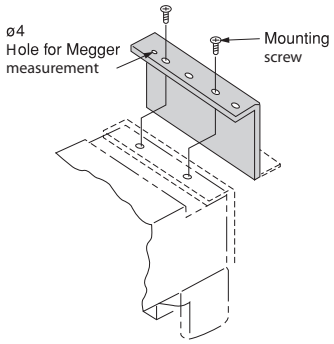
Terminal covers for Rear connected and Plug-in MCCB's



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.

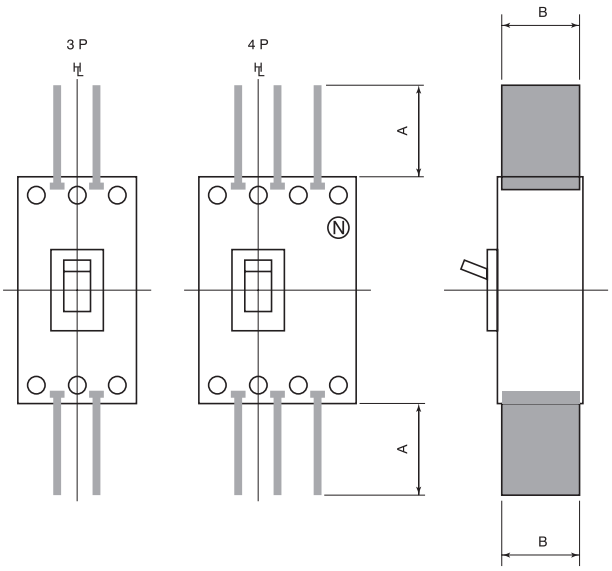


MCCB type	A		B		B'	C		D		Mounting	
	3p	4p	3p	4p		3p	4p	3p	4p	Plug-in	Screw
EB2 125 /L, S, H	90	120	2	2	6	41,5	41,5	40,5	40,5	õ	–
EB2 160/S, H, EB2 250/L, S, H	105	140	2	2	6	42,5	42,5	39,5	39,5	õ	–
EB2 250/E	105	140	2	2	6	77,5	77,5	39,5	39,5	õ	–
EB2 400/L, S, E, LCD, HLCD, EB2 630/LE, E, HE	140	185	3	3	5	97	97	93	93	õ	–
EB2 800/L, S, H, LE, E EB2 1000/LE, E	206	280	14	18	–	101 (103.5)	99 (101.5)	100.5 (103)	98 (100.5)	–	õ
EB2 800/HE	206	280	14	18	–	138 (140.5)	136 (138.5)	137.5 (140)	135 (137.5)	–	õ

Notes:
(2): Values in brackets indicate the distance to the head of terminal cover mounting screws.

Interpole Barriers

Terminal Interpole Barriers



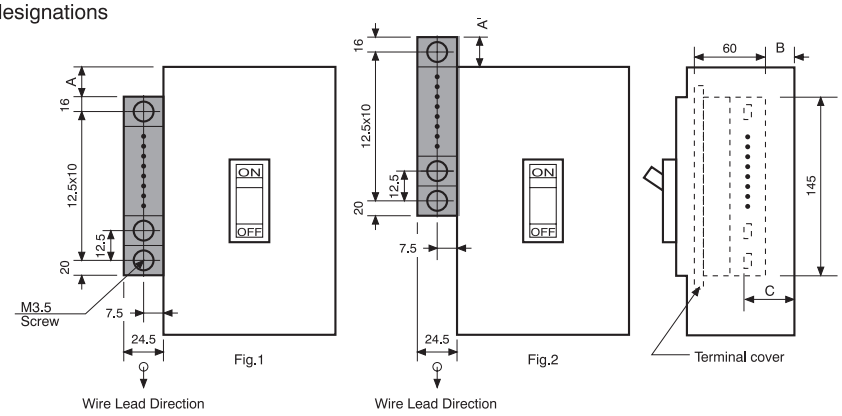
MCCB type	A	B
EB2 125 /L, S, H	47	53
EB2 160/S, H, EB2 250/L, S, H	100	53
EB2 250/E	100	88
EB2 400/L, S, E, LCD, HLCD, EB2 630/LE, E, HE	110	95
EB2 800/L, S, H, LE, E EB2 1000/LE, E	110	95

Dimensions

Terminal Blocks for Front-Connected and Rear-Connected MCCBs (11 Terminals)

Left terminal designations
Example

With SHT	With UVT
AXc1	AXc1
AXb1	AXb1
AXa1	AXa1
AXc2	AXc2
AXb2	AXb2
AXa2	AXa2
ALc1	ALc1
ALb1	ALb1
ALa1	ALa1
C1	D1
C2	D2

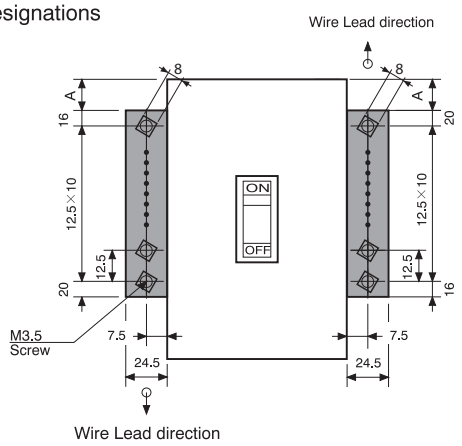


MCCB type	A	A[1]	B	C	Fig.
EB2 125 /L, S, H	-	3	0.5	40	2
EB2 160/S, H, EB2 250/L, S, H	2	-	0.5	40	1
EB2 250/E	2	-	35,5	75	1

Comments:
1. The tightening torque for the M3.5 terminal screw is 0.9 to 1.2 Nm
2. Connection wire size is 2.5 mm^2 (max).

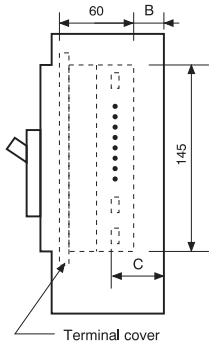
Left terminal designations

AXc1
AXb1
AXa1
AXc2
AXb2
AXa2
ALc1
ALb1
ALa1
AXc3
AXb3



Right terminal designations

With SHT	With UVT
PALc	PALc
PALa	PALa
k	k
l	l
C1	D1
C2	D2

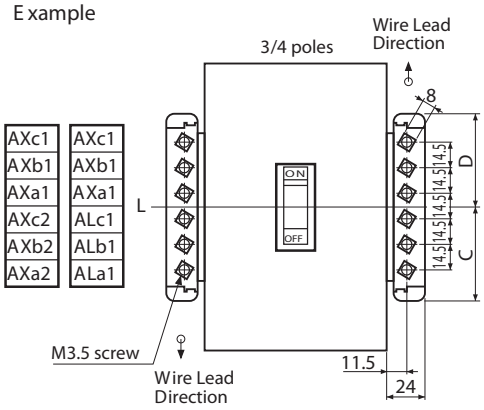


MCCB type	A	B	C
EB2 400/L, S, E, LCD, HLCD, EB2 630/LE, E, HE	39.5	30.5	70
EB2 800/L, S, H, LE, E EB2 1000/LE, E	31	30,5	70
EB2 800/HE	31	67,5	107

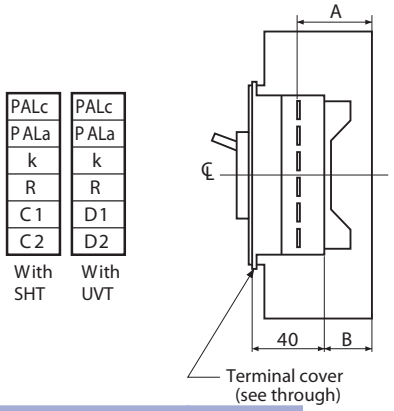
Comments:
1. The tightening torque for the M3.5 terminal screw is 0.9 to 1.2 Nm
2. Connection wire size is 2.5 mm^2 (max).
3. When you specify Ground Fault Trip on electronic MCCBs with 3 poles the terminal block is automatically fitted to connect with the external neutral CT for 3 phases 4 wires system.

Terminal Blocks for Front-Connected and Rear-Connected MCCBs (6 terminals)

Left terminal designations
E xample



R ight terminal designations
E xample

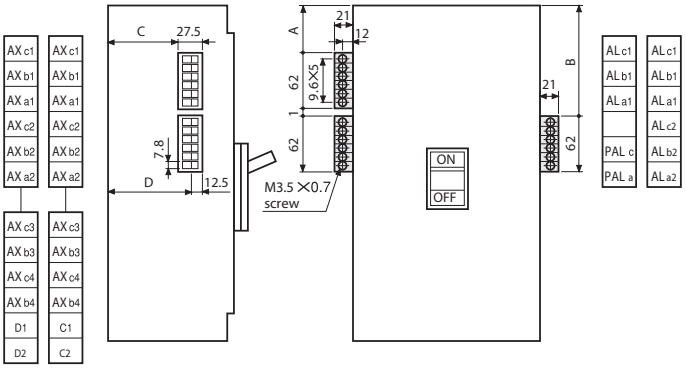


MCCB type	A	A[1]	B	C
EB2 125 /L, S, H	42,5	27	53	53
EB2 160/S, H, EB2 250/L, S, H	42,5	27	53	53
EB2 250/E	77,5	62	53	53
EB2 400/L, S, E, LCD, HLCD, EB2 630/LE, E, HE	72,5	57	43	63
EB2 800/L, S, H, LE, E, EB2 1000/LE, E	72,5	57	23,5	82,5
EB2 800/HE	109,5	94	23,5	82,5

Comments:
1. The tightening torque for the M3.5 terminal screw is 0.9 to 1.2 Nm
2. Connection wire size is 2.5 mm^2 (max).

Left terminal designations
Example

Right terminal designations
Example



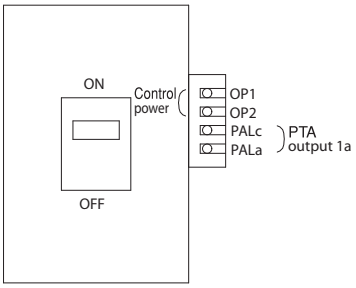
MCCB type	A	B	C	D
EB2 1250 /LE, E	51	114 (124)	57	72
EB2 1600 /LE, E	51	114 (124)	77	92

Comments:
1. Values in parentheses applies to 4-pole breakers.
2. Tightening torque of M3.5 terminal screws: 0.9 1.2 N.m.
3. Connection wire size: 2.0mm^2 max x 2.

Dimensions

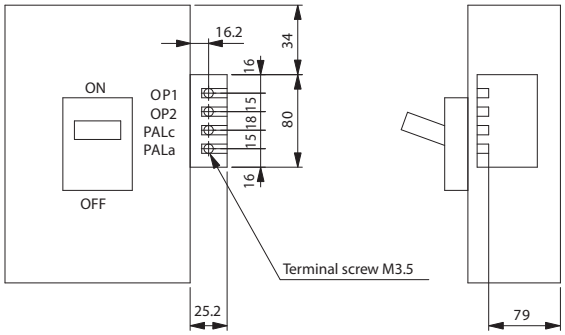
OCR Power Supply For Electronic Protection (Standard Type)

Connection diagram



Notes: Separate installation of the OCR power supply is not available.

Mounting dimensions



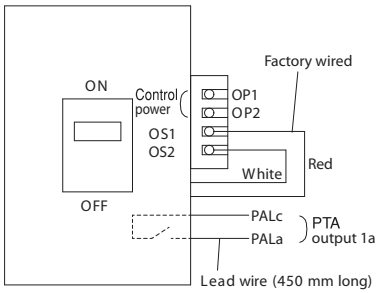
Notes: 1. Tightening torque of terminal screws: 0.9 – 1.2 N ·m
2. Applicable wire size: 2.0 mm^2 max

MCCB type
EB2 250/E

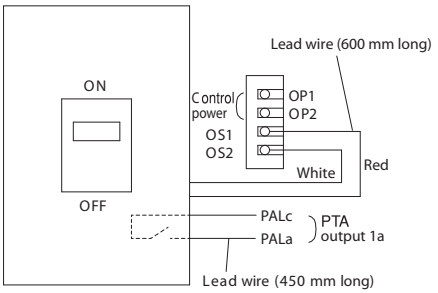
OCR Power Supply For Electronic Protection (Standard Type)

Connection diagram

OCR power supply installed on the breaker

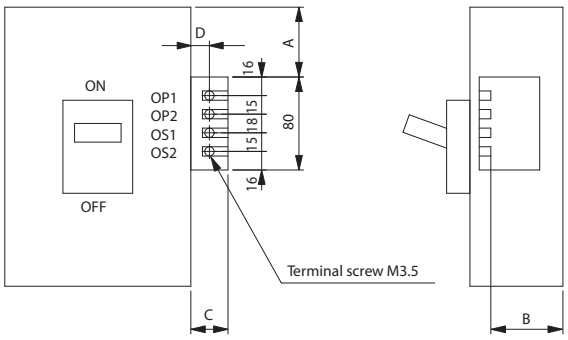


OCR power supply installed separately to the breaker

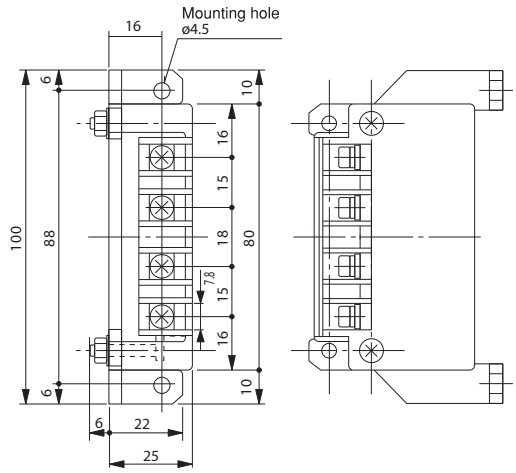


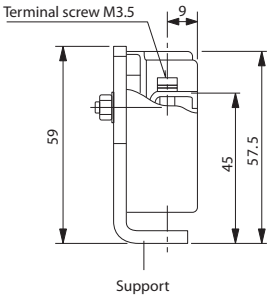
Mounting dimensions

OCR power supply installed on the breaker



OCR power supply installed separately to the breaker





Notes: 1. Tightening torque of terminal screws: 0.9 – 1.2 N ·m
2. Applicable lead wire size: 2.0 mm^2 max

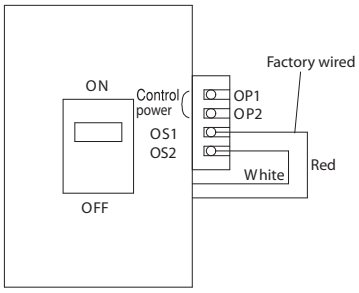
MCCB type		A	B	C	D
EB2 400/E, EB2 630/LE, E, HE		71	74	25,2	16,2
EB2 800/LE, E		62,5	74	25,2	16,2
EB2 800/HE		62,5	111	25,2	16,2
EB2 1250	3p	33	72	21	12
	4p	43	72	21	12
EB2 1600	3p	33	92	21	12
	4p	43	92	21	12

Dimensions

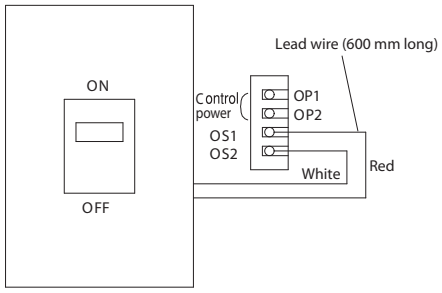
OCR Power Supply For Electronic Protection (with LCD)

Connection diagram

OCR power supply installed on the breaker

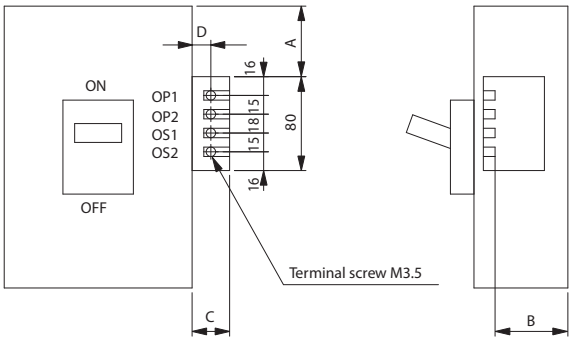


OCR power supply installed separately to the breaker

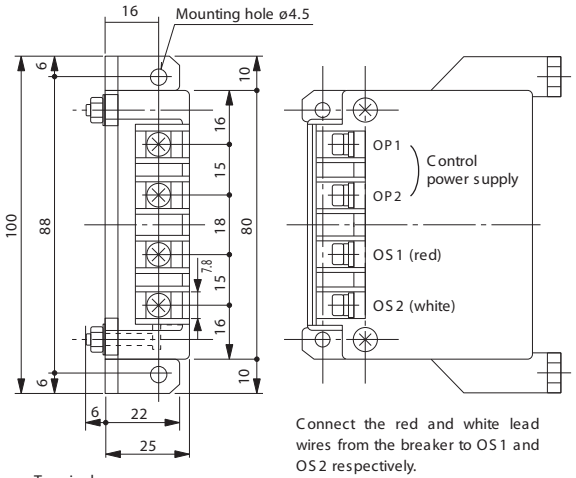


Mounting dimensions

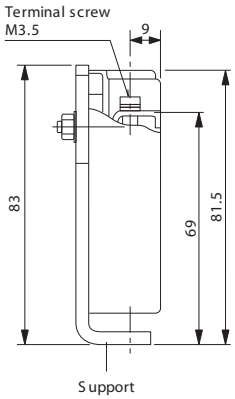
OCR power supply installed on the breaker



OCR power supply installed separately to the breaker



Connect the red and white lead wires from the breaker to OS1 and OS2 respectively.
(Max lead wire length : 600 mm)

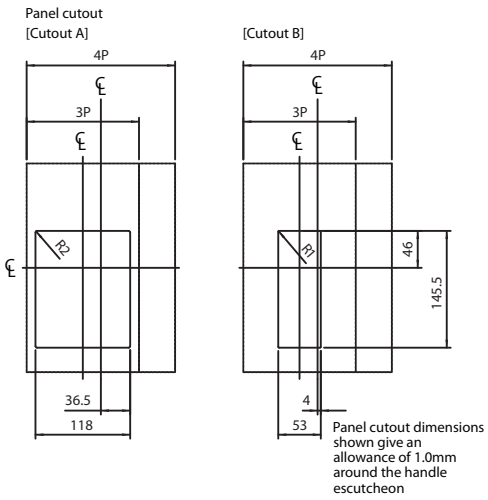


Notes: 1.Tightening torque of terminal screws: 0.9 – 1.2 N ·m
2. Applicable lead wire size: 2.0 mm^2 max

MCCB type	A	B	C	D
EB2 400/LCD, HLCD, EB2 630/LCD	71	74	25,2	16,2

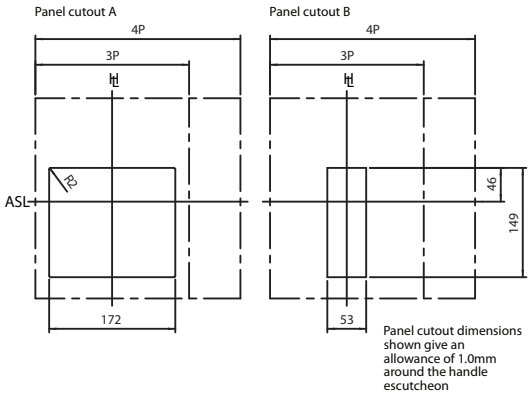
Panel Cut-Out For 400-630AF MCCB with LCD Display

HL: Handle Frame Centre Line



Panel Cut-out for 800-1000AF MCCB with LCD Display

ASL: Standard Line Arrangement HL: Handle Frame Centre Line



Dimensions

Slide Interlocks

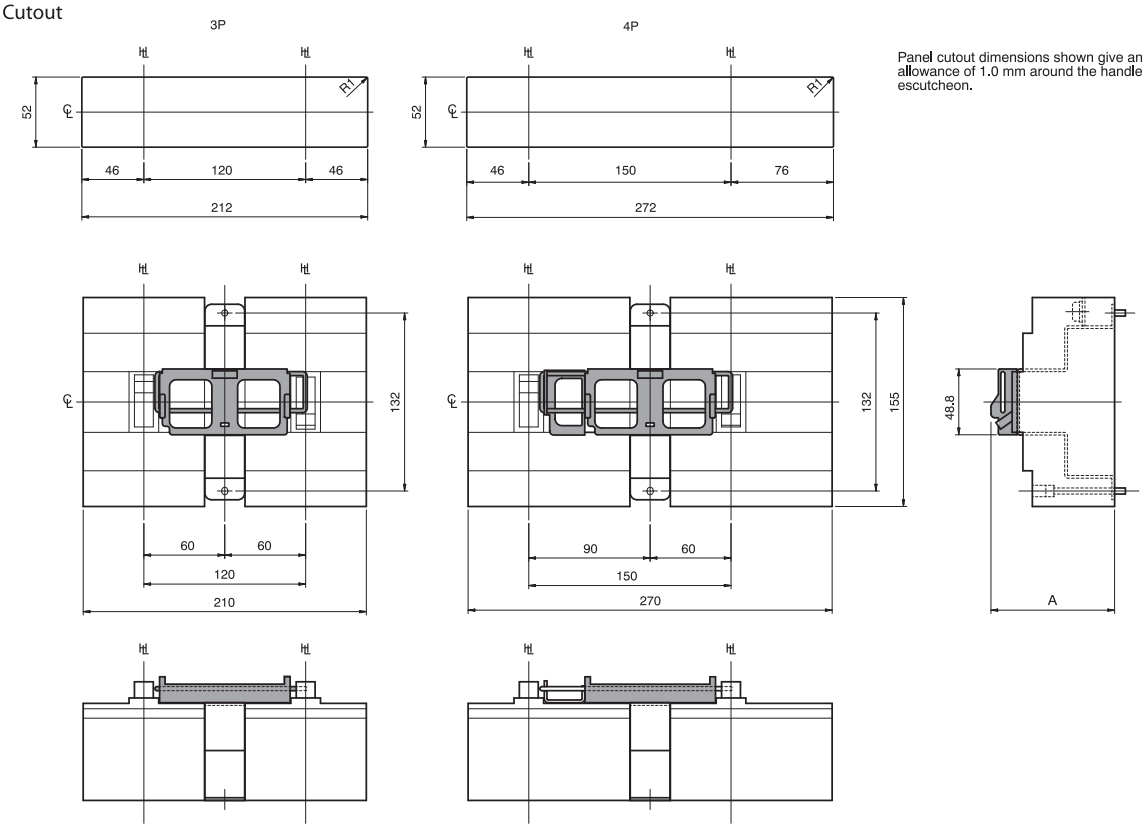
For 125A frame size

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

Mechanical Interlocks slide type (MS)

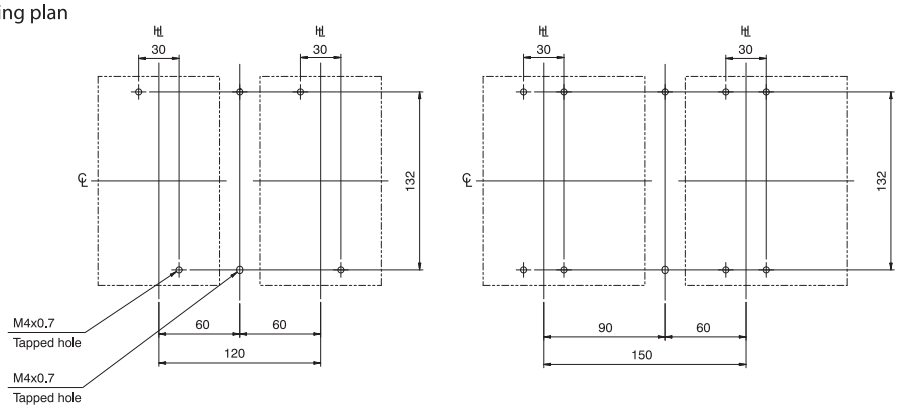
MCCB type		Conn.	A
EB2 125	3p	FC, RC	91,7
	4p	FC, RC	91,7

Panel Cutout



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

Drilling plan



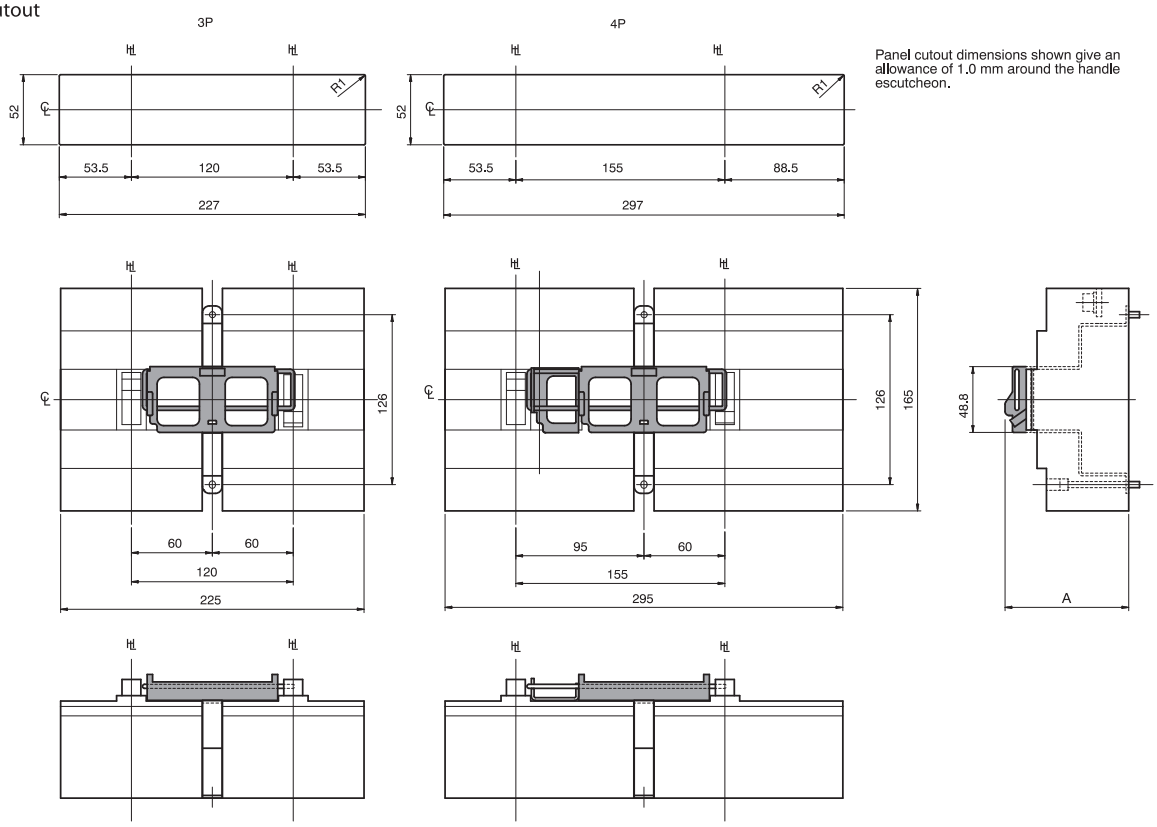
For 160A, 250A frame size

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

Mechanical Interlocks slide type (MS)

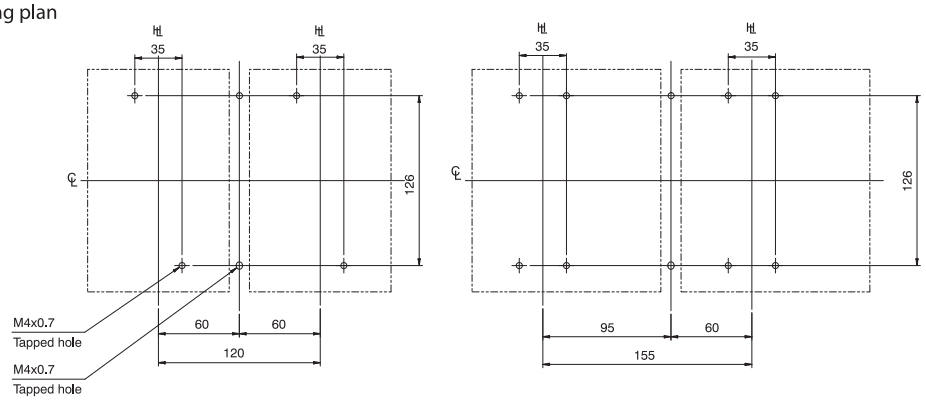
MCCB type		Conn.	A
EB2 160/S, H EB2 250/L, S, H	3p	FC, RC	91,7
	4p	FC, RC	91,7
EB2 250/E	3p	FC, RC	126,7
	4p	FC, RC	126,7

Panel Cutout



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

Drilling plan



Dimensions

Slide Interlocks

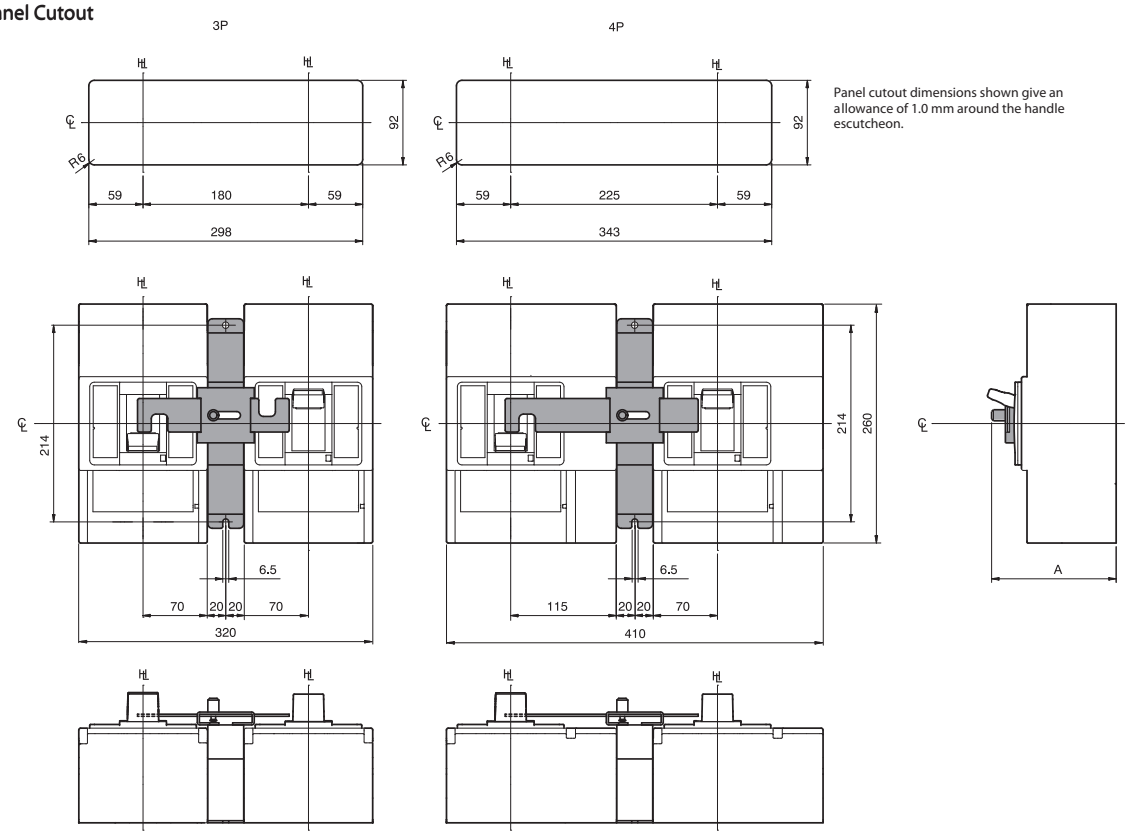
For 400A, 630A frame size

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

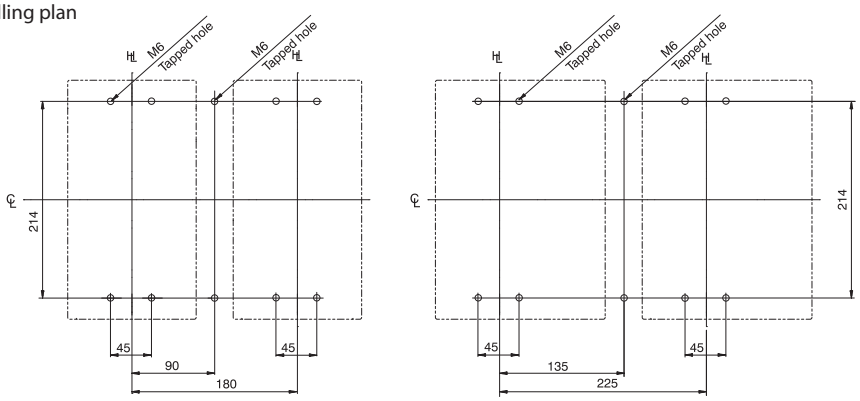
Mechanical Interlock slide type (MS)

MCCB type		Conn.	A
EB2 400 EB2 630	3p	FC, RC	135,5
	4p	FC, RC	135,5

Panel Cutout



Drilling plan



For 800A, 1000A frame size

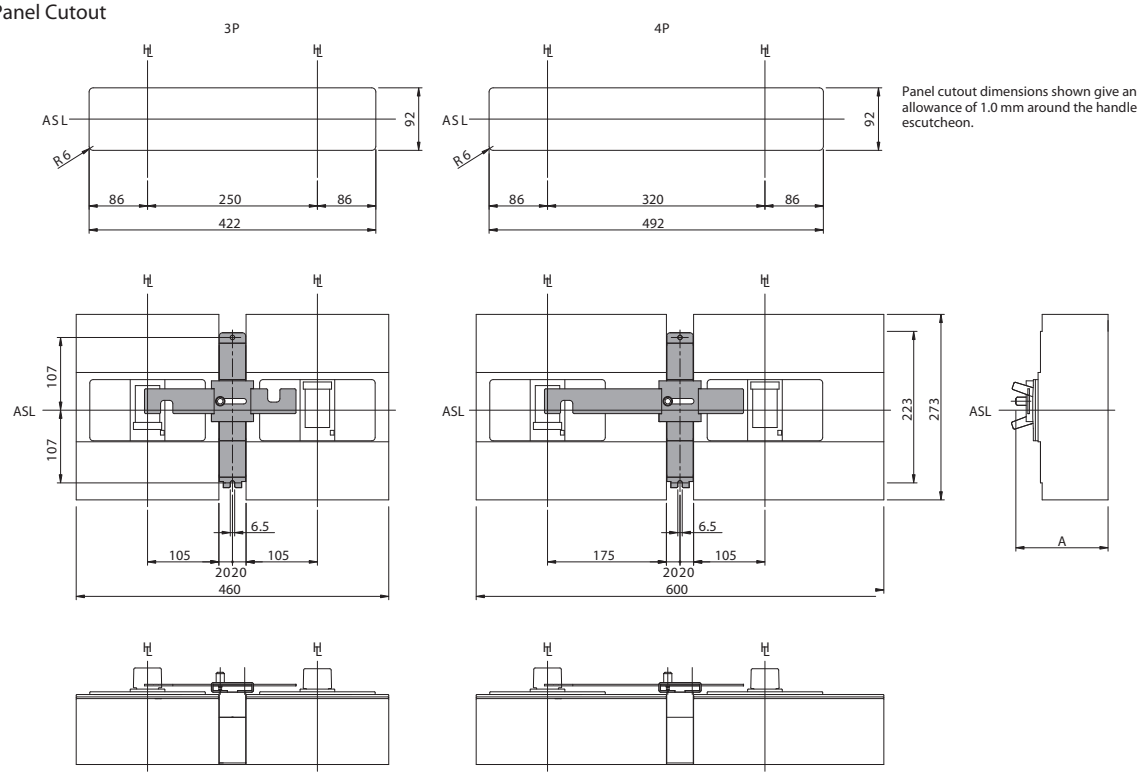
ASL: Arrangement Standard Line ⊞: Handle Frame Centre Line ℄: Handle Centre Line

Mechanical Interlocks slide type (MS)

MCCB type		Conn.	A
EB2 800/L, S, H, LE, E EB2 1000/LE, E	3p	FC, RC	135,5
	4p	FC, RC	135,5
EB2 800/HE	3p	FC, RC	172,5
	4p	FC, RC	172,5

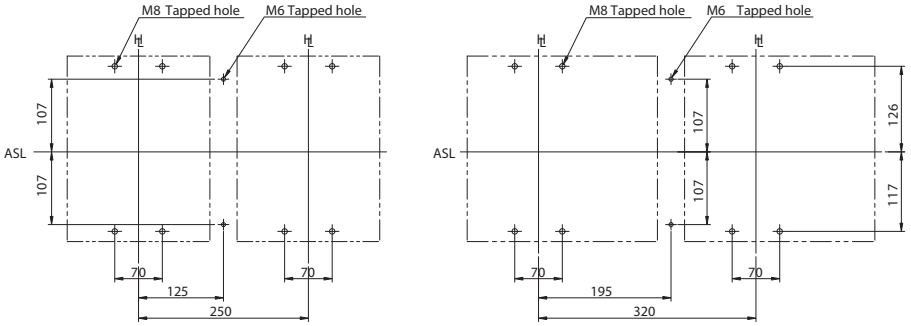
Notes:
(1) The interlock cannot be applied to breakers equipped with front extension bars due to the shortage of the insulating distance.

Panel Cutout



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

Drilling plan



Dimensions

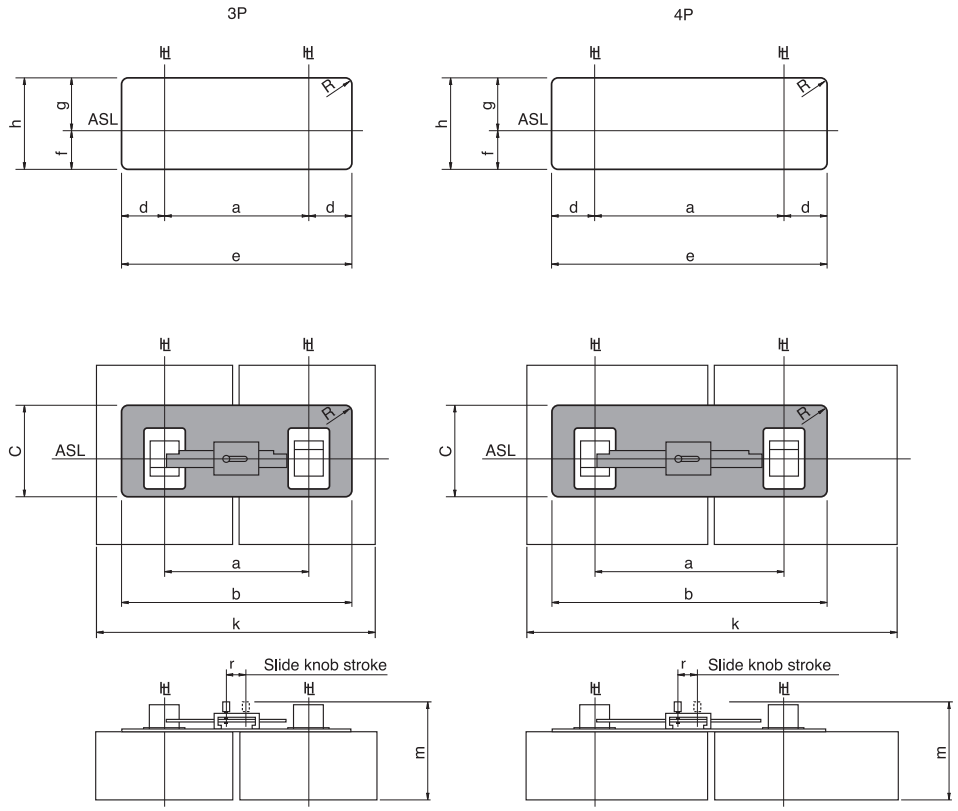
Slide Interlocks

For 1250A, 1600A frame size

MCCB type		a	b	c	d	e	f	g	h	k	m	R	R
EB2 1250	3p	220	340	135	61,5	343	64	74	138	430	160,5	30	8,5
	4p	290	410	135	61,5	413	64	74	138	570	160,5	30	8,5
EB2 1600	3p	220	340	135	61,5	343	64	74	138	430	180,5	30	8,5
	4p	290	410	135	61,5	413	64	74	138	570	180,5	30	8,5

Notes:
1 : Please order interlock with breaker.
(1) The interlock cannot be applied to breakers equipped with a terminal block, UVT controller or OCR controller.
(2) See the outline dimensions of the breaker for the drilling plan.

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



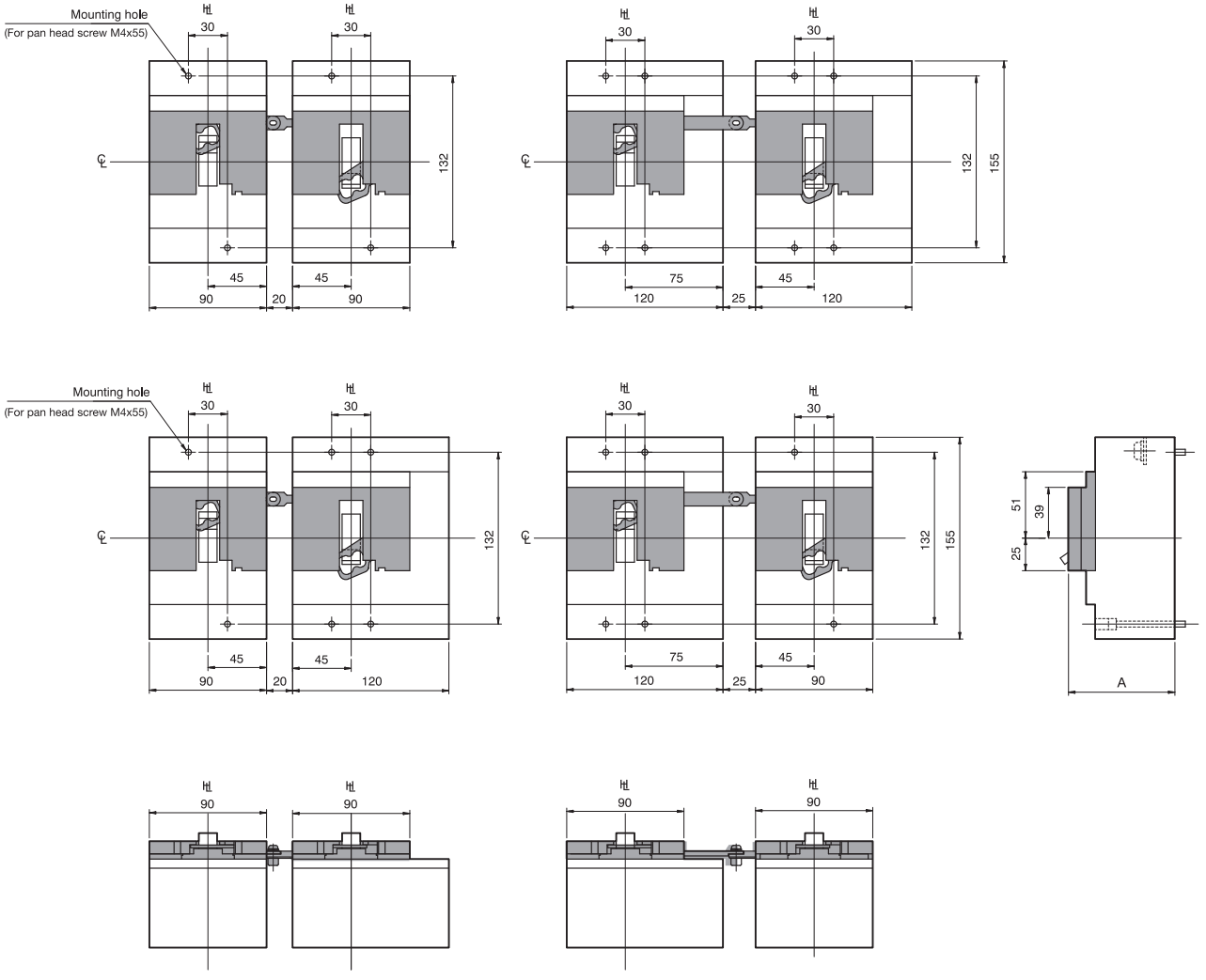
Link Interlocks

For 125A frame size

MCCB type		Position	A
EB2 125	3p	Right	81,7
	4p		
	3p	Left	
	4p		

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

Mechanical Interlocks link type (ML)



Dimensions

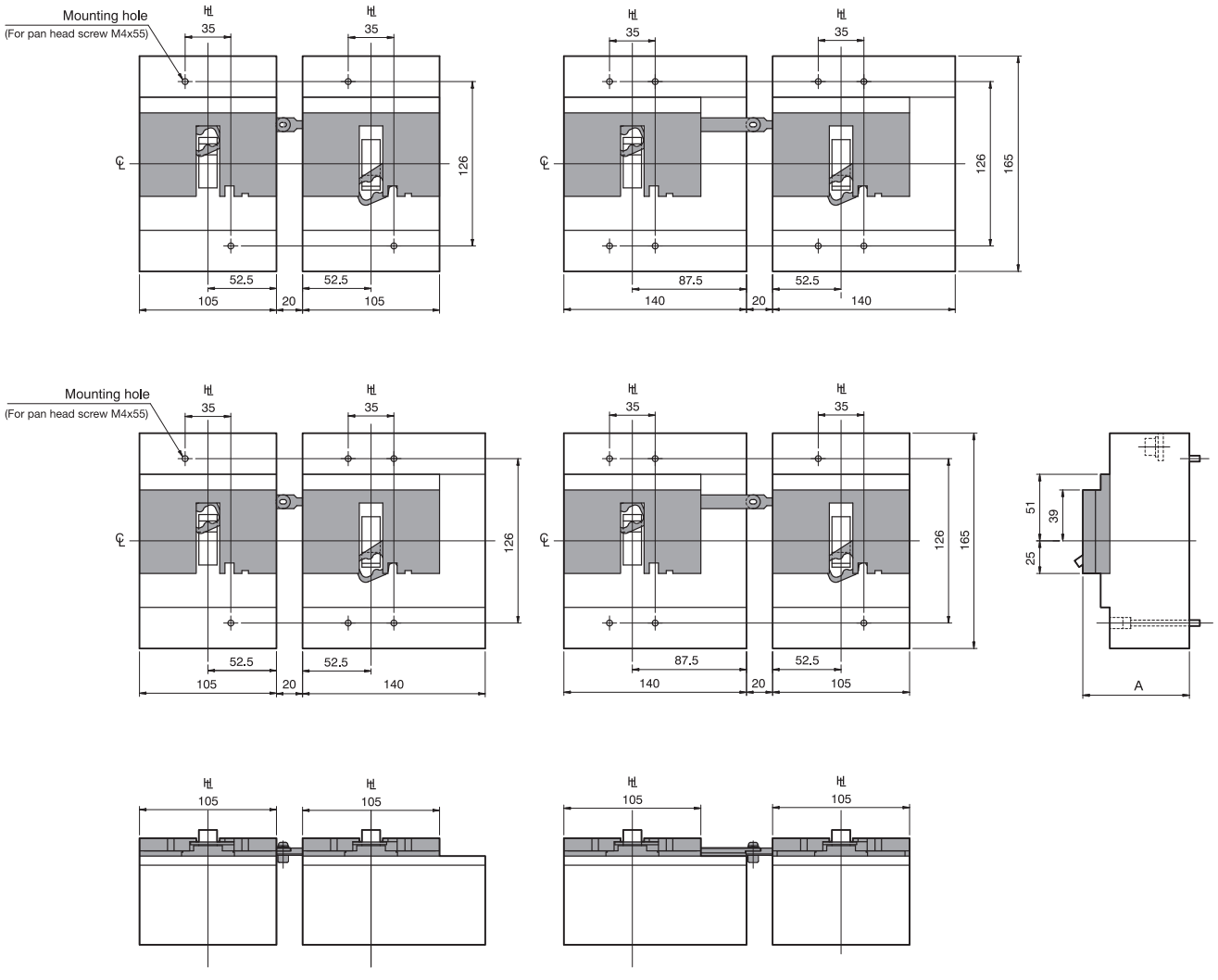
Link Interlocks

For 160A, 250A frame size

MCCB type		Position	A
EB2 160/S, H EB2 250/L, S, H	3p	Right	81,7
	4p		
	3p	Left	
	4p		
EB2 250/E	3p	Right	116,7
	4p		
	3p	Left	
	4p		

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

Mechanical Interlocks link type (ML)



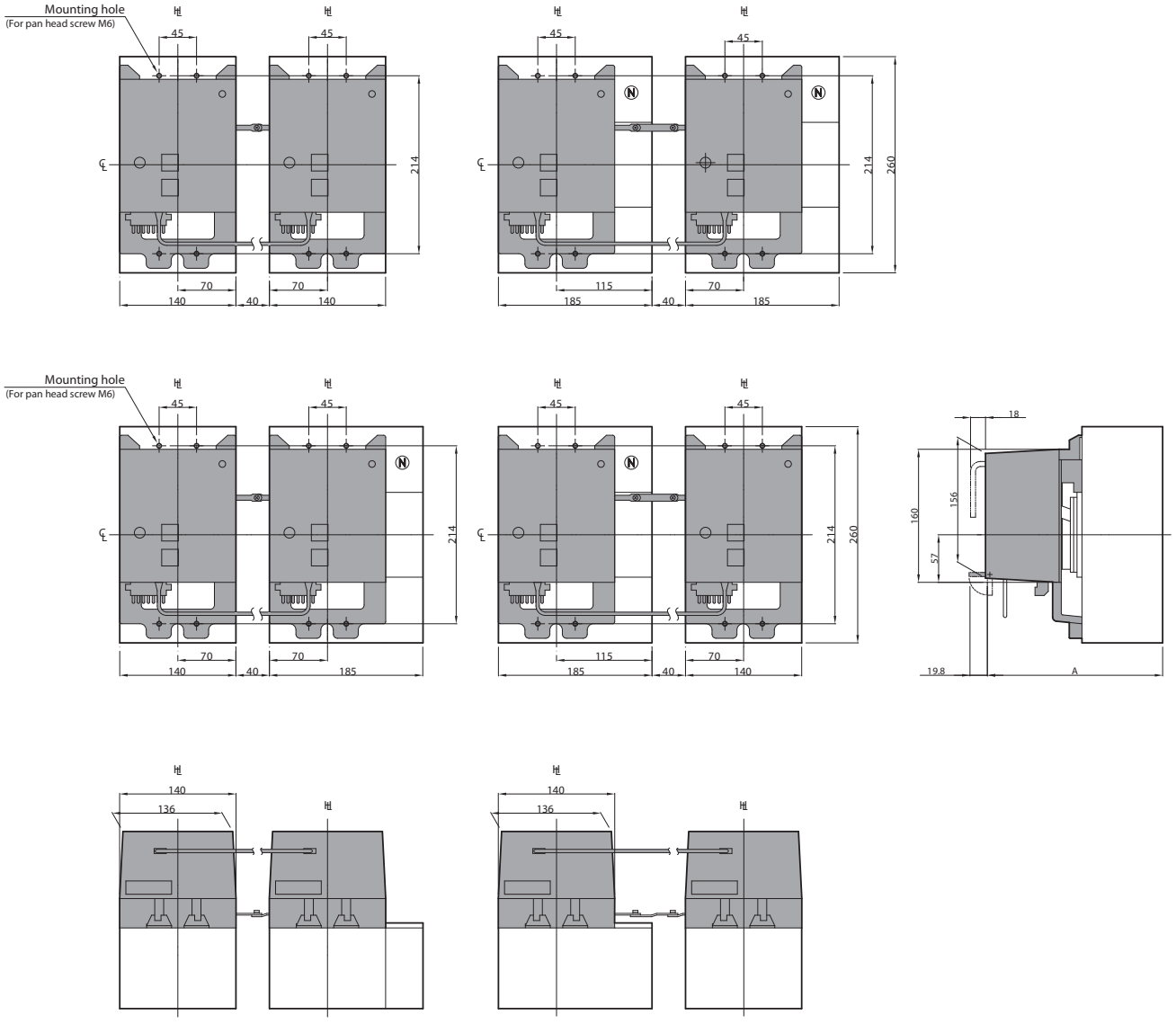
Link Interlocks with Motor Operators

For 400A, 630A frame size

MCCB type		Position	A
EB2 400 EB2 630	3p	Right	213
	4p		
	3p	Left	
	4p		

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

Mechanical Interlocks link type (ML)



For 400A and 630A frame, the link mechanical interlocks can not be used without motor operators. Please specify also the motor operators when ordering. Furthermore, please request the additional labels for the breakers and put the labels on the side of the breakers.

Dimensions

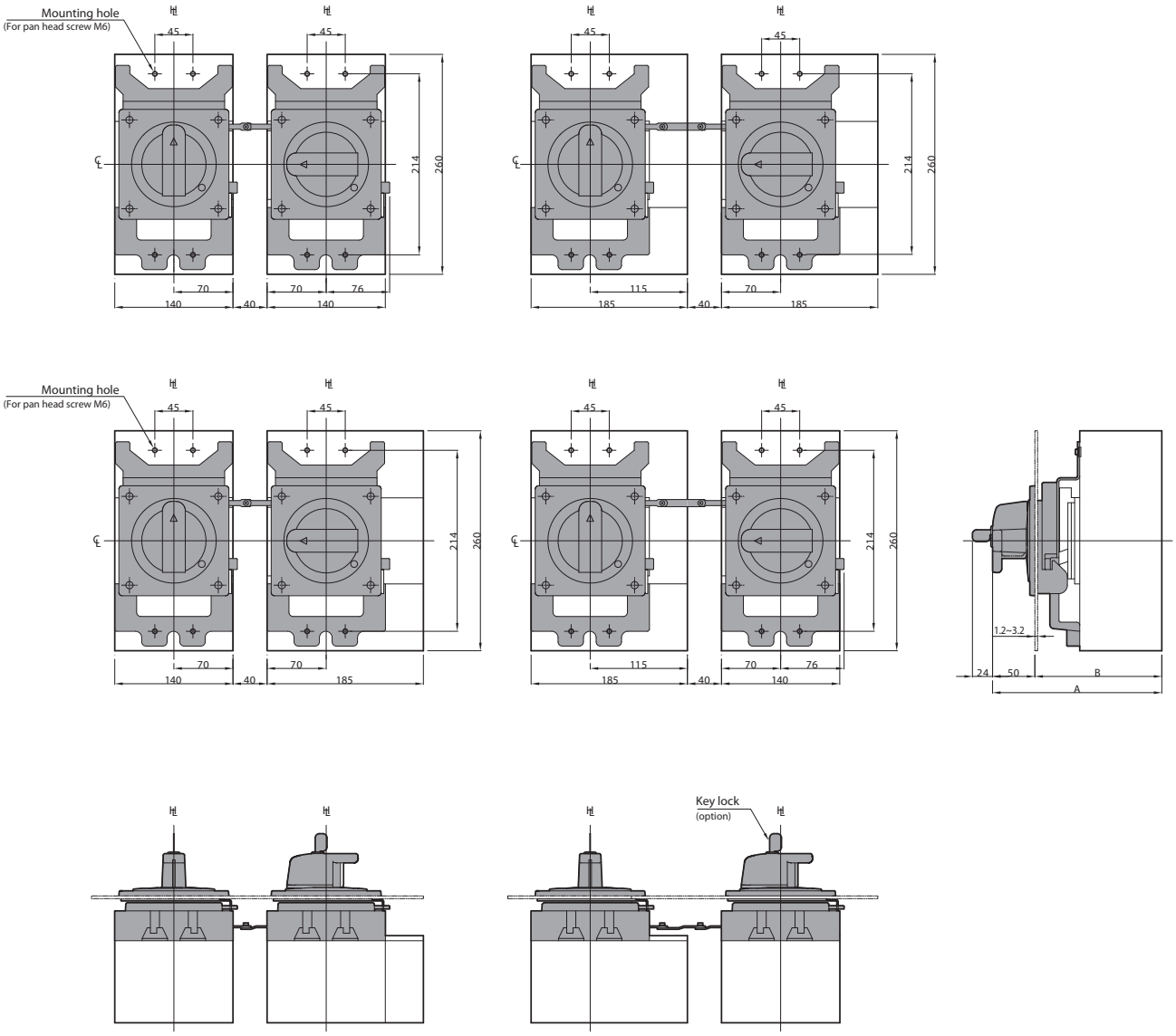
Link Interlocks with Breaker Mounted Handles

For 400A, 630A frame size

MCCB type	Position	A	B
EB2 400 EB2 630	3p 4p — Right	200	150±2
	3p 4p — Left		

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

Mechanical Interlocks link type (ML)



For 400A and 630A frame, the link mechanical interlocks can not be used without breaker mounted handles. Please specify also the breaker mounted handles when ordering. Furthermore, please request the additional labels for the breakers and put the labels on the side of the breakers.

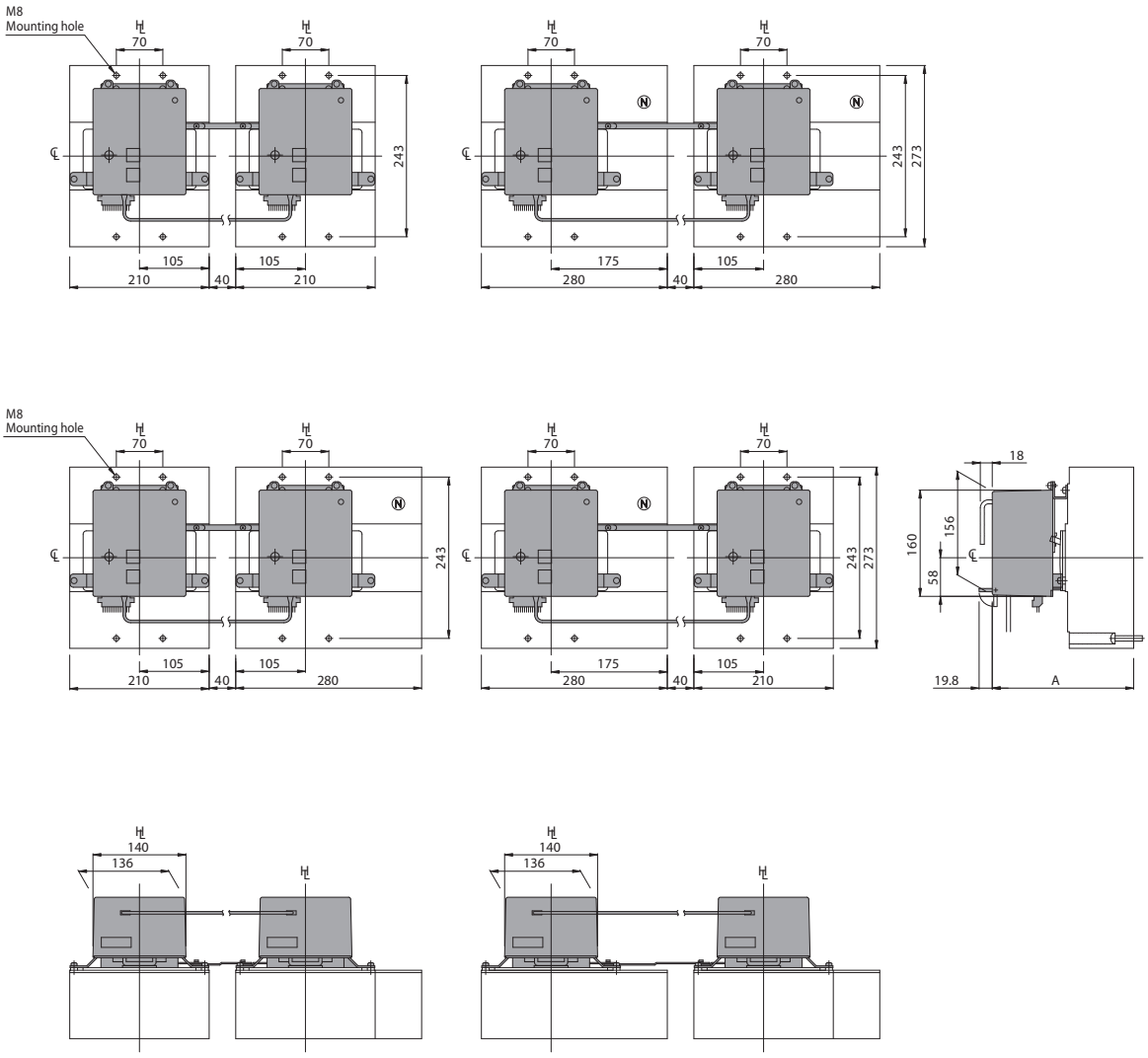
Link Interlocks with Motor Operators

For 800A, 1000A frame size

MCCB type		Position	A	Notes
EB2 800/L, S, H, LE, E EB2 1000/LE, E	3p	Right	213	The interlock cannot be applied to breakers equipped with terminal block.
	4p			
	3p	Left		
	4p			
EB2 800/HE	3p	Right	250	
	4p			
	3p	Left		
	4p			

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

Mechanical Interlocks link type (ML)



For 800A and 1000A frame, the link mechanical interlocks can not be used without motor operators. Please specify also the motor operators when ordering. Furthermore, please request the additional labels for the breakers and put the labels on the side of the breakers.

Dimensions

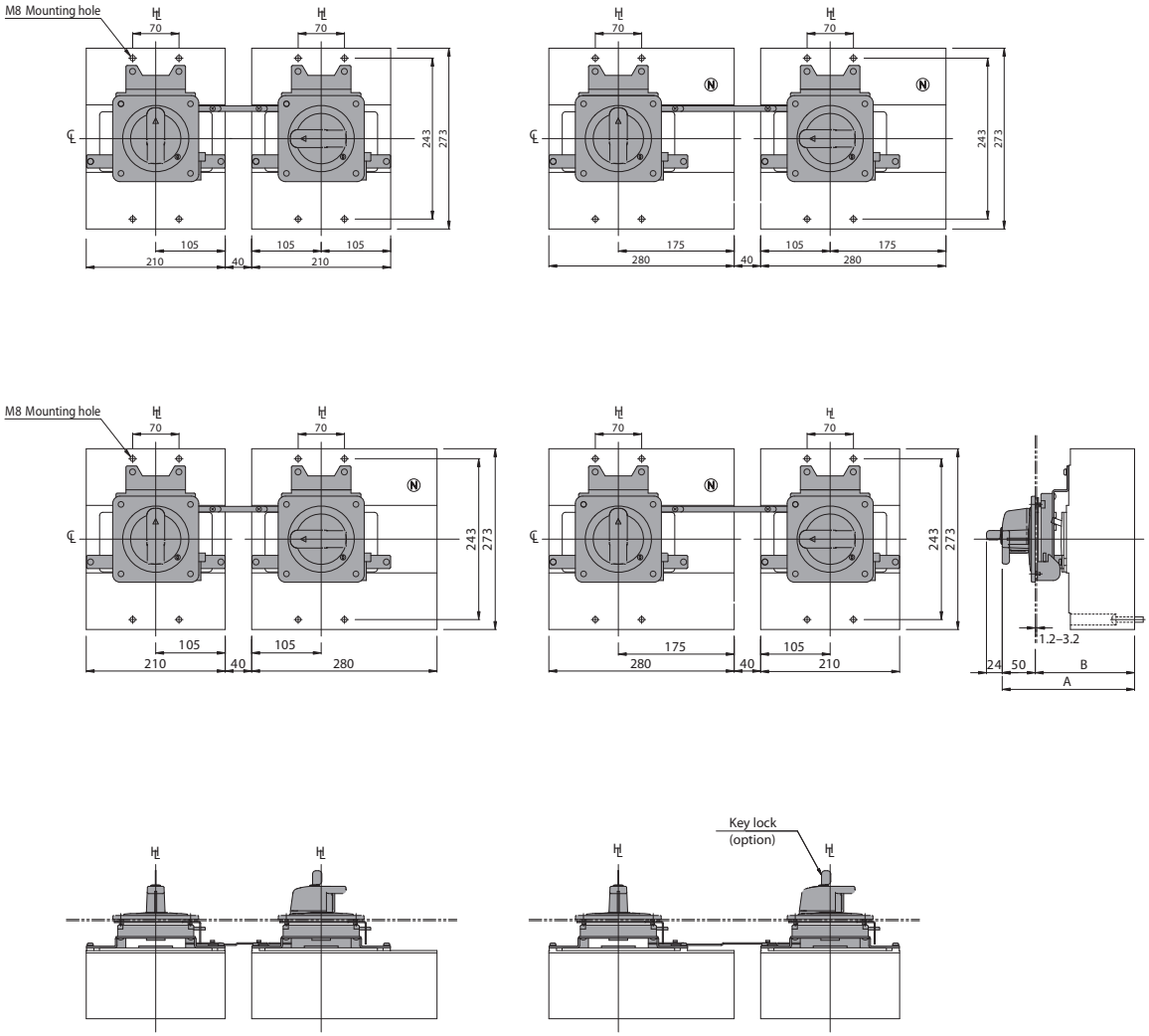
Link Interlocks with Breaker Mounted Handles

For 800A, 1000A frame size

MCCB type		Position	A	B	Notes
EB2 800/L, S, H, LE, E EB2 1000/LE, E	3p	Right	200	150	The interlock cannot be applied to breakers equipped with terminal block.
	4p				
	3p	Left			
	4p				
EB2 800/HE	3p	Right	237	187	
	4p				
	3p	Left			
	4p				

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

Mechanical Interlocks link type (ML)



For 800A and 1000A frame, the link mechanical interlocks can not be used without breaker mounted handles. Please specify also the breaker mounted handles when ordering. Furthermore, please request the additional labels for the breakers and put the labels on the side of the breakers.

Wire Interlocks

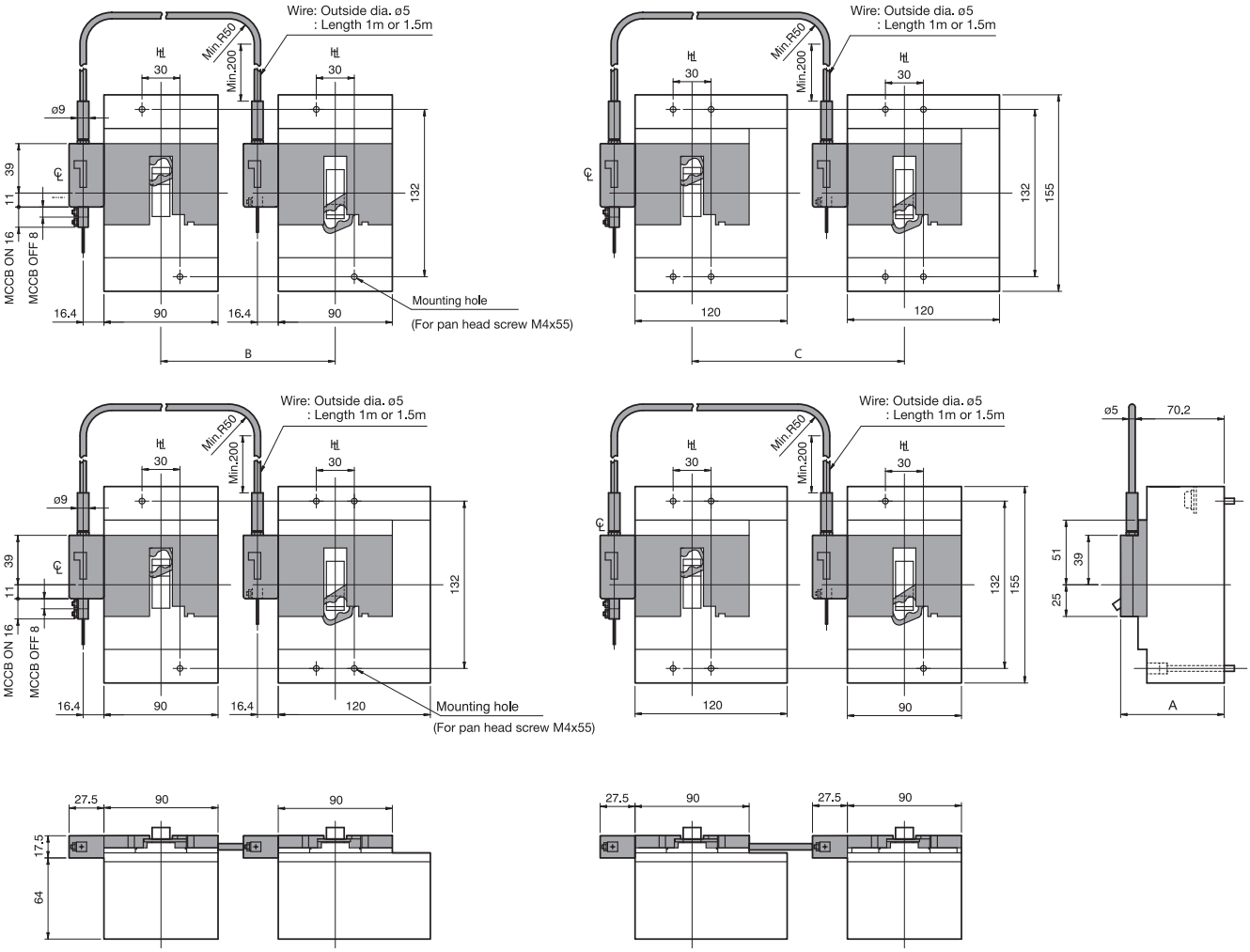
For 125A frame size

MCCB type	A
EB2 125	81,7

Cable length	B	C
1,0m	130min. – 480max.	160min. – 480max.
1,5m	130min. – 980max.	160min. – 980max.

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

Mechanical Interlocks wire type (MW)



Dimensions

Wire Interlocks

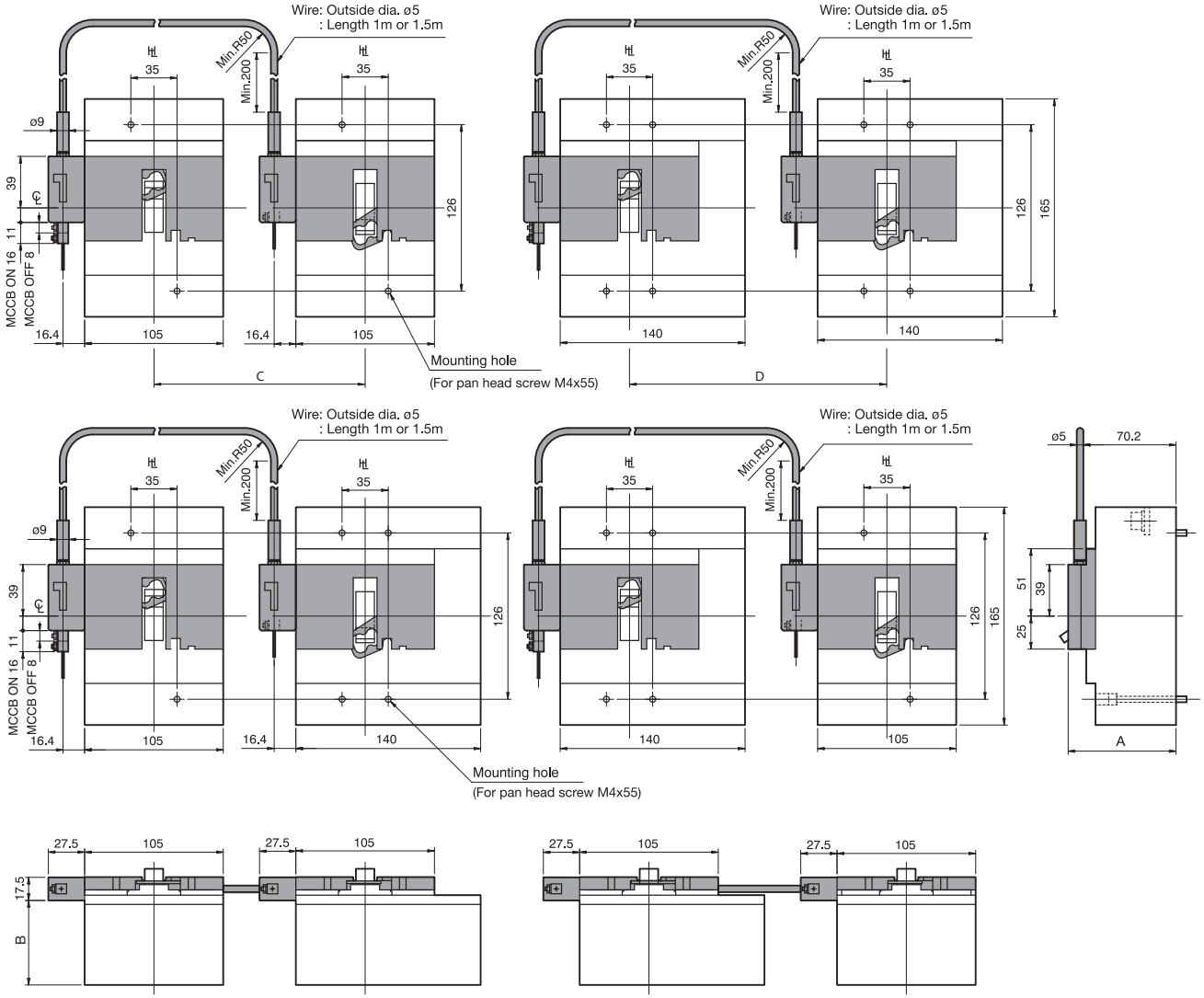
For 160A, 250A frame size

MCCB type	A	B
EB2 160/S, H EB2 250/L, S, H	81,7	64
EB2 250/E	116,7	99

Cable length	C	D
1,0m	155min. – 480max.	180min. – 480max.
1,5m	155min. – 980max.	180min. – 980max.

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

Mechanical Interlocks wire type (MW)



Wire Interlocks with Motor Operators

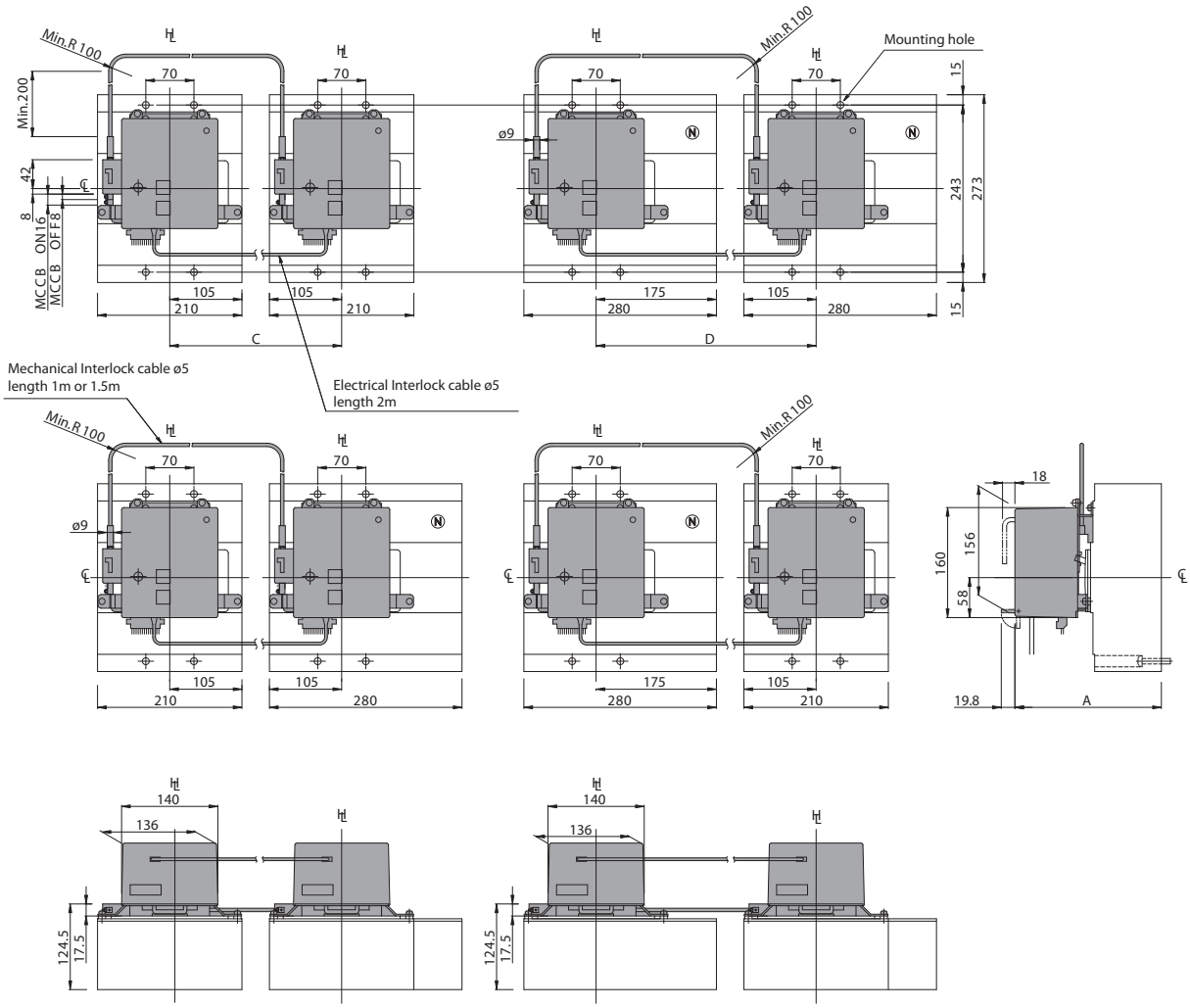
For 400A, 630A frame size

MCCB type	A	B
EB2 400 EB2 630	213	105,4

Cable length	C	D
1,0m	180min. – 480max.	225min. – 480max.
1,5m	180min. – 930max.	225min. – 930max.

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

Mechanical Interlocks wire type (MW)



For 800A and 1000A frame, the wire mechanical interlocks can not be used without motor operators. Please specify also the motor operators when ordering. Furthermore, please request the additional labels for the breakers and put the labels on the side of the breakers.

Dimensions

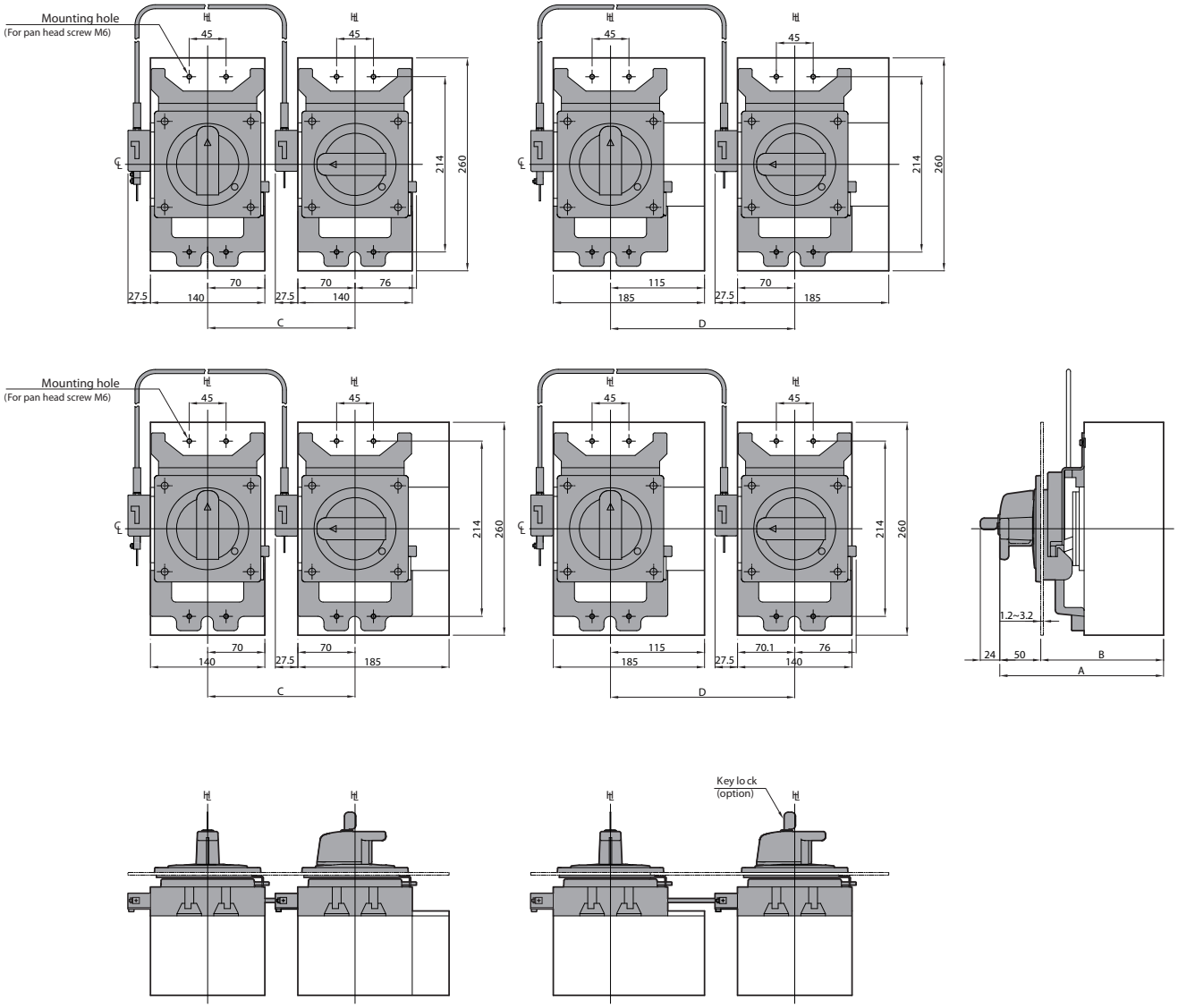
Wire Interlocks with Breaker Mounted Handles

For 400A, 630A frame size

MCCB type	A	B
EB2 400 EB2 630	200	150±2

Cable length	C	D
1,0m	180min. – 430max.	225min. – 430max.
1,5m	180min. – 930max.	225min. – 930max.

ASL: Arrangement Standard Line ⊩: Handle Frame Centre Line ℄: Handle Centre Line
Mechanical Interlocks wire type (MW)



For 400A and 630A frame, the wire mechanical interlocks can not be used without breaker mounted handles. Please specify also the breaker mounted handles when ordering. Furthermore, please request the additional labels for the breakers and put the labels on the side of the breakers.

Wire Interlocks with Motor Operators

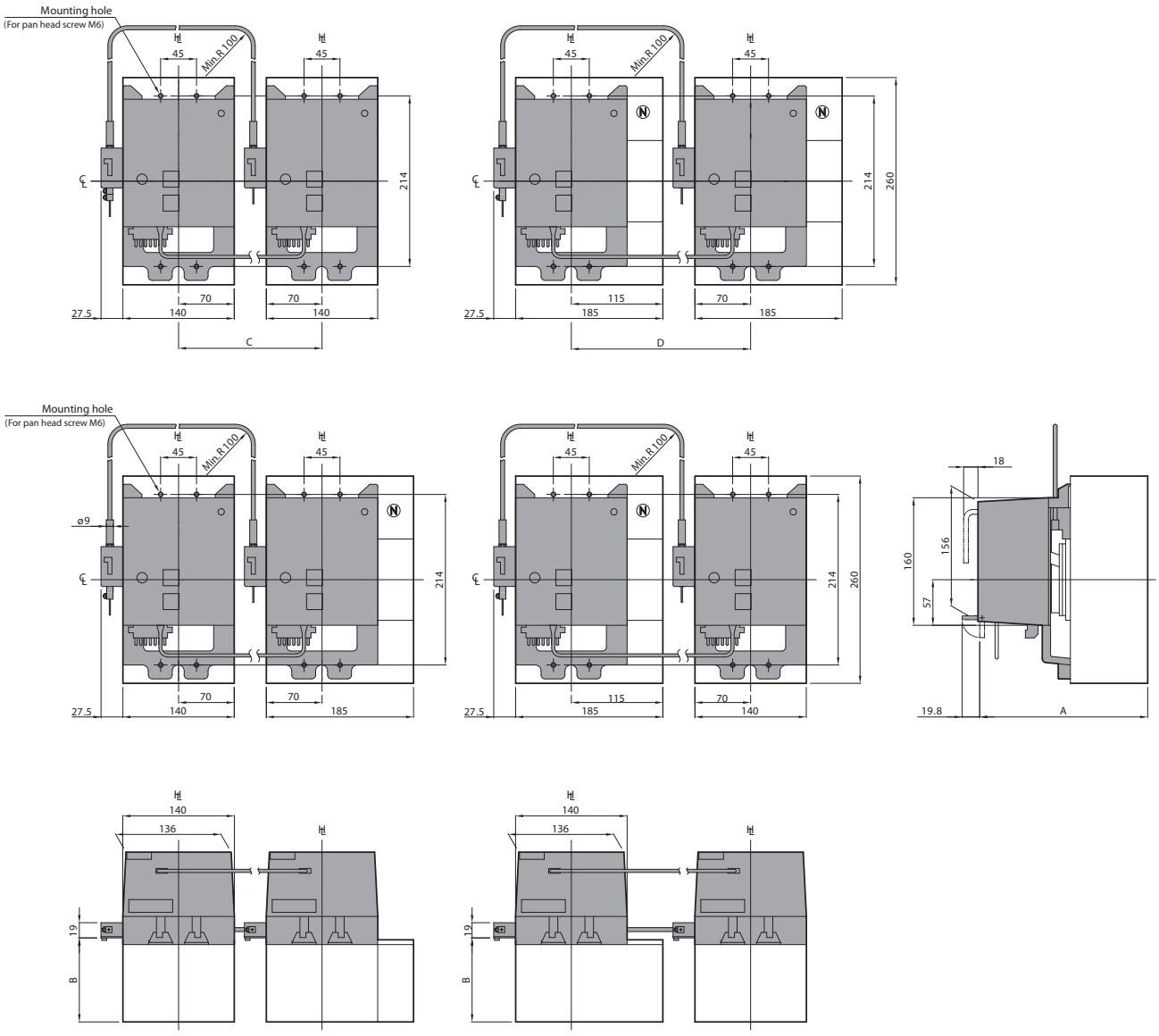
For 800A, 1000A frame size

MCCB type	A
EB2 800/L, S, H, LE, E EB2 1000/LE, E	213
EB2 800/HE	250

Cable length	C	D
1,0m	250min. – 430max.	320min. – 430max.
1,5m	250min. – 930max.	320min. – 430max.

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

Mechanical Interlocks wire type (MW)



For 400A and 630A frame, the wire mechanical interlocks can not be used without motor operators. Please specify also the motor operators when ordering. Furthermore, please request the additional labels for the breakers and put the labels on the side of the breakers.

Dimensions

Wire Interlocks with Breaker Mounted Handles

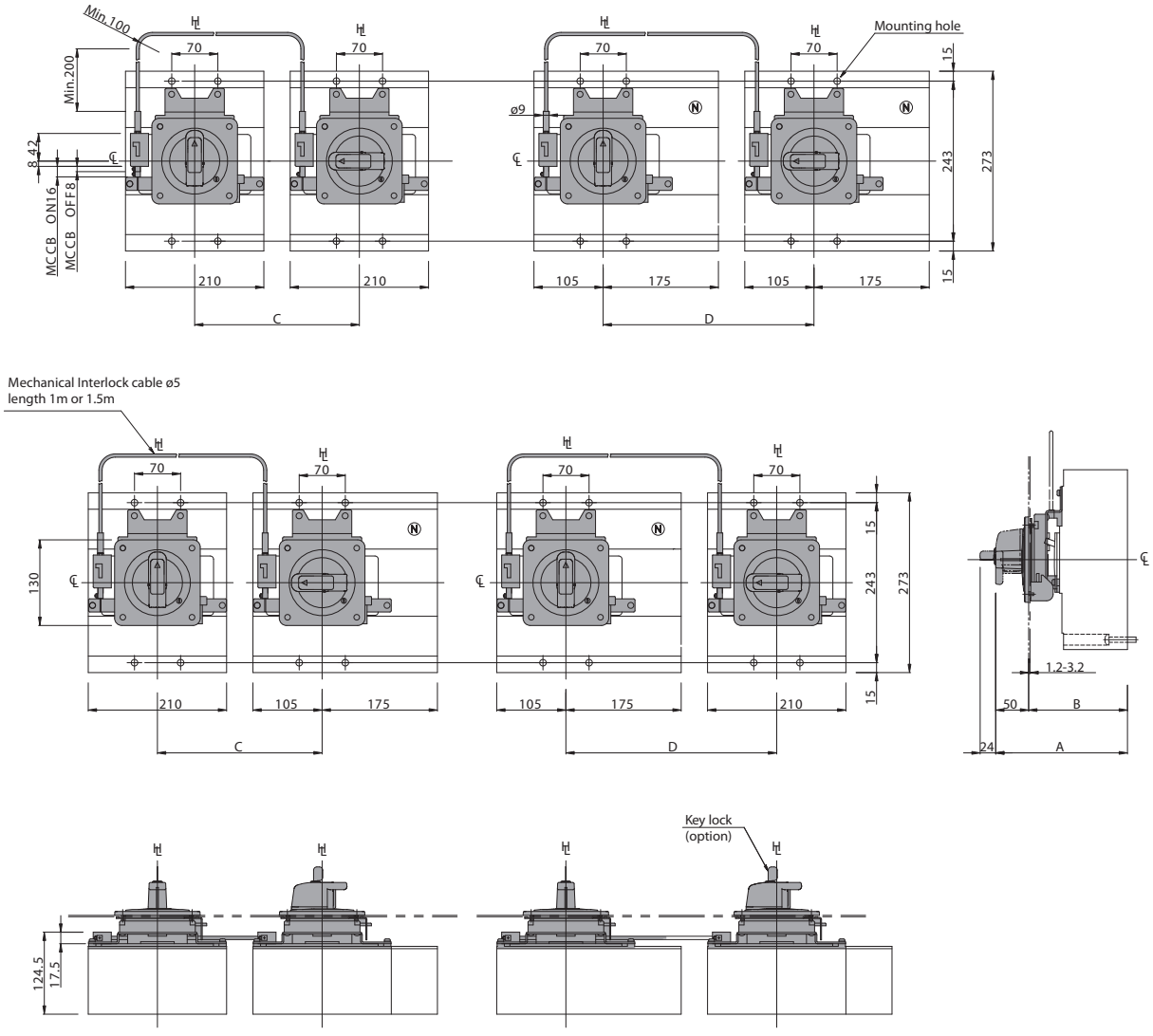
For 800A, 1000A frame size

MCCB type	A	B
EB2 800/L, S, H, LE, E EB2 1000/LE, E	200	150±2
EB2 800/HE	237	187±2

Cable length	C	D
1,0m	250min. – 430max.	320min. – 430max.
1,5m	250min. – 930max.	320min. – 430max.

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

Mechanical Interlocks wire type (MW)



For 800A and 1000A frame, the wire mechanical interlocks can not be used without breaker mounted handles. Please specify also the breaker mounted handles when ordering. Furthermore, please request the additional labels for the breakers and put the labels on the side of the breakers.

Wire Interlocks Rear Type

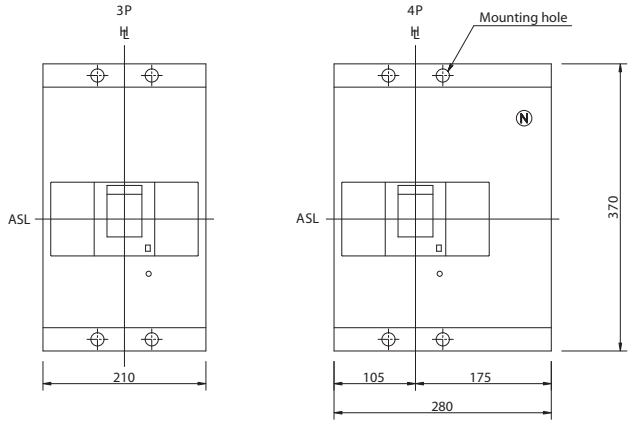
For 1250A, 1600A frame size

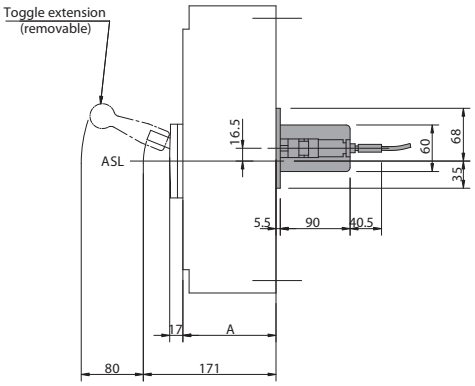
MCCB type	A
EB2 1250/LE, E	120
EB2 1600/LE, E	140

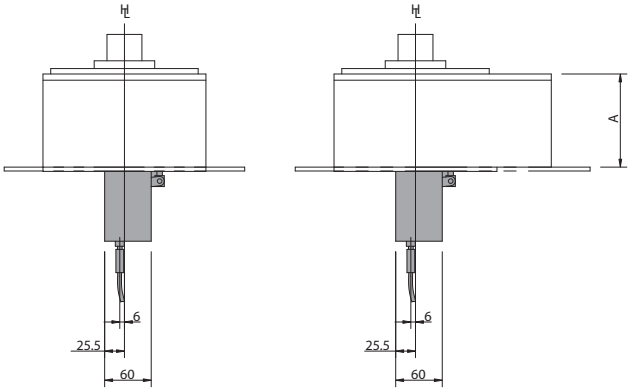
Cable length	P	L
1,0m	650–500–350	450–500–530±30
1,5m	1000–900–750	550–600–700±30

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

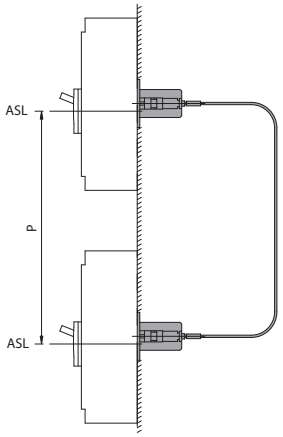
Mechanical Interlocks wire type (MW)



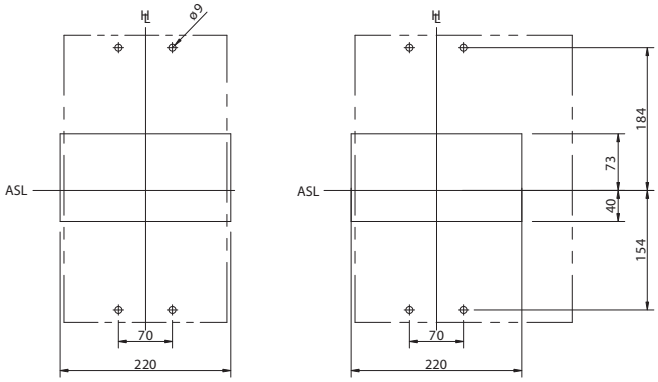




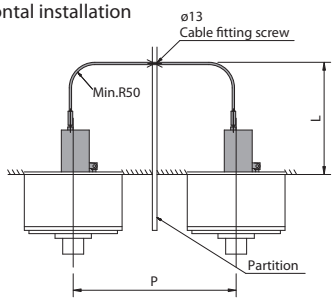
Vertical installation



Drilling plan (front view)



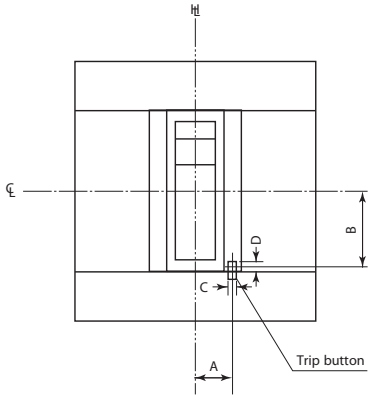
Horizontal installation



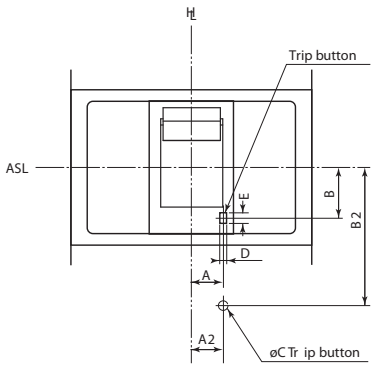
Dimensions

Position of Trip Button

Positions of Trip Button



MCCB type	Poles	A	B	C	D
EB2 125	3, 4	13,8	20,4	3,3	4,3
EB2 160/S, H EB2 250/L, S, H	3, 4	17,2	20,4	3,3	4,3
EB2 250 E	3, 4	17,2	20,4	3,3	4,3
EB2 400 EB2 630	3, 4	21,6	37,2	5,3	6,6
EB2 800 EB2 1000	3, 4	21,6	33	5,3	6,6



MCCB type	Poles	A	B	A2	B2	C	D	E
EB2 1250 EB2 1600	3, 4	30	37,5	31	70,5	6	6	8

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