Circuit Protective Devices

Circuit breakers

Pro M miniature
Isomax molded case
Emax power

AC 1600

Pro M

Emax

Isomax

ABB Control Inc.

Circuit breakers
Pro M miniature
Isomax molded case
Emax power

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Pro M Miniature circuit breakers
General information

General information

Miniature circuit breakers (MCBs) are used throughout the world in all types of electrical installations. ABB MCBs are recognized for use by Underwriters Laboratories Standard UL1077 for supplementary circuit protectors in systems rated 240VAC, 480VAC and 600VAC. Devices are certified per CSA C22.2.

MCBs are approved per IEC-898 and VDE 0641, and certified under IEC-947 and VDE 0660 standards for use in systems rated 415VAC or 690VAC (S500 series).

MCBs can be applied to 16 2/3Hz – 400Hz and DC power systems.

Special direct current version MCBs include a permanent magnet for DC fault current interruption. These "UC" versions are rated 250/500VDC under UL1077/CSA 22.2 No. 235.

Continuous current ratings are as low as 0.2 amperes and up to 125 amperes maximum.

MCBs are of compact size and can be quickly mounted on standard 35mm DIN rail or can be front mounted by use of a front mounting kit.

MCBs include line and load side terminals for conductors from 18 through 4AWG (0.75 – 25mm^2) for 40 amperes; up to 2AWG for 50 and 63 amperes.

MCBs can also be connected via busbar conductors which can be either upper or lower mounted for top feed or bottom feed. Dual function terminals allow busbars to be connected with main incoming line conductors without separate lugs.

Accessories

Auxiliary devices can be added to S260, S270 and S280 series MCBs:

- Shunt trips
- Auxiliary contacts
- Trip contacts
- Aux/trip contacts
- Undervoltage release

Accessory device modules can be field mounted to all above listed ABB MCBs. Auxiliary contacts are also available for the S500 series MCB.

Applications

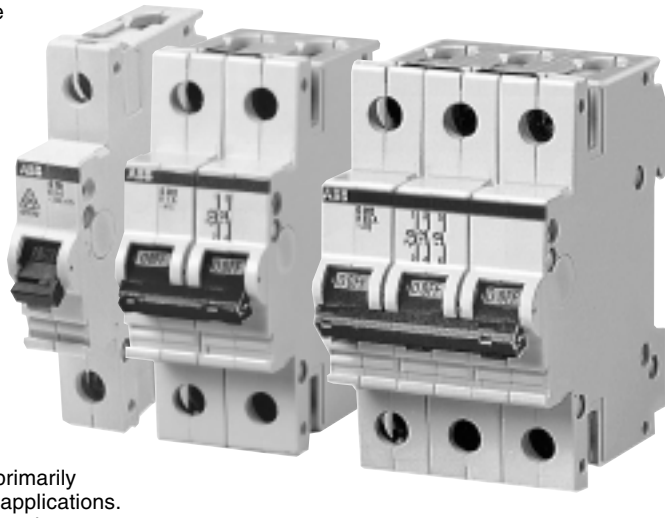
MCBs can be used for equipment protection, in commercial appliances, protection of control circuits against overcurrent faults, computer equipment and other computer peripheral devices.

UL 1077

MCBs are recognized as supplementary protectors and are intended for use as overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided or not required. MCBs and accessories are recognized under UL File E76126.

CSA C22.2

MCBs and accessories are certified under CSA C22.2 No. 235 per File LR98793.



Tripping characteristics

Time-current curves

ABB miniature circuit breakers are available with different trip characteristics, allowing for maximum system protection.

B Characteristic

Available with the S260 series has rated currents of 6 through 63 amperes in 10 steps. The "B" time-current curve is designed primarily for use in cable protection applications. Instantaneous tripping occurs between approximately 3 to 5 times rated current in 50/60Hz systems. This quick trip curve maximizes protection of control circuits under low short circuit fault levels that could damage control wiring.

C Characteristic

Available in the S260 series with rated currents up though 63 amperes and the S290 series with rated currents of 80, 100 and 125 amperes. The "C" time-current curve is designed for medium magnetic start-up currents. Instantaneous tripping occurs between 5 and 10 times rated current in 50/60 Hz systems. The "C" characteristic is also available in other S2 Series MCBs.

D Characteristic

The new magnetic trip action has an instantaneous trip point of approximately 15 times the breaker rating. Thus, the S260-D can be a good protective solution for applications involving high in-rush transformers, motors and other high inductive systems. The 260-D is also suitable for any application where a high instantaneous trip point is desired.

K Characteristic

The "K" time-current characteristic considers high magnetic start-up currents from motors, transformers and other equipment. Instantaneous tripping occurs between 8 and 12 times rated current in 50/60Hz systems. The "K" characteristic is available up through 63 amperes.

The "K" curve offers the best protection for the broadest range of electrical systems. The higher magnetic trip settings maximizes protection while allowing for higher in-rush currents during system start-up.

Z Characteristic

Also available up through 63 amperes, the "Z" characteristic offers instantaneous tripping between 2 and 3 times rated current in 50/60Hz systems. This trip characteristic is available in the S280 series with both the 480VAC and 250/500VDC ratings.

Many applications require a very low short circuit trip settings in order to protect semiconductor or other sensitive devices and the "Z" trip characteristic may provide maximum protection and service in these applications.

General information
Interruption ratings
Trip characteristics overview

Interruption ratings

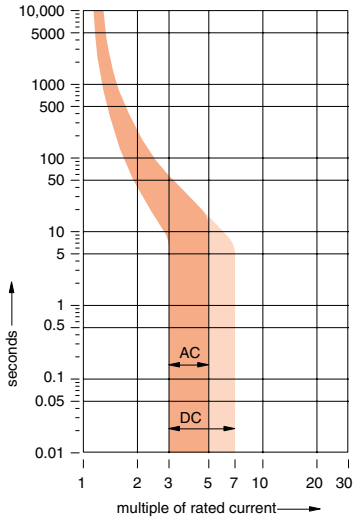
Voltage	Rated interrupting capacity	Rated current	MCB type	Comment
120 VAC	10kA	0.5 - 63A	S260-B,C,D	Single pole
		0.5 - 63A	S270-K	Single pole
		0.2 - 40A	S280-K, Z	Single pole
	18kA	32 - 63A	S500-B,C,D	
		26 - 45A	S500-K	
	30kA	6 - 25A	S500-B,C,D	
		0.15 - 25A	S500-K	
240 VAC	6kA	0.5 - 63A	S260-B,C,D	Single pole
		0.5 - 63A	S270-K	Single pole
		50 - 63A	S280-K, Z	Single pole
	10kA	0.5 - 63A	S260-B,C,D	Multi pole
		0.5 - 63A	S270-K	Multi pole
		0.2 - 40A	S280-K,Z	Single pole
	18kA	32 - 63A	S500-B,C,D	
		26 - 45A	S500-K	
	30kA	6 - 25A	S500-B,C,D	
		0.15 - 25A	S500-K	
277 VAC	6kA	0.5 - 63A	S260-B,C,D	Single pole
		0.5 - 63A	S270-K	Single pole
		50 - 63A	S280-K,Z	Single pole
	10kA	0.2 - 40A	S280-K,Z	Single pole
277/480 VAC	6kA	0.5 - 63A	S260-B,C,D	Multi pole
		0.5 - 63A	S270-K	Multi pole
		40 - 63A	S280-K,Z	Multi pole
	10kA	0.2 - 32A	S280-K,Z	Multi pole
60 VDC	10kA	0.5 - 63A	S260-B,C,D	Single pole
		0.5 - 63A	S270-K	Single pole
125 VDC	10kA	0.5 - 63A	S260-B,C,D	Multi pole
		0.5 - 63A	S270-K	Multi pole
		0.2 - 63A	S280UC-K,Z	Single pole
250 VDC	4.5kA	0.2 - 63A	S280UC-K,Z	Single pole
500 VDC	4.5kA	0.2 - 63A	S280UC-K,Z	Multi pole

Trip characteristics overview

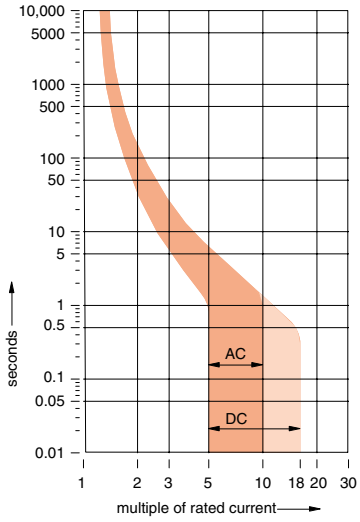
Curve	Magnetic characteristic ①	Thermal characteristic	Series
B	3 - 5X	1.25X	S260, S500
C	5 - 10X	1.25X	S260, S290, S500
D	10 - 20X	1.25X	S260, S500
K	8 - 12X	1.05X	S270,S280, S500
Z	2 - 3X	1.05X	S280

① All values are relative to MCB's ampere rating.

B



C



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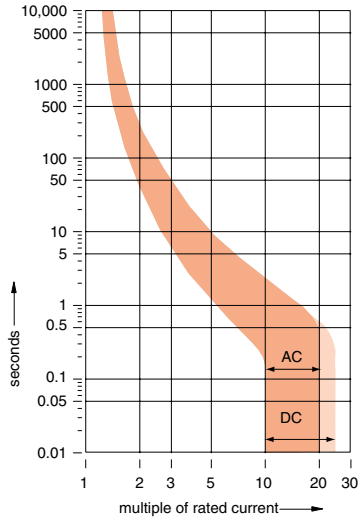
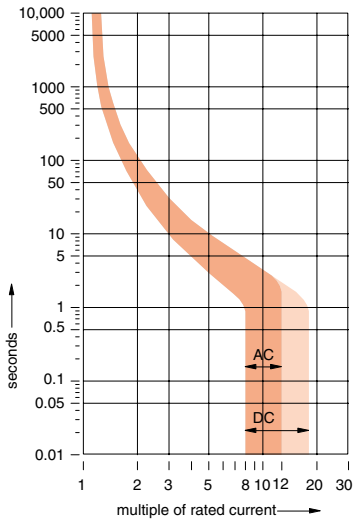
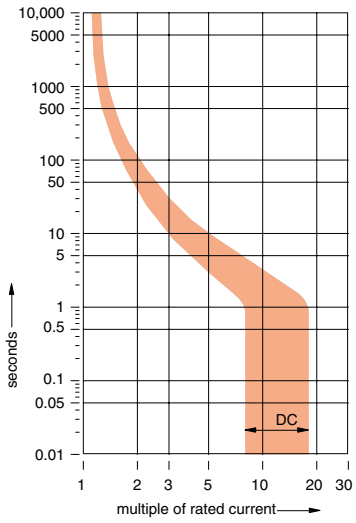


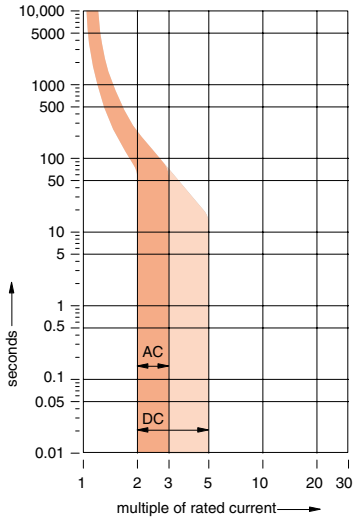
K



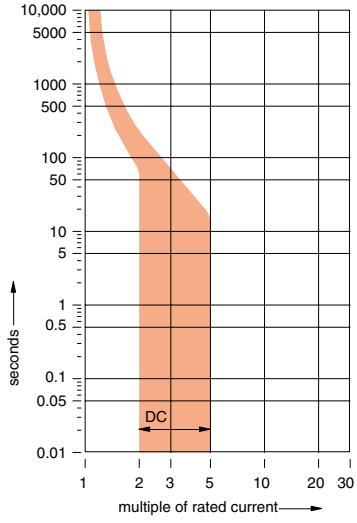
UC-K



Z

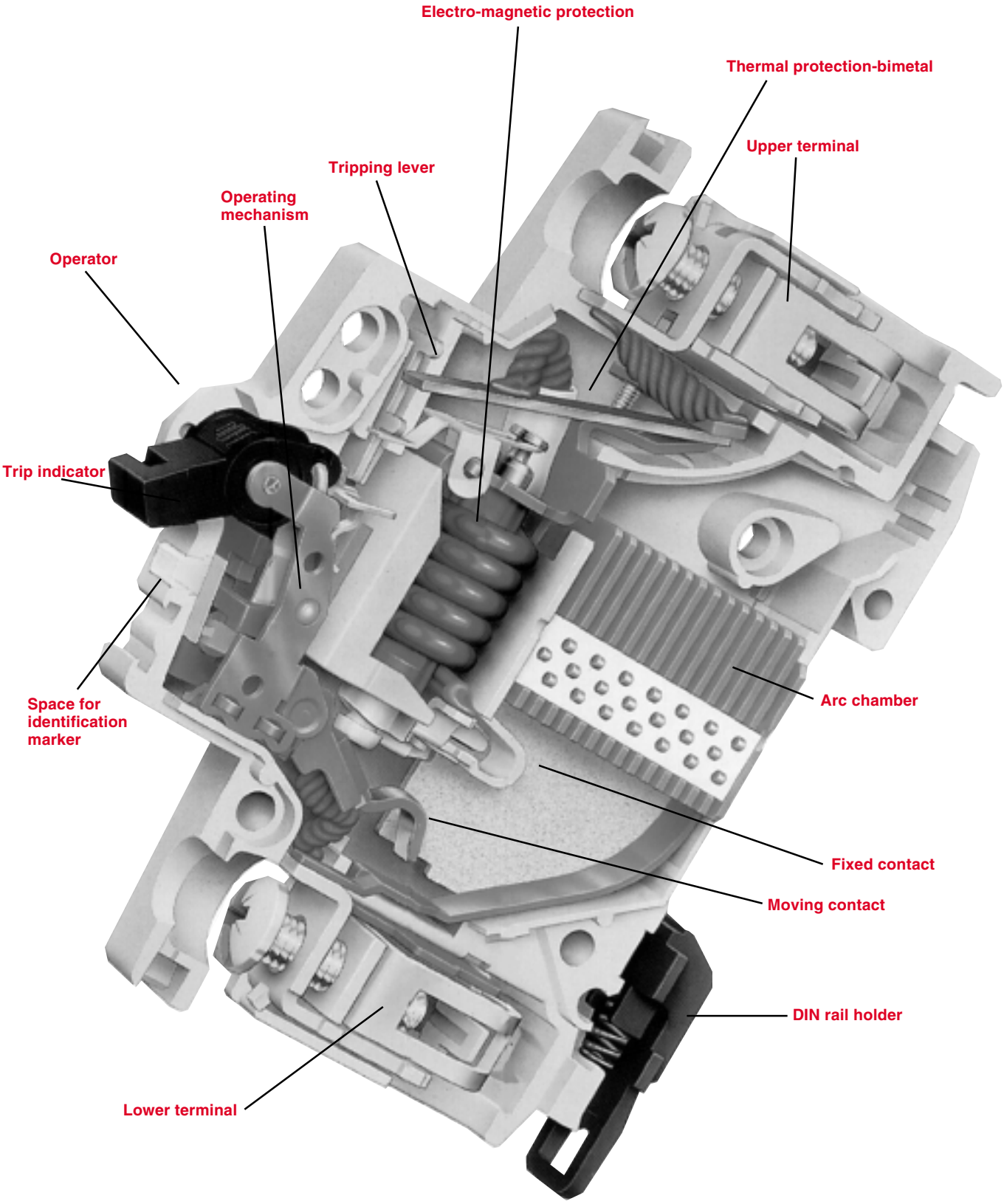


UC-Z

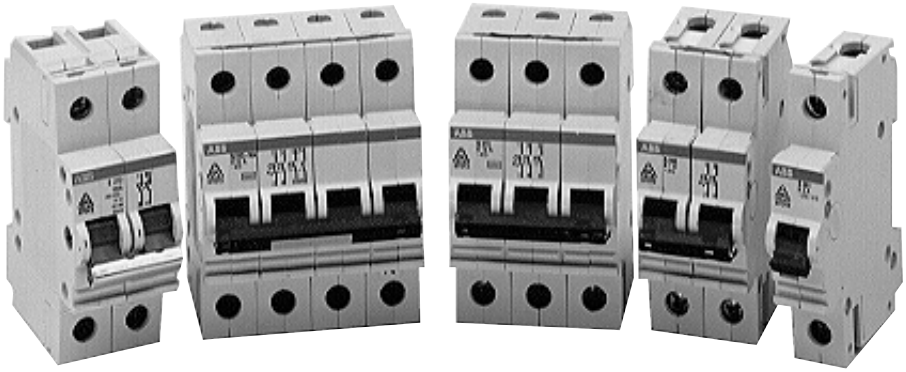


Pro M

General information
Construction details (S280 shown)



Pro M Miniature Circuit Breakers
S260, S270, S280, S290



Description

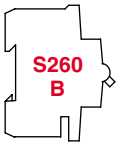
The S2 Series of miniature circuit breakers offer a compact solution to protection requirements. The breakers are recognized under standard UL 1077 as supplemental protective devices. The S2 devices are current limiting, DIN rail mounted and can offer a good equivalent to fused systems.

The S2 is available with application-specific trip characteristics to provide maximum circuit protection. The breakers offer thermal-magnetic trip protection according to B, C, D, K and Z characteristics.

For the worldwide market, the breakers carry UL, CSA, IEC, CE and many other agency approvals and certifications.

Features

- Current limiting
- Fast breaking time (2.5 – 3.5 msec)
- Unique bus connection system
- Wide range of accessories
- Available with variable depth handle mechanism
- Optional Z curve for SCR protection
- CE certified and marked
- DIN rail or front plated mounting
- Finger safe terminals
- Multi-function terminals
- Suitable for reverse feed
- UL 1077 and CSA 22.2
- 277/480VAC and 500VDC versions



S260
277/480 VAC

B

UL 1077 CSA C22.2 No. 235
VDE 0641 IEC-898
Cable protection

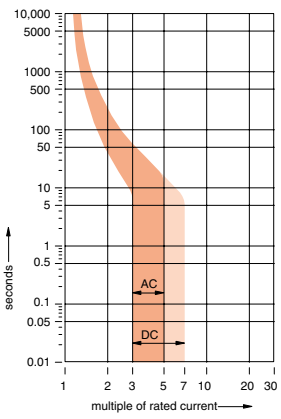
S261-B6

S262-B6
S261-B6NA

S263-B6

S264-B6
S263-B6NA

B



Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
6	S261-B6	**$ 36**			
10	S261-B10	**36**			
13	S261-B13	**36**			
16	S261-B16	**36**			
20	S261-B20	**38**	A	10	4.5
25	S261-B25	**38**			
32	S261-B32	**40**			
40	S261-B40	**42**			
50	S261-B50	**48**			
63	S261-B63	**56**			
6	S261-B6NA	**62**			
10	S261-B10NA	**62**			
13	S261-B13NA	**62**			
16	S261-B16NA	**62**			
20	S261-B20NA	**68**	A	5	9.0
25	S261-B25NA	**72**			
32	S261-B32NA	**74**			
40	S261-B40NA	**76**			
50	S261-B50NA	**90**			
63	S261-B63NA	**102**			
6	S262-B6	**78**			
10	S262-B10	**78**			
13	S262-B13	**78**			
16	S262-B16	**78**			
20	S262-B20	**86**	A	5	9.0
25	S262-B25	**88**			
32	S262-B32	**94**			
40	S262-B40	**98**			
50	S262-B50	**112**			
63	S262-B63	**128**			

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
6	S263-B6	**$ 118**			
10	S263-B10	**118**			
13	S263-B13	**118**			
16	S263-B16	**118**			
20	S263-B20	**130**	A	3	13.5
25	S263-B25	**132**			
32	S263-B32	**142**			
40	S263-B40	**148**			
50	S263-B50	**170**			
63	S263-B63	**194**			
6	S263-B6NA	**142**			
10	S263-B10NA	**142**			
13	S263-B13NA	**142**			
16	S263-B16NA	**142**			
20	S263-B20NA	**162**	A	2	18.0
25	S263-B25NA	**168**			
32	S263-B32NA	**176**			
40	S263-B40NA	**184**			
50	S263-B50NA	**212**			
63	S263-B63NA	**240**			
6	S264-B6	**156**			
10	S264-B10	**156**			
13	S264-B13	**156**			
16	S264-B16	**156**			
20	S264-B20	**172**	B	2	18.0
25	S264-B25	**176**			
32	S264-B32	**188**			
40	S264-B40	**196**			
50	S264-B50	**224**			
63	S264-B63	**256**			

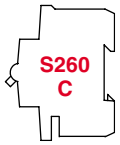
Switched neutral

To create a miniature circuit breaker from stock items with a switched neutral, order standard MCB (usually a single or three pole version) and a neutral disconnect module, S2-NT, which can be field added to the MCB.

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

S260
277/480 VAC



C UL 1077 CSA C22.2 - NO. 235
VDE 0641 IEC-898
Cable & equipment protection

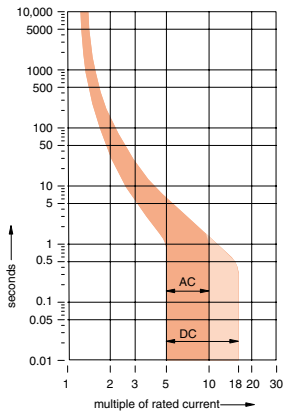

S261-C1


S262-C1


S263-C1


S264-C1

C



Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.5	S261-C0.5	**$ 42**			
1	S261-C1	**42**			
1.6	S261-C1.6	**42**			
2	S261-C2	**42**			
3	S261-C3	**42**			
4	S261-C4	**42**			
6	S261-C6	**42**			
8	S261-C8	**42**			
10	S261-C10	**42**	A	10	4.5
13	S261-C13	**42**			
16	S261-C16	**42**			
20	S261-C20	**42**			
25	S261-C25	**46**			
32	S261-C32	**48**			
40	S261-C40	**52**			
50	S261-C50	**60**			
63	S261-C63	**68**			
0.5	S261-C0.5NA	**84**			
1	S261-C1NA	**84**			
1.6	S261-C1.6NA	**84**			
2	S261-C2NA	**84**			
3	S261-C3NA	**84**			
4	S261-C4NA	**84**			
6	S261-C6NA	**84**			
8	S261-C8NA	**84**	B	5	9.0
10	S261-C10NA	**84**			
13	S261-C13NA	**84**			
16	S261-C16NA	**84**			
20	S261-C20NA	**84**			
25	S261-C25NA	**88**			
32	S261-C32NA	**90**			
40	S261-C40NA	**96**			
50	S261-C50NA	**112**			
63	S261-C63NA	**130**			
0.5	S262-C0.5	**96**			
1	S262-C1	**96**			
1.6	S262-C1.6	**96**			
2	S262-C2	**96**			
3	S262-C3	**96**			
4	S262-C4	**96**			
6	S262-C6	**96**			
8	S262-C8	**96**	A	5	9.0
10	S262-C10	**96**			
13	S262-C13	**96**			
16	S262-C16	**96**			
20	S262-C20	**96**			
25	S262-C25	**106**			
32	S262-C32	**106**			
40	S262-C40	**116**			
50	S262-C50	**136**			
63	S262-C63	**152**			

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.5	S263-C0.5	**$ 138**			
1	S263-C1	**138**			
1.6	S263-C1.6	**138**			
2	S263-C2	**138**			
3	S263-C3	**138**			
4	S263-C4	**138**			
6	S263-C6	**138**			
8	S263-C8	**138**			
10	S263-C10	**138**	A	3	13.5
13	S263-C13	**138**			
16	S263-C16	**138**			
20	S263-C20	**138**			
25	S263-C25	**156**			
32	S263-C32	**158**			
40	S263-C40	**174**			
50	S263-C50	**200**			
60	S263-CS60	**228**			
63	S263-C63	**228**			
0.5	S263-C0.5NA	**200**			
1	S263-C1NA	**200**			
1.6	S263-C1.6NA	**200**			
2	S263-C2NA	**200**			
3	S263-C3NA	**200**			
4	S263-C4NA	**200**			
6	S263-C6NA	**200**			
8	S263-C8NA	**200**	B	2	18.0
10	S263-C10NA	**200**			
13	S263-C13NA	**200**			
16	S263-C16NA	**200**			
20	S263-C20NA	**200**			
25	S263-C25NA	**206**			
32	S263-C32NA	**212**			
40	S263-C40NA	**224**			
50	S263-C50NA	**264**			
63	S263-C63NA	**304**			
0.5	S264-C0.5	**218**			
1	S264-C1	**218**			
1.6	S264-C1.6	**218**			
2	S264-C2	**218**			
3	S264-C3	**218**			
4	S264-C4	**218**			
6	S264-C6	**218**			
8	S264-C8	**218**	B	2	18.0
10	S264-C10	**218**			
13	S264-C13	**218**			
16	S264-C16	**218**			
20	S264-C20	**218**			
25	S264-C25	**234**			
32	S264-C32	**238**			
40	S264-C40	**260**			
50	S264-C50	**300**			
63	S264-C63	**338**			

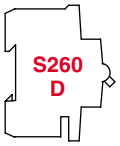
Switched neutral

To create a miniature circuit breaker from stock items with a switched neutral, order standard MCB (usually a single or three pole version) and a neutral disconnect module, S2-NT, which can be field added to the MCB.

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Pro M



S260
277/480 VAC

D

UL 1077 CSA C22.2
VDE 0641 IEC-898
Cable & equipment protection


S261-D0.5


S262-D1


S263-D63

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.5	S261-D0.5	**$ 42**			
1	S261-D1	**42**			
1.6	S261-D1.6	**42**			
2	S261-D2	**42**			
3	S261-D3	**42**			
4	S261-D4	**42**			
6	S261-D6	**42**			
8	S261-D8	**42**			
10	S261-D10	**42**	A	10	4.5
13	S261-D13	**42**			
16	S261-D16	**42**			
20	S261-D20	**42**			
25	S261-D25	**46**			
32	S261-D32	**48**			
40	S261-D40	**52**			
50	S261-D50	**60**			
63	S261-D63	**68**			
0.5	S262-D0.5	**96**			
1	S262-D1	**96**			
1.6	S262-D1.6	**96**			
2	S262-D2	**96**			
3	S262-D3	**96**			
4	S262-D4	**96**			
6	S262-D6	**96**			
8	S262-D8	**96**	A	5	9.0
10	S262-D10	**96**			
13	S262-D13	**96**			
16	S262-D16	**96**			
20	S262-D20	**96**			
25	S262-D25	**106**			
32	S262-D32	**106**			
40	S262-D40	**116**			
50	S262-D50	**136**			
63	S262-D63	**152**			

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.5	S263-D0.5	**$ 138**			
1	S263-D1	**138**			
1.6	S263-D1.6	**138**			
2	S263-D2	**138**			
3	S263-D3	**138**			
4	S263-D4	**138**			
6	S263-D6	**138**			
8	S263-D8	**138**	A	3	13.5
10	S263-D10	**138**			
13	S263-D13	**138**			
16	S263-D16	**138**			
20	S263-D20	**138**			
25	S263-D25	**156**			
32	S263-D32	**158**			
40	S263-D40	**174**			
50	S263-D50	**200**			
63	S263-D63	**228**			

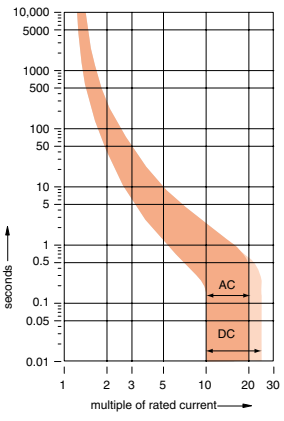
Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

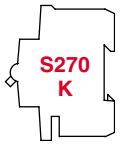
Switched neutral

To create a miniature circuit breaker from stock items with a switched neutral, order standard MCB (usually a single or three pole version) and a neutral disconnect module, S2-NT, which can be field added to the MCB.

D



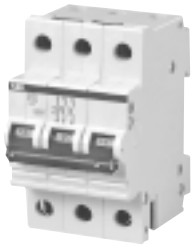
S270
277/480 VAC

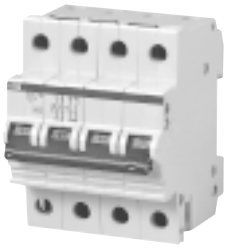


K UL 1077 CSA C22.2 - NO. 235
VDE 0641 IEC-898
Cable & equipment protection

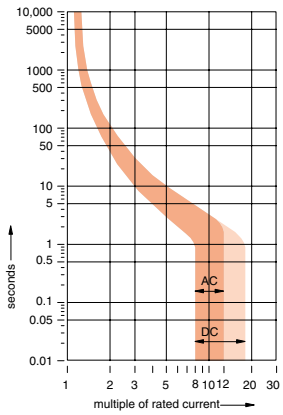

S271-K10


S271-K2
S272-K2NA


S273-K10


S273-K20
S274-K20NA

K



Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.5	S271-K0.5	$ 42			
1	S271-K1	42			
1.6	S271-K1.6	42			
2	S271-K2	42			
3	S271-K3	42			
4	S271-K4	42			
5	S271-KS5	42			
6	S271-K6	42			
8	S271-K8	42			
10	S271-K10	42			
13	S271-K13	42	A	10	4.5
15	S271-KS15	42			
16	S271-K16	42			
20	S271-K20	42			
25	S271-K25	46			
30	S271-KS30	48			
32	S271-K32	48			
40	S271-K40	52			
50	S271-K50	60			
60	S271-KS60	68			
63	S271-K63	68			
0.5	S271-K0.5NA	84			
1	S271-K1NA	84			
1.6	S271-K1.6NA	84			
2	S271-K2NA	84			
3	S271-K3NA	84			
4	S271-K4NA	84			
6	S271-K6NA	84			
8	S271-K8NA	84			
10	S271-K10NA	84	B	5	9.0
13	S271-K13NA	84			
16	S271-K16NA	84			
20	S271-K20NA	84			
25	S271-K25NA	88			
32	S271-K32NA	90			
40	S271-K40NA	96			
50	S271-K50NA	112			
63	S271-K63NA	130			
0.5	S272-K0.5	96			
1	S272-K1	96			
1.6	S272-K1.6	96			
2	S272-K2	96			
3	S272-K3	96			
4	S272-K4	96			
5	S272-KS5	96			
6	S272-K6	96			
8	S272-K8	96			
10	S272-K10	96	A	5	9.0
13	S272-K13	96			
15	S272-KS15	96			
16	S272-K16	96			
20	S272-K20	96			
25	S272-K25	106			
30	S272-KS30	106			
32	S272-K32	106			
40	S272-K40	116			
50	S272-K50	136			
60	S272-KS60	152			
63	S272-K63	152			

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.5	S273-K0.5	$ 138			
1	S273-K1	138			
1.6	S273-K1.6	138			
2	S273-K2	138			
3	S273-K3	138			
4	S273-K4	138			
5	S273-KS5	138			
6	S273-K6	138			
8	S273-K8	138			
10	S273-K10	138			
13	S273-K13	138	A	3	13.5
15	S273-KS15	138			
16	S273-K16	138			
20	S273-K20	138			
25	S273-K25	156			
30	S273-KS30	158			
32	S273-K32	158			
40	S273-K40	174			
50	S273-K50	200			
60	S273-KS60	228			
63	S273-K63	228			
0.5	S273-K0.5NA	200			
1	S273-K1NA	200			
1.6	S273-K1.6NA	200			
2	S273-K2NA	200			
3	S273-K3NA	200			
4	S273-K4NA	200			
6	S273-K6NA	200			
8	S273-K8NA	200			
10	S273-K10NA	200	B	2	18.0
13	S273-K13NA	200			
16	S273-K16NA	200			
20	S273-K20NA	200			
25	S273-K25NA	206			
32	S273-K32NA	212			
40	S273-K40NA	224			
50	S273-K50NA	264			
63	S273-K63NA	304			
0.5	S274-K0.5	218			
1	S274-K1	218			
1.6	S274-K1.6	218			
2	S274-K2	218			
3	S274-K3	218			
4	S274-K4	218			
6	S274-K6	218			
8	S274-K8	218	B	2	18.0
10	S274-K10	218			
13	S274-K13	218			
16	S274-K16	218			
20	S274-K20	218			
25	S274-K25	234			
32	S274-K32	238			
40	S274-K40	260			
50	S274-K50	300			
63	S274-K63	338			

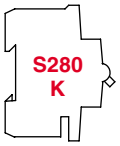
Switched neutral

To create a miniature circuit breaker from stock items with a switched neutral, order standard MCB (usually a single or three pole version) and a neutral disconnect module, S2-NT, which can be field added to the MCB.

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Pro M

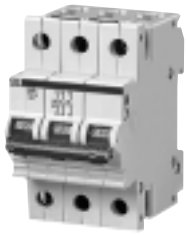


S280
277/480 VAC

K UL 1077 CSA C22.2 - NO. 235
VDE 0660
Cable & equipment protection


S281-K16


S282-K1


S283-K63

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.2	S281-K0.2	**$ 54**			
0.3	S281-K0.3	**54**			
0.5	S281-K0.5	**54**			
0.75	S281-K0.75	**54**			
1	S281-K1	**54**			
1.6	S281-K1.6	**54**			
2	S281-K2	**54**			
3	S281-K3	**54**			
4	S281-K4	**54**			
6	S281-K6	**54**			
8	S281-K8	**54**	A	10	4.6
10	S281-K10	**54**			
13	S281-K13	**54**			
16	S281-K16	**54**			
20	S281-K20	**54**			
25	S281-K25	**56**			
32	S281-K32	**58**			
40	S281-K40	**64**			
50	S281-K50	**70**			
63	S281-K63	**80**			
0.2	S282-K0.2	**128**			
0.3	S282-K0.3	**128**			
0.5	S282-K0.5	**128**			
0.75	S282-K0.75	**128**			
1	S282-K1	**128**			
1.6	S282-K1.6	**128**			
2	S282-K2	**128**			
3	S282-K3	**128**			
4	S282-K4	**128**			
6	S282-K6	**128**	A	5	9.2
8	S282-K8	**128**			
10	S282-K10	**128**			
13	S282-K13	**128**			
16	S282-K16	**128**			
20	S282-K20	**128**			
25	S282-K25	**130**			
32	S282-K32	**134**			
40	S282-K40	**134**			
50	S282-K50	**162**			
63	S282-K63	**182**			

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.2	S283-K0.2	**$ 194**			
0.3	S283-K0.3	**194**			
0.5	S283-K0.5	**194**			
0.75	S283-K0.75	**194**			
1	S283-K1	**194**			
1.6	S283-K1.6	**194**			
2	S283-K2	**194**			
3	S283-K3	**194**			
4	S283-K4	**194**			
6	S283-K6	**194**	A	3	13.9
8	S283-K8	**194**			
10	S283-K10	**194**			
13	S283-K13	**194**			
16	S283-K16	**194**			
20	S283-K20	**194**			
25	S283-K25	**196**			
32	S283-K32	**200**			
40	S283-K40	**214**			
50	S283-K50	**246**			
63	S283-K63	**280**			

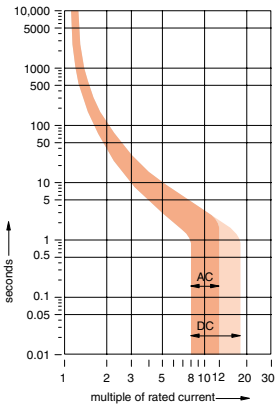
Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

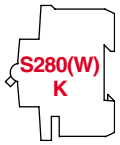
Switched neutral

To create a miniature circuit breaker from stock items with a switched neutral, order standard MCB (usually a single or three pole version) and a neutral disconnect module, S2-NT, which can be field added to the MCB.

K



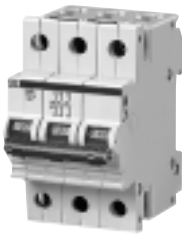
S280 (W)
for use with ring tongue terminal connectors
277/480 VAC



K UL 1077 CSA C22.2 - NO. 235
VDE 0660
Cable & equipment protection


S281-K16W


S282-K1W


S283-K63W

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.2	S281-K0.2W	**$ 54**			
0.3	S281-K0.3W	**54**			
0.5	S281-K0.5W	**54**			
0.75	S281-K0.75W	**54**			
1	S281-K1W	**54**			
1.6	S281-K1.6W	**54**			
2	S281-K2W	**54**			
3	S281-K3W	**54**			
4	S281-K4W	**54**			
6	S281-K6W	**54**			
8	S281-K8W	**54**	A	10	4.6
10	S281-K10W	**54**			
13	S281-K13W	**54**			
16	S281-K16W	**54**			
20	S281-K20W	**54**			
25	S281-K25W	**56**			
32	S281-K32W	**58**			
40	S281-K40W	**64**			
50	S281-K50W	**70**			
63	S281-K63W	**80**			
0.2	S282-K0.2W	**128**			
0.3	S282-K0.3W	**128**			
0.5	S282-K0.5W	**128**			
0.75	S282-K0.75W	**128**			
1	S282-K1W	**128**			
1.6	S282-K1.6W	**128**			
2	S282-K2W	**128**			
3	S282-K3W	**128**			
4	S282-K4W	**128**			
6	S282-K6W	**128**	A	5	9.2
8	S282-K8W	**128**			
10	S282-K10W	**128**			
13	S282-K13W	**128**			
16	S282-K16W	**128**			
20	S282-K20W	**128**			
25	S282-K25W	**130**			
32	S282-K32W	**134**			
40	S282-K40W	**134**			
50	S282-K50W	**162**			
63	S282-K63W	**182**			

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.2	S283-K0.2W	**$ 194**			
0.3	S283-K0.3W	**194**			
0.5	S283-K0.5W	**194**			
0.75	S283-K0.75W	**194**			
1	S283-K1W	**194**			
1.6	S283-K1.6W	**194**			
2	S283-K2W	**194**			
3	S283-K3W	**194**			
4	S283-K4W	**194**			
6	S283-K6W	**194**	A	3	13.9
8	S283-K8W	**194**			
10	S283-K10W	**194**			
13	S283-K13W	**194**			
16	S283-K16W	**194**			
20	S283-K20W	**194**			
25	S283-K25W	**196**			
32	S283-K32W	**200**			
40	S283-K40W	**214**			
50	S283-K50W	**246**			
63	S283-K63W	**280**			

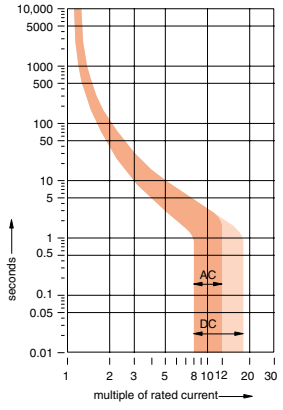
Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Screws (must be ordered separately!)

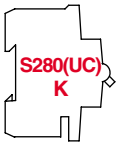
Item	Catalog number	List price ②
PKG of 20 screws	S2-SCR	**No charge**

K



① For use with ring tongue or cable terminals only. Cannot be used with busbar system.
② No charge when ordered with the S280(W).

Pro M



S280UC
500 VDC

K UL 1077 VDE 0660
CSA 22.2 No. 235
Cable and Equipment Protection


S281UC-K25


S282UC-K8


S283UC-K16

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.2	S281UC-K0.2	**$ 104**			
0.3	S281UC-K0.3	**104**			
0.5	S281UC-K0.5	**104**			
0.75	S281UC-K0.75	**104**			
1	S281UC-K1	**104**			
1.6	S281UC-K1.6	**104**			
2	S281UC-K2	**104**			
3	S281UC-K3	**104**			
4	S281UC-K4	**104**			
6	S281UC-K6	**104**	B	10	4.6
8	S281UC-K8	**104**			
10	S281UC-K10	**104**			
16	S281UC-K16	**104**			
20	S281UC-K20	**104**			
25	S281UC-K25	**108**			
32	S281UC-K32	**110**			
40	S281UC-K40	**116**			
50	S281UC-K50	**136**			
63	S281UC-K63	**152**			
0.2	S282UC-K0.2	**242**			
0.3	S282UC-K0.3	**242**			
0.5	S282UC-K0.5	**242**			
0.75	S282UC-K0.75	**242**			
1	S282UC-K1	**242**			
1.6	S282UC-K1.6	**242**			
2	S282UC-K2	**242**			
3	S282UC-K3	**242**			
4	S282UC-K4	**242**	B	5	9.2
6	S282UC-K6	**242**			
8	S282UC-K8	**242**			
10	S282UC-K10	**242**			
16	S282UC-K16	**242**			
20	S282UC-K20	**242**			
25	S282UC-K25	**248**			
32	S282UC-K32	**256**			
40	S282UC-K40	**266**			
50	S282UC-K50	**312**			
63	S282UC-K63	**348**			

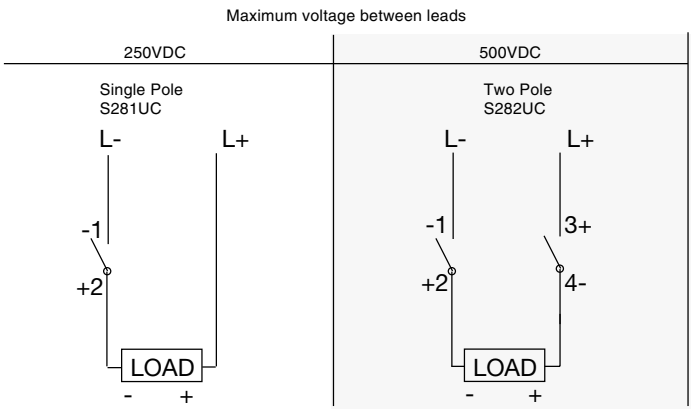
Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.2	S283UC-K0.2	**$ 370**			
0.3	S283UC-K0.3	**370**			
0.5	S283UC-K0.5	**370**			
0.75	S283UC-K0.75	**370**			
1	S283UC-K1	**370**			
1.6	S283UC-K1.6	**370**			
2	S283UC-K2	**370**			
3	S283UC-K3	**370**			
4	S283UC-K4	**370**	B	3	13.9
6	S283UC-K6	**370**			
8	S283UC-K8	**370**			
10	S283UC-K10	**370**			
16	S283UC-K16	**370**			
20	S283UC-K20	**370**			
25	S283UC-K25	**382**			
32	S283UC-K32	**408**			
40	S283UC-K40	**448**			
50	S283UC-K50	**472**			
63	S283UC-K63	**534**			

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

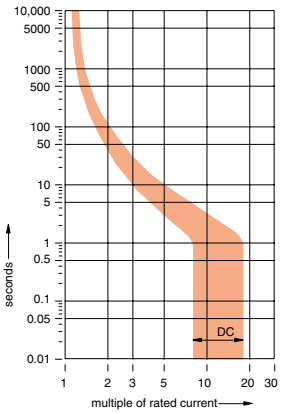
Direct current applications

The S280UC differs from standard miniature circuit breakers in that the UC versions include a permanent magnet which aids in the extinguishing of the arc during medium and high level faults. It is necessary to observe the correct polarity and current direction when connecting the UC breakers. Two examples of correct connection are shown below.



Termination points are marked on all UC type MCBs, points one (1) and four (4) are negative and points two (2) and three (3) are positive. Four pole breakers are also available for voltage reversal applications.

UC-K



S280 & S280UC
277/480VAC & 500VDC

Z

UL 1077 VDE 0660
CSA 22.2 No. 235
Fast trip characteristic


S281-Z16


S282-Z32


S283-Z32

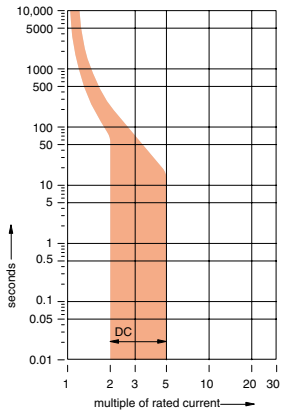
480 VAC Class

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.5	S281-Z0.5	**$ 70**			
1	S281-Z1	**70**			
1.6	S281-Z1.6	**70**			
2	S281-Z2	**70**			
3	S281-Z3	**70**			
4	S281-Z4	**70**			
6	S281-Z6	**70**			
8	S281-Z8	**70**	B	10	4.5
10	S281-Z10	**70**			
16	S281-Z16	**70**			
20	S281-Z20	**70**			
25	S281-Z25	**70**			
32	S281-Z32	**74**			
40	S281-Z40	**78**			
50	S281-Z50	**88**			
63	S281-Z63	**100**			
0.5	S282-Z0.5	**162**			
1	S282-Z1	**162**			
1.6	S282-Z1.6	**162**			
2	S282-Z2	**162**			
3	S282-Z3	**162**			
4	S282-Z4	**162**			
6	S282-Z6	**162**			
8	S282-Z8	**162**	B	5	9.2
10	S282-Z10	**162**			
16	S282-Z16	**162**			
20	S282-Z20	**162**			
25	S282-Z25	**184**			
32	S282-Z32	**170**			
40	S282-Z40	**176**			
50	S282-Z50	**206**			
63	S282-Z63	**232**			
0.5	S283-Z0.5	**244**			
1	S283-Z1	**244**			
1.6	S283-Z1.6	**244**			
2	S283-Z2	**244**			
3	S283-Z3	**244**			
4	S283-Z4	**244**			
6	S283-Z6	**244**			
8	S283-Z8	**244**	B	3	13.9
10	S283-Z10	**244**			
16	S283-Z16	**244**			
20	S283-Z20	**244**			
25	S283-Z25	**248**			
32	S283-Z32	**254**			
40	S283-Z40	**266**			
50	S283-Z50	**306**			
63	S283-Z63	**344**			

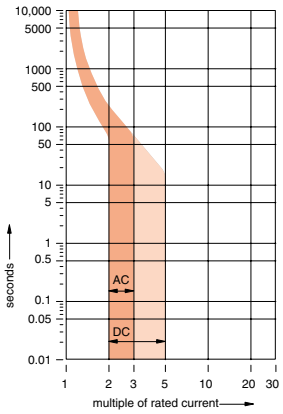
500 VDC Class

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
0.5	S281UC-Z0.5	**$ 168**			
1	S281UC-Z1	**168**			
1.6	S281UC-Z1.6	**168**			
2	S281UC-Z2	**168**			
3	S281UC-Z3	**168**			
4	S281UC-Z4	**168**			
6	S281UC-Z6	**168**			
8	S281UC-Z8	**168**			
10	S281UC-Z10	**168**	B	10	4.6
16	S281UC-Z16	**168**			
20	S281UC-Z20	**168**			
25	S281UC-Z25	**170**			
32	S281UC-Z32	**176**			
40	S281UC-Z40	**188**			
50	S281UC-Z50	**216**			
63	S281UC-Z63	**242**			
0.5	S282UC-Z0.5	**390**			
1	S282UC-Z1	**390**			
1.6	S282UC-Z1.6	**390**			
2	S282UC-Z2	**390**			
3	S282UC-Z3	**390**			
4	S282UC-Z4	**390**			
6	S282UC-Z6	**390**			
8	S282UC-Z8	**390**	B	5	9.2
10	S282UC-Z10	**390**			
16	S282UC-Z16	**390**			
20	S282UC-Z20	**390**			
25	S282UC-Z25	**398**			
32	S282UC-Z32	**410**			
40	S282UC-Z40	**426**			
50	S282UC-Z50	**498**			
63	S282UC-Z63	**558**			
0.5	S283UC-Z0.5	**594**			
1	S283UC-Z1	**594**			
1.6	S283UC-Z1.6	**594**			
2	S283UC-Z2	**594**			
3	S283UC-Z3	**594**			
4	S283UC-Z4	**594**			
6	S283UC-Z6	**594**			
8	S283UC-Z8	**594**	B	3	13.9
10	S283UC-Z10	**594**			
16	S283UC-Z16	**594**			
20	S283UC-Z20	**594**			
25	S283UC-Z25	**603**			
32	S283UC-Z32	**612**			
40	S283UC-Z40	**657**			
50	S283UC-Z50	**756**			
63	S283UC-Z63	**855**			

UC-Z



Z



Switched neutral

To create a miniature circuit breaker from stock items with a switched neutral, order standard MCB (usually a single or three pole version) and a neutral disconnect module, S2-NT, which can be field added to the MCB. See accessories page 1.18.

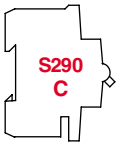
Direct current applications

Please refer to the chart on page 1.12..

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Pro M



S290
277/480 VAC

C VDE 0660
Cable and equipment protection


S291-C80


S290-H11

480 VAC Class

Rated current	Catalog number	List price	Delivery class	Sugg. order qty	Wgt. oz. (1 pc.)
80	S291-C80	**$ 138**			
100	S291-C100	**144**	B	6	9.2
125	S291-C125	**192**			
80	S292-C80	**340**			
100	S292-C100	**364**	B	3	18.4
125	S292-C125	**568**			
80	S293-C80	**536**			
100	S293-C100	**548**	B	2	27.6
125	S293-C125	**732**			
80	S294-C80	**740**			
100	S294-C100	**756**	B	1	36.8
125	S294-C125	**948**			

Auxiliary contact

	S290-H11	**72**	B	1	1.75

Bell alarm

	S290-S	**112**	B	1	1.75

Shunt trip

	S290-A1	**144**	B	1	6.2

For field mounting, left side, 110V – 415VAC

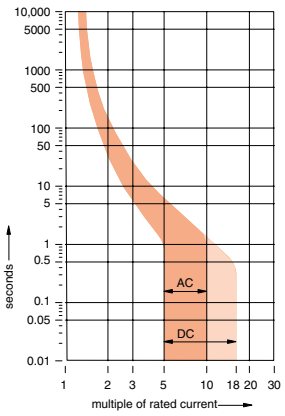
	S290-A2	**144**	B	1	6.2

For field mounting, left side, 24 – 48VDC

Delivery Class

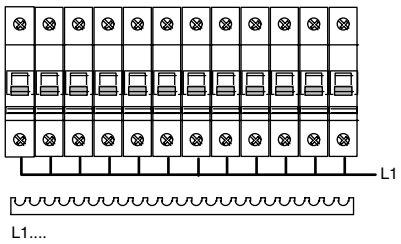
A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

C



Accessories
Busbars
S260, S270, S280

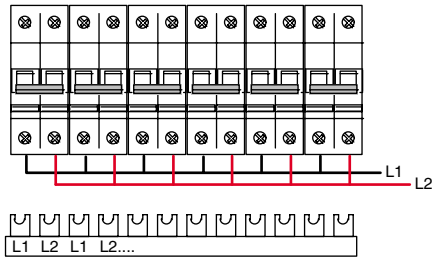
1 Phase



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
55	12	207	–	SZ-KS1/12	**$ 12**	A	10	0.6
55	56	988	–	SZ-KS1/56	**36**		5	2.6
85	56	988	–	SZ-KS2/56	**46**		5	5.2
110	56	988	–	SZ-VB45.32	**68**		5	10.0

Uninsulated copper bar mounts flush with bottom edge of circuit breakers.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

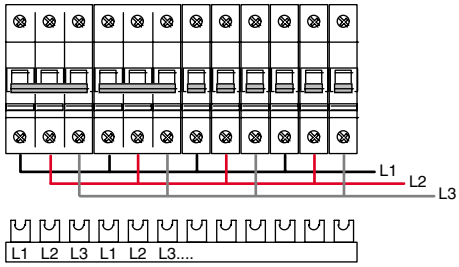
2 Phase



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	58	1035	PSB-END3	SZ-PSB54N	**$ 122**	A	1	14.4
65	58	1035	PSB-END3	SZ-PSB56N	**122**			19.1
50	12	213	–	PSB-53UL	**40**			4.0

Insulated busbar assembly contains 2 separate circuits for use with 1, 1+N or 2 pole MCBs.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

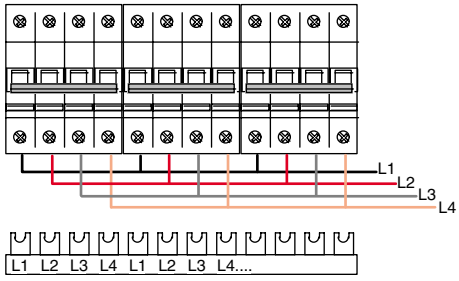
3 Phase



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	12	213	–	PSB-3UL	**$ 60**	A	3	4.3
65	60	1065	PSB-END5	SZ-PSB4N	**130**		1	21.4
50	60	1065	PSB-END6	SZ-PSB12N	**176**		1	34.2

Insulated busbar assembly contains 3 separate circuits for use with 1 or 3 pole MCBs.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

4 Phase



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	60	1035	PSB-END4	SZ-PSB62N	**$ 204**	A	1	23.2
65	60	988	PSB-END4	SZ-PSB64N	**236**			31.6

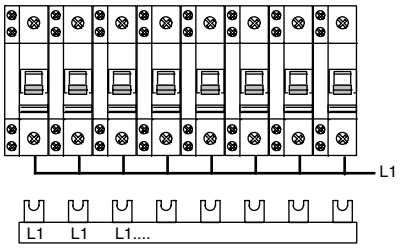
Insulated busbar assembly contains 4 separate circuits for use with 3+N1 or 4 pole MCBs.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Accessories
Busbars
S260, S270, S280

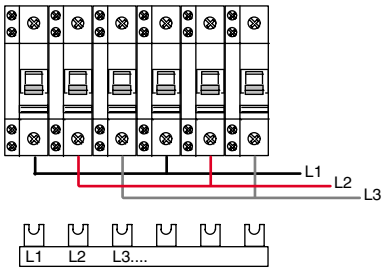
1 Phase with 1 auxiliary



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	39	1044	PSB-END3	SZ-KS3/39N	**$ 50**	A	1	7.4
65	39	1044	PSB-END3	SZ-KS4/39N	**56**	A	1	10.1

Uninsulated copper bar mounts flush with bottom edge of circuit breakers.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

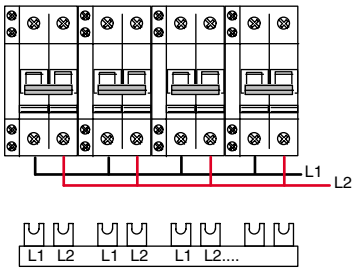
3 Phase for 1 pole MCB's with 1 auxillary



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	58	1044	PSB-END3	SZ-PSB46N	**$ 124**	B	1	16.1
65	58	1044	PSB-END3	SZ-PSB48N	**158**	B	1	22.1

Insulated busbar assembly contains 2 separate circuits for use with 1, 1+N or 2 pole MCBs.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

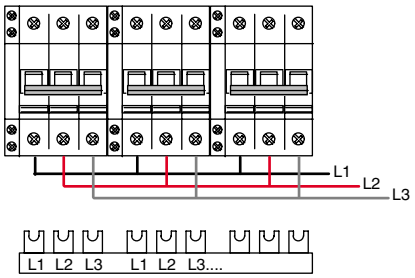
2 Phase with 1 auxillary



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
65	48	1065	—	SZ-PSB92N	**174**	B	1	23.2

Insulated busbar assembly contains 3 separate circuits for use with 1 or 3 pole MCBs.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

3 Phase with 1 auxillary



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	48	980	PSB-END3	SZ-PSB50N	**$ 124**	B	1	15.8
65	48	980	PSB-END3	SZ-PSB52N	**158**	A	1	22.6

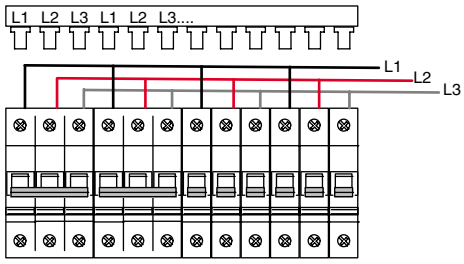
Insulated busbar assembly contains 4 separate circuits for use with 3+N1 or 4 pole MCBs.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Accessories
Busbars
S260, S270, S280

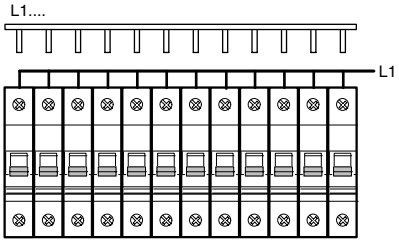
3 Phase



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	12	213	—	SZ-PSB21	**$ 40**	A	1	4.5
50	60	1065	—	SZ-PSB22	**130**			21.4
65	12	213	—	SZ-PSB23	**50**			6.0
65	60	1065	—	SZ-PSB24	**176**			34.2

Insulated busbar assembly contains 3 separate circuits for use with 1, 2+N or 3 pole MCBs.
For use on line side (top) of S260 and S270 MCBs.

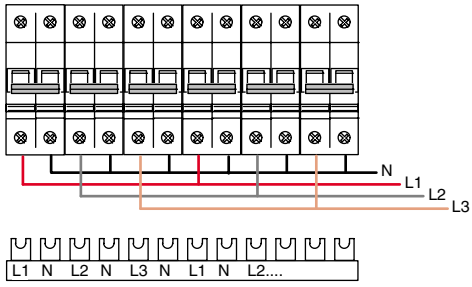
1 Phase



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	12	202	—	SZ-KS16/12N	**$ 13**	A	1	1.5
50	56	1007	—	SZ-KS16/56N	**55**			9.0

Insulated busbar assembly contains 1 circuit for use with 1 pole MCBs.
For use on line side (top) of S260 and S270 MCBs.

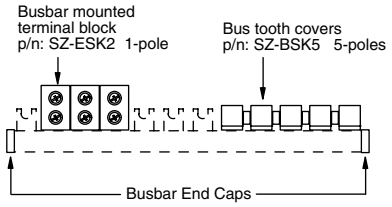
3 Phase + N, for use with 2 pole MCB's on 3 phase / 4W system



Amp rating	Number of poles	Busbar length	End cap catalog number	Catalog number	List price	Delivery class	Suggested order qty. quantity	Weight ounce (2 pc.)
50	58	1048	PSB-END4	SZ-PSB58N	**$ 198**	B	1	22.3
65	58	1048	PSB-END4	SZ-PSB60N	**238**	A	1	30.8

Insulated busbar assembly contains 4 separate circuits for use with 1+N or 2 pole MCBs.
For use on load side (bottom) of S260, S270, S280 and line side (top) of S280 MCBs.

MCB Busbar accessories



Description	Catalog number	List price	Delivery class	Suggested order qty.	Weight ounce qty. (2 pc.)
Busbar end caps	PSB-END3 PSB-END4 PSB-END5 PSB-END6	**$ 2**	A	10	—
Busbar tooth covers (shrouds unused portion of busbar)	SZ-BSK5	**4**	A	10	—
IEC busbar mounted terminal block 1 pole, for use on all busbars	SZ-ESK2	**10**	A	1	1.0

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Accessories
S260, S270 & S280


S2-H11


S2-A1


S2-BM1


S2-S


S2-S/H


S2-NT

Electrical accessories	Catalog number	List price	Delivery class	Suggested order quantities	Wgt. oz. (1 pc.)
Auxiliary contacts					
For field mounting: left side					
1 N.O./ 1 N.C.	S2-H11	**$ 36**			
2 N.O.	S2-H20	**36**			
2 N.C.	S2-H02	**36**	A	1	1.4
1 N.O./ 2 N.C.	S2-H12	**54**			
2 N.O./ 1 N.C.	S2-H21	**54**			
2 N.O./ 1 N.C. (low voltage)	S2-H21KL	**60**			

The S2-H11 auxiliary switch can be field mounted to any S260, S270 or S280 series breaker. The auxiliary contacts will signal whether the breaker is in the ON or OFF position. The contacts are rated 6A/240 VAC and 1.5A/110 VDC. Minimum operating voltage is 12 VAC/VDC.

Bell alarm

For field mounting, left side	S2-S	**48**	A	1	1.4

The S2-S bell alarm includes a set of contacts that will only signal when the breaker has tripped. Typically the contacts would be connected to an alarm or bell to signal the operator that an overcurrent trip has occured. The bell alarm also includes a test button for testing the alarm contacts without opening the breaker. The contact is rated 6A/240 VAC and 1.5A/110 VDC. Minimum operating voltage is 12 VAC/VDC.

Bell alarm with auxiliary contact

For field mounting, left side	S2-S/H	**58**	A	1	1.4

The S2-S/H bell alarm with auxiliary contact device combines one set of bell alarm contacts with one set of auxiliary contacts (N.O.).

Shunt trip

For field mounting, left side					
12-60 VAC (12-60VDC)	S2-A1	**138**	A	1	5.2
110-415 VAC (110-250 VDC)	S2-A2				

For remote tripping of breaker, a shunt trip device can be added to the MCB. The solenoid device opens the breaker after control voltage is applied. Shunt trips are available depending on control system voltage (12-415 VAC/VDC).

Undervoltage release

For field mounting, left or right side					
12V	S2-BM1				
24V	S2-BM2				
48V	S2-BM3	**216**	A	1	5.2
110V	S2-BM4				
220V	S2-BM5				
380V	S2-BM6				

When control voltage drops below approximately 50% of rated voltage, the S2-BM opens the breaker. The breaker can not be operated unless proper control voltage is first applied to the UVR coil. Similar in size and mounting to the shunt trip accessory; can be left or right side mounted.

Hand operated neutral disconnect

For field mounting, right side, 40A max.	S2-NT	**27**	A	1	1.4

When switching of neutral with breaker contacts is desired, the neutral module S2-NT can be added to any S260, S270 or S280 MCB. The neutral connection makes before the MCB contacts connect line to load. Makes contact before MCB contacts close. Must be opened manually.

Factory mounting

All accessories can be easily mounted in the field. For factory mounting of any accessory devices, add $30 list to total price per breaker. To create complete catalog number, take suffix of accessory device following "S2-" and add suffix to end of breaker part number. Multiple suffixes must be added in alphabetical order.

Example:	S272-K20A1	$ 264	(2 pole, 20A breaker with type A1 shunt trip) S272-K20 @ $96 + A1 @ $138 + factory mounting @ $30 = $264
	S272-K20A2H11	$ 300	(2 pole, 20A breaker with type A2 shunt trip and H11 aux. contacts) S272-K20 @ $96 + A2 @ $138 + H11 @ $36 + factory mounting @ $30 = $300

Auxiliary contacts and shunt trips may be mounted in combination.

Delivery Class

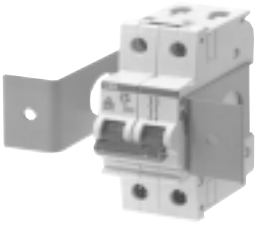
A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

NOTE: Above accesssories are for use with types S260, S270 and S280 breakers only.

Accessories
S260, S270, S280


S500-ME2


MB-CL


MB-3PD


SZ-AST35


SA2

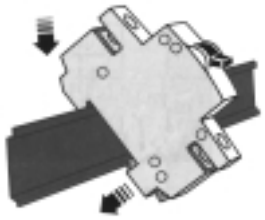

SA1

Electrical accessories	Catalog number	List price	Delivery class	Suggested order quantities	Wgt. oz. (1 pc.)
Front mounting kit					
For 2 poles	S500-ME1	**$ 60**	A	1	2.1
For 2 – 5 poles	S500-ME2	**70**			2.9
For 2 – 10 poles	S500-ME3	**80**			3.6
Optional rear terminals (2 per kit)	MB-2RT	**16**			1.5
Includes flange, mounting rail, terminals for rear connection and hardware.					
Front mounting clip					
For 1 – 4 poles	MB-CL	**35**	A	1	2
Simple mounting clip for up to four module mounting.					
Front mounting bracket					
For 1 – 3 poles	MB-3PD	**35**	A	1	2.5
For flush mounting of three pole MCBs: includes hardware.					
Pin-type connector					
2AWG (35mm^2)	SZ-AST35	**9**	A	10	0.5
Needed for connecting large cable 2AWG (35mm^2) and busbar on same breaker.					
Locking device					
Adaptor only	SA1	**9**	A	10	0.7
Padlock only w/ 2 keys	SA2	**19**			0.1
Allows breaker to be locked in ON or OFF position.					
Labeling accessory					
1 sheet = 100 blank labels 1 sheet = 100 numbered labels	STL-ST	**74**	A	1	—
Snaps into rail indent on front of MCB Label holder & labels includes 100 label carriers.					
Enclosure, IP55					
For 4 modules	12644	**84**	A	1	8.1
For 6 modules	12646	**98**			10.8
For 10 modules	12650	**126**			20.4
For 20 modules	12652	**210**			41.0
Molded plastic complete with mounting rail and knock-outs for cable entries.					
Blanking plates					
Single pole (set of 10)	BP-1P	**6**	A	1	—
Twelve pole (snap-off, set of 1)	BP-12P	**7**	—	—	—
Terminal covers					
For 2 modules	PCD2	**32**	A	1	2.0
For 4 modules	PCD4	**45**			2.8
For 6 modules	PCD6	**56**			3.4
For 8 modules	PCD8	**66**			4.1
For additional protection against accidental contact. Includes integrated mounting rail.					
Handle mechanism					
	RHS2-M	**76**	A	1	9.2
For use with 2, 3 and 4 pole S2 MCBs and disconnect switch selector handles with 5mm shaft.					
Mounting rail					
Universal mounting	SMR-39	**21**	A	1	8
35mm DIN rails are available in 39-inch strips (1 meter).					

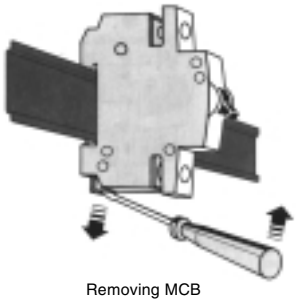
Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Technical data
Mounting and operating instructions



Mounting MCB



Removing MCB

Mounting
Universal mounting position using snap-on mounting to standard 35x7.5mm DIN rail.

Miniature circuit breakers (MCBs) can also be mounted to front of door using a panel cut-out with breaker handle protruding through panel opening for external operation. Special front mounting kit type ME is available (see page 2.12).

Connection
Terminals are suitable for solid or flexible conductors from 18 to 4 AWG (0.75 to 25mm^2) with no busbar connected. When maximum busbar size of 36 mm^2 is used, maximum cable is 6 AWG (16 mm^2).

Maximum tightening torque of 17.5 in-lb (2 Nm) for line/load terminals and 4.5 in-lb (0.5Nm) for accessory device terminals.

Operation
MCBs are switched on by moving the handle to the upper position. Stamped onto the handle switch, a “I” is visible confirming that the breaker is closed.

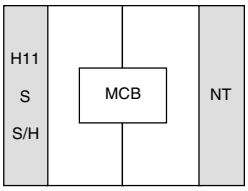
The MCBs are “trip-free,” if the handle is being forced to the “ON” position, the breaker will still trip under fault conditions.

The “O” marking indicates that the breaker is in the “OFF” position. The MCB is now open and the load is disconnected from line power.

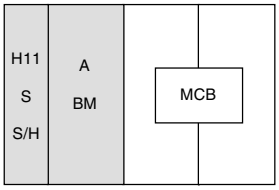
When a breaker has tripped, the MCB handle should first be set to the full “OFF” position to make certain the trip mechanism has been reset. Once the fault has been determined and cleared the MCB can again be switched “ON”.

Maintenance
ABB miniature circuit breakers require no special maintenance; only normal electrical system maintenance procedures are required.

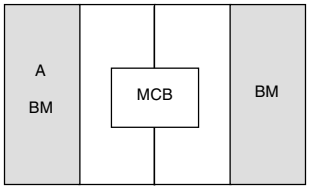
Possible mounting arrangements of MCB accessories



Auxiliary switch/bell alarm neutral disconnect



Shunt trip or undervoltage release mounted with auxiliary switch

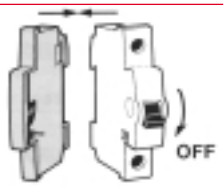


Shunt trip and/or undervoltage release

Auxiliary switch

Set breaker to “ON” position

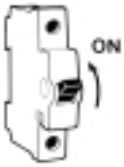
Break out opening on side of MCB



Set MCB to “OFF” position and mount auxiliary switch to side of breaker

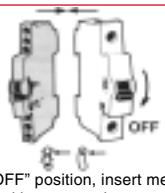
Attach with spring clamps

Bell alarm with auxiliary contact



Set breaker to “ON” position

Break out opening on side of MCB and remove seal

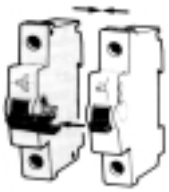


Set MCB to “OFF” position, insert metal pin as noted above with arrow and mount device to side of MCB

Attach with spring clamps

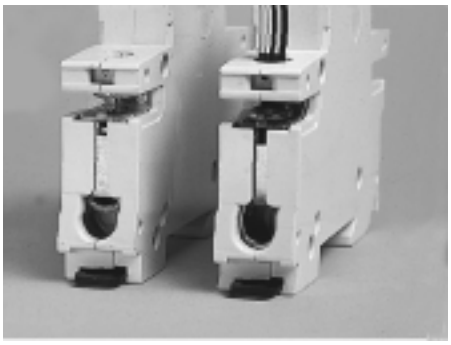
Shunt trip and undervoltage release

Remove seal

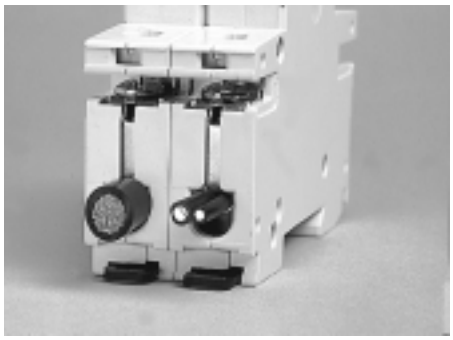


Add shunt trip to MCB

Attach with spring clamps

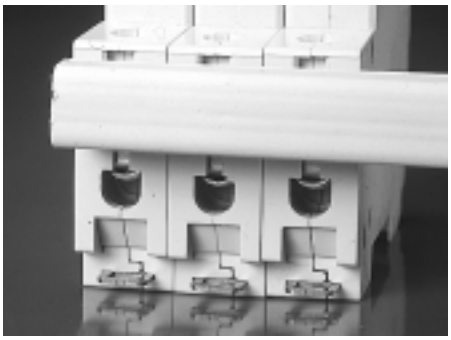


Dual function terminals provided in open position for connection to busbars. Pressing on screw head opens box terminal for cable insertion. Only the lower terminal is dual function.

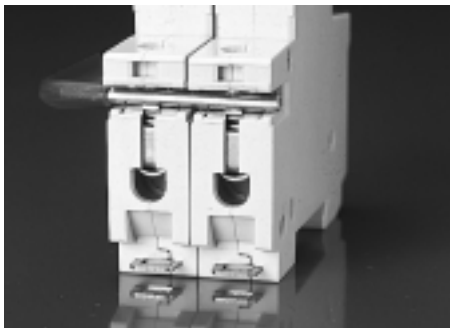


Terminals allow for connection of cable 18-4 AWG. Conductors of different sizes may also be used in same terminal.

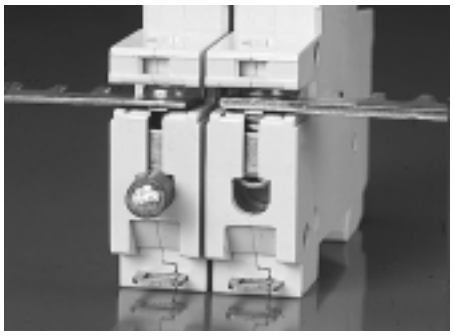
Up to five conductors, 16 AWG each, can be safely connected per terminal.



Lower terminals can be bussed together with single phase or multi-phase busbars as shown. Upper terminals can also be busbar connected.



Lower terminal can also be bussed with solid round conductor.



Cables can be connected to box terminals in addition to busbar connections on lower, dual function terminals.

Technical data
S260, S270, & S280

Item	S260-B		S260-C, -D		S270-K		S280-K	
Approvals:								
UL	1077		1077		1077		1077	
CSA	C22.2 — No.235		C22.2 — No. 235		C22.2 — No. 235		C22.2 — No. 235	
VDE	0641, 0660		0660		0660		0660	
IEC	898, 947		898, 947		898, 947		898, 947	
No. of poles:	1,2,3,4 1+N,3+N		1,2,3		1,2,3,4, 1+N,3+N		1,2,3,4,1+N,3+N	
Tripping characteristic:	B		C,D		K		K	
Rated currents:	6 to 63A		0.5 to 63A		0.5 to 63A		0.2 to 63A	
Minimum operating voltage:	12V		12V		12V		12V	
UL/CSA rated voltage & interrupting capacity	Single pole	Multi pole	Single pole	Multi pole	Single pole	Multi pole	Single pole	Multi pole
120VAC	10kA	—	10kA	—	10kA	—	10kA for 0.2-40A 6kA for 50-63A	—
240VAC	6kA	10kA	6kA	10kA	6kA	10kA	10kA for 0.2-40A 6kA for 50-63A	10kA for 0.2-32A 6kA for 40-63A
277VAC	6kA	—	6kA	—	6kA	—	10kA for 0.2-40A	—
277/480 VAC	—	6kA	—	6kA	—	6kA	—	10kA for 0.2-32A 6kA for 40-63A
60VDC	10kA	10kA	10kA	10kA	10kA	10kA	—	—
125VDC	—	10kA	—	10kA	—	10kA	—	—
Frequency:	50/60Hz (See below)		50/60Hz (see below)		50/60Hz (see below)		50/60Hz (see below)	
Rated voltage								
IEC single pole	240/415VAC 60VDC 415VAC 110VDC		240/415VAC 60VDC 415VAC 110VDC		240/415VAC 60VDC 415VAC 110VDC		240/415VAC 60VDC 415VAC 110VDC	
IEC multi-pole								
Protection category:	IP20		IP20		IP20		IP20	
Depth of unit per DIN 43880:	68mm		68mm		68mm		68mm	
Mounting position:	optional		optional		optional		optional	
Standard mounting:	35mm DIN rail		35mm DIN rail		35mm DIN rail		35mm DIN rail	
Terminals:	Conductors from 18-4AWG (0.75 – 25sq mm) 50A and above Conductors from 18-2AWG (0.75 – 35sq mm)		Conductors from 18-4AWG (0.75 – 25sq mm) 50A and above Conductors from 18-2AWG (0.75 – 35sq mm)		Conductors from 18-4AWG (0.75 – 25sq mm) 50A and above Conductors from 18-2AWG (0.75 – 35sq mm)		Conductors from 18-4AWG (0.75 – 25sq mm) 50A and above Conductors from 18-2AWG (0.75 – 35sq mm)	
Service life at rated load:	20,000 operations		20,000 operations		20,000 operations		20,000 operations	
Ambient temperatures:	-25°C to +55°C		-25°C to +55°C		-25°C to +55°C		-25°C to +55°C	
Shock resistance:	10g minimum of 20 impacts, shock duration of 13ms		10g minimum of 20 impacts, shock duration of 13ms		10g minimum of 20 impacts, shock duration of 13ms		10g minimum of 20 impacts, shock duration of 13ms	
Vibration resistance:	5g, minimum of 30 minutes		5g, minimum of 30 minutes		5g, minimum of 30 minutes		5g, minimum of 30 minutes	
Disconnecting neutral rating:	6kA switching		6kA switching		6kA switching		—	

Influence of frequency on electro-magnetic trips

Magnetic trip values shown on trip curves are valid for 50/60Hz applications. For frequencies other than 50/60Hz, the magnetic (instantaneous) trip values are increased by the factor given below:

	16 2/3 - 60Hz	100Hz	200Hz	400Hz	DC
Approx. factor	1	1.1	1.2	1.5	1.5

Thermal tripping is independent of frequency.

Technical data
S280, S280UC, S290

Tech data

Item	S280UC-K		S280-Z		S280UC-Z		S290-C
Approvals:							
UL	1077		1077		1077		—
CSA	C22.2 — No. 235		C22.2 — No. 235		C22.2 — No. 235		—
VDE	0660		0660		0660		0660
IEC	898,947		898, 947		898, 947		898
No. of poles:	1,2,3		1,2,3,4		1,2,3		1,2,3,4
Tripping characteristic:	K		Z		Z		C
Rated currents:	0.2 to 63A		0.5 to 63A		0.5 to 63A		80 to 125A
Minimum operating voltage:	12V		12V		12V		12V
UL/CSA rated voltage & interrupting capacity	Single pole	Multi pole	Single pole	Multi pole	Single pole	Multi pole	
120VAC	6kA for 0.2-40A 5kA for 50-63A	—	10kA for 0.2-40A 6kA for 50-63A	—	6kA for 0.2-40A 5kA for 50-63A	—	—
240VAC	6kA for 0.2-40A 5kA for 50-63A	6kA for 0.2-40A 5kA for 50-63A	10kA for 0.2-40A 6kA for 50-63A	10kA for 0.2-32A 6kA for 40-63A	6kA for 0.2-40A 5kA for 50-63A	6kA for 0.2-40A 5kA for 50-63A	—
277VAC	4.5kA for 0.2-40A 5kA for 50-63A	—	10kA for 0.2-40A 6kA for 50-63A	—	4.5kA for 0.2-40A 5kA for 50-63A	—	—
277/480 VAC	—	4.5kA for 0.2-40A 5kA for 50-63A	—	10kA for 0.2-32A 6kA for 40-63A	—	4.5kA for 0.2-40A 5kA for 50-63A	—
60VDC	10kA	10kA	—	—	10kA	10kA	—
125VDC	10kA	10kA	—	—	10kA	10kA	—
250VDC	4.5kA	4.5kA	—	—	4.5kA	4.5kA	—
500VDC	—	4.5kA	—	—	—	4.5kA	—
Frequency:	50/60Hz (see below)		50/60 Hz (see below)		50/60Hz (see below)		50/60Hz (see below)
Rated voltage							
IEC single pole	240/415VAC 220VDC		240/415VAC 60VDC		240/415VAC 220VDC		230/440VAC 60VDC
IEC multi-pole	415VAC 440VDC		415VAC 110VDC		415VAC 440VDC		440VAC 110VDC
Protection category:	IP20		IP20		IP20		IP20
Depth of unit per DIN 43880:	68mm		68mm		68mm		70mm
Mounting position:	optional		optional		optional		optional
Standard mounting:	35mm DIN rail		35mm DIN rail		35mm DIN-rail		35mm DIN-rail
Terminals:	Conductors from 18-4AWG (0.75 – 25sq mm)		Conductors from 18-4AWG (0.75 – 25sq mm)		Conductors from 18-4AWG (0.75 – 25sq mm)		Conductors from 14-1/0AWG (1.5 – 50sq mm)
	50A and above Conductors from 18-2AWG (0.75 – 35sq mm)		50A and above Conductors from 18-2AWG (0.75 – 35sq mm)		50A and above Conductors from 18-2AWG (0.75 – 35sq mm)		— — —
Service life at rated load:	20,000 operations		20,000 operations		20,000 operations		10,000 operations
Ambient temperatures:	-25°C to +55°C		-25°C to +55°C		-25°C to +55°C		-5°C to +45°C
Shock resistance:	10g minimum of 20 impacts, shock duration of 13ms		10g minimum of 20 impacts, shock duration of 13ms		10g minimum of 20 impacts, shock duration of 13ms		30g minimum of 20 impacts, shock duration of 13ms
Vibration resistance:	5g, minimum of 30 minutes		5g, minimum of 30 minutes		5g, minimum of 30 minutes		60m/s², at 10 – 150 Hz

Influence of frequency on electro-magnetic trips

Magnetic trip values shown on trip curves are valid for 50/60Hz applications. For frequencies other than 50/60Hz, the magnetic (instantaneous) trip values are increased by the factor given below:

	16 2/3 - 60Hz	100Hz	200Hz	400Hz	DC
Approx. factor	1	1.1	1.2	1.5	1.5

Thermal tripping is independent of frequency.

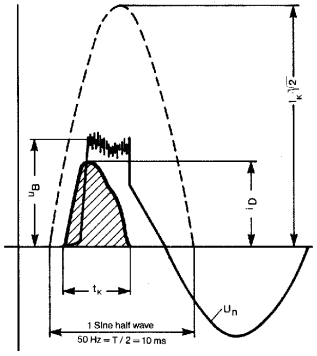
Pro M

Technical data
Let-through values

Description

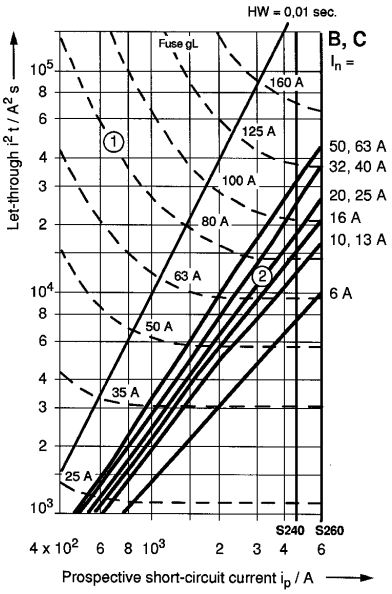
All ABB miniature circuit breakers substantially reduce the maximum let-through current from the peak available short circuit current.

I_K - RMS current of fault
I_D - Max let-through of MCB
V_n - System voltage
V_B - Arc voltage of MCB
t_k - Breaking time of MCB

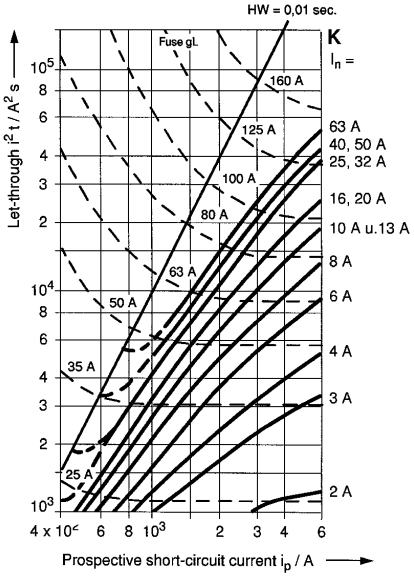


Let-through values I^2t

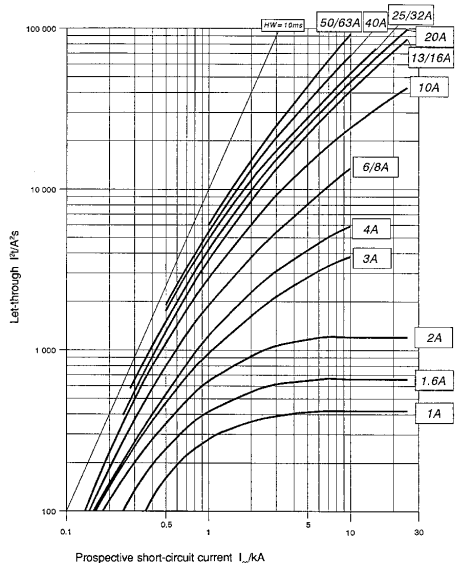
S260-B



S270-K



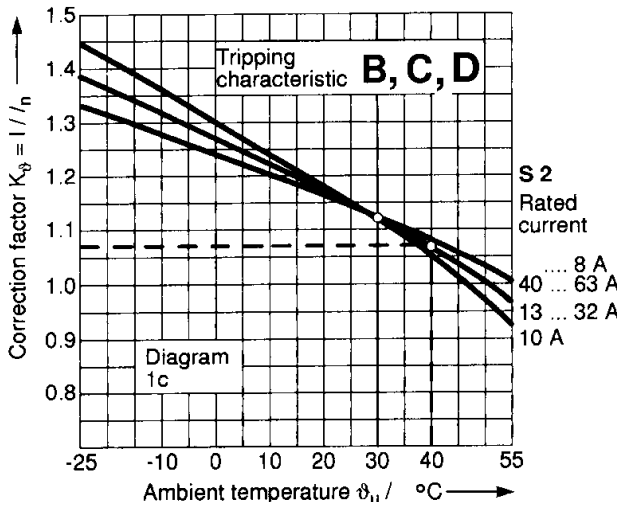
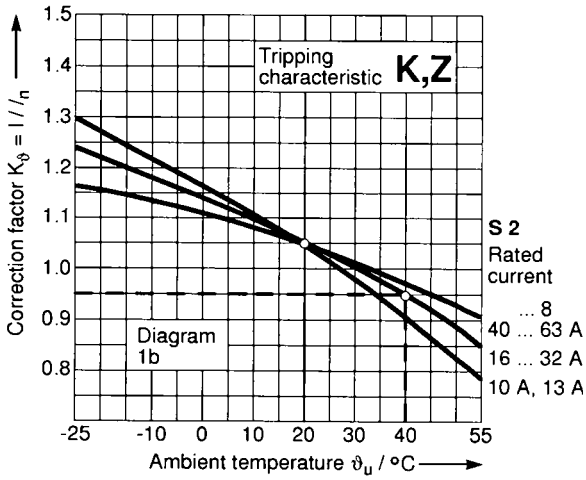
S280-K



For other curves, please contact ABB Control.

Version	I^2t	I Peak
S260B	TD9980	—
S260C	TD9981	—
S260D	TD9982	—
S270K	TD9972	TD9950
S280K	TD9978	—
S280Z	TD9979	—
S290C	TD9985	—

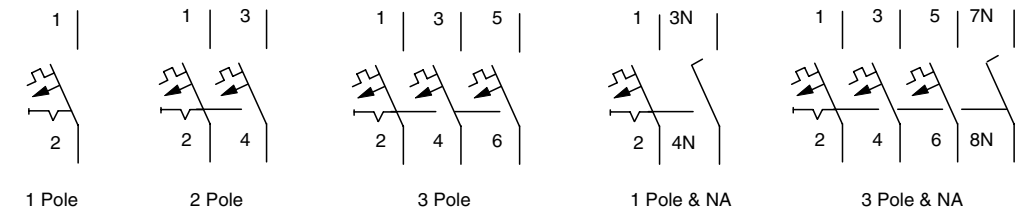
Version	Amps	Time-current trip
S260B	6 - 63	TD9725
S270K	0.5 - 8	TD9705
	10 - 40	TD9706
	50 - 63	TD9707
S280K	0.2 - 8	TD9708
	10 - 40	TD9709
	50 - 63	TD9710
S280Z	0.5 - 63	TD9711

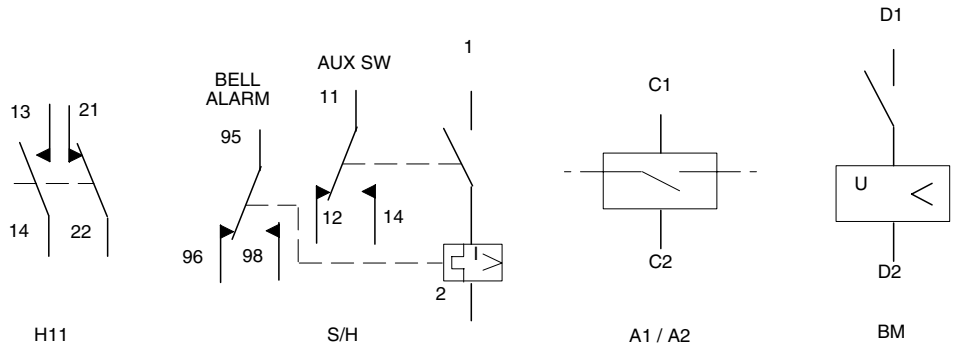
Type B, C, D	Type K, Z
	

Current carrying capacity of type “B”, “C”, “D”, “K” and “Z” thermal trip characteristics as a function of ambient temperature.

Terminal markings

Input optional from top or bottom.





Pro M

Technical data
Breaker resistance values & wire size comparison

Miniature circuit breaker resistance values

Ampere rating	Milliohms S260-B	S270-K	S280-K	S280-Z
0.2	—	—	33300	—
0.3	—	—	19700	—
0.5	—	6340	5020	10100
0.75	—	—	2400	—
1.0	—	1550	1390	2270
1.6	—	695	612	1100
2	—	460	450	619
3	—	165	147	202
4	—	120	112	149
6	55	52	54.1	104
8	15	38	33.8	53.9
10	13.3	12.6	15.1	17.5
12	13.3	12.6	—	—
16	7.0	7.7	8.1	10.9
20	6.25	6.7	5.27	6.0
25	5.0	4.6	3.97	4.1
32	3.6	3.5	2.65	2.81
40	3.0	2.8	2.44	2.55
50	1.2	1.15	1.15	1.77
63	1.4	0.70	0.70	1.31

Comparison of IEC and AWG wire sizes

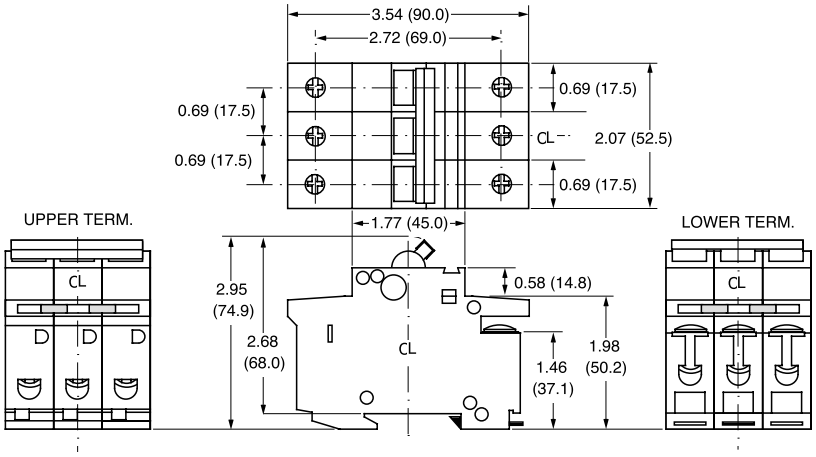
mm	AWG (mm)	Amps / UL	Amps / IEC
1.0	—	—	8
—	16 (1.3)	10	—
1.5	—	—	12
—	14 (2.1)	15	—
2.5	—	—	20
—	12 (3.3)	20	—
4	—	—	25
—	10 (5.3)	30	—
6	—	—	32
—	8 (8.4)	50	—
10	—	—	50
—	6 (13.3)	65	—
16	—	—	65
—	4 (21.2)	85	—
25	—	—	85
—	3 (26.7)	100	—
—	2 (33.6)	115	—
35	—	—	115

Ampacities for AWG wire are based on copper cable rated 75° C, except for 16AWG which is based on 60° C wire. Taken from UL508 Table 52.2.

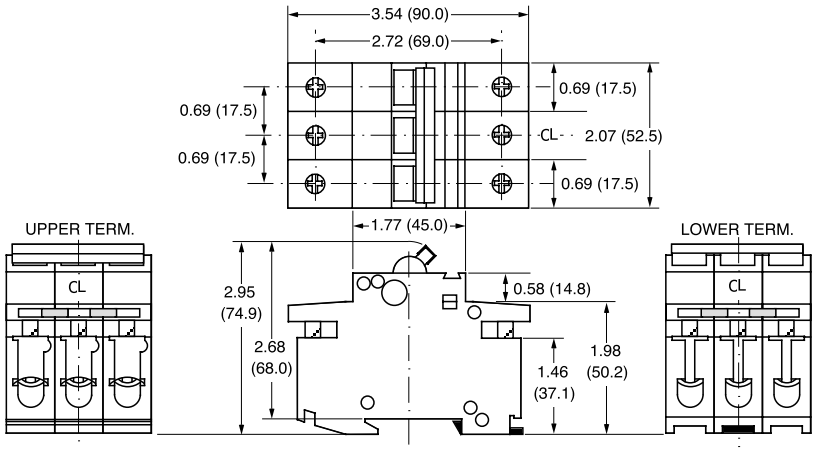
Consult applicable standards for futher detail and information.

Approximate dimensions
S260, S270, S280, S290

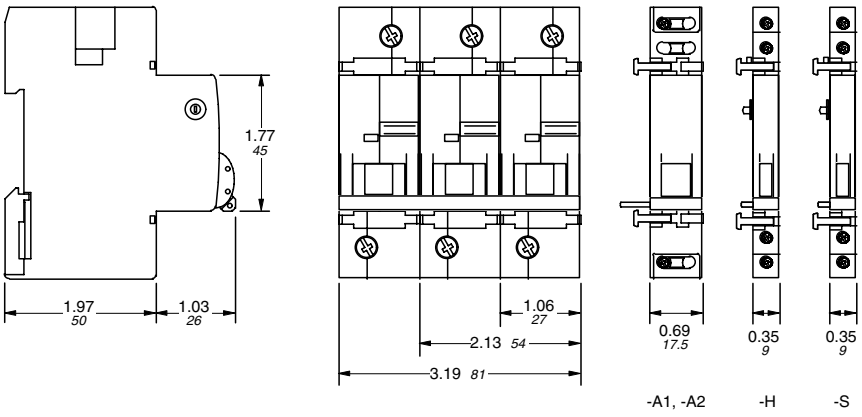
S260 & S270



S280



S290

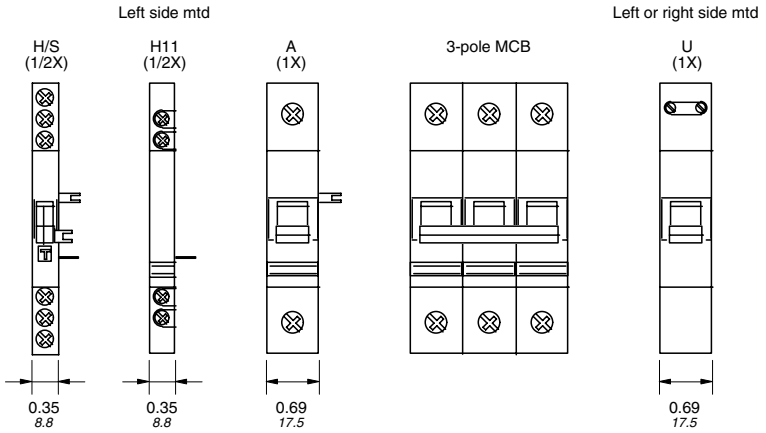


Pro M

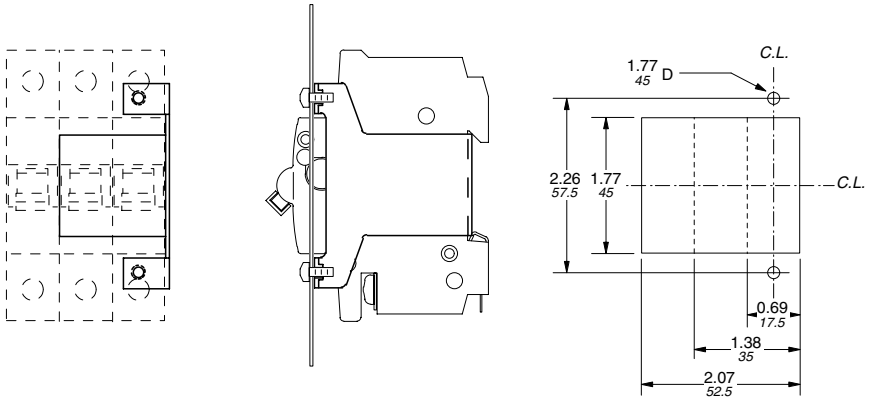
Approximate dimensions
Accessories

00.00 Inches
00.00 Millimeters

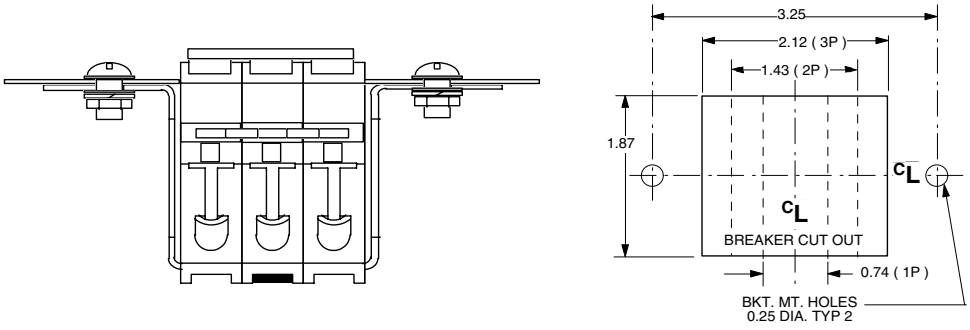
Accessories



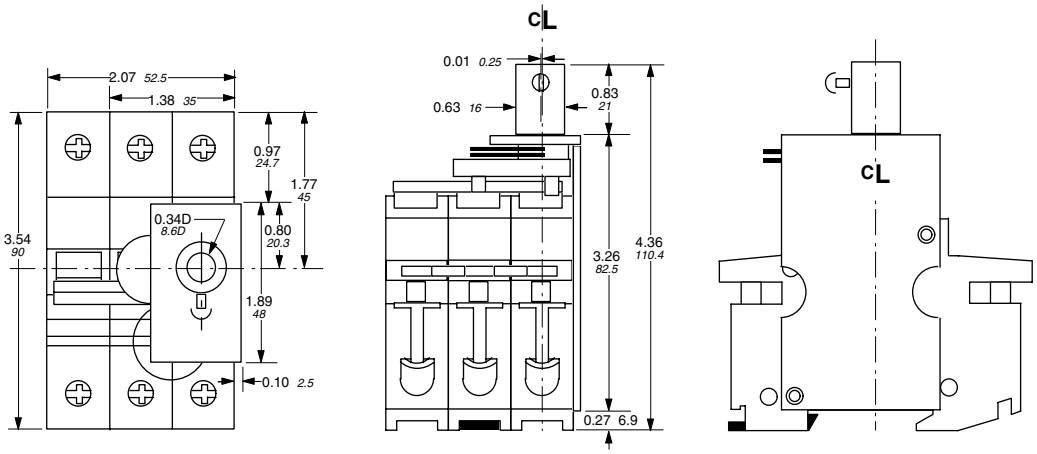
MB-CL



MB-3PD

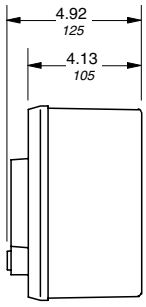


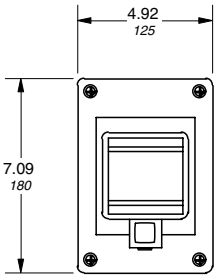
RHS2-M



Approximate dimensions
Accessories

12644





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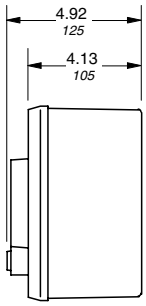

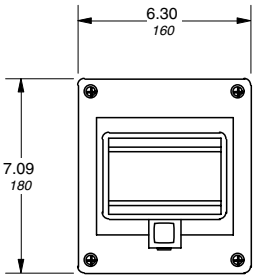

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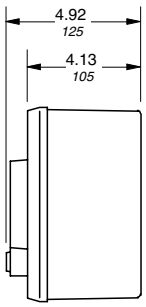

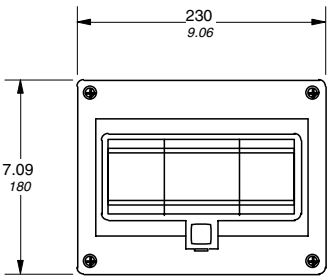

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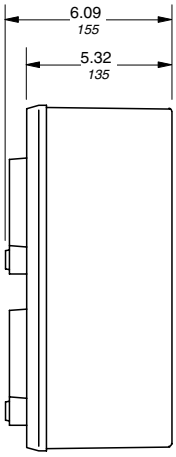
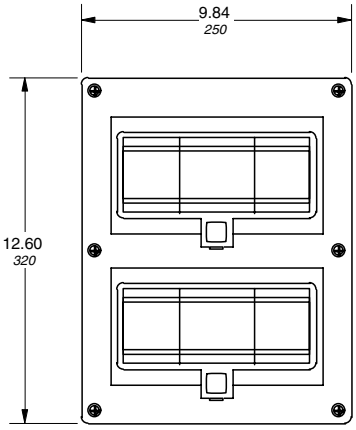




Cross-reference

Older version	Suggested replacement series	Physical comparison	Electrical comparison
S160L	S260B	Same pole spacing	Same trip characteristic as “L”
S160K	S270K	Same pole spacing	Same trip characteristic as “K” S270 is 6kA IC
S210L	S260B	Same pole spacing	Same trip characteristic as “L” S260B is 6kA IC
S210K	S280K	Same pole spacing	Same trip characteristic as “K” S280K is 6kA IC
S210Z	S280Z	Same pole spacing	Same trip characteristic as “Z”
S250L	S260B	Same pole spacing	Same trip characteristic as “L”
S210-UCK	S280UC-K	Same pole spacing	Same trip characteristic as “K”
S210-UCZ	S280UC-Z	Same pole spacing	Same trip characteristic as “Z”
S220-K	S500-K	Different pole spacing	Same trip characteristic as “K”
S230-B	S260-B	Same pole spacing	Same trip characteristic as “B”

Many older styles of ABB miniature circuit breakers have been replaced by new and improved versions. Many of these newer styles can be directly interchanged, both electrically and physically, with the older version. There are also many international styles of ABB circuit breakers which are not normal stock items and may be interchanged with stocked ABB versions.

Note: MCB types S260/270 and S280 can be raised to the same height as older style S210 series MCBs through the use of a height adjuster (SZ-ES68/83; $ 30 list per 20). The height adjustor snaps onto the DIN rail and raises the height of components 68mm to match that of the S210 series (83mm).

Pro M Miniature Circuit Breakers S500

Description

Increasing energy requirements result in larger short-circuit currents which place heavy demands on protective switchgear regarding safety, reliability and switching capacities.

The S500 heavy-duty circuit breaker fulfills these requirements by virtue of its technical features. It is equipped with a thermal and/or electromagnetic release to protect circuits, motors, switchgear and systems from the effects of overload and short-circuit currents.

For the worldwide market, the S500 breakers carry UL, CSA, IEC, CE and many other agency approvals.

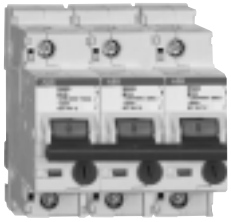
Features

- High breaking capacity
- Energy-limiting
- Current-limiting
- Extremely fast breaking time
- Optimal selectivity
- Various versions for special applications
- Compact dimensions, DIN cap size
- Easy and quick to install
- Easy to connect; finger safe terminals
- Wide range of accessories
- UL 1077 recognized 600VAC and 500VDC versions

S500
277/600 VAC

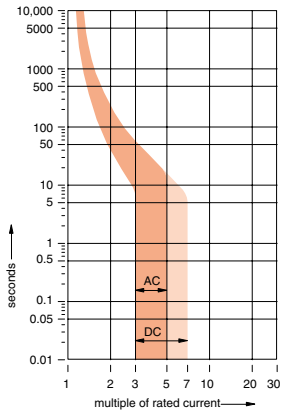
S501-C16

S502-C6

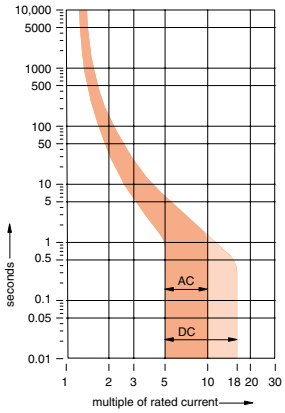


S503-C10

B



C



B

UL 1077 CSA C22.2
VDE 0641 IEC 947-2

Rated current	Catalog number	List price	Delivery class	Weight (oz.) 1 pc
6	S501-B6	**$ 168**		
10	S501-B10	**168**		
13	S501-B13	**168**		
16	S501-B16	**168**		
20	S501-B20	**168**	B	8.90
25	S501-B25	**168**		
32	S501-B32	**168**		
40	S501-B40	**168**		
50	S501-B50	**186**		
63	S501-B63	**202**		
6	S502-B6	**328**		
10	S502-B10	**328**		
13	S502-B13	**328**		
16	S502-B16	**328**		
20	S502-B20	**328**	B	17.85
25	S502-B25	**328**		
32	S502-B32	**328**		
40	S502-B40	**328**		
50	S502-B50	**362**		
63	S502-B63	**392**		
6	S503-B6	**478**		
10	S503-B10	**478**		
13	S503-B13	**478**		
16	S503-B16	**478**		
20	S503-B20	**478**	B	25.36
25	S503-B25	**478**		
32	S503-B32	**478**		
40	S503-B40	**478**		
50	S503-B50	**526**		
63	S503-B63	**574**		

C

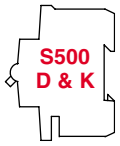
UL 1077 CSA C22.2
VDE 0641 IEC 947-2

Rated current	Catalog number	List price	Delivery class	Weight (oz.) 1 pc
6	S501-C6	**$ 168**		
10	S501-C10	**168**		
13	S501-C13	**168**		
16	S501-C16	**168**		
20	S501-C20	**168**	B	8.90
25	S501-C25	**168**		
32	S501-C32	**168**		
40	S501-C40	**168**		
50	S501-C50	**184**		
63	S501-C63	**202**		
6	S502-C6	**328**		
10	S502-C10	**328**		
13	S502-C13	**328**		
16	S502-C16	**328**		
20	S502-C20	**328**	B	17.85
25	S502-C25	**328**		
32	S502-C32	**328**		
40	S502-C40	**328**		
50	S502-C50	**362**		
63	S502-C63	**392**		
6	S503-C6	**478**		
10	S503-C10	**478**		
13	S503-C13	**478**		
16	S503-C16	**478**		
20	S503-C20	**478**	B	25.36
25	S503-C25	**478**		
32	S503-C32	**478**		
40	S503-C40	**478**		
50	S503-C50	**526**		
63	S503-C63	**574**		

Delivery Class

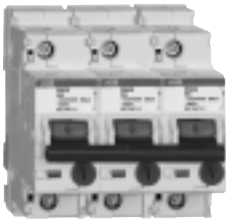
A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

S500
277/600 VAC



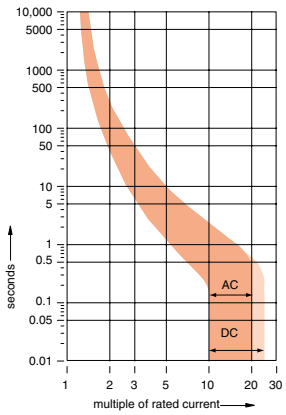
S501-D20

S502-D13

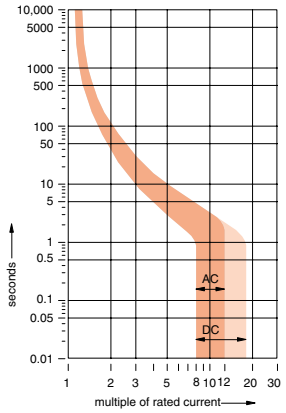


S503-K6

D



K



D

UL 1077 CSA C22.2
VDE 0641 IEC 947-1

Rated current	Catalog number	List price	Delivery class	Wgt. oz. (1 Pc.)
13	S501-D13	**$ 190**		
16	S501-D16	**190**		
20	S501-D20	**190**		
25	S501-D25	**190**	B	8.90
32	S501-D32	**190**		
40	S501-D40	**190**		
50	S501-D50	**210**		
63	S501-D63	**226**		
13	S502-D13	**372**		
16	S502-D16	**372**		
20	S502-D20	**372**		
25	S502-D25	**372**	B	17.85
32	S502-D32	**372**		
40	S502-D40	**372**		
50	S502-D50	**408**		
63	S502-D63	**442**		
13	S503-D13	**544**		
16	S503-D16	**544**		
20	S503-D20	**544**		
25	S503-D25	**544**	B	25.36
32	S503-D32	**544**		
40	S503-D40	**544**		
50	S503-D50	**600**		
63	S503-D63	**646**		

K

UL 1077 CSA C22.2
VDE 0641 IEC-898

Rated current	Catalog number	List price	Delivery class	Wgt. oz. (1 Pc.)
0.1 – 0.15	S501-K0.15	**$ 182**		
0.14 – 0.21	S501-K0.21	**182**		
0.2 – 0.3	S501-K0.3	**182**		
0.28 – 0.42	S501-K0.42	**182**		
0.38 – 0.58	S501-K0.58	**182**		
0.53 – 0.8	S501-K0.8	**182**		
0.73 – 1.1	S501-K1.1	**182**		
1 – 1.5	S501-K1.5	**182**		
1.4 – 2.1	S501-K2.1	**182**		
2 – 3	S501-K3	**182**		
2.8 – 4.2	S501-K4.2	**182**	B	8.90
3.8 – 5.8	S501-K5.8	**182**		
5.3 – 8	S501-K8	**182**		
7.3 – 11	S501-K11	**182**		
10 – 15	S501-K15	**182**		
14 – 20	S501-K20	**182**		
18 – 26	S501-K26	**182**		
23 – 32	S501-K32	**202**		
29 – 37	S501-K37	**202**		
34 – 41	S501-K41	**226**		
38 – 45	S501-K45	**226**		
0.1 – 0.15	S502-K0.15	**356**		
0.14 – 0.21	S502-K0.21	**356**		
0.2 – 0.3	S502-K0.3	**356**		
0.28 – 0.42	S502-K0.42	**356**		
0.38 – 0.58	S502-K0.58	**356**		
0.53 – 0.8	S502-K0.8	**356**		
0.73 – 1.1	S502-K1.1	**356**		
1 – 1.5	S502-K1.5	**356**		
1.4 – 2.1	S502-K2.1	**356**		
2 – 3	S502-K3	**356**	B	17.85
2.8 – 4.2	S502-K4.2	**356**		
3.8 – 5.8	S502-K5.8	**356**		
5.3 – 8	S502-K8	**356**		
7.3 – 11	S502-K11	**356**		
10 – 15	S502-K15	**356**		
14 – 20	S502-K20	**356**		
18 – 26	S502-K26	**356**		
23 – 32	S502-K32	**392**		
29 – 37	S502-K37	**392**		
34 – 41	S502-K41	**442**		
38 – 45	S502-K45	**442**		
0.1 – 0.15	S503-K0.15	**518**		
0.14 – 0.21	S503-K0.21	**518**		
0.2 – 0.3	S503-K0.3	**518**		
0.28 – 0.42	S503-K0.42	**518**		
0.38 – 0.58	S503-K0.58	**518**		
0.53 – 0.8	S503-K0.8	**518**		
0.73 – 1.1	S503-K1.1	**518**		
1 – 1.5	S503-K1.5	**518**		
1.4 – 2.1	S503-K2.1	**518**		
2 – 3	S503-K3	**518**	B	25.36
2.8 – 4.2	S503-K4.2	**518**		
3.8 – 5.8	S503-K5.8	**518**		
5.3 – 8	S503-K8	**518**		
7.3 – 11	S503-K11	**518**		
10 – 15	S503-K15	**518**		
14 – 20	S503-K20	**518**		
18 – 26	S503-K26	**518**		
23 – 32	S503-K32	**574**		
29 – 37	S503-K37	**574**		
34 – 41	S503-K41	**644**		

Delivery Class

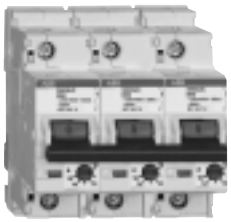
A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Pro M

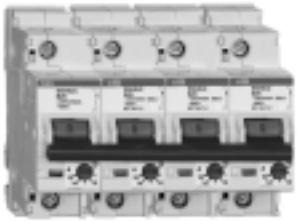
S500UC
600 VAC/VDC

S501UC-B40

S502UC-B16

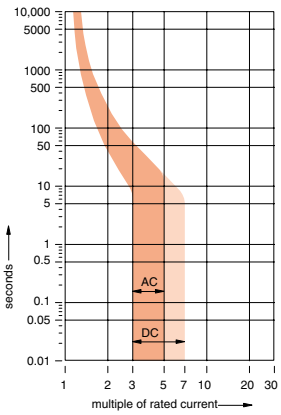


S503UC-B50



S504UC-B25

B



B UL 1077 CSA C22.2
VDE 0660

Rated current	Catalog number	List price	Delivery class	Weight (oz.) 1 pc
6	S501UC-B6	**$ 226**		
10	S501UC-B10	**226**		
13	S501UC-B13	**226**		
16	S501UC-B16	**226**		
20	S501UC-B20	**226**	C	8.90
25	S501UC-B25	**226**		
32	S501UC-B32	**226**		
40	S501UC-B40	**226**		
50	S501UC-B50	**258**		
63	S501UC-B63	**292**		
6	S502UC-B6	**442**		
10	S502UC-B10	**442**		
13	S502UC-B13	**442**		
16	S502UC-B16	**442**		
20	S502UC-B20	**442**	C	17.85
25	S502UC-B25	**442**		
32	S502UC-B32	**442**		
40	S502UC-B40	**442**		
50	S502UC-B50	**502**		
63	S502UC-B63	**568**		

Rated current	Catalog number	List price	Delivery class	Weight (oz.) 1 pc
6	S503UC-B6	**$ 646**		
10	S503UC-B10	**646**		
13	S503UC-B13	**646**		
16	S503UC-B16	**646**		
20	S503UC-B20	**646**	C	25.36
25	S503UC-B25	**646**		
32	S503UC-B32	**646**		
40	S503UC-B40	**646**		
50	S503UC-B50	**734**		
63	S503UC-B63	**832**		
6	S504UC-B6	**908**		
10	S504UC-B10	**908**		
13	S504UC-B13	**908**		
16	S504UC-B16	**908**		
20	S504UC-B20	**908**	C	35.75
25	S504UC-B25	**908**		
32	S504UC-B32	**908**		
40	S504UC-B40	**908**		
50	S504UC-B50	**1030**		
63	S504UC-B63	**1164**		

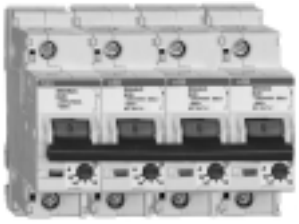
Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

S500 UC
600 VAC/VDC

S500 (UC) K

S503UC-K8



S504UC-K20

K UL 1077 CSA C22.2
VDE 0660

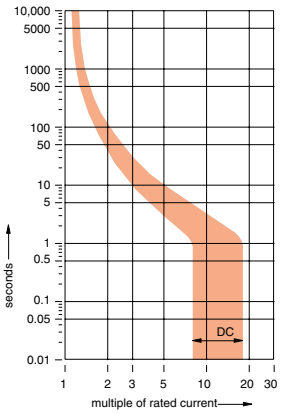
Rated current	Catalog number	List price	Delivery class	Weight (oz.) 1 pc
0.1 – 0.15	S501UC-K0.15	$ 250		
0.14 – 0.21	S501UC-K0.21	250		
0.2 – 0.3	S501UC-K0.3	250		
0.28 – 0.42	S501UC-K0.42	250		
0.38 – 0.58	S501UC-K0.58	250		
0.53 – 0.8	S501UC-K0.8	250		
0.73 – 1.1	S501UC-K1.1	250		
1 – 1.5	S501UC-K1.5	250		
1.4 – 2.1	S501UC-K2.1	250		
2 – 3	S501UC-K3	250		
2.8 – 4.2	S501UC-K4.2	250	C	8.90
3.8 – 5.8	S501UC-K5.8	250		
5.3 – 8	S501UC-K8	250		
7.3 – 11	S501UC-K11	250		
10 – 15	S501UC-K15	250		
14 – 20	S501UC-K20	250		
18 – 26	S501UC-K26	250		
23 – 32	S501UC-K32	286		
29 – 37	S501UC-K37	286		
34 – 41	S501UC-K41	320		
38 – 45	S501UC-K45	320		
0.1 – 0.15	S502UC-K0.15	488		
0.14 – 0.21	S502UC-K0.21	488		
0.2 – 0.3	S502UC-K0.3	488		
0.28 – 0.42	S502UC-K0.42	488		
0.38 – 0.58	S502UC-K0.58	488		
0.53 – 0.8	S502UC-K0.8	488		
0.73 – 1.1	S502UC-K1.1	488		
1 – 1.5	S502UC-K1.5	488		
1.4 – 2.1	S502UC-K2.1	488	C	17.85
2 – 3	S502UC-K3	488		
2.8 – 4.2	S502UC-K4.2	488		
3.8 – 5.8	S502UC-K5.8	488		
5.3 – 8	S502UC-K8	488		
7.3 – 11	S502UC-K11	488		
10 – 15	S502UC-K15	488		
14 – 20	S502UC-K20	488		
18 – 26	S502UC-K26	488		
23 – 32	S502UC-K32	558		
29 – 37	S502UC-K37	558		
34 – 41	S502UC-K41	622		
38 – 45	S502UC-K45	622		

Rated current	Catalog number	List price	Delivery class	Weight (oz.) 1 pc
0.1 – 0.15	S503UC-K0.15	$ 712		
0.14 – 0.21	S503UC-K0.21	712		
0.2 – 0.3	S503UC-K0.3	712		
0.28 – 0.42	S503UC-K0.42	712		
0.38 – 0.58	S503UC-K0.58	712		
0.53 – 0.8	S503UC-K0.8	712		
0.73 – 1.1	S503UC-K1.1	712		
1 – 1.5	S503UC-K1.5	712		
1.4 – 2.1	S503UC-K2.1	712		
2 – 3	S503UC-K3	712		
2.8 – 4.2	S503UC-K4.2	712	C	25.36
3.8 – 5.8	S503UC-K5.8	712		
5.3 – 8	S503UC-K8	712		
7.3 – 11	S503UC-K11	712		
10 – 15	S503UC-K15	712		
14 – 20	S503UC-K20	712		
18 – 26	S503UC-K26	712		
23 – 32	S503UC-K32	814		
29 – 37	S503UC-K37	814		
34 – 41	S503UC-K41	910		
38 – 45	S503UC-K45	910		
0.1 – 0.15	S504UC-K0.15	996		
0.14 – 0.21	S504UC-K0.21	996		
0.2 – 0.3	S504UC-K0.3	996		
0.28 – 0.42	S504UC-K0.42	996		
0.38 – 0.58	S504UC-K0.58	996		
0.53 – 0.8	S504UC-K0.8	996		
0.73 – 1.1	S504UC-K1.1	996		
1 – 1.5	S504UC-K1.5	996		
1.4 – 2.1	S504UC-K2.1	996		
2 – 3	S504UC-K3	996	C	35.75
2.8 – 4.2	S504UC-K4.2	996		
3.8 – 5.8	S504UC-K5.8	996		
5.3 – 8	S504UC-K8	996		
7.3 – 11	S504UC-K11	996		
10 – 15	S504UC-K15	996		
14 – 20	S504UC-K20	996		
18 – 26	S504UC-K26	996		
23 – 32	S504UC-K32	1142		
29 – 37	S504UC-K37	1142		
34 – 41	S504UC-K41	1276		
38 – 45	S504UC-K45	1276		

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

UC-K



Pro M

Accessories
S500

S500-H11
Auxiliary contacts

Electrical accessories	Catalog number	List price	Delivery class	Wgt. oz. (1pc.)
Auxiliary contacts				
1 N.O./1 N.C.	S500-H11			
2 N.O.	S500-H20	**$ 84**	B	2.14
2 N.C.	S500-H02			
For field mounting left side				
Bell alarm with auxiliary contacts				
1 N.O./1 N.C.	S500-S11			
2 N.O.	S500-S20	**92**	B	2.14
2 N.C.	S500-S02			
For field mounting left side				
Handle mechanism				
	S500-RD3	**100**	B	6.5
For use with 3 pole S500 MCBs and disconnect switch selector handles with 5mm shafts				
Front mounting kit				
For 1 pole	S500-ME1	**16**		2.1
1 to 3 poles	S500-ME2	**32**	A	2.9
1 to 7 poles	S500-ME3	**64**		3.6

Electrical accessories	Catalog number suffix	List price	Delivery class	Wgt. oz. (1pc.)
Undervoltage release				
12 V	-UA12			
24 V	-UA24			
48 V	-UA48	**$ 266**	B	5.71
110 V	-UA110			
230 V	-UA230			
500 V	-UA500			
Factory mount only.				
Shunt trip				
12 V	-AL12			
24 V	-AL24			
48 V	-AL48	**224**	B	5.71
110 V	-AL110			
230 V	-AL230			
500 V	-AL500			
Factory mount only.				

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Technical data
S500

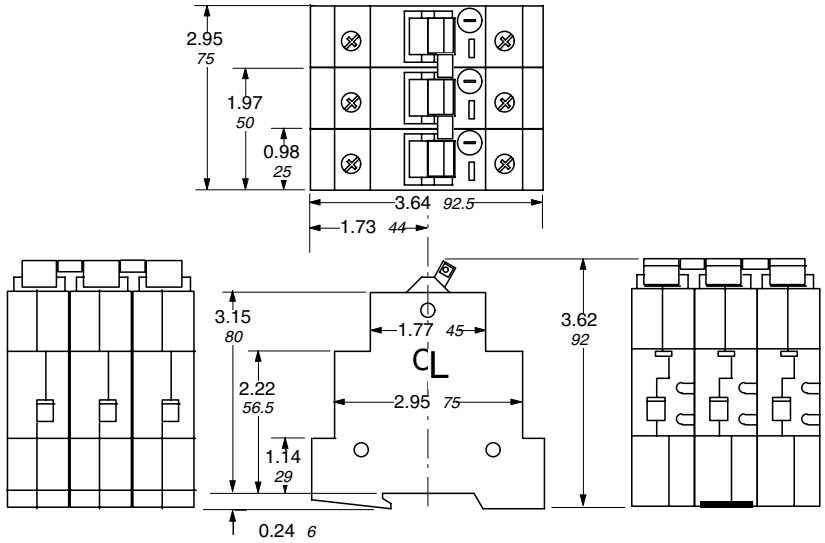
Item	S500-B, C, D	S500-K
Approvals:		
UL	1077	1077
CSA	C22.2 - No.235	C22.2 - No. 235
VDE	0641/6.78	0641/6.78
IEC	947-2	—
No. of poles:	1,2,3, +N, +NA	1,2,3, +N, +NA
Tripping characteristic:	B.C.D.	K
Rated currents:	6 to 63A	0.1 to 45A
Rated voltage:		
UL/CSA single pole	277VAC	277VAC
UL/CSA multi pole	600VAC	600VAC
IEC single pole	690VAC	690VAC
Rated interrupting capacity:		
Single pole	6-25A – 30KA/240VAC 14KA/277VAC	0.15-25A – 30KA/240VAC 14KA/277VAC
	32-63A – 18KA/240VAC 14KA/277VAC	26-45A – 18KA/240VAC 14KA/277VAC
Multi-pole	6-63A – 14KA/480VAC 6KA/600VAC	6-63A – 14KA/480VAC 6KA/600VAC
Frequency:	50/60 Hz	50/60Hz
Mounting position:	optional	optional
Standard mounting:	35mm DIN rail	35mm DIN rail
Terminals:	Conductors from 16-4AWG (1-25sq mm)	Conductors from 16-4AWG (1-25sq mm)
Service life at rated load:	20,000 operations	20,000 operations
Calibration temperature:	40°C	40°C

Item	S500UC-B, K			
Approvals:				
UL	1077			
CSA	C22.2			
VDE	0660			
No. of poles:	1,2,3, 4			
Tripping characteristic:	B, K			
Rated currents:	B: 6 to 63A K: 0.15 to 45A			
Rated voltage:				
UL single pole	277VAC/250VDC			
UL multi pole	600VAC/600VDC			
IEC multi pole	690VAC/750VDC			
Rated interrupting capacity:	B single pole:			
	6 – 25A	18KA/240VAC	14KA/277VAC	30KA/250VDC
	32 – 63A	30KA/240VAC	14KA/277VAC	30KA/250VDC
	B two-pole:			
	6 – 63A	14KA/480VAC	6KA/600VAC	30KA/500VDC
	B three-pole:			
	6 – 63A	14KA/480VAC	6KA/600VAC	30KA/600VDC
	K single pole:			
	0.15 – 25A	30KA/240VAC	14KA/277VAC	30KA/250VDC
	32 – 63A	18KA/240VAC	14KA/277VAC	30KA/250VDC
	K two-pole:			
	0.15 – 45A	14KA/480VAC	6KA/600VAC	30KA/500VDC
	K three-pole:			
	0.5 – 45A	14KA/480VAC	6KA/600VAC	30KA/600VDC
Frequency:	50/60Hz			
Mounting position:	optional			
Standard mounting:	35mm DIN-rail			
Terminals:	Conductors from 16 to 4AWG (1-25sq mm)			
Service life at rated load:	20,000 operations			
	40°C			

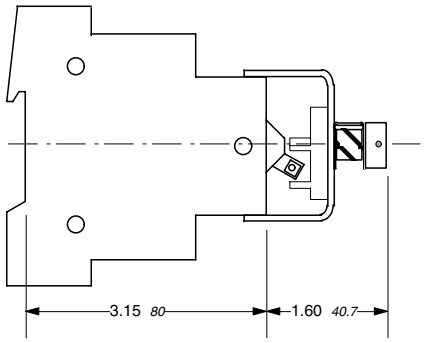
Approximate dimensions
S500
Accessories

00.00 Inches
00.00 Millimeters

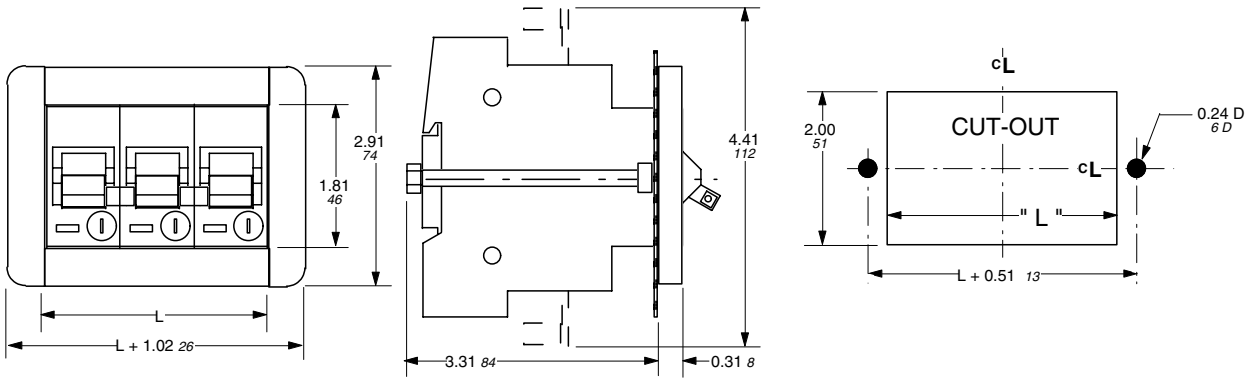
S500



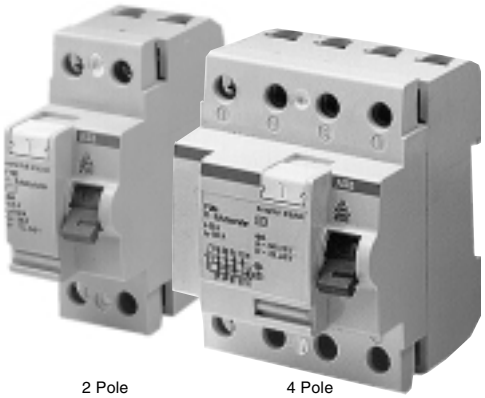
S500-RD3 Handle mechanism



S500 Front mounting kit



Residual current devices
F360 series



2 Pole 4 Pole

Pro M

Description

RCDs provide ground fault equipment protection by monitoring the leakage of current to ground. The F360 series will trip when ground faults are detected in excess of the GF trip rating of the RCCB. These devices provide GF protection only and are used in series with standard MCBs which provide overload and short circuit protection. The F360 series can be used as a main device providing GF protection for several MCB branch devices.

The F360 series are UL1053 recognized for use in 277/480VAC applications.

The F362 is for use in single phase/two wire or two wire systems. The F364 is for use in three phase/four wire systems.

Selection guide
Residual current devices, F362, F364

00.00 Inches
00.00 Millimeters

F262

F364

Residual current breakers

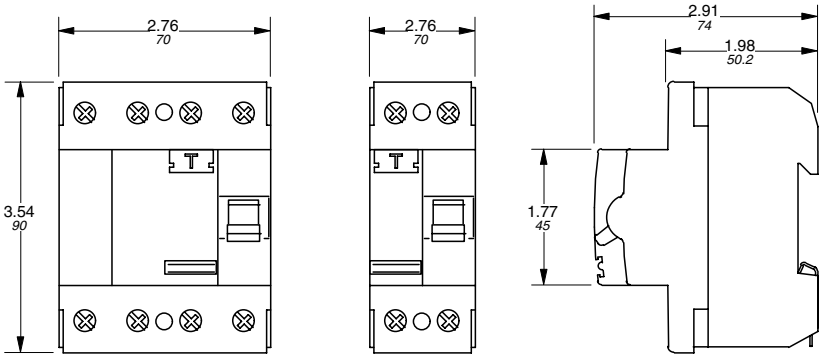
Breaker		GF trip level	Rated current	Catalog number	List price	Delivery class	Suggested order qty	Wgt. oz (1 Pc.)
F362	Two pole 480VAC	10mA	16	F362-16/0.01	**$ 590**			
		30mA	25	F362-25/0.03	**408**			
			40	F362-40/0.03	**464**			
			63	F362-63/0.03	**660**			
		100mA	25	F362-25/0.1	**408**			
			40	F362-40/0.1	**464**	B	1	13.8
			63	F362-63/0.1	**660**			
		300mA	25	F362-25/0.3	**288**			
			40	F362-40/0.3	**320**			
			63	F362-63/0.3	**474**			
F364	Four pole 480VAC	30mA	25	F364-25/0.03	**426**			
			40	F364-40/0.03	**486**			
			63	F364-63/0.03	**726**			
		100mA	25	F364-25/0.1	**426**			
			40	F364-40/0.1	**486**			
			63	F364-63/0.1	**726**	B	1	19.0
		300mA	25	F364-25/0.3	**302**			
			40	F364-40/0.3	**342**			
			63	F364-63/0.3	**494**			
		500mA	25	F364-25/0.5	**302**			
			40	F364-40/0.5	**342**			
			63	F364-63/0.5	**494**			

Above devices are UL 1053 recognized and IEC 1008 approved.

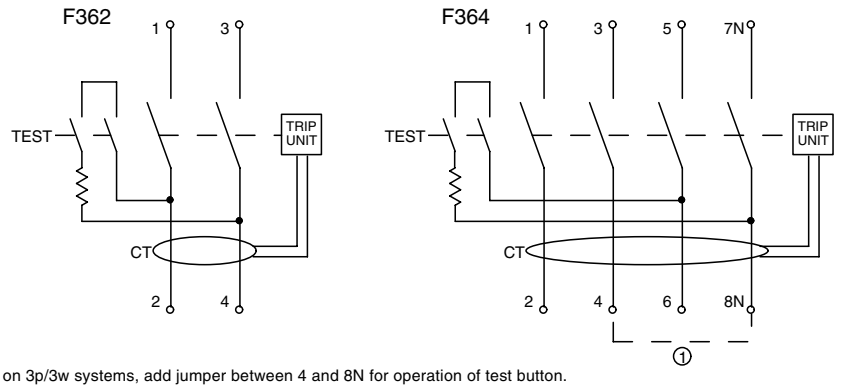
Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Approximate dimensions

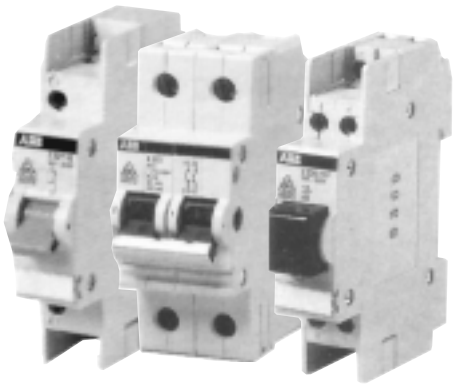


Wiring diagram



① For use on 3p/3w systems, add jumper between 4 and 8N for operation of test button.

Modular installation equipment
System Pro M



Pro M

Description

- Safe connection by box terminals
- Captive screws with Pozidrive slotted head, Pozidrive system, Gr. 1
- Snap-on labels available
- Quick mounting with snap-on clip, easily accessible and detachable at the bottom
- Protection against unintentional direct touch
- System approach for control and circuit protection
- Compact size that dimensionally matches the S2 MCB series
- Control and pilot functions can be along side protective devices
- DIN rail mounted with 45mm front opening
- For use in auxiliary and logic devices
- Provide additional user functions for system control and operation
- Include pushbuttons, indicating lights and selector switches
- ABB System Pro M compatibility
- Most devices are both UL 508 recognized and are IEC compliant
- Labeled with the CE Mark

Modular installation equipment
Switches, 240VAC
16 & 25A

E221-10

Type	Rated current	Catalog number	List price	Delivery schedule	Suggested order qtys	Weight (Oz.) 1 piece
Switches						
1 N.O. + 1 N.C.	16	E221-11	**$ 90**			
2 N.O. + 2 N.C.	16	E221-22	**177**	B	10	2.46
3 N.O. + 1 N.C.	16	E221-31	**177**			
1 N.O.	16	E221-10	**59**			1.94
2 N.O.	16	E221-20	**110**	B	10	2.12
3 N.O.	16	E221-30	**120**			2.29
4 N.O.	16	E221-40	**159**			2.47
1 N.O. + 1 N.C.	25	E222-11	**140**			2.47
1 N.O.	25	E222-10	**107**			1.94
2 N.O.	25	E222-20	**141**	B	10	2.12
3 N.O.	25	E222-30	**159**			2.29
4 N.O.	25	E222-40	**239**			2.47
Form "C" switches						
1 Change-over contact	16	E221-6	**69**	B	10	2.12
2 Change-over contacts	16	E221-6/2	**125**			2.47
1 Change-over contact	25	E222-6	**128**	B	10	2.12
Form "C" switches (I-O-II, Hand-OFF-Automatic)						
1 Pole	16	E221-4	**99**	B	10	2.12
2 Pole	16	E221-4/2	**147**			2.47
1 Pole	25	E222-4	**150**	B	10	2.12

Note: Above devices are UL 508 recognized and IEC certified.
A300 pilot duty

Delivery Class

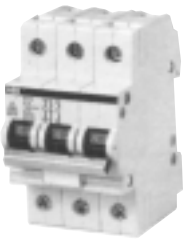
A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Modular installation equipment
Disconnect switches
45, 63, 80 & 100A

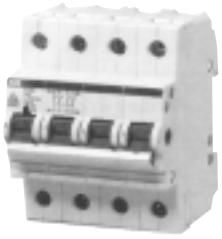
Disc. Sws.

Single pole

Two pole



Three pole



Four pole

Type	Rated current	Catalog number	List price	Delivery schedule	Suggested order qtys	Weight (Oz.) 1 piece
Single pole, 240V						
	45	E241/45	**$ 54**	B	10	2.82
	63	E271/63	**60**			
	80	E271/80	**72**			
	100	E271/100	**96**			
Two pole, 415V						
	45	E242/45	**114**	B	5	6.17
	63	E272/63	**126**			
	80	E272/80	**150**			
	100	E272/100	**204**			
Three pole, 415V						
	45	E243/45	**174**	B	3	9.52
	63	E273/63	**192**			
	80	E273/80	**228**			
	100	E273/100	**306**			
Four pole, 415V						
	45	E244/45	**234**	B	2	12.87
	63	E274/63	**258**			
	80	E274/80	**306**			
	100	E274/100	**410**			

Above devices are IEC certified.

Isolator switches

The E240/270 series operate as disconnect switches and are typically used as a main disconnect for several branch MCB devices. The isolator switches offer no overcurrent protection. The E240/270 series is the same physical size and shape as the S260, S270 & S280 series. The switches include dual function terminals and can be connected via standard ABB busbar through the upper or lower terminals.

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Pro M

Modular installation equipment
Pilot devices


E225-11F


E227-10E

Pushbutton, 1 N.O. + 1 N.C. contact

Type	Catalog number	List price	Delivery schedule	Pack units pcs.	Weight (Oz.) 1 piece
Grey	E225-11B				
Red	E225-11C				
Green	E225-11D	**$ 75**	A	10	1.94
Yellow	E225-11E				
Black	E225-11F				
Blue	E225-11G				

Illuminated pushbutton, 1 N.O. contact with lamp, 120 VAC

Clear	E227-10B/110				
Red	E227-10C/110				
Green	E227-10D/110	**100**	A	10	1.94
Yellow	E227-10E/110				
Blue	E227-10G/110				

Pilot light with lamp, 120 VAC

Clear	E229-B/110				
Red	E229-C/110				
Green	E229-D/110	**93**	A	10	1.59
Yellow	E229-E/110				
Blue	E229-G/110				

Lamps

24 VAC/DC	E10/24				
120 VAC/DC	E10/110	**24**	A	1	0.14
220 VAC/DC	E10/220				

Note: Above devices are UL 508 recognized and IEC certified.

Special features

- Safe connection via box terminals
- Captive screws with Phillips/Slotted head, Posidriv sysem, Gr. 1
- Snap-on labels available
- Protection against unintentional touch acc. to DIN VDE 0106 Part 100
- Lenses and pushbuttons in six colors

Elapsed time meter

Type	Catalog number	List price	Delivery schedule	Pack units pcs.	Weight (KG) 1 piece
24 VAC, 60 Hz	E233-24/60		B		
120 VAC, 60 Hz	E233-120/60	**$ 130**	A	1	0.045
240 VAC, 60 Hz	E233-240/60		B		

- Non-resettable
- 100,000 hours (99999.99)

Delivery Class

A - Standard item, stock to 2 weeks lead time
B - Stock to 4 weeks lead time
C - 6 to 8 week lead time
D - 10 to 12 week lead time
E - Call for delivery

Components for quick mounting onto DIN rails (35mm)

Mounting depth:	68mm
Mounting width:	1, 2, 3 and 4 pole switches = 17.5mm (= 1 module)

E220 Switches, 16 & 25A

Switching capacity:	1.25 I_n, 1.1U_n, cos j = 0.6
Short-circuit withstanding capacity:	3 kA, 380V, cos j = 0.9
Toggle sealable:	In ON and OFF positions
Connection cross-sections:	Up to 1 x 6mm^2 or 2 x 2.5mm^2
Rated AC voltage:	240 VAC UL/CSA (E171252) 250/440 VAC IEC

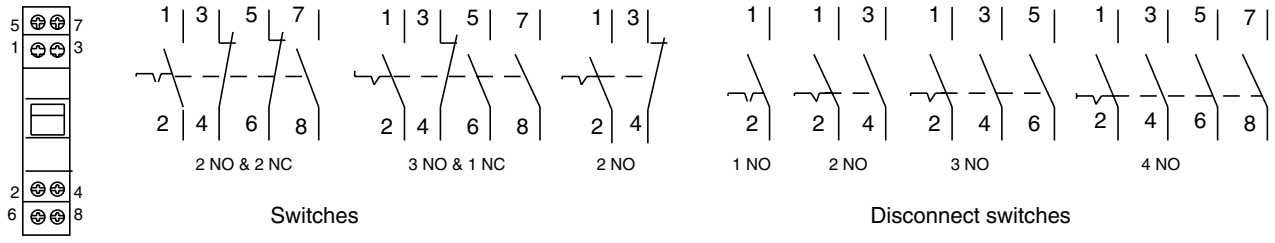
E240/270 Disconnect switches, 45, 63, 80, & 100A

Switching capacity:	1.25 I_n, 1.1U_n, cos j = 0.3
Short-circuit withstanding capacity:	E240 = 10kA, E270 = 25kA RMS
Connection cross-sections:	E240 up to 25mm^2 E270 up to 50mm^2
Rated AC voltage:	240/400/415 VAC

E Series components for quick mounting onto DIN rails (35mm)

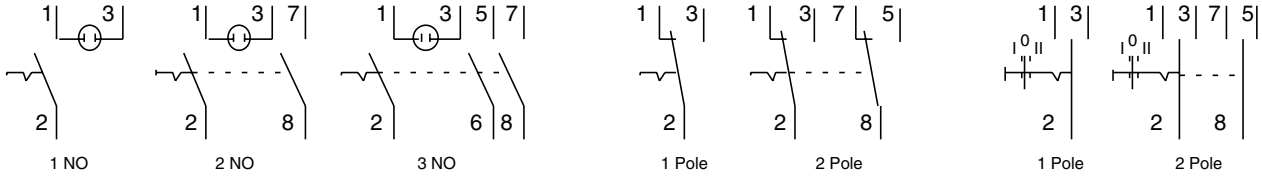
Mounting depth	68mm
Mounting width:	17.5mm (=1 module)
Color:	RAL 7035, grey
Connection cross sections:	Up to 1 X 6mm^2 or 2 X 2.5mm^2
Rated current:	16A
Rated voltage:	250 VAC IEC
Rated voltage:	240 VAC UL/CSA (E171252)

Terminal markings



Switches

Disconnect switches

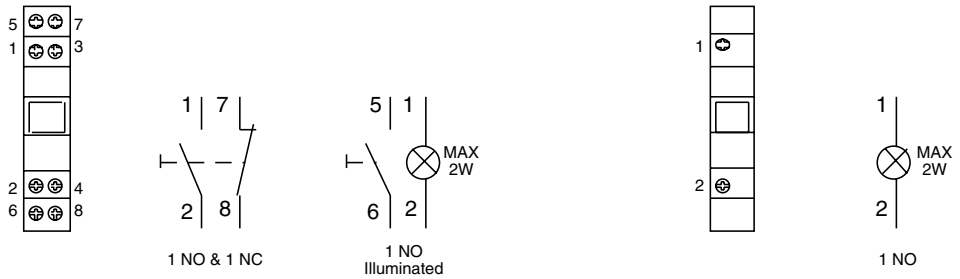


Illuminated pushbutton

Form "C" switches

Form "C" switches
(Hand - OFF- Auto)

Terminal assignments for pushbuttons and indicator lights



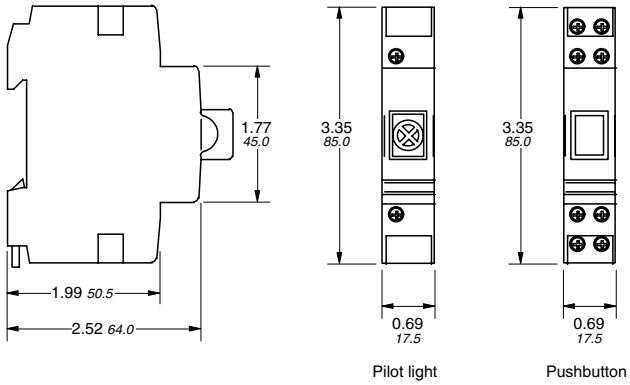
Pushbutton

Pilot light

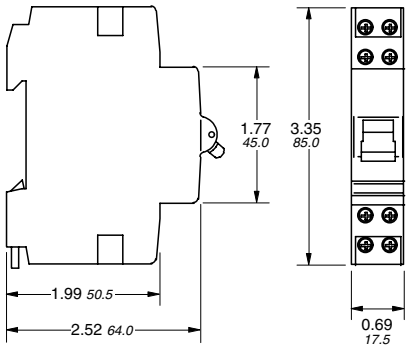
Modular installation equipment
Approximate dimensions

00.00 Inches
00.00 Millimeters

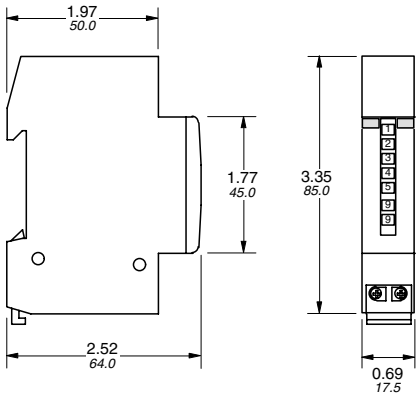
E220



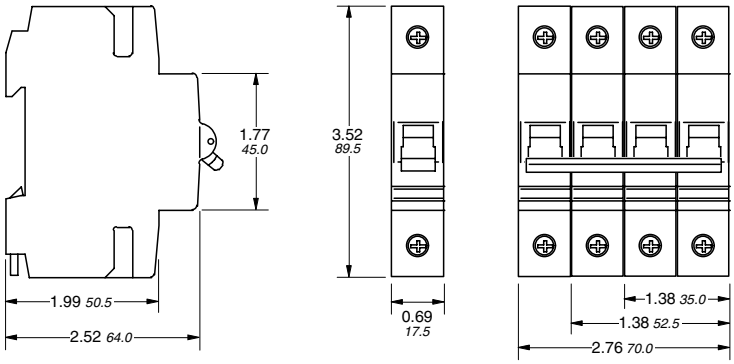
E220, 16 & 25A



E233



E240/270



Isomax
Molded case circuit breakers

Introduction
ABB Isomax molded case circuit breakers are modern, innovative units designed after extensive analysis of the demands of today's market. These new units embody all the experience and advances derived from ABB's previous highly successful and acclaimed range of circuit breakers. ABB Isomax circuit breakers are designed for the total safety of both operators and systems. This complete and versatile series of circuit breakers can satisfy the most demanding system specifications.

ABB Isomax circuit breakers are ideal for all electrical power generation and distribution applications. The Isomax series maximizes safety and dependability for all power users. The new line is particularly suitable for applications involving special protection coordination needs and automated control systems.

ABB Isomax units also satisfy the most demanding requirements for rated current and fault current levels.

With the wide range of optional trip functions total system selectivity can be maximized.

- Continuous currents from 15A to 2500A
- Rated interrupting capacities from 14kA to 85kA (600VAC UL/CSA)
- Extended working life of all mechanical and electrical parts for continuity of operation
- Suitable for isolation applications
- UL/CSA 100% equipment rated versions

Frame sizes — seven basic sizes
The ABB Isomax series inclues seven basic frame sizes with continuous rated currents from 15A to 2500A and with 600VAC interrupting capacities up to 85kA. The various versions have the following breaking capacity ratings:

- **B** basic breaking capacity
- **N** normal breaking capacity
- **H** high breaking capacity
- **L, V** very high breaking capacity

Derived versions
- Circuit breakers with selective and non-selective residual current protection
- Switch disconnectors
- Circuit breakers for motor control with adjustable magnetic release
- Circuit breakers for machine tools
- Circuit breakers for direct current

ABB Isomax versions
- Fixed: all models
- Plug-in: up to S5 400A (IEC)
- Withdrawable: from S3 to S7 1200A (IEC)

① Available up to 225A at 480VAC

General information
General ratings and specifications


S1


S3B


S3


S4

Circuit-breaker type			S1	S3B	S3			S4		
Maximum frame continuous rated current	40°C	A	100	225	225			250		
Rated operational voltage	50/60 Hz	V	277/480V	240	600			600		
Test voltage	1 min. 50/60 Hz	V	3000	3000	3000			3000		
Rated impulse withstand voltage		kV	6	6	6			8		
Poles		No.	3	2-3	2-3-4			2-3-4		
Performance level			**N**	**B**	**N**	**H**	**L**	**N**	**H**	**L**
UL/CSA short-circuit interrupting capacity UL 489, File # E93565 CSA, File # LR90467	240VAC	kA RMS	50	150	65	100	150	65	150	200
	480VAC		**20**③	—	**25**	**50**②	**85**	**25**	**65**	**100**
	600VAC		—	—	14	14	25	18	22	35
	500VDC	①	—	50	35	50	65	—	—	—
	600VDC	①	—	—	20	35	50	—	—	—
IEC-947 rated ultimate short-circuit breaking capacity Icu	220/230VAC	kA RMS	40	150	65	100	170	65	150	200
	380/400/415VAC		**25**	—	**35**	**65**	**85**	**35**	**65**	**100**
	440VAC		16	—	30	50	65	30	50	80
	500VAC		12	—	25	40	50	25	40	65
	660/690VAC		—	—	14	18	20	18	22	30
Overcurrent trip unit/relays										
Thermal-magnetic			•	•	•			—		
Microprocessor-based			—	—	—			•		
Dialogue unit			—	—	—			•		
Interchangeability			—	—	—			•		
Version — Terminals										
Fixed — front or rear			•	•	•			•		
Plug-in — front or rear (IEC)			•	•	•			•		
Withdrawable — front or rear (IEC)			—	•	•			•		
Dimensions (fixed circuit-breaker)										
2P & 3P (H x W x D)		in	4.72 x 3.07 x 2.75	6.70 x 4.13 x 4.07	6.70 x 4.13 x 4.07			10.0 x 4.13 x 4.07		
4P IEC (H x W x D)		in	4.72 x 4.09 x 2.75	6.70 x 5.51 x 4.07	6.70 x 5.51 x 4.07			10.0 x 5.51 x 4.07		
Mechanical duration										
Operations		No.	25,000	25,000	25,000			25,000		
Frequency		ops./hour	240	240	120			120		
Weights (Fixed 3P)		lbs	2.42	6.75	6.75			8.8		

① For use with thermal-magnetic trip only:
500VDC, 2 poles in series
600 VDC, 3 poles in series
② 15-30A units are 65kA at 480VAC
③ 15A units are 14kA at 480VAC

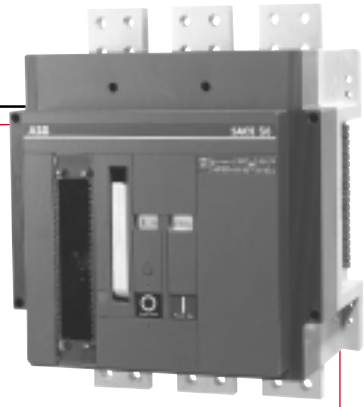
General information
General ratings and specifications


S5


S6


S6


S7


S8

Circuit-breaker type			S5			S6			S6			S7	S8
Maximum frame continuous rated current	40°C	A	400			600			800			1200	1600/2000/2500
Rated operational voltage	50/60 Hz	V-	600			600			600			600	600
Test voltage	1 min. 50/60 Hz	V-	3000			3000			3000			3000	3000
Rated impulse withstand voltage		kV	8			8			8			8	8
Poles		No.	2-3-4			2-3-4			2-3-4			2-3-4	3
Performance level			**N**	**H**	**L**	**N**	**H**	**L**	**N**	**H**	**L**	**H**	**V**
UL/CSA short-circuit interrupting capacity UL 489, File # E93565 CSA, File # LR90467	240VAC	kA RMS	65	150	200	65	150	200	65	150	200	100	125
	480VAC		**35**	**65**	**100**	**50**	**65**	**100**	**50**	**65**	**100**	**65**	**100**
	600VAC		22	22	35	25	35	42	25	35	42	50	85
	500VDC	①	35	50	65	35	50	65	35	50	65	—	—
	600VDC	①	20	35	50	20	35	50	20	35	50	—	—
IEC-947 rated ultimate short-circuit breaking capacity	220/230VAC	kA RMS	65	100	200	65	100	200	65	100	200	100	120
	380/400/415VAC		**35**	**65**	**100**	**35**	**65**	**100**	**35**	**65**	**100**	**65**	**120**
	Icu 440VAC		30	50	80	30	50	80	30	50	80	55	100
	500VAC		25	40	65	25	40	65	25	40	65	45	70
	660/690VAC		20	25	30	20	25	35	20	25	35	25	50
Overcurrent trip unit/relays													
Thermal-magnetic				•			•			•		—	—
Microprocessor-based				•			•			•		•	•
Dialogue unit				•			•			•		•	•
Interchangeability				•			•			•		•	•
Version-Terminals													
Fixed – front or rear				•			•			•		•	•
Plug-in – front or rear				•			•			•		—	—
Withdrawable — front or rear				•			•			•		•	—
Dimensions (fixed circuit-breaker)													
2P & 3P (H x W x D)		in	13.62 x 5.51 x 4.07			10.55 x 8.27 x 4.07			14.25 x 8.27 x 4.07			15.98 x 8.27 x 5.45	15.75 x 15.98 x 9.25
4P IEC (H x W x D)		in	13.62 x 7.24 x 4.07			10.55 x 11.0 x 4.07			14.25 x 11.0 x 4.07			15.98 x 11.0 x 5.45	—
Mechanical endurance													
Operations		No.	20,000			20,000			20,000			10,000	10,000
Frequency		(ops./hour)	120			120			120			120	20
Weights Fixed 3P		lbs.	11.0			21.0			22.0			37.5	135

Isomax

① For use with thermal-magnetic trip only:
500VDC, 2 poles in series
600 VDC, 3 poles in series

General information

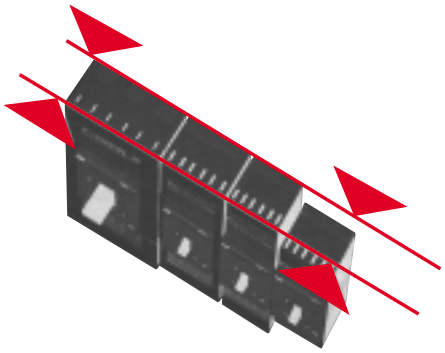
Improved use

ABB Isomax circuit breakers — from Model S4 to S8 and starting from 40A are provided with microprocessor based modular relays.

These are available in two versions:
– ABB PR211: with overload and short-circuit protection
– ABB PR212: with overload protection, short-circuit protection, and ground fault protection. This version can also be fitted with a dialog unit for connection to automation systems.

These reliable and precise relays are unaffected by electromagnetic disturbances. Minimal response tolerances ensure high precision in discrimination computations.

S1, S3 and selected versions of the S5 and S6 breakers are fitted with thermal-magnetic trip releases.



Flexible and modular construction simplify panel design and construction for:
- primary distribution (switchboards)
- motor control (MCC)
- secondary distribution (panelboards)
- panel builders (OEM & users)

– Standard modular dimensions
– Standard circuit breaker depths S3-S6
– Assembly onto DIN profile up to 400 A
– Full range of accessories
– Standard front flange:
  - for DIN 45mm cut-outs on S3-S5
  - for 105mm cut-outs on S3-S7.
– Handle operators:
  - flange type
  - variable depth rotary type
  - fixed depth rotary type

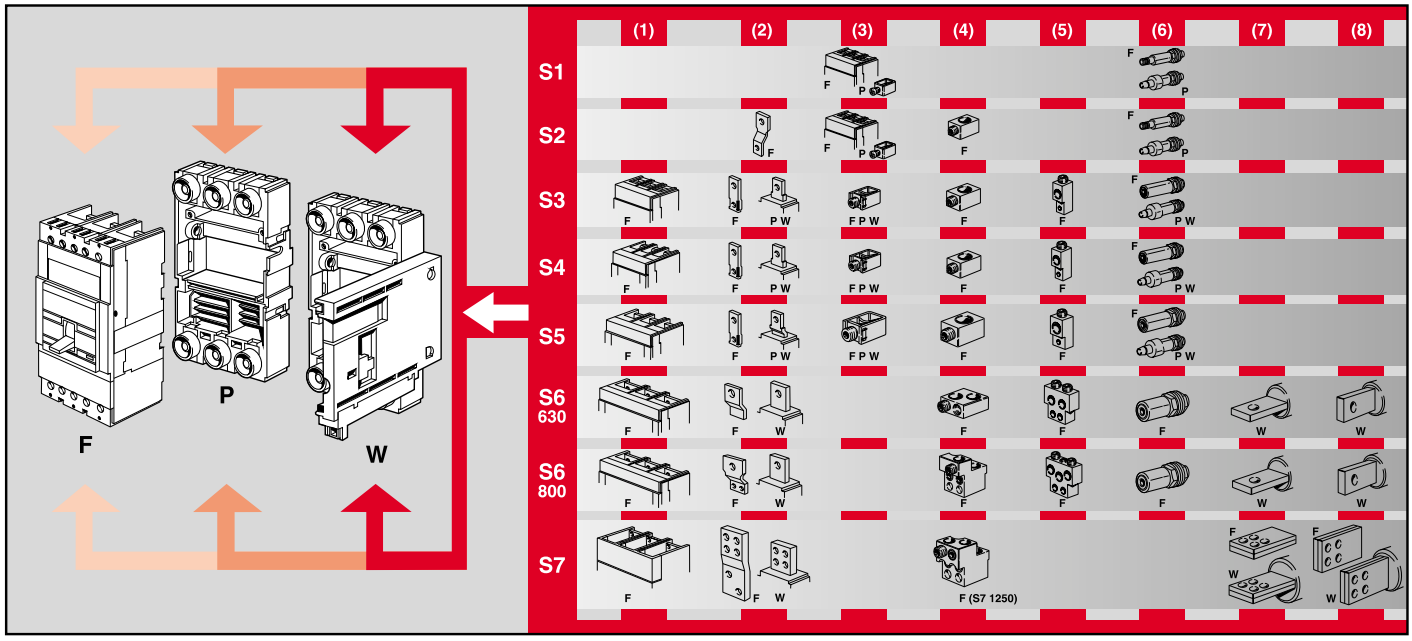
Isomax

Maximum versatility

ABB Isomax circuit breakers can be fitted with a wide range of terminals for all types of connections.

Modular design also makes installation and assembly extremely simple.

The various terminal options can be fitted in different combinations in the same unit (e.g. one type at the top and another at the bottom). This makes ABB Isomax circuit breakers easy to adapt to any installation.

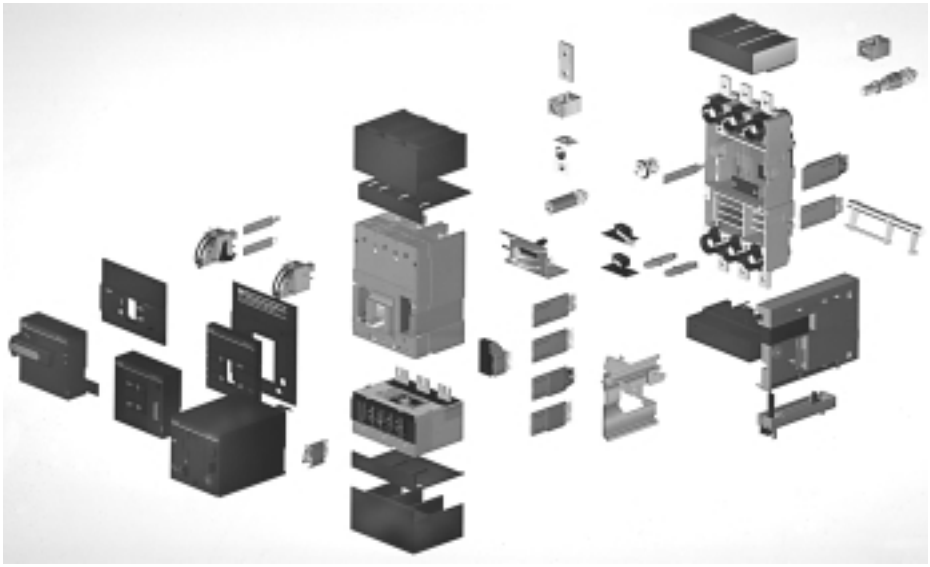


(1) Front
(2) Extended front
(3) CU front cable terminals (saddle type)
(4) CU/AL front cables (standard type)
(5) CU rear cables
(6) Rear threaded
(7) Rear horizontal flat bar
(8) Rear vertical flat bar

Complete range of accessories

ABB Isomax circuit breakers are complemented by a complete range of accessories to satisfy the widely differing operational and automation requirements. Accessories are standardized for groups of circuit breakers to streamline storage logistics and simplify installation.

ABB Isomax units can be customized as required under conditions of absolute safety. All accessories for S3 – S7 can be mounted with simple operations without having to remove the circuit breaker power cover and without any accessory adjustments.



Simplified maintenance

Maintenance operations are kept to a minimum. All inspection can be performed quickly and easily.

A dialog unit (optional) can be installed to store operational data for efficient maintenance scheduling.

Reliability is ensured by the high quality of all materials and by advanced manufacturing in automated assembly systems capable of ensuring consistent product quality.

Insulation distances are as required for both UL/CSA 600VAC approvals and also IEC-947 690VAC rating, which ensures safe insulation even under the severest operating conditions.

Double insulation. The cover on S3 – S7 encloses all electrical accessory cavities which are also completely separated from the power circuit.

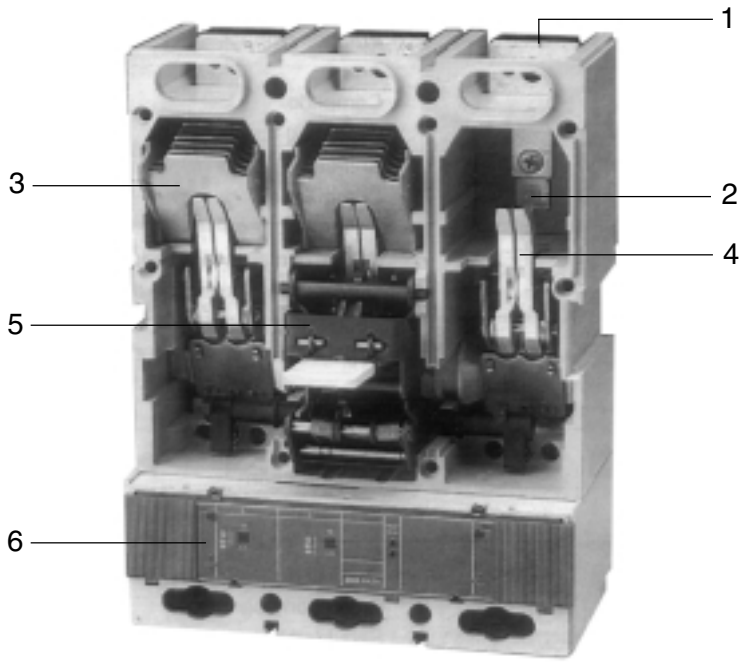
Moreover:

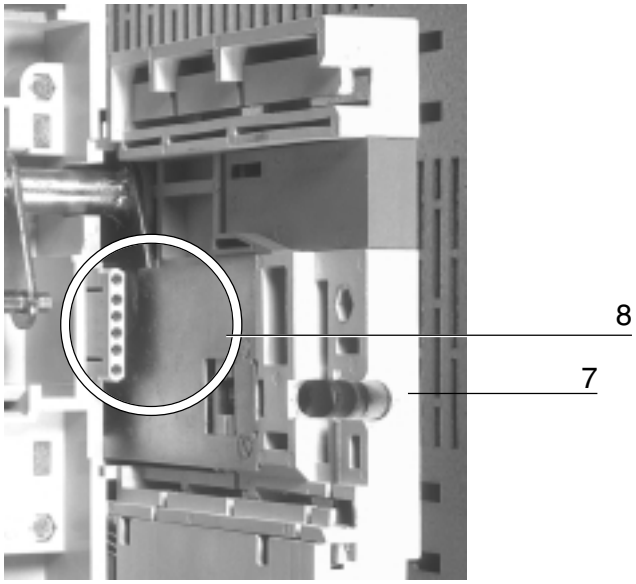
- positive operation to guarantee safe and reliable signalling.
- optional draw-out with closed-door racking-out for maximum operational safety.
- high and low terminal covers are available to increase operator protection level.

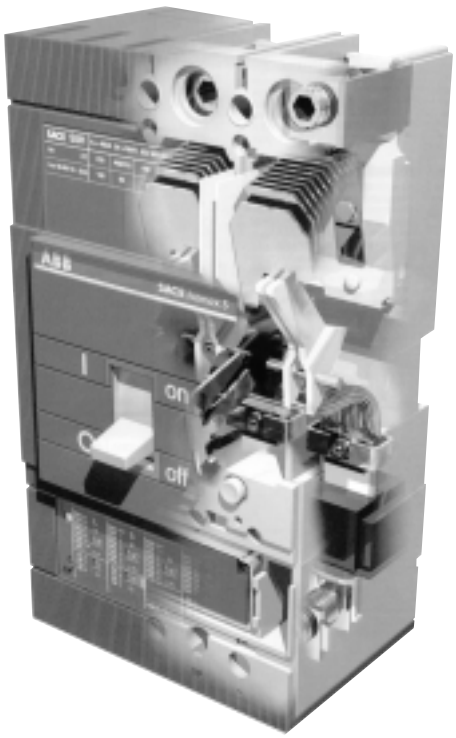
General information
Technical and design specifications
Main component parts

Versions
On request, IEC circuit breakers can be delivered in plug-in or withdrawable, two, three or four pole versions. Units are normally provided with front or rear terminals. Fixed parts are always manufactured to IP20 protection. See Accessories section for details of other optional accessories.

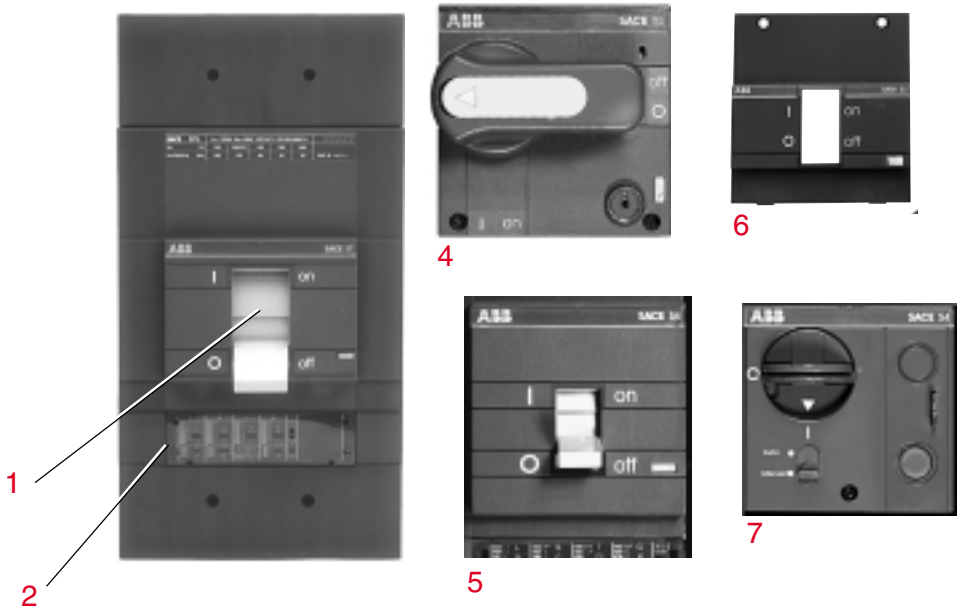
Key
1 Terminals
2 Fixed contacts
3 Arcing chamber
4 Moving contacts
5 Operating mechanism
6 Microprocessor based solid-state relay
7 Closed door isolation device
8 Plug-in connector for auxiliary circuits

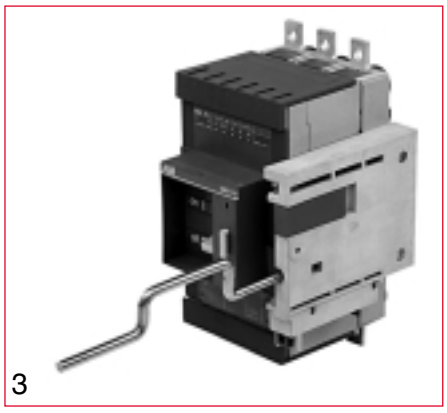


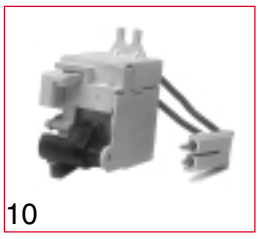


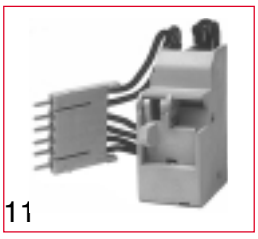


Operating and signalling devices









Key

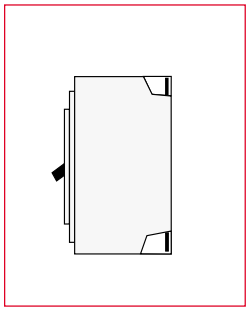
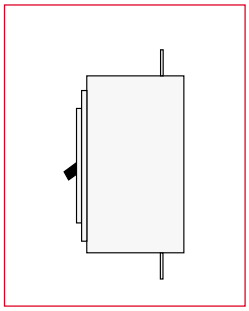
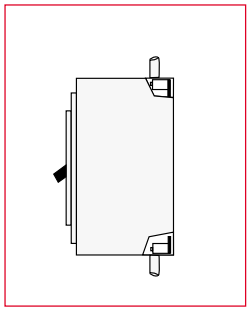
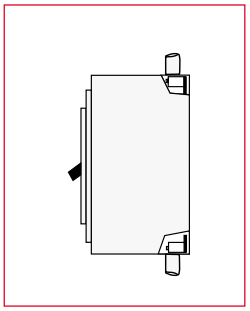
1 Operating lever
2 Overcurrent relay adjustments
3 Closed door racking-in and racking-out device
4 Rotary handle operating mechanism
5 Standard front flange (105 mm/4.13" high). Available for circuit-breakers S3 – S7
6 Flange (45 mm/1.77" high) for installation of circuit breakers behind standard IEC doors. Available for circuit-breakers up to S5 frame
7 Direct acting motor operator S3 – S5
8 Stored energy motor operator S6 – S7
9 Shunt trip device
10 Undervoltage release
11 Auxiliary contact switch for circuit breaker position indication

General information
Technical and design specifications
Main component parts

Combinations of terminals

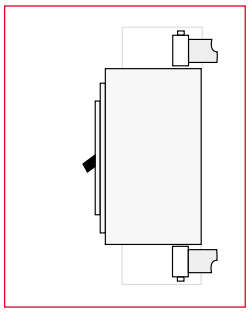
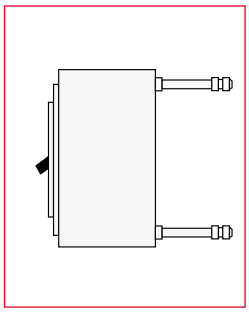
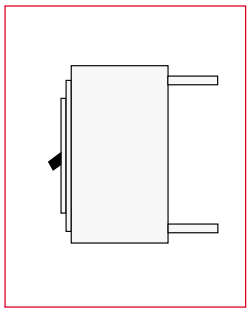
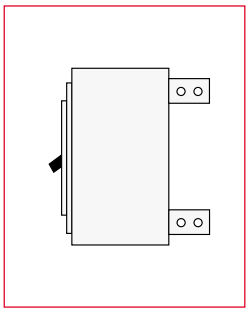
All circuit breaker bus terminations are made of silver-plated copper. Terminals can be provided in different combinations (e.g. one type at the top and another type at the bottom). Various connection schemes are available making ABB Isomax circuit breakers easily adapted to any installation requirements. In particular, this exceptional versatility makes ABB Isomax units ideal for wall mounted switchboards with connections accessible from the front and for rear connection switchboards.

Connection type

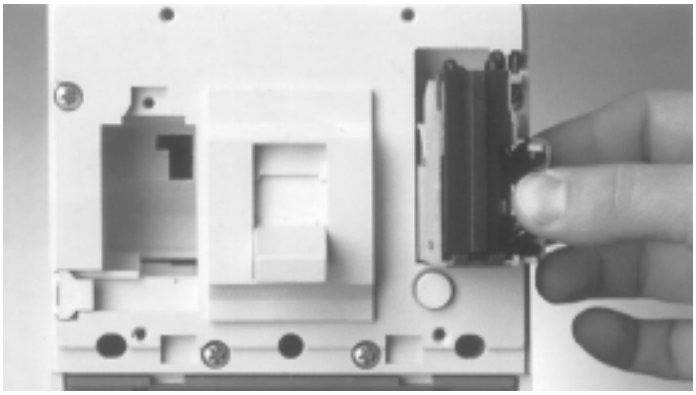
Circuit-breaker	Front bar			Extended front bar			CU front cable lugs			CU/AL front cable lugs		
	F	P	W	F	P	W	F	P	W	F	P	W
S1	—	—	—	—	—	—	●	♦	—	—	—	—
S3	●	—	—	♦	♦	♦	♦	♦	♦	♦	—	—
S4	●	—	—	♦	♦	♦	♦	♦	♦	♦	—	—
S5	●	—	—	♦	♦	♦	♦	♦	♦	♦	—	—
S6	●	—	—	♦	—	♦	—	—	—	♦	—	—
S7	●	—	—	♦	—	♦	—	—	—	♦	—	—
S8	●	—	—	—	—	—	—	—	—	♦	—	—

Key: **F** = Fixed **P** = Plug-in **W** = Withdrawable ♦ = Optional terminals ● =Standard connections

Circuit-breaker	CU rear cable lugs			Rear threaded studs			Rear horizontal flat bus			Rear vertical flat bus		
	F	P	W	F	P	W	F	P	W	F	P	W
S1	—	—	—	♦	♦	—	—	—	—	—	—	—
S3	♦	—	—	♦	♦	♦	—	—	—	—	—	—
S4	♦	—	—	♦	♦	♦	—	—	—	—	—	—
S5	♦	—	—	♦	♦	♦	—	—	—	—	—	—
S6	♦	—	—	♦	—	—	—	—	♦	—	—	♦
S7	—	—	—	—	—	—	♦	—	♦	♦	—	♦
S8	—	—	—	—	—	—	♦	—	—	♦	—	—

Key: **F** = Fixed **P** = Plug-in **W** = Withdrawable ♦ = Optional terminals

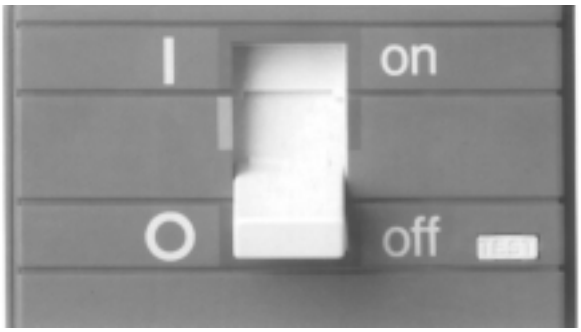


Double insulation

The double insulation technique involves the total separation of the power and auxiliary circuits, and is a characteristic of all Isomax switchgear, from size S3 to S7.

The housing of each electrical accessory is completely segregated from the power circuit, thus avoiding all risk of contact with the active parts and hence improving operator safety conditions in plant management and inspection.

In addition, the insulation of the internal active parts, in terms of both the thickness of the materials and the distances, is superior to that required by the IEC Standards and complies with American usage.



Positive operation

The operating lever always indicates the exact position of the moving contacts in the circuit-breaker, thus guaranteeing safe and reliable indication (I = Closed; O = Open; yellow line = Open due to tripping of releases).

The operating mechanism of the circuit-breaker is trip-free, independently of the pressure on the lever or the speed of operation.

Tripping of the releases automatically opens the moving contacts; to close them again, the operating mechanism has to be reset by pushing the operating lever from the intermediate position fully down to the lower limit of the open position.

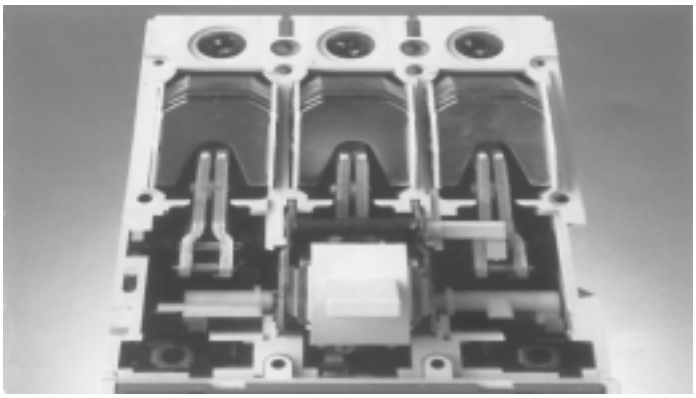
In the plug-in or withdrawable circuit breakers, the mobile part can only be detached from the fixed part when the circuit-breaker is open (i.e. moving contacts separate from fixed contacts).

Selectivity

The complete range of releases available makes it possible to coordinate protection functions using current-type, time-type, energy-type or residual-current selectivity chains.

This makes it possible to isolate only those zones affected by faults, ensuring maximum operating continuity.

Circuit-breakers in category B are available from 400 A upwards. (IEC 947-2)



Inspection

A direct check can be made on the state of the internal parts and active components when the circuit-breaker is out of service.

Access can be gained to the arcing chambers and fixed and moving contacts simply by removing the cover of the circuit-breaker.

The operation, made easier by the limited number of components, reduces maintenance times and guarantees a higher level of safety.

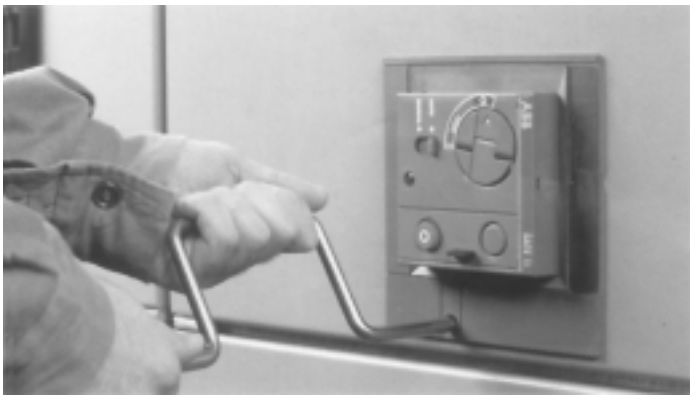
General information
Construction characteristics

Isolation behavior
In the open position, the circuit-breaker guarantees the isolation of the circuit in accordance with IEC 947-2 specifications.

In the IEC withdrawable or plug-in versions, the power and auxiliary circuits are isolated in the racked out or removed positions, thus guaranteeing that no parts are live.

In these conditions, using suitable connectors, blank tests can be conducted, with the operations on the circuit-breaker being carried out in complete safety.

The redundant insulation distances guarantee the absence of leakage currents and dielectric strength in the event of any overvoltages across the input and output.



Racking-out with the door closed
This system, present for the first time on a series of molded-case circuit-breakers, starting from Isomax S3, allows racking-in and racking-out with the compartment door closed, thus increasing operator safety and allowing the construction of internal-arc-proof low-voltage switchboards.

Racking out can only be done with the circuit-breaker open, using the racking-out crank handle supplied with the withdrawable version of the circuit-breaker.

Electromagnetic compatibility
With the use of the PR211/P microprocessor-based overcurrent releases and the RC211 and RC212 electronic residual current releases, slow non-operation is guaranteed, even in the presence of interference caused by electronic equipment, atmospheric disturbance or discharges of an electrical nature.

Furthermore, the appliances do not generate interference with other electronic equipment in the vacinity.

This is in accordance with IEC 947-2 Addendum F, IEC 1000-4, EN 61000-4, EN 50081-2, European Directive No. 49/12-12-1992 specifications on electromagnetic compatibility EMC.

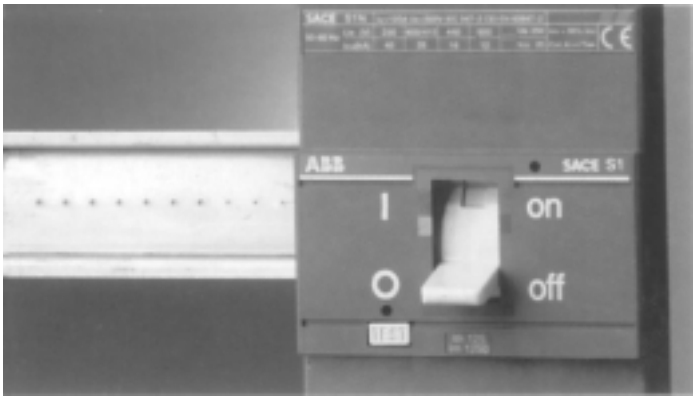
Tropicalization
The Isomax series of circuit-breakers and accessories comply with the strictest regulations on use in hot-damp saline climates (in conformity with climatographic chart No. 8 of the IEC 721-2-1 specifications), thanks to:

– insulating cases made of fiberglass-reinforced synthetic resins
– corrosion-resistant treatment on all main metal parts (environment C UNI 3564-65)
– Fe/Zn 12 galvanizing (UNI ISO 2081), protected by a conversion layer composed mainly of chromates (UNI ISO 4520).

Protection classes

Various measures have been incorporated in Isomax S circuit-breakers to achieve IP20 protection for the fixed, plug-in and withdrawable versions of the circuit-breaker, excluding the terminals, and IP 30 for the front parts of circuit-breakers installed in switchboards.

The fixed parts are always IP20 protection grade. IP54 protection can be achieved for circuit-breakers installed in switchboards by using door-mounted crank handle operating mechanisms and special insulating gaskets that can be ordered separately.



Mounting on DIN channel up to Isomax S5

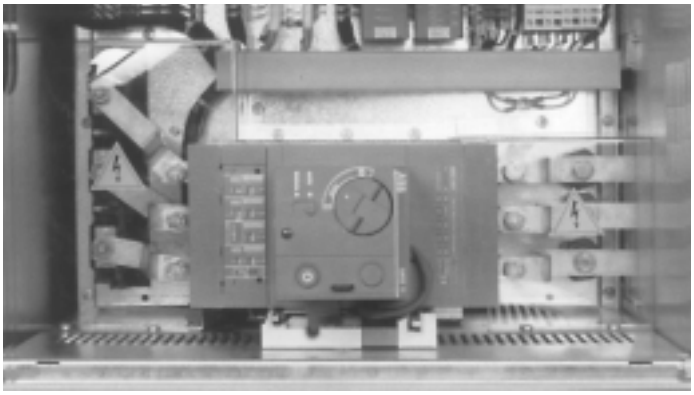
The brackets for mounting on the standardized DIN EN 50022 channels for S1 and S2 and on DIN EN 50023 for S3, S4, S5 simplify the fitting for the circuit-breakers on standard switchboards.

This allows standarized support structures to be installed and simplifies the phase for designing and building the switchboard structure.

Resistance to vibration

The circuit-breakers are unaffected by vibrations generated mechanically or by electromagnetic effects, in compliance with the IEC 68-2-6 standards and the strictest regulations set by the most important classification organizations:

– RINA
– DET Norske Veritas
– Lloyd's Register of Shipping
– Germanischer Lloyd
– Bureau Veritas



Installation positions

The circuit-breakers can be installed in any position with no variations to their rated characteristics.

In compliance with UL and IEC 947-2 standards, Isomax S circuit-breakers can be powered from either their top or bottom terminals, without affecting operation.

They can be installed in switchboards, mounted directly on the base plate or on DIN channels up to size S5.

General information
Table of power losses
400 Hz ratings

Table of power losses

Dissipated power (W)		S1		S3		S4		S5		S6		S7		S8
Setting	I_n (A)	F	P	F	P•W	F	P•W	F	P•W	F	P•W	F	P•W	F
R15	15	7	7.3	11.8	13									
R20	20	8.6	8.9	10.8	11.9									
R25	25	7.9	8.3	12	13.2									
R30	30	8.6	8.4	16.9	18.5									
R40	40	8.6	9.5	15.1	16.6									
R50	50	10	11	16.4	18									
R60	60	12.8	13	14.4	16									
R70	70	15.8	17.4	15.8	18.8									
R80	80	13.5	15	17.9	21									
R90	90	17	19	21.9	26									
R100	100	13.8	15.5	21	25									
R125	125			18.5	26									
R150	150			40.5	52									
R175	175			35.9	40									
R200	200			36	46									
R225	225			55	67									
R300	300							52.7	79					
R400	400							66.4	96					
R600	600									83	106			
R800	800									93.2	119			
I_n = 100	100					5.2	8							
I_n = 150	150					13	19							
I_n = 250	250					40	55							
I_n = 300	300							40	57					
I_n = 400	400							60	90					
I_n = 600	600									63	104			
I_n = 800	800									96	125			
I_n = 1000	1000											102	140	
I_n = 1200	1200											151	203	
I_n = 1600	1600													41
I_n = 2000	2000													64
I_n = 2500	2500													100

400Hz response

Breaker frame	Breaker rating	Thermal amperes			Magnetic rating	
		Minimum	Maximum	Fixed	Minimum	Maximum
S1	15	—	—	15	—	1000
	20	—	—	19	—	1000
	25	—	—	23	—	1000
	30	—	—	28	—	1000
	40	—	—	37	—	1000
	50	—	—	46	—	1000
	60	—	—	55	—	1200
	70	—	—	65	—	1400
	80	—	—	74	—	1600
	90	—	—	81	—	1800
	100	—	—	90	—	2000
S3	15	—	—	15	—	850
	20	—	—	19	—	850
	25	—	—	23	—	850
	30	—	—	28	—	850
	35	—	—	32.4	—	850
	40	—	—	37	—	850
	50	—	—	46	—	850
	60	—	—	55.5	—	1020
	70	—	—	64.8	—	1190
	80	—	—	74	—	1360
	90	—	—	81	—	1530
	100	—	—	90	—	1700
	125	—	—	112	—	1360
	150	—	—	135	—	1605
	175	—	—	157.5	—	1640
	200	—	—	180	—	1875
	225	—	—	202.5	—	2138
	250	—	—	225	—	2400

400Hz response

Breaker frame	Breaker rating	Electronic trip headers				
		Thermal amperes			Magnetic rating	
		Minimum x 0.4(.44)	Maximum x 0.8(.88)	Fixed	Minimum x 1.5(1.8)	Maximum x 12(14.4)
S4①	100	44	88	—	180	1440
	150	66	132	—	270	2160
	250	110	180.4	—	450	3600
S5①	300	132	264	—	540	4320
	400	176	352	—	720	5760
S6①	600	264	528	—	1080	8640
	800	352	704	—	1440	11,520
S7①	1000	440	880	—	1800	14,400
	1200	528	1056	—	2160	17,280

① PR211 Trip unit — maximum allowable setting of "L" is 0.8.

Thermal-magnetic S1, S3, S5, S6

The S1 – S3 Isomax series uses a non-interchangeable tripping mechanism with a fixed thermal and magnetic trip. These breakers utilize a heat sensitive bimetal for protection against overload currents. The magnetic element is an instantaneous acting device for protection against short circuit faults. The S5, S6 Isomax series with thermal-magnetic tripping mechanism are adjustable from .7 to 1.

S3 150 – S3 225

Fixed thermal

Ith = 15 – 150A
Ith = 175 – 225A

+

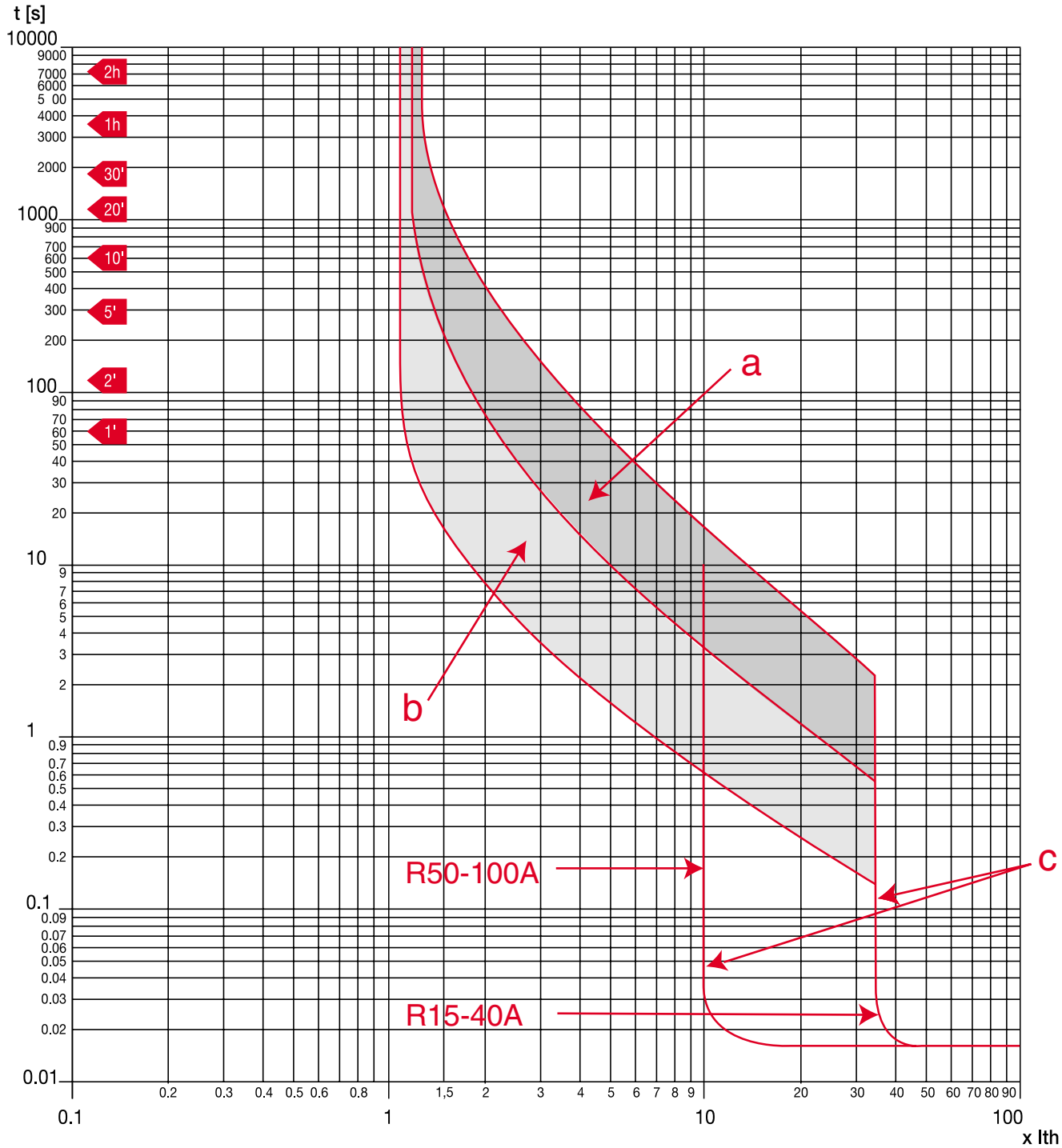
Fixed magnetic

I3 = 10 x Ith
500A min.

Variation in thermal element setting currents according to ambient temperature

Circuit breaker frame	Trip release	Variation in current					
		10°C	20°C	30°C	40°C	50°C	60°C
S1 100, S3 100	R15	18	17	16	15	14	13
	R20	24	22	21	20	19	17
	R25	30	28	27	25	23	21
	R30	35	33	32	30	28	26
	R35	41	39	37	35	33	30
	R40	47	44	42	40	37	34
	R45	53	50	48	45	42	38
	R50	59	56	53	50	47	43
	R60	71	67	64	60	56	51
	R70	83	78	74	70	66	60
	R80	94	90	85	80	75	68
	R90	106	101	95	90	85	77
	R100	118	112	106	100	95	85
S3 150	R125	148	140	133	125	119	106
	R150	177	168	159	150	143	127
S3 225	R175	207	196	186	175	166	149
	R200	236	224	212	200	190	170
	R225	266	252	239	225	214	191
S5 400	R300	345	328	314	300	286	267
	R400	465	442	420	400	380	355
S6 600	R600	690	656	628	600	572	534
	R800	965	90	855	800	740	670

Protective releases
Thermal magnetic overcurrent release
Time current curves, S1



Key

Ith = Rated current of overcurrent release at 40 °C temperature

- – multiples of Ith for thermal releases
- – multiples of Ith for magnetic releases

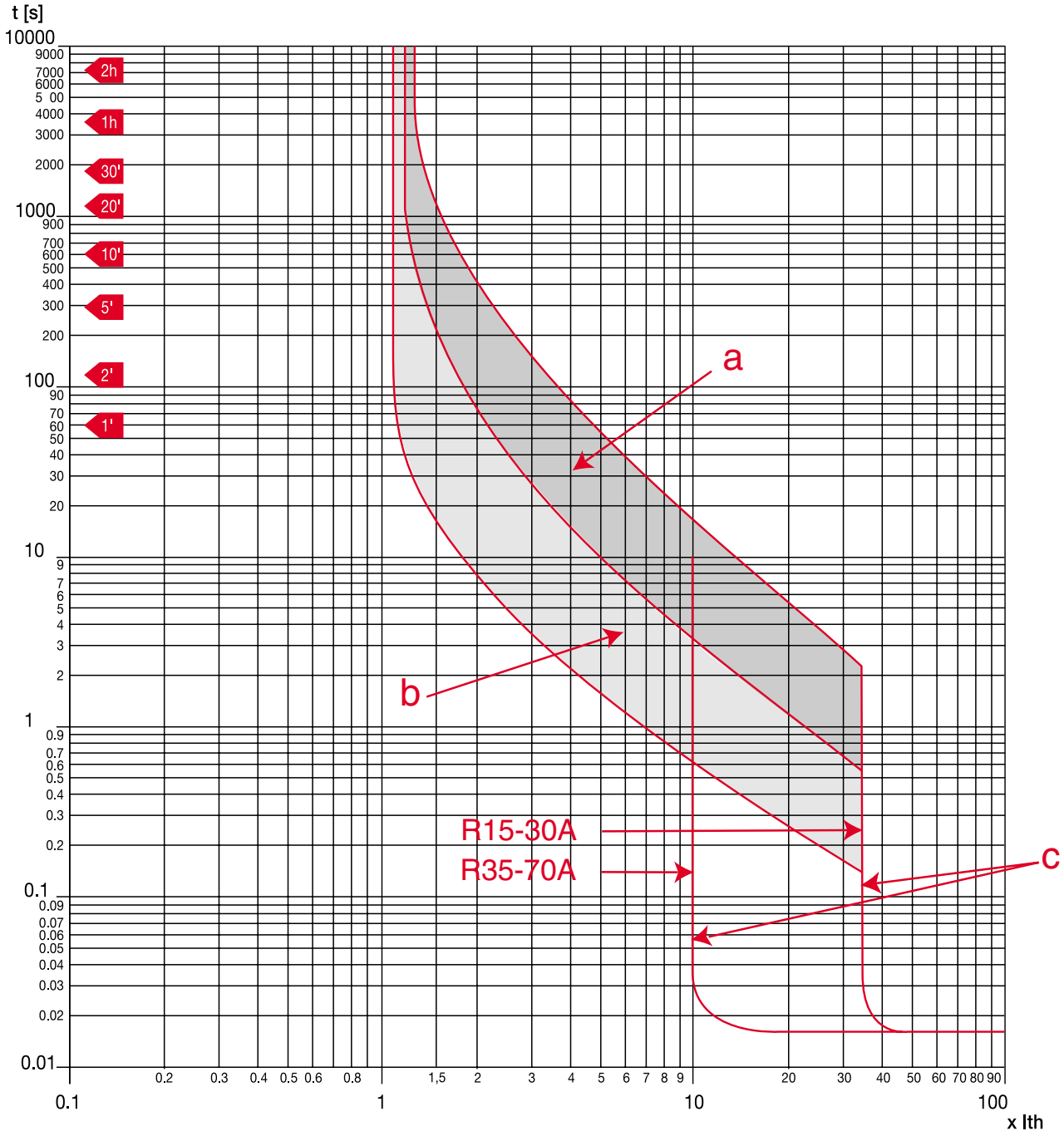
a = Thermal releases cold

b = Thermal releases under operating conditions

c = Magnetic releases (± 20%)

t = Tripping time

Protective releases
Thermal-magnetic overcurrent release
Time-current curves, S3 150 ①



Key

Ith = Rated current of overcurrent release at 40 °C temperature

- – multiples of Ith for thermal releases
- – multiples of Ith for magnetic releases

a = Thermal releases cold

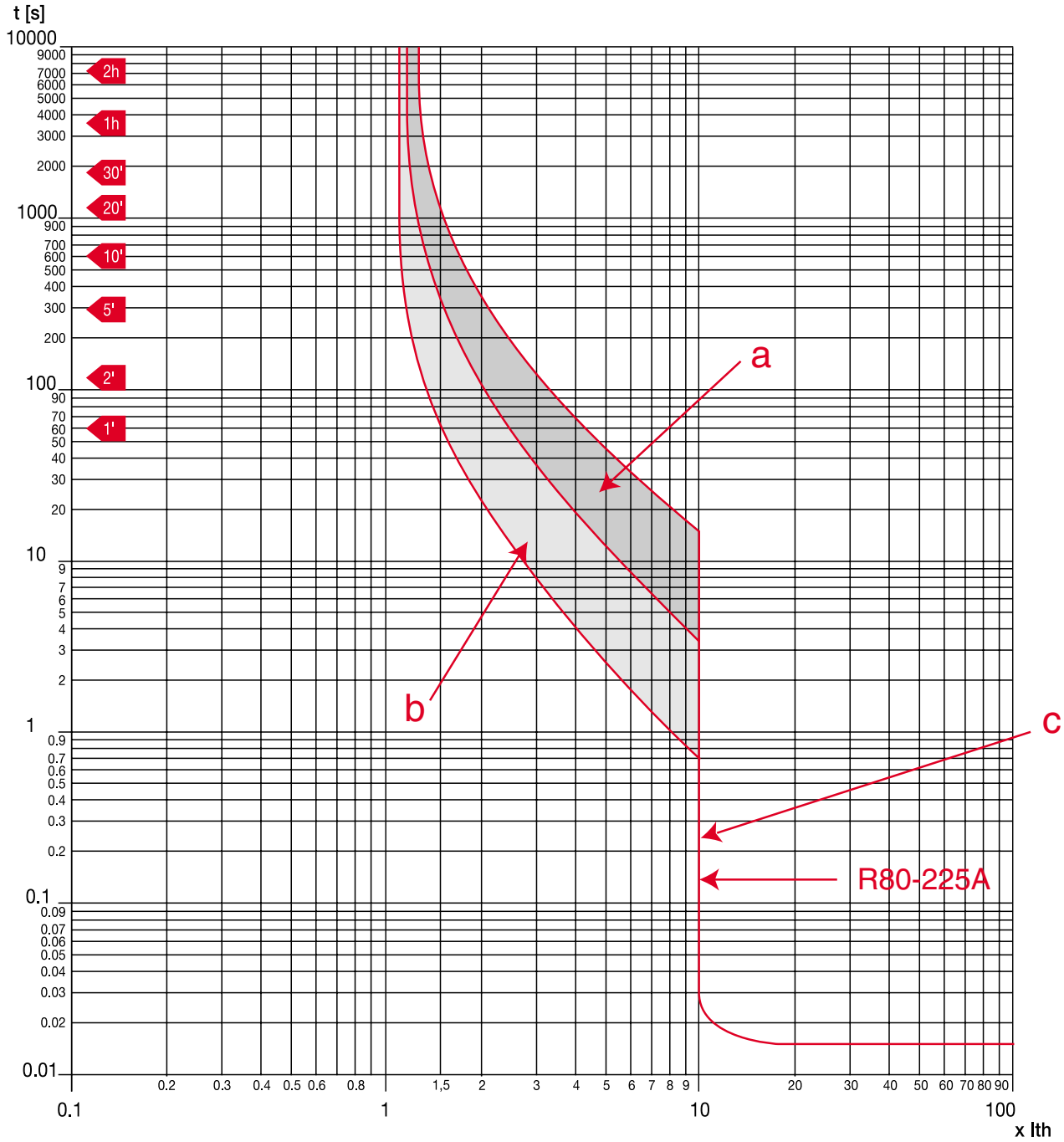
b = Thermal releases under operating conditions

c = Magnetic releases (± 20%)

t = Tripping time

① Direct current may shift tripping characteristic. Consult ABB.

Protective releases
Thermal-magnetic overcurrent release
Time-current curves, S3 150 – S3 225



Key

Ith = Rated current of overcurrent release at 40 °C temperature

– multiples of Ith for thermal releases

– multiples of Ith for magnetic releases

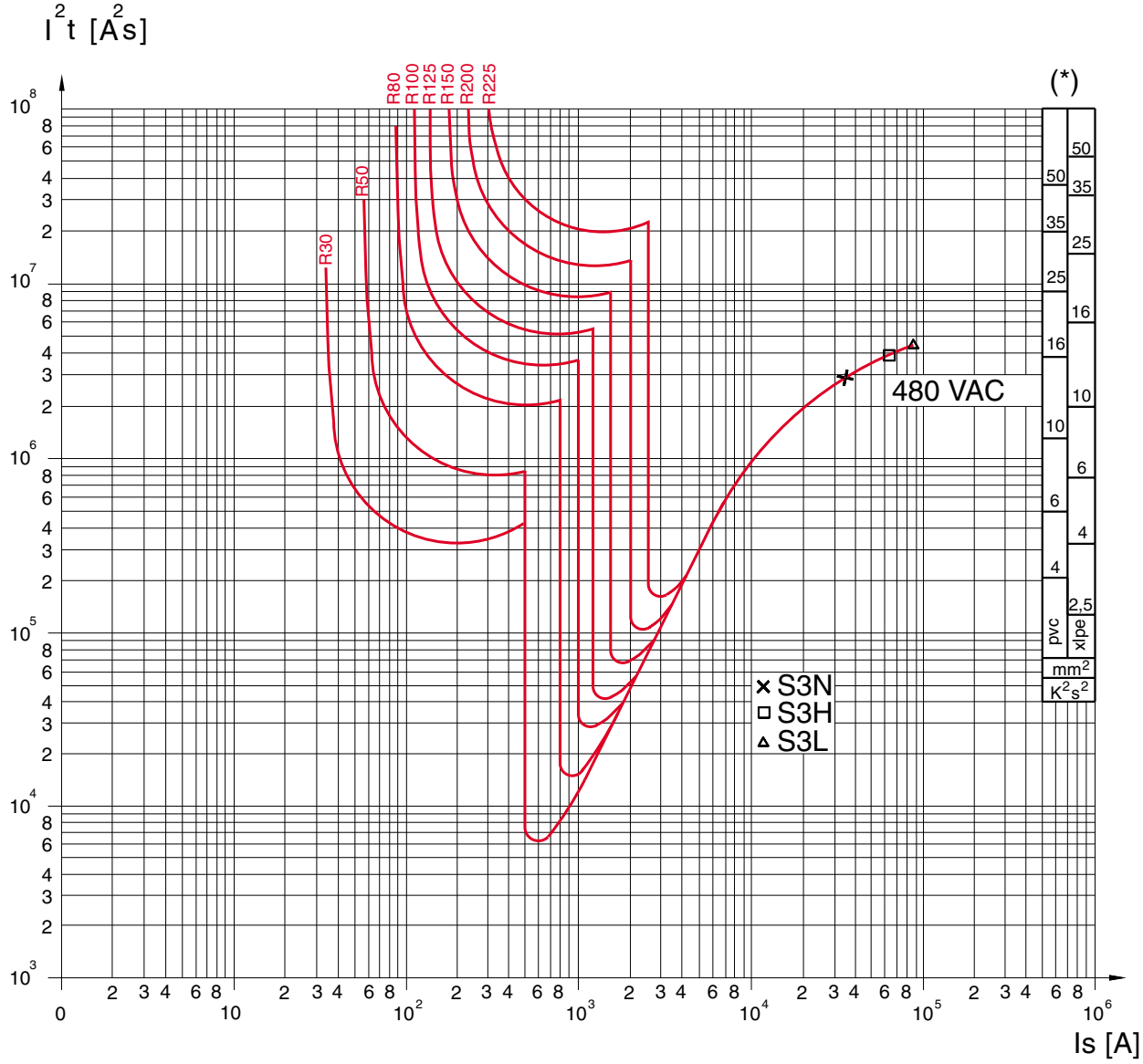
a = Thermal releases cold

b = Thermal releases under operating conditions

c = Magnetic releases (± 20%)

t = Tripping time

Protective releases
Specific let-through energy I^2t curves
S3— TM - Ith = 30A – 225A



Key

Is = Prospective short-circuit symmetrical current

Ith = Rated current of overcurrent release at 40 °C temperature

I^2t = Specific let-through energy at the voltages shown

(*) = Section of copper cable

Isomax

Protective releases
Microprocessor trip release
S4, S5, S6, S7, S8

Microprocessor based overcurrent relays for alternating current for S4, S5, S6 and S7 circuit-breakers

The microprocessor based overcurrent relays (actual RMS) for Isomax S circuit-breakers are interchangeable and offer a wide range of current and trip time settings.

They are available in two versions:

PR211/P with overcurrent protection «L» and instant short circuit protection «I». Available with functions «L», «I», or «L+I». L function includes adjustable long-time pick-up and long-time delay.

PR212/P with overcurrent protection «L», selective short circuit protection «S», instant short circuit protection «I» and ground fault protection «G». Available with functions «L+S+I» or «L+S+I+G». Functions «S», «I» and «G» can be excluded manually by means of the trip current threshold selector (OFF position). In its most complete configuration, i.e. with functions «L+S+I+G», the PR212/P relay can be combined, on request, with the following units:

PR212/D — dialog unit

Essential for two-way communication with electrical plant management systems. When the unit is present, it is possible to choose between the manually set parameters (LOC), and the parameters set by the electrical plant control system (REM) by means of the appropriate selector. The dialog unit must be supplied with an auxiliary voltage of 24 V d.c.

The following information is made available through the dialog unit on the field bus:

- protection parameters
- current values of phases, neutral and ground
- circuit-breaker state
- number of operations of circuit-breaker
- interrupted currents
- state of the overcurrent relay with indication of:
  - normal operation
  - pre-alarm (0.9 x I1)
  - overcurrent function «L»
  - trip function «S»
  - trip function «I»
  - trip function «G».

It is possible to provide and/or modify the protection parameters and the circuit-breaker opening/closing controls. In the event of a serial communication error, the overcurrent relay operates in accordance with the last parameters set and in any event always in accordance with the manually programmed setting. The same occurs in the event of a dialog unit fault, and in the absence of auxiliary supply.

The dialog unit is external for circuit breakers S4 and S5 and is located inside the relay box for circuit breakers S6 and S7.

The external dialog unit is connected by means of a cable for supply and communication with the PR212/P protection relay.

The standard version of the dialog interface has the following specifications:

- hardware: EIA RS485 serial transmission line
- communication protocol: ABB INSUM
- transmission speed: 150 – 19200 baud (bit/s).

PR212/K — signalling unit

Can be connected directly to the PR212/P protection relay and provides contacts for the protection unit trip and alarm signals: pre-alarm, overcurrent function «L», trip functions «S», «I» and «G», trip by relay and internal communication error with PR212/P.

PR212/T — actuator unit

Can be installed only if the dialog unit is present, and by means of suitable relays, controls the opening and closing of the circuit-breaker. In order that opening and closing can be actuated, the circuit-breaker must be equipped with a motor operator (direct-acting for S4 and S5; stored energy type for S6 and S7).

Note

The K and T units are always external.

Other important features of the microprocessor based relays are as follows:

- protection of neutral with programmable automatic adjustment, executed by the manufacturer, to 50% (standard) or 100% (on request) of the current value selected for the phases. The optional version has no code in this catalog;
- reliable operation also when one phase only is live;
- individual and simultaneous adjustment on the three phases and neutral;
- no need for auxiliary supply;
- trip specifications not affected by the ambient temperature;
- consistency of specifications and reliability including in contaminated environments;
- signalling of tripped relay (available for all versions) by means of voltage-free contact for 24 V d.c. or a.c. circuits maximum 3 W.

Circuit-breaker rated current change according to ambient temperature. The tripping characteristics of Isomax S4 – S8 with electronic trip units are unaffected by ambient temperatures from -25°C to +60°C. Max operating temperature is 70°C.

400Hz

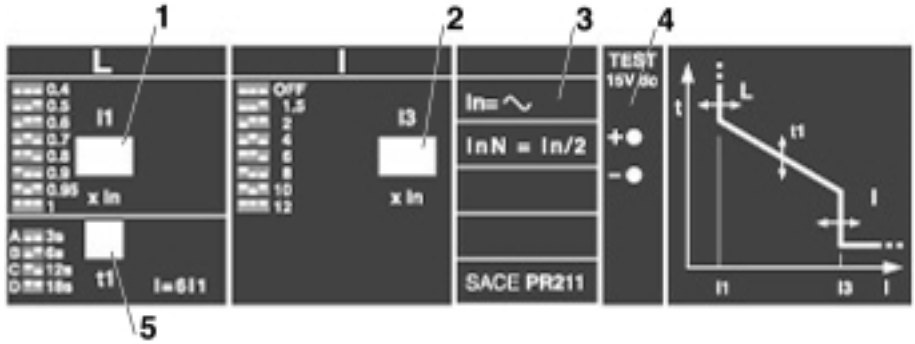
All S1 through S8 breakers are suitable for use in 400Hz power systems.

Protective releases
Microprocessor based overcurrent relays, PR211 for S4, S5, S6 & S7 breakers

Protective functions and set values

Protection against	Trip	Symbol	Set values (manual adjustment in steps)
Overload	Long delay	L	I1 = 0.4-0.5-0.6-0.7-0.8-0.9-0.95-1 x In t1 = 4 curves A,B,C,D
Short-circuit	Instantaneous adjustment	I	I3 = 1.5-2-4-6-8-10-12 x In

PR211



Key

1 Dip-switch for function L setting
2 Dip-switch for function I setting
3 Rated current of current transformers
4 15 V d.c. input for release functioning check
5 Function L trip time setting dip switch
Iu = Rated uninterrupted current of circuit-breaker
In = Rated current of current transformers
I1 = Current setting value for relay overload protection (L)
I3 = Current setting value for relay instantaneous short-circuit protection (I)

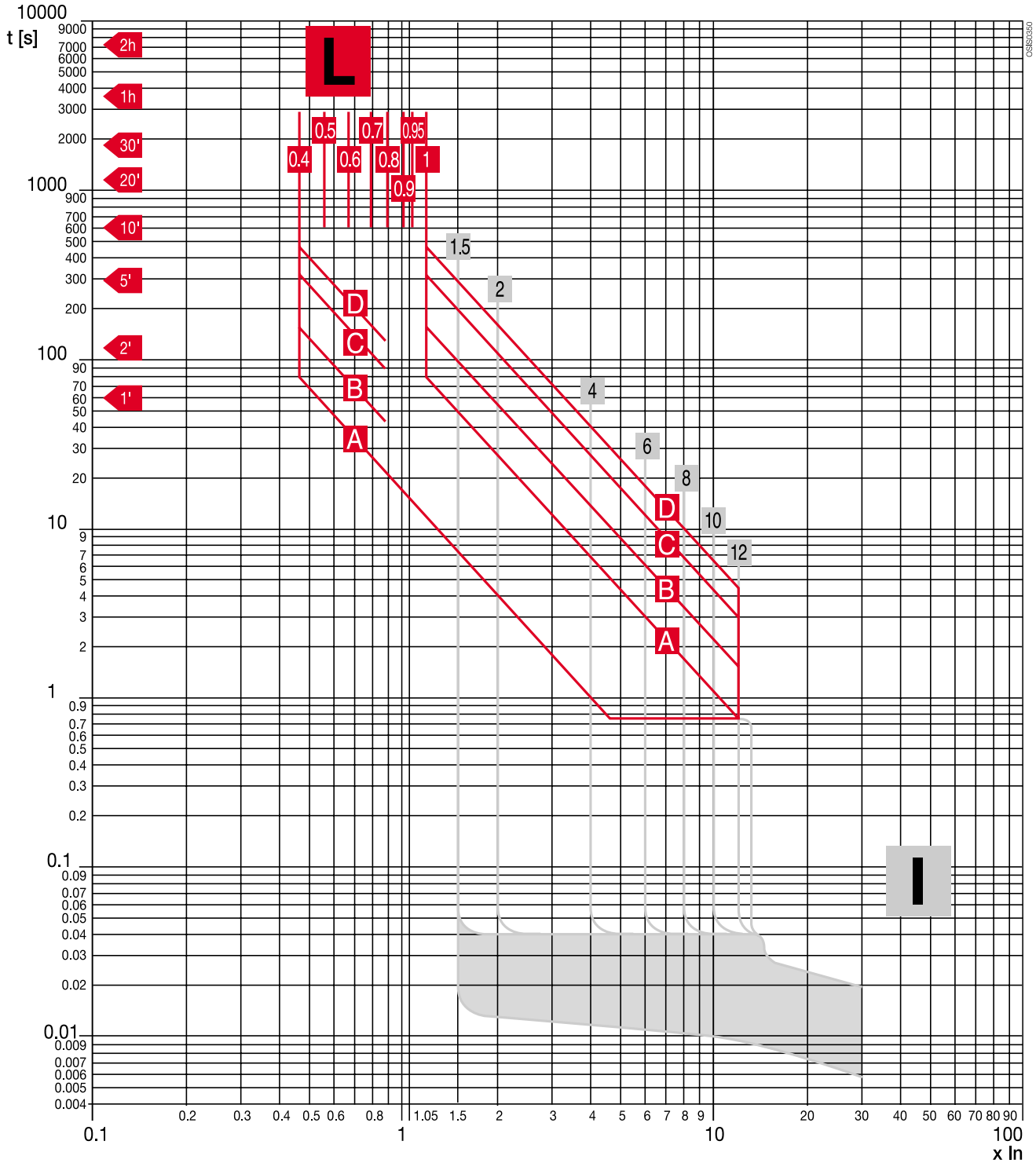
Rated and setting currents

Circuit-breaker		Current transformer	Functions	
	Iu-A	In-A	L (I1) A (0.4 – 1 x In)	I (I3) A (1.5 – 12 x In)
S4	250	100	40 – 100	150 – 1200
		250	100 – 250	375 – 3000
S5	400	300	120 – 300	450 – 3600
		400	160 – 400	600 – 4800
S6	600/800	600	240 – 600	900 – 7200
		800	320 – 800	1200 – 9600
S7	1200	1000	400 – 1000	1000 – 12,000
		1200	480 – 1200	1800 – 14,400

Isomax

Protective releases
Microprocessor based overcurrent relays, PR211
Time-current curves, S4 – S7

Function L - I



Key

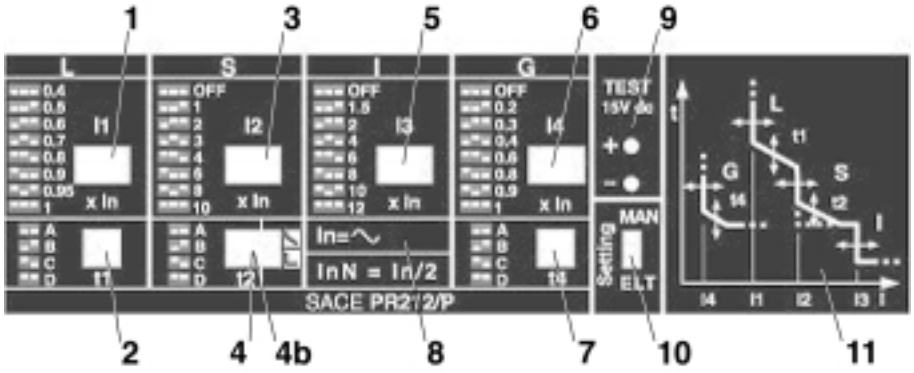
In = Rated current of current transformers
t = Tripping time

Protective releases
Microprocessor based overcurrent relays, PR212
Protection functions and set values, S4 – S8

Protection functions and set values

Protection against	Overload	Short-circuit	Short circuit	Earth fault
Trip	Long delay	Inverse or definite short delay	Instantaneous adjustable	Inverse short delay
Symbol	L	S	I	G ①
Set values (manual adjustment in steps	I1 = 0.4-0.5-0.6-0.7-0.8-0.9-0.95-1 x In t1 = 4 curves A – D	I2 = 1-2-3-4-6-8-10 OFF x In t2 = 4 curves A – D	I3 = 1.5-2-4-6-8-10-12	I4 = 0.2-0.3-0.4-0.7-0.8-0 t4 = 4 curves A – D
Set values (electronic adjustment)	I1 = 0.4 - 1 x In t1 = 3 - 18s	I2 = 1 … 10 OFF x In t2 = 0.05 – 0.5	I3 = 1.5-12 OFF x In	I4 = 0.2 – 1 OFF x In t4 = 0.1 – 0.8s

PR212



Key

1 Function L setting dip-switch
2 Function L trip time setting dip-switch
3 Function S setting dip-switch
4 Function S trip time setting dip-switch
4b Fixed/variable trip time selection dip-switch
5 Function I setting dip-switch
6 Function G setting dip-switch
7 Function G trip time setting dip-switch
8 Rated current of current transformers
9 15 V d.c. input for release functioning check
10 Manual/electronic parameter setting selector switch
11 Dialogue unit

Isomax

① S8 it = 0.2 - 0.4

Protective releases
Rated and setting currents, PR212
S4 – S8

Rated and setting currents

Circuit breaker		Current transformer	Functions			
Iu		In-A	L(I1) A (0.4 – 1.0 x In)	S (I1) A (1 – 10 x In)	I (I3) A (1.5 – 12 x In)	G (I4) A (0.2 – 1 x In) / S8 (0.2 – 0.4)
S4	250	100	40 – 100	100 – 1000	150 – 1200	20 – 100
		250	100 – 250	250 – 2500	375 – 3000	50 – 250
S5	400	300	120 – 300	300 – 3000	450 – 3600	60 – 300
		400	160 – 400	400 – 4000	600 – 4800	80 – 400
S6	600	600	240 – 600	600 – 6000	900 – 7200	120 – 600
	800	800	320 – 800	800 – 8000	1200 – 9600	160 – 800
S7	1200	1000	400 – 1000	1000 – 10,000	1500 – 12,000	200 – 1000
		1200	480 – 1200	1200 – 12,000	1800 – 14,400	240 – 1200
S8	1600 – 2500	1600	640 – 1600	1600 – 16,000	2400 – 19,200	320 – 640
		2000	800 – 2000	2000 – 20,000	3000 – 24,000	400 – 800
		2500	1000 – 2500	2500 – 25,000	3750 – 30,000	500 – 1000

Key

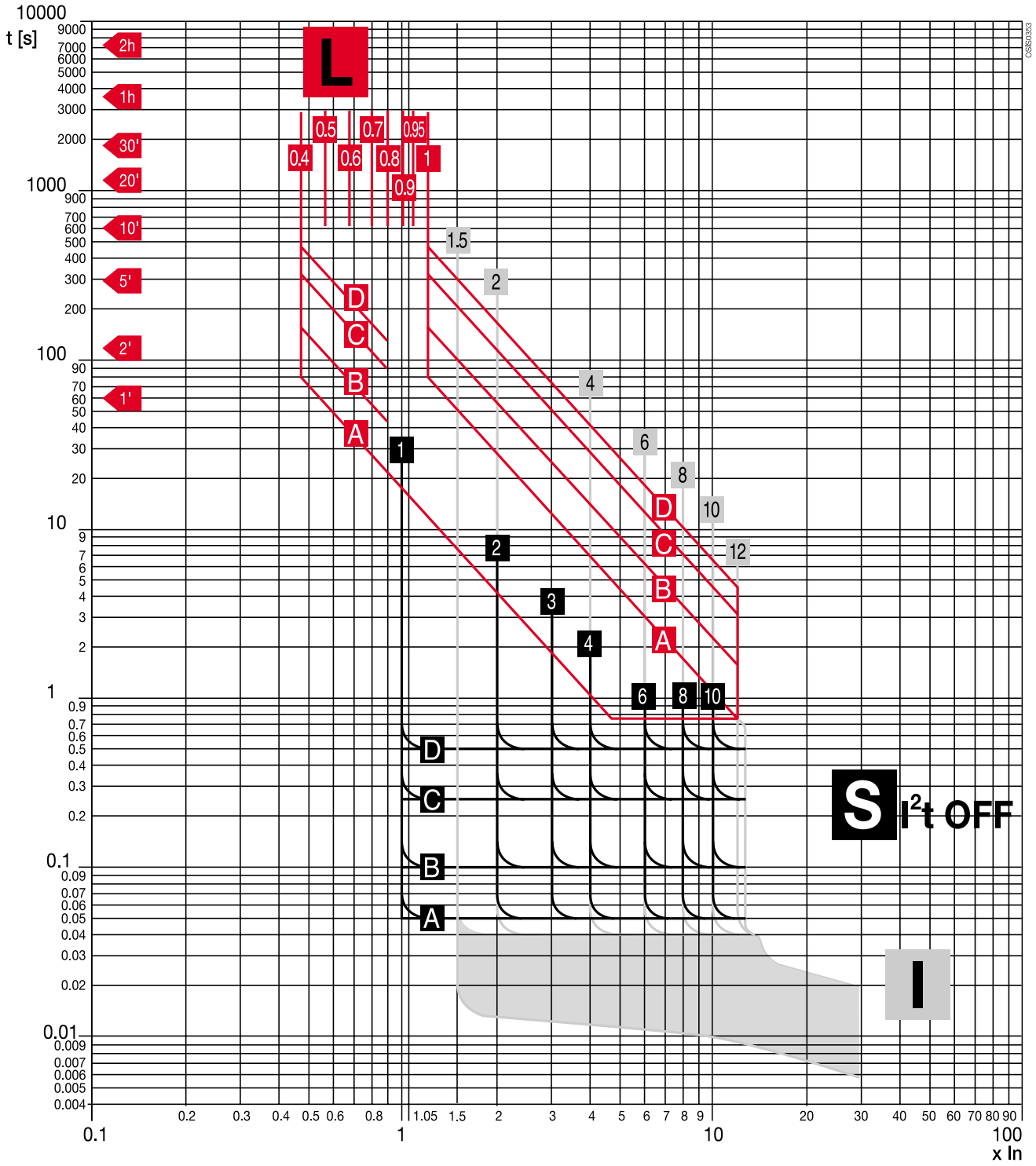
Iu = Rated uninterrupted current of circuit-breaker
In = Rated current of current transformers
I1 = Current setting value for relay overload protection
I2 = Current setting value for relay short-circuit selective protection
I3 = Current setting value for relay instantaneous short-circuit protection
I4 = Current setting value for earth fault protection

Protective releases

Microprocessor based overcurrent relays, PR212

Time-current curves, S4 – S8

Function L - S - I



Key

In = Rated current of current transformers
t = Tripping time

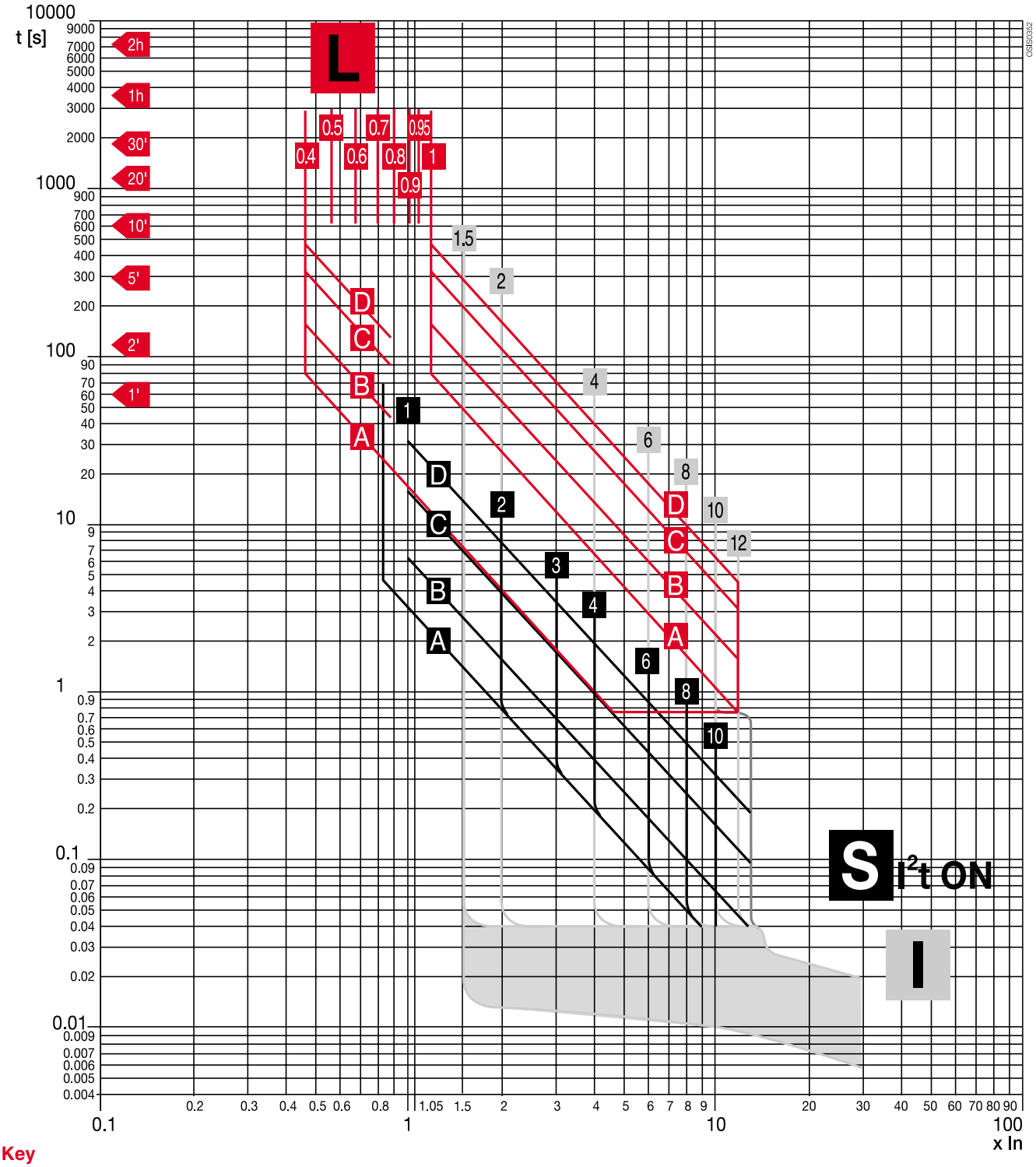
Isomax

Protective releases

Microprocessor based overcurrent relays, PR212

Time-current curves, S4 – S8

Function L - S - I

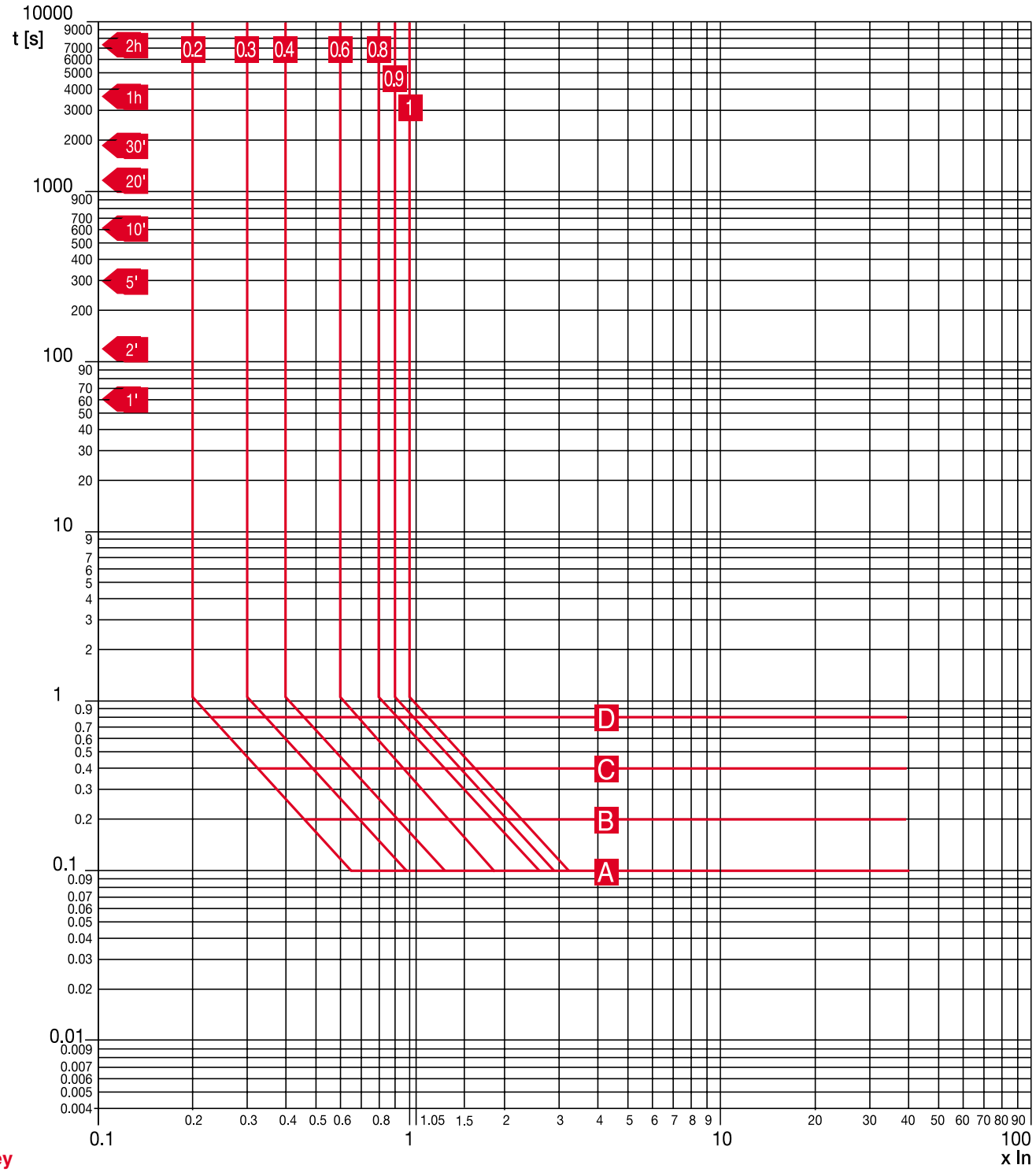


Key

In = Rated current of current transformers
t = Tripping time

Protective releases
Microprocessor based overcurrent relays, PR212
Time-current curves, S4 – S8

Function G[1]



Key

In = Rated current of current transformers
t = Tripping time

[1] S8 maximum setting is 0.4 per NEC guidelines.

Motor horsepower ratings
Magnetic trip
1/2HP @ 575V to 100HP @ 575V

Horsepower per NEC 430-50				Motor full Load amps	Isomax Type	MCP Rating	Approximate trip setting % of MFLA						
208V	230V	460V	575V				1.5X	2X	4X	6X	8X	10X	12X
					Magnetic trip		%	%	%	%	%	%	%
			1/2	0.9	S3	3	—	—	1300	2000	2700	3400	4000
		1/2		1.1	S3	3	—	—	1100	1600	2200	3700	3300
			3/4	1.3	S3	3	—	—	900	1400	1800	2300	2800
		3/4		1.6	S3	3	—	—	800	1100	1500	1900	2300
			1	1.7	S3	3	—	—	700	1100	1400	1800	2100
		1		2.1	S3	5	—	—	1000	1400	1900	2400	2900
	1/2			2.2	S3	5	—	—	900	1400	1800	2300	2700
1/2			1 1/2	2.4	S3	5	—	—	800	1300	1700	2100	2500
			2	2.7	S3	5	—	—	700	1100	1500	1900	2200
		1 1/2		3	S3	5	—	—	700	1000	1300	1700	2000
	3/4			3.2	S3	5	—	—	600	900	1300	1600	1900
		2		3.4	S3	5	—	—	600	900	1200	1500	1800
3/4				3.5	S3	10	—	—	1100	1700	2300	2900	3400
			3	3.9	S3	10	—	—	1000	1500	2100	2600	3100
	1			4.2	S3	10	—	—	1000	1400	1900	2400	2900
1				4.6	S3	10	—	—	900	1300	1700	2200	2600
		3		4.8	S3	10	—	—	800	1300	1700	2100	2500
	1 1/2			6	S3	10	—	—	700	1000	1300	1700	2000
			5	6.1	S3	10	—	—	700	1000	1300	1600	2000
1 1/2				6.6	S3	10	—	—	600	900	1200	1500	1800
	2			6.8	S3	10	—	—	600	900	1200	1500	1800
				7.5	S3	25	—	—	1300	2000	2700	3300	4000
2		5		7.6	S3	25	—	—	1300	2000	2600	3300	3900
			7 1/2	9	S3	25	—	—	1100	1700	2200	2800	3300
	3			9.6	S3	25	—	—	1000	1600	2100	2600	3100
3				10.6	S3	25	—	—	900	1400	1900	2400	2800
		7 1/2	10	11	S3	25	—	—	900	1400	1800	2300	2700
		10		14	S3	25	—	—	700	1000	1400	1800	2100
	5			15.2	S3	25	—	—	700	1000	1300	1600	2000
5				16.7	S3	25	—	—	600	900	1200	1500	1800
			15	17	S3	25	—	—	600	900	1200	1500	1800
		15		21	S3	50	—	—	1000	1400	1900	2400	2800
	7 1/2		20	22	S3	50	—	—	900	1400	1800	2300	2700
7 1/2				24.2	S3	50	—	—	800	1200	1700	2100	2500
		20	25	27	S3	50	—	—	700	1100	1500	1900	2200
	10			28	S3	50	—	—	700	1100	1400	1800	2100
10				30.8	S3	50	—	—	600	1000	1300	1600	1900
			30	32	S3	50	—	—	600	900	1300	1600	1900
		25		34	S3	50	—	—	600	900	1200	1500	1800
		30		40	S3	100	—	—	1000	1500	2000	2500	3000
			40	41	S3	100	—	—	1000	1500	2000	2400	2900
	15			42	S3	100	—	—	1000	1400	1900	2400	2900
15				46.2	S3	100	—	—	900	1300	1700	2200	2600
		40	50	52	S3	100	—	—	800	1200	1500	1200	2300
	20			54	S3	100	—	—	700	1100	1500	1900	2200
20				59.4	S3	100	—	—	700	1000	1300	1700	2000
			60	62	S3	100	—	—	600	100	1300	1600	1900
		50		65	S3	100	—	—	600	900	1200	1500	1800
	25			68	S3	100	—	—	600	900	1200	1500	1800
25				74.8	S3	150	—	—	800	1200	1600	2000	—
		60	75	77	S3	150	—	—	800	1200	1600	1900	—
	30			80	S3	150	—	—	800	1100	1500	1900	—
30				88	S3	150	—	—	700	1000	1400	1700	—
		75		96	S3	150	—	—	600	900	1300	1600	—
			100	99	S3	150	—	—	600	900	1200	1500	—

Motor horsepower ratings
Electronic trip
40HP @ 230V to 500HP @ 460V

Horsepower per NEC 430-50				Motor full Load amps	Isomax Type	MCP Rating	Approximate trip setting % of MFLA						
208V	230V	460V	575V				1.5X	2X	4X	6X	8X	10X	12X
					Electronic trip		%	%	%	%	%	%	%
	40			104	S4	250	350	500	1000	1400	1900	2400	2900
40				114	S4	250	350	450	900	1300	1800	2200	2600
		100		124	S4	250	300	400	800	1200	1600	2000	2400
			125	125	S4	250	300	400	800	1200	1600	2000	2400
	50			130	S4	250	300	400	800	1200	1500	1900	2300
50				143	S4	250	250	350	700	1000	1400	1700	2100
			150	144	S4	250	250	350	700	1000	1400	1700	2100
	60			154	S4	250	250	300	600	1000	1300	1600	1900
		125		156	S4	250	250	300	600	1000	1300	1600	1900
60				169	S4	250	200	300	600	900	1200	1500	1800
		150		180	S5	400	350	450	900	1300	1800	2200	2700
	75			192	S5	400	300	400	800	1300	1700	2100	2500
75				211	S5	400	300	400	800	1100	1500	1900	2300
		200		240	S5	400	250	350	700	1000	1300	1700	2000
			250	242	S5	400	250	350	700	1000	1300	1700	2000
	100			248	S5	400	250	300	600	1000	1300	1600	1900
100				273	S6	600	350	450	900	1300	1800	2200	2600
			300	289	S6	600	300	400	800	1200	1700	2100	2500
		250		302	S6	600	300	400	800	1200	1600	2000	2400
	125			312	S6	600	300	400	800	1200	1500	1900	2300
			350	336	S6	600	250	350	700	1100	1400	1800	2100
125				343	S6	600	250	350	700	1100	1400	1700	2100
	150			360	S6	600	250	350	700	1000	1300	1700	2000
		300		361	S6	600	250	350	700	1000	1300	1700	2000
			400	362	S6	600	250	300	600	900	1300	1600	1900
150				396	S6	600	250	300	600	900	1200	1500	1800
			450	412	S6	800	300	400	800	1200	1600	1900	2300
		350		414	S6	800	300	400	800	1200	1600	1900	2300
			500	472	S6	800	250	350	700	1000	1400	1700	2000
		400		477	S6	800	250	350	700	1000	1300	1700	2000
	200			480	S6	800	250	350	700	1000	1300	1700	2000
		450		515	S6	800	250	300	600	900	1200	1600	1900
200				528	S6	800	250	300	600	900	1200	1500	1800
		500		590	S7	1000	250	350	700	1000	1400	1700	2000

Notes

Isomax
Molded case circuit breakers
S1 – S8

S4 N 250 B W - 2xxx

Accessories (added in alpha-numeric order) ①

A =	Auxiliary Switch
BA =	Bell Alarm
BA3 =	Bell Alarm (S6/S7 only)
H =	Fixed Rotary Handle mounted on CB
S_ =	Shunt trip with voltage code
U_ =	Undervoltage release with voltage code

Number of poles

-2 =	2 pole
-4 =	4 pole
None =	3 pole

Type connectors

W = None

Trip unit function

B =	LI	**F** =	LSIG/K
C =	LSI	**H** =	LSIG/D
D =	Molded Case Switch (MCS)	**J** =	LSIG/DT
E =	LSIG	**K** =	LSIG/DTK
T =	Thermal-magnetic	**M** =	Magnetic only (MCP)

Current rating

015 =	15A
250 =	250A
400 =	400A
1200 =	1200A

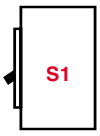
Interrupting rating class

B =	Basic (240VAC)	**BQ** =	Basic, 100% rated
N =	Normal	**NQ** =	Normal, 100% rated
H =	High	**HQ** =	High, 100% rated
L =	Extra High	**LQ** =	Extra High, 100% rated
		D =	Special molded case switch (No trip IEC)

Frame size

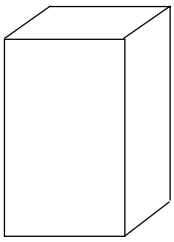
S1= 100A	**S6** = 600 / 800A
S3 = 150 / 225A	**S7** = 1200A
S4 = 250A	
S5 = 400A	

① Consult ABB for factory installed accessories.



S1
100A
Standard thermal-magnetic

S1



H x W x D
4.72" x 3.07" x 2.75"

General
The S1 breaker family ranges from 15 through 100 amperes. The S1 trip mechanisms are non-interchangeable and use sensitive electromagnetic relays for overcurrent trip protection. Heat sensitive bimetal are used for thermal rating of the breaker. Lugs are included with the S1 breaker.

Number of poles
The S1 is available in three pole or four pole versions. The four pole version is IEC only. For price estimate of a four pole device, add 35% to list price of selected version three pole breaker, contact ABB Control for details.

Accessory mounting
Shunt trips or undervoltage releases mount in the left cavity. Auxiliary or bell alarm switches mount in the right cavity.

Reverse feeding
All versions of the S1 family are suitable for reverse feed applications.

UL489 / CSA C22.2 Interrupting capacity (kA RMS)

Voltage	Continuous rating	N
240VAC	15 – 100A	50kA
277/480VAC	15A 20 – 100A	14kA 20kA

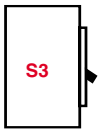
IEC-947 Interrupting capacity (kA RMS)

Voltage	Continuous rating	N
230VAC 380/400/415VAC 440VAC 500VAC	15 – 100A	40kA 25kA 16kA 12kA

S1N

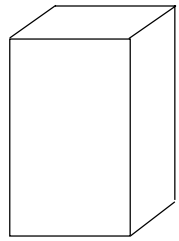
Breaker	IC at 480 VAC	Rating	Magnetic	3 pole catalog number	List price
S1N	14kA	15A	500A	S1N015TL	**$ 392**
	20kA	20A 25A 30A 40A 50A 60A	500A 500A 500A 500A 500A 600A	S1N020TL S1N025TL S1N030TL S1N040TL S1N050TL S1N060TL	**392**
		70A 80A 90A 100A	700A 800A 900A 1000A	S1N070TL S1N080TL S1N090TL S1N100TL	**459**

S3
150/225A
Standard thermal-magnetic



S3B

S3N S3H S3L


H x W x D
6.70" x 4.13" x 4.07"

Standard S3 package includes complete circuit breaker and mounting hardware. **Order cable lugs as a separate item, copper/ aluminum (Cu/Al) lugs are no charge when ordered with breaker.**

General
The S3 breaker family ranges from 15 through 225 amperes. The S3 trip mechanisms are non-interchangeable and use sensitive electromagnetic relays for overcurrent trip protection. Heat sensitive bimetal are used for thermal overcurrent protection. Short circuit current protection begins at 10 times the thermal rating of the breaker and uses a magnetic coil principle.

Versions
To meet all application needs, the S3 is available in various versions:

T =Thermal-magnetic
Q =100% UL rated
D = Molded case switch
M = Magnetic only (MCP)

Performance level
Each version is also available in different maximum fault interrupting levels

B = 240VAC
N = Normal
H = High
L = Extra high

Number of poles
In UL/CSA form, the S3 is available in two pole or three pole versions, both with the same dimensions. A four pole version is also available in IEC form. For price estimate, add 35% to list price of selected version three pole breaker, contact ABB Control for details.

Accessory mounting
Internal accessories are UL/CSA approved for both factory or field installation. Accessories require control cable connectors. Shunt trips or UVR's mount in the left cavity. Auxiliary or bell alarm switches mount in the right cavity.

Reverse feeding
All versions of the S3 family are suitable for reverse feed applications.

Molded case switches
UL1087 switches include no overcurrent protection except for a high instantaneous trip mechanism for self protection. IEC type molded case switches with no trip protection are also available.

UL/CSA Interrupting capacity (kA RMS)
UL489 / CSA C22.2

Voltage	N	H	L
240VAC	65	100	150
480VAC	25	50	85①
600VAC	14	14	25
500VDC	35	50	65
600VDC	20	35	50

IEC-947 Interrupting capacity (kA RMS)

Voltage	N	H	L
230VAC	65	100	170
380/400/415VAC	35	65	85
440VAC	30	50	65
500VAC	25	40	50
690VAC	14	18	20
500VDC	35	50	65
750VDC	20	35	50

Isomax

① 15-30A are 65kA at 480VAC

S3
150/225A
Standard thermal-magnetic

S3B

Breaker	IC at 240VAC	Rating	Magnetic trip	2 pole, 240VAC catalog number	List price	3 pole, 240VAC catalog number	List price
S3B	**150kA**	175A 200A 225A	1750A 2000A 2250A	S3B175TW-2 S3B200TW-2 S3B225TW-2	**$ 460**	S3B175TW S3B200TW S3B225TW	**$ 590**

S3N

Breaker	IC at 480VAC	Rating	Magnetic trip	2 pole, 480VAC/500VDC catalog number	List price	3 pole, 600VAC/DC catalog number	List price
S3N	**25kA**	15A 20A 25A 30A 35A 40A 50A 60A	500A 500A 500A 500A 500A 500A 500A 600A	S3N015TW-2 S3N020TW-2 S3N025TW-2 S3N030TW-2 S3N035TW-2 S3N040TW-2 S3N050TW-2 S3N060TW-2	**$ 316**	S3N015TW S3N020TW S3N025TW S3N030TW S3N035TW S3N040TW S3N050TW S3N060TW	**$ 413**
		70A 80A 90A 100A	700A 800A 900A 1000A	S3N070TW-2 S3N080TW-2 S3N090TW-2 S3N100TW-2	**407**	S3N070TW S3N080TW S3N090TW S3N100TW	**504**
		125A 150A 175A① 200A① 225A①	1250A 1500A 1750A 2000A 2250A	S3N125TW-2 S3N150TW-2 S3N175TW-2 S3N200TW-2 S3N225TW-2	**911**	S3N125TW S3N150TW S3N175TW S3N200TW S3N225TW	**1131**

S3H

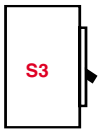
Breaker	IC at 480VAC	Rating	Magnetic trip	2 pole, 480VAC/500VAC catalog number	List price	3 pole, 600VAC/DC catalog number	List price
S3H	**50kA**	15A 20A 25A 30A 35A 40A 50A 60A	500A 500A 500A 500A 500A 500A 500A 600A	S3H015TW-2 S3H020TW-2 S3H025TW-2 S3H030TW-2 S3H035TW-2 S3H040TW-2 S3H050TW-2 S3H060TW-2	**$ 527**	S3H015TW S3H020TW S3H025TW S3H030TW S3H035TW S3H040TW S3H050TW S3H060TW	**$ 619**
		70A 80A 90A 100A	700A 800A 900A 1000A	S3H070TW-2 S3H080TW-2 S3H090TW-2 S3H100TW-2	**617**	S3H070TW S3H080TW S3H090TW S3H100TW	**702**
		125A 150A 175A① 200A① 225A①	1250A 1500A 1750A 2000A 2250A	S3H125TW-2 S3H150TW-2 S3H175TW-2 S3H200TW-2 S3H225TW-2	**1376**	S3H125TW S3H150TW S3H175TW S3H200TW S3H225TW	**1586**

S3L

Breaker	IC at 480VAC	Rating	Magnetic trip	2 pole, 480VAC/500VAC catalog number	List price	3 pole, 600VAC/DC catalog number	List price
S3L	**65kA**	15A 20A 25A 30A	500A 500A 500A 500A	S3L015TW-2 S3L020TW-2 S3L025TW-2 S3L030TW-2	**$ 634**	S3L015TW S3L020TW S3L025TW S3L030TW	**$ 824**
	85kA	35A 40A 50A 60A	500A 500A 500A 600A	S3L035TW-2 S3L040TW-2 S3L050TW-2 S3L060TW-2	**634**	S3L035TW S3L040TW S3L050TW S3L060TW	**824**
		70A 80A 90A 100A	700A 800A 900A 1000A	S3L070TW-2 S3L080TW-2 S3L090TW-2 S3L100TW-2	**816**	S3L070TW S3L080TW S3L090TW S3L100TW	**1010**
		125A 150A 175A① 200A① 225A①	1250A 1500A 1750A 2000A 2250A	S3L125TW-2 S3L150TW-2 S3L175TW-2 S3L200TW-2 S3L225TW-2	**1818**	S3L125TW S3L150TW S3L175TW S3L200TW S3L225TW	**2260**

① 480VAC maximum

S3
150/225A
100% UL rated



S3NQ

Breaker	IC at 480VAC	Rating	Magnetic trip	3 pole 600VAC/DC catalog number	List price
S3NQ	**25kA**	15A	500A	S3NQ015TW	**$ 459**
		20A	500A	S3NQ020TW	
		25A	500A	S3NQ025TW	
		30A	500A	S3NQ030TW	
		35A	500A	S3NQ035TW	
		40A	500A	S3NQ040TW	
		50A	500A	S3NQ050TW	
		60A	600A	S3NQ060TW	
		70A	700A	S3NQ070TW	**560**
		80A	800A	S3NQ080TW	
		90A	900A	S3NQ090TW	
		100A	1000A	S3NQ100TW	
		125A	1250A	S3NQ125TW	**1257**
		150A	1500A	S3NQ150TW	
		175A①	1750A	S3NQ175TW	
		200A①	2000A	S3NQ200TW	
		225A①	2250A	S3NQ225TW	

S3HQ

Breaker	IC at 480VAC	Rating	Magnetic trip	3 pole catalog number	List price
S3HQ	**50kA**	15A	500A	S3HQ015TW	**$ 688**
		20A	500A	S3HQ020TW	
		25A	500A	S3HQ025TW	
		30A	500A	S3HQ030TW	
		35A	500A	S3HQ035TW	
		40A	500A	S3HQ040TW	
		50A	500A	S3HQ050TW	
		60A	600A	S3HQ060TW	
		70A	700A	S3HQ070TW	**780**
		80A	800A	S3HQ080TW	
		90A	900A	S3HQ090TW	
		100A	1000A	S3HQ100TW	
		125A	1250A	S3HQ125TW	**1762**
		150A	1500A	S3HQ150TW	
		175A①	1750A	S3HQ175TW	
		200A①	2000A	S3HQ200TW	
		225A①	2250A	S3HQ225TW	

S3LQ

Breaker	IC at 480VAC	Rating	Magnetic trip	3 pole catalog number	List price
S3LQ	**65kA**	15A	500A	S3LQ015TW	**$ 916**
		20A	500A	S3LQ020TW	
		25A	500A	S3LQ025TW	
		30A	500A	S3LQ030TW	
	85kA	35A	500A	S3LQ035TW	
		40A	500A	S3LQ040TW	
		50A	500A	S3LQ050TW	
		60A	600A	S3LQ060TW	
		70A	700A	S3LQ070TW	**1123**
		80A	800A	S3LQ080TW	
		90A	900A	S3LQ090TW	
		100A	1000A	S3LQ100TW	
		125A	1250A	S3LQ125TW	**2511**
		150A	1500A	S3LQ150TW	
		175A①	1750A	S3LQ175TW	
		200A①	2000A	S3LQ200TW	
		225A①	2250A	S3LQ225TW	

Note: When applied correctly, UL tested 100% equipment rated breakers may be applied at full rating rather than on the sizing rules of the NEC where breakers and cable are sized based on actual continuous load current divided by 80%. This 100% rating can save the user the cost of larger cable or bus bar. Please consult the NEC for details and other design factors needed for this application.

① 480VAC maximum

S3
150/225A, 600VAC

Magnetic only (MCP)

Magnetic only circuit breakers are instantaneous trip only devices which are Underwriters Laboratories Recognized. MCPs must be used with some other device that will provide overload protection.

Type	Interruption capacity	Amps	Magnetic trip	3 pole catalog number	List price
S3N	240VAC 35kA 480VAC 18kA 600VAC 10kA	3 5 10	12 – 36 20 – 60 40 – 120	S3N003MW S3N005MW S3N010MW	**$ 568**
	240VAC 35kA 480VAC 18kA 600VAC 10kA	25	100 – 300	S3N025MW	
	240VAC 75kA 480VAC 35kA 600VAC 14kA	50 100 125 150	200 – 600 400 – 1200 500 – 1500 600 – 1500	S3N050MW S3N100MW S3N125MW S3N150MW	**633** **763** **929** **929**

Type	Interruption capacity	Amps	Magnetic trip	3 pole catalog number	List price
S3L	240VAC 50kA 480VAC 25kA 600VAC 10kA	3 5 10	12 – 36 20 – 60 40 – 120	S3L003MW S3L005MW S3L010MW	**$ 710**
	240VAC 50kA 480VAC 25kA 600VAC 10kA	25	100 – 300	S3L025MW	
	240VAC 150kA 480VAC 85kA 600VAC 25kA	50 100 125 150	200 – 600 400 – 1200 500 – 1500 600 – 1500	S3L050MW S3L100MW S3L125MW S3L150MW	**710** **843** **1910** **1910**
	480VAC 65kA	200 ②	800 – 2400	S3L200MW	**1910**

Molded case switches

Type	Interruption capacity	Amps	Magnetic trip	3 pole catalog number	List price
S3B-D	240VAC 150KA	225	2250A	S3B225DW	**$ 410**
S3H-D	240VAC 100kA 480VAC 50kA 600VAC 14kA 500VDC 65kA 600VDC 50kA	150 225 ②	1500A 2250A	S3H150DW S3H225DW	**892** **1254**
Non-UL switches without overcurrent protection	Withstand rating				
	600VAC 6.5kA	100 160 250	none none none	S3D100W S3D160W S3D250W	**531** **892** **1393**

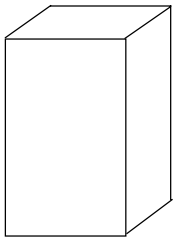
Connection options

Type	Wire range	Amps①	Set of 2 catalog number	List price	Set of 3 catalog number	List price
CU/AL front lugs	14AWG – 2AWG	60	K3TA-2	**$ 4**	K3TA	**$ 6**
CU/AL front lugs	14AWG – 1/0	100	K4TB-2	**4**	K4TB	**6**
CU/ALfront lugs	2AWG – 4/0	150	K4TC-2	**4**	K4TC	**6**
CU/AL front lugs	4AWG – 300kcmil	225	K4TD-2	**10**	K4TD	**15**
					Set of 6 catalog number	
CU front lugs (saddle)	14AWG – 250kcmil	250	—	—	K4TES	**30**
CU rear lugs	6AWG – 350kcmil	250	—	—	K4TER	
Extended front bar	–	250	—	—	K4ET-250	

① Suggested lugs for circuit breaker up to amps shown. Cable size and type determine maximum amperage.
② 480VAC maximum.

S4
250A, 600VAC
Electronic trip type

S4



H x W x D
10.0" x 4.13" x 4.07"

Standard S4 package includes complete circuit breaker and mounting hardware. **Order cable lugs or other connection scheme as a separate item.**

General
The S4 breaker family is a 250A frame utilizing a microprocessor based overcurrent protective trip system. In the 250A version, the trip unit is adjustable from 100A up to 250A without the addition of any parts or rating plugs. As standard, the S4 includes adjustable long time function for overload protection and adjustable instantaneous function for short circuit protection.

Versions
To meet all application needs, the S4 is available in various versions:

B = Adjustment LI
C = Adjustment LSI
E = Adjustment LSIG
Q = 100% UL rated
D = Molded case switch
M = Magnetic only (MCP)

Trip functions
These tripping functions are available:

L = Long time
S = Short time
I = Instantaneous
G = Ground fault

Performance level
Each version is also available in different maximum fault interrupting levels:

N = Normal
H = High
L = Extra high

Number of poles
In UL/CSA form, the S4 is available in two pole or three pole versions, both with the same dimensions. A four pole version is also available in UL/IEC form. For price estimate, add 35% to list price of selected version three pole breaker, contact ABB Control for details.

Accessory mounting
Internal accessories are UL/CSA approved for both factory or field installation. Accessories require control cable connectors. Shunt trips or UVR's mount in the left cavity. Auxiliary or bell alarm switches mount in the right cavity.

Reverse feeding
All versions of the S4 family are suitable for reverse feed applications.

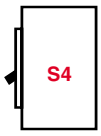
Molded case switches
UL1087 switches include no overcurrent protection except for a high instantaneous trip mechanism for self protection.

UL/CSA Interrupting capacity (kA RMS)
UL489 / CSA C22.2

Voltage	N	H	L
240VAC	65	150	200
480VAC	25	65	100
600VAC	18	22	35

IEC-947 Interrupting capacity (kA RMS)

Voltage	N	H	L
230VAC	65	150	200
380/400/415VAC	35	65	100
440VAC	30	50	80
500VAC	25	40	65
690VAC	18	22	30



S4
250A, 600VAC
Electronic trip type

The S4 breaker family uses two available microprocessor based internal trip units. The standard **PR211** trip unit includes adjustments for long time current pick-up and instantaneous current trip point.

The optional **PR212** trip unit includes adjustments for long time current pick-up/delay, short time pick-up/delay I^2t (on/off), instantaneous current trip point and further optional ground fault protection.

100A Frame (40 – 100A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	2 pole catalog number	List price	3 pole catalog number	List price
S4N	25kA	PR211 PR212 PR212	LI LSI LSIG	S4N100BW-2 S4N100CW-2 —	**$ 1073** **1679**	S4N100BW S4N100CW S4N100EW	**$ 1347** **1913** **2813**
S4H	65kA	PR211 PR212 PR212	LI LSI LSIG	S4H100BW-2 S4H100CW-2 —	**2572** **3138**	S4H100BW S4H100CW S4H100EW	**3030** **3596** **4496**
S4L	100kA	PR211 PR212 PR212	LI LSI LSIG	S4L100BW-2 S4L100CW-2 —	**3159** **3725** —	S4L100BW S4L100CW S4L100EW	**3950** **4516** **5416**

250A Frame (100 – 250A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	2 pole catalog number	List price	3 pole catalog number	List price
S4N	25kA	PR211 PR212 PR212	LI LSI LSIG	S4N250BW-2 S4N250CW-2 —	**$ 1073** **1679**	S4N250BW S4N250CW S4N250EW	**$ 1347** **1913** **2813**
S4H	65kA	PR211 PR212 PR212	LI LSI LSIG	S4H250BW-2 S4H250CW-2 —	**2572** **3138**	S4H250BW S4H250CW S4H250EW	**3030** **3596** **4496**
S4L	100kA	PR211 PR212 PR212	LI LSI LSIG	S4L250BW-2 S4L250CW-2 —	**3159** **3725** —	S4L250BW S4L250CW S4L250EW	**3950** **4516** **5416**

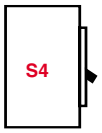
Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 1.0 0.1 – 0.8 sec.	Off-0.2-0.3-0.4-0.6-0.8-0.9-1.0 x Frame rating A - B - C - D

Continuous amperage settings (long time adjustment)

Frame	Set points								
	0.4	0.5	0.6	0.7	0.8	0.9	0.95	1.0	Setting
100A	40	50	60	70	80	90	95	100	Amps
250A	100	125	150	175	200	225	237	250	Amps

S4
250A, 600 VAC
100% UL rated



When applied correctly, UL tested 100% equipment rated breakers may be applied at full rating rather than on the sizing rules of the NEC where breakers and cable are sized based on actual continuous load current divided by 80%.

This 100% rating can save the user the cost of larger cable or bus bar. Please consult the NEC for details and other design factors needed for this application.

100A Frame (40 – 100A adjustable continuous range)

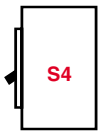
Breaker	IC at 480VAC	Trip type	Adjustment	3 pole catalog number	List price
S4N	25kA	PR211 PR212 PR212	LI LSI LSIG	S4NQ100BW S4NQ100CW S4NQ100EW	**$ 1482** **2104** **3094**
S4H	65kA	PR211 PR212 PR212	LI LSI LSIG	S4HQ100BW S4HQ100CW S4HQ100EW	**3333** **3956** **4946**
S4L	100kA	PR211 PR212 PR212	LI LSI LSIG	S4LQ100BW S4LQ100CW S4LQ100EW	**4345** **4968** **5958**

250A Frame (100 – 250A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	3 pole catalog number	List price
S4N	25kA	PR211 PR212 PR212	LI LSI LSIG	S4NQ250BW S4NQ250CW S4NQ250EW	**$ 1482** **2104** **3094**
S4H	65kA	PR211 PR212 PR212	LI LSI LSIG	S4HQ250BW S4HQ250CW S4HQ250EW	**3333** **3956** **4946**
S4L	100kA	PR211 PR212 PR212	LI LSI LSIG	S4LQ250BW S4LQ250CW S4LQ250EW	**4345** **4968** **5958**

Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 1.0 0.1 – 0.8 sec.	Off-0.2-0.3-0.4-0.6-0.8-0.9-1.0 x Frame rating A - B - C - D



S4
250A, 600VAC

Magnetic only (MCP)

All S4 magnetic only breakers utilize the electronic PR211 trip unit with an adjustable range of 1.5 to 12 times frame rating. Both two and three pole MCPs are 600VAC rated.

Type	Amps	Interruption capacity	Adjustment range	2 pole 600VAC catalog number	List price	3 pole 600VAC catalog number	List price
S4N	100 250	240VAC 65kA 480VAC 25kA 600VAC 18kA	150 – 1200A 375 – 3000A	S4N100MW-2 S4N250MW-2	**$ 1073**	S4N100MW S4N250MW	**$ 1347**
S4H	100 250	240VAC 150kA 480VAC 65kA 600VAC 22kA	150 – 1200A 375 – 3000A	S4H100MW-2 S4H250MW-2	**2572**	S4H100MW S4H250MW	**3030**
S4L	100 250	240VAC 200kA 480VAC 100kA 600VAC 35kA	150 – 1200A 375 – 3000A	S4L100MW-2 S4L250MW-2	**3159**	S4L100MW S4L250MW	**3950**

Molded case switch

Type	Interruption capacity	Amps	Magnetic trip	3 pole catalog number	List price
S4H-D	240VAC 150kA 480VAC 65kA 600VAC 22kA	250	3000A	S4H250DW	**$ 1215**

Neutral GF current transformer (required for 4 wire GF systems)

Amps	Catalog number	List price
100 250	K4NCT-100 K4NCT-250	**$ 250**

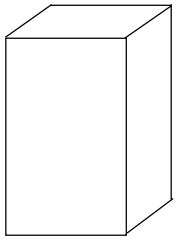
Connection options

Type	Wire range	Amps ①	Set of 2 catalog number	List price	Set of 3 catalog number	List price
CU/AL front lugs	14AWG – 1/0	100	K4TB-2	**$ 4**	K4TB	**$ 6**
CU/AL front lugs	2AWG – 4/0	150	K4TC-2	**4**	K4TC	**6**
CU/AL front lugs	4AWG – 300kcmil	225	K4TD-2	**10**	K4TD	**15**
CU/AL front lugs	6AWG – 350kcmil	250	K4TE-2	**20**	K4TE	**30**
					Set of 6 catalog number	
CU front lugs (saddle)	14AWG – 250kcmil	250	—	—	K4TES	**30**
CU rear lugs	6AWG – 250kcmil	250	—	—	K4TER	
Extended front bar	—	250	—	—	K4ET-250	

① Suggested lugs for a circuit breaker up to the amps shown. Cable size and type determine maximum amperage.

S5
400A, 600V
Electronic and thermal-magnetic trip types

S5



H x W x D
10.0" x 5.51" x 4.07" (a)
13.62" x 5.51" x 4.07" (b)

Standard S5 package includes complete circuit breaker and mounting hardware. **Order cable lugs or other connection scheme as a separate item.**

(a) With K5TF cable lugs, breaker is 10.0" tall.
(b) With K5TG cable lugs, terminal covers are provided and breaker is 13.62" tall.

General
The S5 breaker family is a 400A frame utilizing a microprocessor-based overcurrent protective trip system. In the 400A version, the trip unit is adjustable from 160A up to 400A without the addition of any parts or rating plugs. As standard the S5 includes adjustable long time function for overload protection and adjustable instantaneous function for short circuit protection.

Versions
To meet all application needs, the S5 is available in various versions:

B = Adjustment LI
C = Adjustment LSI
E = Adjustment LSIG
Q = 100% UL rated
D = Molded case switch
M = Magnetic only (MCP)
T = Thermal magnetic

Trip functions
These tripping functions are available:

L = Long time
S = Short time
I = Instantaneous
G = Ground fault

Performance level
Each version is also available in different maximum fault interrupting levels

N = Normal
H = High
L = Extra high

Number of poles
In UL/CSA version, the S5 is available in two pole or three pole version, both with the same dimensions. A four pole version is also available in UL/IEC form. For price estimate, add 35% to list price of selected version three pole breaker, contact ABB Control for details.

Accessory mounting
Internal accessories are UL/CSA approved for both factory or field installation. Accessories require control cable connectors. Shunt trips or UVR's mount in the left cavity. Auxiliary or bell alarm switches mount in the right cavity.

Reverse feeding
All versions of the S5 family are suitable for reverse feed applications.

Molded case switches
UL1087 switches include no overcurrent protection except for a high instantaneous trip mechanism for self protection.

UL/CSA Interrupting capacity (kA RMS)
UL489 / CSA C22.2

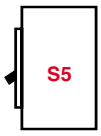
Voltage	N	H	L
240VAC	65	150	200
480VAC	35	65	100
600VAC	22	22	35
500VDC①	35	50	65
600VDC①	20	35	50

IEC-947 Interrupting capacity (kA RMS)

Voltage	N	H	L
230VAC	65	100	200
380/400/415VAC	35	65	100
440VAC	30	50	80
500VAC	25	40	65
690VAC	20	25	30

Isomax

① Thermal magnetic only.



S5
400A, 600 VAC
Electronic and thermal-magnetic trip types

The S5 breaker family uses two available microprocessor based internal trip units. The standard **PR211** trip unit includes adjustments for long time current pick-up and instantaneous current trip point.

The optional **PR212** trip unit includes adjustments for long time current pick-up/delay, short time pick-up/delay, I^2t (on/off), instantaneous current trip point and further optional ground fault protection.

400A Frame (160 – 400A adjustable continuous range)

Breaker	IC at 480VAC	Trip	Adjustment	2 pole, 600VAC catalog number	List price	3 pole, 600VAC catalog number	List price
S5N	35kA	PR211 PR212 PR212	LI LSI LSIG	S5N400BW-2 S5N400CW-2 —	**$ 1798** **2464** —	S5N400BW S5N400CW S5N400EW	**$ 2151** **2817** **3717**
S5H	65kA	PR211 PR212 PR212	LI LSI LSIG	S5H400BW-2 S5H400CW-2 —	**3285** **3951** —	S5H400BW S5H400CW S5H400EW	**3654** **4320** **5220**
S5L	100kA	PR211 PR212 PR212	LI LSI LSIG	S5L400BW-2 S5L400CW-2 —	**3945** **4611** —	S5L400BW S5L400CW S5L400EW	**4733** **5399** **6299**

Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 1.0 0.1 – 0.8 sec.	Off-0.2-0.3-0.4-0.6-0.8-0.9-1.0 x Frame rating A - B - C - D

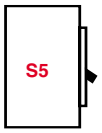
Continuous amperage settings (long time adjustment)

Frame	Set points								
	0.4	0.5	0.6	0.7	0.8	0.9	0.95	1.0	Setting
400A	160	200	240	280	320	360	380	400	Amps

S5 thermal-magnetic breakers, for AC and DC applications

Breaker	IC at 500VDC	Rating	Magnetic trip	2 pole, 600VAC/500VDC catalog number	List price	3 pole, 600VAC/DC catalog number	List price
S5N	35kA	300A (210 – 300A) 400A (280 – 400A)	3000A 4000A	S5N300TW-2 S5N400TW-2	**$ 1798**	S5N300TW S5N400TW	**$ 2151**
S5H	50kA	300A (210 – 300A) 400A (280 – 400A)	3000A 4000A	S5H300TW-2 S5H400TW-2	**3285**	S5H300TW S5H400TW	**3654**
S5L	65kA	300A (210 – 300A) 400A (280 – 400A)	3000A 4000A	S5L300TW-2 S5L400TW-2	**3945**	S5L300TW S5L400TW	**4733**

S5
400A, 600 VAC
100% UL rated, electronic trip type



When applied correctly, UL tested 100% equipment rated breakers may be applied at full rating rather than on the sizing rules of the NEC where breakers and cable are sized based on actual continuous load current divided by 80%.

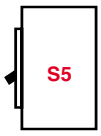
This 100% rating can save the user the cost of larger cable or bus bar. Please consult the NEC for details and other design factors needed for this application.

400A Frame (160 – 400A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	3 pole, 600VAC catalog number	List price
S5N	35kA	PR211 PR212 PR212	LI LSI LSIG	S5NQ400BW S5NQ400CW S5NQ400EW	**$ 2366** **3099** **4089**
S5H	65kA	PR211 PR212 PR212	LI LSI LSIG	S5HQ400BW S5HQ400CW S5HQ400EW	**4019** **4752** **5742**
S5L	100kA	PR211 PR212 PR212	LI LSI LSIG	S5LQ400BW S5LQ400CW S5LQ400EW	**5206** **5939** **6929**

Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 1.0 0.1 – 0.8 sec.	Off-0.2-0.3-0.4-0.6-0.8-0.9-1.0 x Frame rating A - B - C - D



S5
400A, 600VAC

Magnetic only (MCP)

All S5 magnetic only breakers utilize the electronic PR211 trip unit with an adjustable range of 1.5 to 12 times frame rating. Both two and three pole MCP's are 600VAC rated.

Type	Amps	Interruption capacity	Adjustment range	2 pole 600VAC catalog number	List price	3 pole 600VAC catalog number	List price
S5N	400	240 VAC 65kA 480VAC 35kA 600VAC 22kA	600 – 4800A	S5N400MW-2	**$ 1798**	S5N400MW	**$ 2151**
S5H	400	240VAC 150kA 480VAC 65kA 600VAC 22kA	600 – 4800A	S5H400MW-2	**3285**	S5H400MW	**3654**
S5L	400	240VAC 200kA 480VAC 100kA 600VAC 35kA	600 – 4800A	S5L400MW-2	**3945**	S5L400MW	**4733**

Molded case switch

Switch	Interruption capacity	Amps	Magnetic trip	3 pole catalog number	List price
S5H-D	240VAC 150kA 480VAC 65kA 600VAC 22kA 600VDC 50kA	400A	5000A	S5H400DW	**$ 1994**

Neutral GF current transformer (required for 4 wire GF systems)

Amps	Catalog number	List price
400	K5NCT-400	**$ 250**

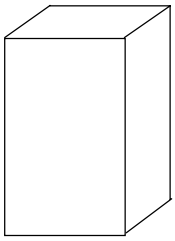
Connection options

Type	Wire range	Amps[2]	Set of 2 catalog number	List price	Set of 3 catalog number	List price
CU/AL front lugs CU/AL front lugs	250kcmil – 500kcmil (2) 3/0 – 250kcmil	300 400	K5TF-2 K5TG-2[1]	**$ 30**	K5TF K5TG[1]	**$ 45**
					Set of 6 catalog number	
CU front lugs (saddle)	250kcmil – 500kcmil	400	—	—	K5TGS	**90**
CU rear lugs	6AWG – 350kcmil	400	—	—	K5TGR	
Extended front bar	—	400	—	—	K5ET-400	

[1] Including lug cover.
[2] Suggested lugs for a circuit breaker up to amps shown. Cable size and type determine maximum amperage.

S6
600A / 800A, 600V
Electronic and thermal-magnetic trip type

S6



H x W x D
10.55" x8.27" x 4.07" (a)
14.25" x 8.27" x 4.07" (b)

Standard S6 package includes complete circuit breaker and mounting hardware. **Order cable lugs or other connection scheme as a separate item.**

(a) With K6TH cable lugs breaker is 10.55" tall.
(b) With K6TJ cable lugs, terminal covers are provided and breaker is 14.25" tall.

General
The S6 breaker family is an 800A frame with a 600A and 800A version, both utilizing a microprocessor based overcurrent protective trip system. Both versions are adjustable from 40% to 100% of rating without the addition of any parts or rating plugs. As standard, the S6 includes adjustable long time function for overload protection and adjustable instantaneous function for short circuit protection.

Versions
To meet all application needs, the S6 is available in various versions:
- B = Adjustment LI
- C = Adjustment LSI
- E = Adjustment LSIG
- Q = 100% UL rated
- D = Molded case switch
- M = Magnetic only (MCP)
- T = Thermal magnetic

Trip functions
These tripping functions are available:
- L = Long time
- S = Short time
- I = Instantaneous
- G = Ground fault

Performance level
Each version is also available in different maximum fault interrupting levels
- N = Normal
- H = High
- L = Extra high

Number of poles
In UL/CSA version, the S6 is available as in two pole or three pole version, both with the same dimensions. A four pole version is also available in UL/IEC form. For price estimate, add 35% to list price of selected version three pole breaker, contact ABB Control for details.

Accessory mounting
Internal accessories are UL/CSA approved for both factory or field installation. Accessories require control cable connectors. Shunt trips or UVR's mount in the left cavity. Auxiliary or bell alarm switches mount in the right cavity.

Reverse feeding
All versions of the S6 family are suitable for reverse feed applications.

Molded case switches
UL1087 switches include no overcurrent protection except for a high instantaneous trip mechanism for self protection. IEC type molded case switches with no trip protection are also available.

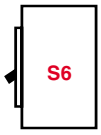
UL/CSA Interrupting capacity (kA RMS)
UL489 / CSA C22.2

Voltage	N	H	L
240VAC	65	150	200
480VAC	50	65	100
600VAC	25	35	42
500VDC①	35	50	65
600VDC①	20	25	50

IEC-947 Interrupting capacity (kA RMS)

Voltage	N	H	L
230VAC	65	100	200
380/400/415VAC	35	65	100
440VAC	30	50	80
500VAC	25	40	65
690VAC	20	25	35

① Thermal magnetic only.



S6
600A / 800A, 600 VAC
Electronic and thermal magnetic trip type

The S6 breaker family uses two available microprocessor based internal trip units. The standard **PR211** trip unit includes adjustments for long time current pick-up and instantaneous current trip point.

The optional **PR212** trip unit includes adjustments for long time current pick-up/delay, short time pick-up/delay, I^2t (on/off), instantaneous current trip point and further optional ground fault protection.

600A Frame (240 – 600A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	2 pole, 600VAC catalog number	List price	3 pole, 600VAC catalog number	List price
S6N	50kA	PR211 PR212 PR212	LI LSI LSIG	S6N600BW-2 S6N600CW-2 —	**$ 2847** **4237** —	S6N600BW S6N600CW S6N600EW	**$ 3608** **4998** **6998**
S6H	65kA	PR211 PR212 PR212	LI LSI LSIG	S6H600BW-2 S6H600CW-2 —	**4275** **5665** —	S6H600BW S6H600CW S6H600EW	**5271** **6661** **8661**
S6L	100kA	PR211 PR212 PR212	LI LSI LSIG	S6L600BW-2 S6L600CW-2 —	**5481** **6871** —	S6L600BW S6L600CW S6L600EW	**6482** **7872** **8972**

800A Frame (320 – 800A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	2 pole, 600VAC catalog number	List price	3 pole, 600VAC catalog number	List price
S6N	50kA	PR211 PR212 PR212	LI LSI LSIG	S6N800BW-2 S6N800CW-2 —	**$ 3842** **5232** —	S6N800BW S6N800CW S6N800EW	**$ 4802** **6192** **8192**
S6H	65kA	PR211 PR212 PR212	LI LSI LSIG	S6H800BW-2 S6H800CW-2 —	**5275** **6665** —	S6H800BW S6H800CW S6H800EW	**6465** **7855** **9855**
S6L	100kA	PR211 PR212 PR212	LI LSI LSIG	S6L800BW-2 S6L800CW-2 —	**6476** **7866** —	S6L800BW S6L800CW S6L800EW	**7676** **9066** **11,066**

Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 1.0 0.1 – 0.8 sec.	Off-0.2-0.3-0.4-0.6-0.8-0.9-1.0 x Frame rating A - B - C - D

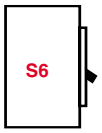
Continuous amperage settings (long time adjustment)

Frame	Set points								
	0.4	0.5	0.6	0.7	0.8	0.9	0.95	1.0	Setting
600A	240	300	360	420	480	540	570	600	Amps
800A	320	400	480	560	640	720	760	800	Amps

S6 thermal-magnetic breakers, for AC and DC applications

Breaker	IC at 500VDC	Rating	Magnetic trip	2 pole, 600VAC /500DC catalog number	List price	3 pole, 600VAC/DC catalog number	List price
S6N	35kA	600A (420 – 600A) 800A (560 – 800A)	6000A 8000A	S6N600TW-2 S6N800TW-2	**$ 2847** **3842**	S6N600TW S6N800TW	**$ 3608** **4802**
S6H	50kA	600A (420 – 600A) 800A (560 – 800A)	6000A 8000A	S6H600TW-2 S6H800TW-2	**4275** **5275**	S6H600TW S6H800TW	**5270** **6465**
S6L	65kA	600A (420 – 600A) 800A (560 – 800A)	6000A 8000A	S6L600TW-2 S6L800TW-2	**5481** **6476**	S6L600TW S6L800TW	**6482** **7676**

S6
600A / 800A, 600 VAC
100% UL rated, electronic trip type



When applied correctly, UL tested 100% equipment rated breakers may be applied at full rating rather than on the sizing rules of the NEC where breakers and cable are sized based on actual continuous load current divided by 80%.

This 100% rating can save the user the cost of larger cable or bus bar. Please consult the NEC for details and other design factors needed for this application.

600A Frame (240 – 600A adjustable continuous range)

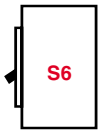
Breaker	IC at 480VAC	Trip type	Adjustment	3 pole 600VAC catalog number	List price
S6N	50kA	PR211 PR212 PR212	LI LSI LSIG	S6NQ600BW S6NQ600CW S6NQ600EW	**$ 3969** **5498** **7698**
S6H	65kA	PR211 PR212 PR212	LI LSI LSIG	S6HQ600BW S6HQ600CW S6HQ600EW	**5798** **7327** **9527**
S6L	100kA	PR211 PR212 PR212	LI LSI LSIG	S6LQ600BW S6LQ600CW S6LQ600EW	**7130** **8659** **9869**

800A Frame (320 – 800A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	3 pole 600VAC catalog number	List price
S6N	50kA	PR211 PR212 PR212	LI LSI LSIG	S6NQ800BW S6NQ800CW S6NQ800EW	**$ 5282** **6811** **9011**
S6H	65kA	PR211 PR212 PR212	LI LSI LSIG	S6HQ800BW S6HQ800CW S6HQ800EW	**7112** **8641** **10,841**
S6L	100kA	PR211 PR212 PR212	LI LSI LSIG	S6LQ800BW S6LQ800CW S6LQ800EW	**8444** **9973** **12,173**

Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 1.0 0.1 – 0.8 sec.	Off-0.2-0.3-0.4-0.6-0.8-0.9-1.0 x Frame rating A - B - C - D



S6
600A / 800A

Magnetic only (MCP)

All S6 magnetic only breakers utilize the electronic PR211 trip unit with an adjustable range of 1.5 to 12 times frame rating. Both two and three pole MCPs are 600VAC rated.

Type	Amps	Interruption capacity		Adjustment range	2 pole 600VAC catalog number	List price	3 pole 600VAC catalog number	List price
S6N	600 800	240VAC 480VAC 600VAC	65kA 50kA 25kA	900 – 7200A 1200 – 9600A	S6N600MW-2 S6N800MW-2	**$ 2847** **3842**	S6N600MW S6N800MW	**$ 3608** **4802**
S6H	600 800	240VAC 480VAC 600VAC	150kA 65kA 35kA	900 – 7200A 1200 – 9600A	S6H600MW-2 S6H800MW-2	**4275** **5270**	S6H600MW S6H800MW	**5271** **6465**
S6L	600 800	240VAC 480VAC 600VAC	200kA 100kA 42kA	900 – 7200A 1200 – 9600A	S6L600MW-2 S6L800MW-2	**5481** **6476**	S6L600MW S6L800MW	**6482** **7676**

Molded case switches

Type	Interruption capacity		Amps	Magnetic trip	3 pole catalog number	List price
S6H-D	240VAC 480VAC 600VAC 600VDC	200kA 100kA 42kA 50kA	— 600 800 —	— 10,000A 10,000A —	— S6H600DW S6H800DW —	— **$ 3275** **4248** —
Non-UL, switches without overcurrent protection	Withstand rating		400 630 800	none none none	S6D400W S6D630W S6D800W	**3275** **3275** **4248**
	600VAC	15kA				

Neutral current transformer (required for 4 wire GF systems)

Amps	Catalog number	List price
600 800	K6NCT-600 K6NCT-800	**$ 250**

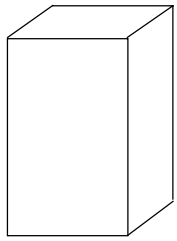
Connection options

Type	Wire range	Amps ②	Set of 2 catalog number	List price	Set of 3 catalog number	List price
CU/AL front lugs CU/AL front lugs	(2) 250kcmil – 500kcmil (3) 2/0 – 400kcmil	600 800	K6TH-2 ① K6TJ-2 ①	**$ 50** **90**	K6TH ① K6TJ ①	**$ 75** **135**
					Set of 6 catalog number	
CU rear lugs CU rear lugs	(2) 250kcmil – 500kcmil (3) 2/0 – 400kcmil	600 800	— —	— —	K6THR K6TJR	**150** **170**
Extended front bar Extended front bar	— —	600 800	— —	— —	K6ET-600 K6ET-800	**150** **170**

① Includes lug cover.
② Suggested lugs for a circuit breaker up to amps shown. Cable size and type determine maximum amperage.

S7
1200A, 600 VAC
Electronic trip type

S7



H x W x D
15.98" x 8.27" x 5.45"

Standard S7 package includes complete circuit breaker and mounting hardware. **Order cable lugs or other connection scheme as a separate item.**

General
The S7 breaker family is a 1200A frame utilizing a microprocessor based overcurrent protective trip system. In the 1200A version, the trip unit is adjustable from 480A up to 1200A without the addition of any parts or rating plugs. As standard, the S7 includes adjustable long time function for overload protection and adjustable instantaneous function for short circuit protection.

Versions
To meet all application needs, the S7 is available in various versions:

B = Adjustment LI
C = Adjustment LSI
E = Adjustment LSIG
Q = 100% UL rated
D = Molded case switch
M = Magnetic only (MCP)

Trip functions
These tripping functions are available:

L = Long time
S = Short time
I = Instantaneous
G = Ground fault

Performance level
Each version is also available in different maximum fault interrupting levels

H = High
L = Extra high (IEC only)

Number of poles
In UL/CSA version, the S7 is available as in two pole or three pole version, both with the same dimensions. A four pole version is also available in IEC form. For price estimate, add 35% to list price of selected three pole, contact ABB Control.

Accessory mounting
Internal accessories are UL/CSA approved for both factory or field installation. Accessories require control cable connectors. Shunt trips or UVR's mount in the left cavity. Auxiliary or bell alarm switches mount in the right cavity.

Reverse feeding
All versions of the S7 family are suitable for reverse feed applications.

Molded case switches
UL1087 switches include no overcurrent protection except for a high instantaneous trip mechanism for self protection. IEC type molded case switches with no trip protection are also available.

UL/CSA Interrupting capacity (kA RMS)
UL480 / CSA C22.2

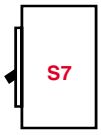
Voltage	H	
240VAC	100	
480VAC	65	
600VAC	50	

IEC-947 Interrupting capacity (kA RMS)

Voltage	H	L
230VAC	100	200
380/400/415VAC	65	100
440VAC	55	80
500VAC	45	70
690VAC	25	35

Isomax

① Consult factory



S7
1200A, 600 VAC
Electronic trip type

The S7 breaker family uses two available microprocessor based internal trip units. The standard **PR211** trip unit includes adjustments for long time current pick-up and instantaneous current trip point.

The optional **PR212** trip unit includes adjustments for long time current pick-up/delay, short time pick-up/delay, I^2t (on/off), instantaneous current trip point and further optional ground fault protection.

1000A Frame (400 – 1000A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	2 pole, 600VAC catalog number	List price	3 pole, 600VAC catalog number	List price
S7H	65kA	PR211 PR212 PR212	LI LSI LSIG	S7H1000BW-2 S7H1000CW-2 —	**$ 6959** **8039** —	S7H1000BW S7H1000CW S7H1000EW	**$ 7724** **8804** **10,604**

1200A Frame (480 – 1200A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	2 pole, 600VAC catalog number	List price	3 pole, 600VAC catalog number	List price
S7H	65kA	PR211 PR212 PR212	LI LSI LSIG	S7H1200BW-2 S7H1200CW-2 —	**$ 6959** **8039** —	S7H1200BW S7H1200CW S7H1200EW	**$ 7724** **8804** **10,604**

Trip settings

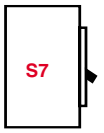
Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 1.0 0.1 – 0.8 sec.	Off-0.2-0.3-0.4-0.6-0.8-0.9-1.0 x Frame rating A - B - C - D

Continuous amperage settings (long time adjustment)

Frame	Set points								
	0.4	0.5	0.6	0.7	0.8	0.9	0.95	1.0	Setting
1000A	400	500	600	700	800	900	950	1000	Amps
1200A	480	600	720	840	960	1080	1140	1200	Amps

① Consult factory.

S7
1200A, 600VAC
UL 100% rated



When applied correctly, UL tested 100% equipment rated breakers may be applied at full rating rather than on the sizing rules of the NEC where breakers and cable are sized based on actual continuous load current divided by 80%.

This 100% rating can save the user the cost of larger cable or bus bar. Please consult the NEC for details and other design factors needed for this application.

1000A Frame (400 – 1000A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	3 pole catalog number	List price
S7H	65kA	PR211 PR212 PR212	LI LSI LSIG	S7HQ1000BW S7HQ1000CW S7HQ1000EW	**$ 8495** **9684** **11,664**

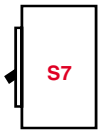
1200A Frame (480 – 1200A adjustable continuous range)

Breaker	IC at 480VAC	Trip type	Adjustment	3 pole catalog number	List price
S7H	65kA	PR211 PR212 PR212	LI LSI LSIG	S7HQ1200BW S7HQ1200CW S7HQ1200EW	**$ 8495** **9684** **11,664**

Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 1.0 0.1 – 0.8 sec.	Off-0.2-0.3-0.4-0.6-0.8-0.9-1.0 x Frame rating A - B - C - D

① Consult factory.



S7
1200A, 600V

Magnetic only (MCP)

All S7 magnetic only breakers utilize the electronic PR211 trip unit with an adjustable range of 1.5 to 12 times frame rating. Both two and three pole MCPs are 600VAC rated.

Type	Amps	Interruption capacity		Adjustment range	2 pole catalog number	List price	3 pole catalog number	List price
S7H	1000 1200	240VAC 480VAC 600VAC	100kA 65kA 50kA	1500 – 12,000A 1800 – 14,400A	S7H1000MW-2 S7H1200MW-2	**$ 6959**	S7H1000MW S7H1200MW	**$ 7724**

Molded case switches

Type	Interruption capacity		Amps	Magnetic trip	3 pole catalog number	List price
S7H-D	240VAC 480VAC 600VAC 600VDC	100kA 65kA 50kA 12kA	1000 1200	20,000A 20,000A	S7H1000DW S7H1200DW	**$ 7300**
Non-UL, switches without overcurrent protection	Withstand rating 600VAC	25kA	1000 1250	— —	S7D1000W S7D1250W	

Neutral current transformer (required for 4 wire GF systems)

Amps	Catalog number	List price
1000 1200	K7NCT-1000 K7NCT-1200	**$ 250**

Connection options

Type	Wire range	Amps ①	Set of 2 catalog number	List price	Set of 3 catalog number	List price
CU/AL front lugs	(4) 4/0 – 500kcmil	1200	K7TK-2	**$ 120**	K7TK	**$ 180**
Extended front bar	—	1200	—	—	Set of 6 catalog number K7ET-1250	**240**

① Suggested lugs for a circuit breaker up to amps shown. Cable size and type determine maximum amperage.

S8
1600 / 2000 / 2500A
Insulated case circuit breaker

S8

Description

- Insulated case type molded case circuit breaker with manually operated stored energy mechanism. Optional electric charging motor available
- Three cycle closing time for use in generator synchronizing applications.
- Electric spring charging mechanism rated for over 5,000 operations
- Three different frame ratings, 1600, 2000 and 2500 amperes. All are same compact physical size.
- Solid state trip units are available in four different configurations including adjustments for long time, short time, instantaneous and ground fault.
- Standard interrupting rating of 100kA at 480VAC.
- Short time withstand rating of 35kA at 600VAC for one second when breaker ordered with adjustable short time trip.
- Breaker includes charging handle for manual energizing of closing/opening springs
- Built-in ground fault (LSIG) for use with four-wire systems requires neutral GF sensor. Meets NEC ground fault requirements for service entrance applications.
- Internal accessories include electric charging motor, shunt trips, a combination auxiliary/bell alarm switch, and an undervoltage release.
- Breakers are suitable for use in reverse feed applications.
- Wide range of adjustments on trip settings, trip unit includes cover to prevent tampering.
- Front indicators for contact position.
- Uses convenient mounting pads for ease of installation in enclosures.
- Internal accessories are prewired to terminal block mounted on right side of breaker.
- Trip signal contact option indicates when breaker has tripped due to overcurrent.
- Canadian Standards Association certification under C22.2 No. 5 under File LR90467 for both breakers and internal accessories.
- In compliance with IEC947 including 690VAC. Breakers are labeled with both UL/CSA and IEC ratings.
- Breakers are Underwriters Laboratories listed under Standard UL 489 for molded case circuit breakers per File E93565, internal accessories are per File E116596.

S8 2500A

Isomax

Catalog number information

S8V 16 E W X X X X X X X

Frame size

Current rating
16 - 1600A
20 - 2000A
25 - 2500A

Trip
C - LSI
E - LSIG
M - I
D - Molded case switch

Connection scheme
W - Without connectors
R - Rear connectors, line & load
L - Cable terminals, line & load
D - Rear connectors, line side only
E - Rear connectors, load side only
S - Cable terminals, line side only
V - Cable terminals, load side only
H -Cable terminals, line side; rear connectors, load side
J - Rear connectors, line side; cable terminals, load side

Closing coil
1 - 480VAC
2 - 240VAC
3 - 208VAC
4 - 120VAC
5 - 250VDC
6 - 125VDC
7 - 48VDC
8 - 24VAC/VDC
0 - None

Contacts
A - Aux switches
B - Trip Signal
P - Both
0 - None

Motor
2 - 240,208VAC/250VDC
4 - 120VAC/125VDC
7 - 48VDC
8 - 24 – 30 VAC/VDC
0 - None

Shunt trip
1 - 480VAC
2 - 240,208VAC/250VDC
3 - 24VAC/30VDC
4 - 120VAC/125VDC
7 - 48VAC/48VDC
8 - 24VDC
0 - None

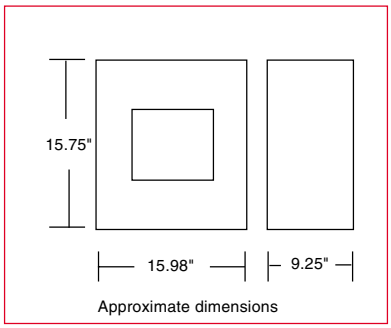
UV release
1 - 480VAC
2 - 240VAC
4 - 120VAC
5 - 250VDC
6 - 125VDC
7 - 48VDC
8 - 24VDC
0 - None

Accessories
D - Locking button device (open)
L - Key lock (open)
X - None

Breaker catalog numbers

The breaker catalog number must be completed. Please note that variations can affect price.

S8
1600 / 2000 / 2500A
Insulated case circuit breaker



Approximate dimensions

Description

Breaker is shipped complete with installed trip unit and accessories. Cable terminals or rear T connectors can be included if desired. For four-wire systems an external neutral ground fault sensor must be ordered separately.

Trip functions

L – Long time pick-up and delay
S – Short time pick-up and delay
I – Instantaneous trip
G – Ground fault pick-up and delay

3 pole, 600VAC maximum ①

Maximum continuous rating				1600A		2000A		2500A	
Breaker	IC at 480VAC	Trip type	Adjustment	Catalog number	List price	Catalog number	List price	Catalog number	List price
S8V	100kA	PR212	LSI	S8V16CW	**$ 12,540**	S8V20CW	**$ 14,427**	S8V25CW	**$ 21,561**
			LSIG	S8V16EW	**14,505**	S8V20EW	**16,561**	S8V25EW	**24,487**
			I	S8V16MW	**11,267**	S8V20MW	**12,988**	S8V25MW	**20,916**
			MCS	S8V16DW	**9620**	S8V20DW	**10,999**	S8V25DW	**16,267**

UL/CSA Interrupting capacity (kA RMS)

UL489 / CSA C22.2

Voltage	V
240VAC	125
480VAC	100
600VAC ②	85
600VDC ②	25

IEC-947 Interrupting capacity (kA RMS)

Voltage	V
230VAC	120
300/400/415VAC	120
440VAC	100
500VAC	70
690VAC	50

Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.6-0.7-0.8-0.9-0.95-1.0 x Frame rating A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I^2t On-Off)
I	Instantaneous trip	1.5 – 12.0	1.5-2.0-4.0-6.0-8.0-10.0-12.0 x Frame rating
G	Ground fault Ground fault delay	0.2 – 0.4 0.1 – 0.8 sec.	Off-0.2-0.3-0.4 x Frame rating A - B - C - D

Continuous amperage settings (long time adjustment)

Frame	Set points								
	0.4	0.5	0.6	0.7	0.8	0.9	0.95	1.0	Setting
1600A	640	800	960	1120	1280	1440	1520	1600	Amps
2000A	800	1000	1200	1400	1600	1800	1900	2000	Amps
2500A	1000	1250	1500	1750	2000	2250	2375	2500	Amps

UL 100% equipment rated circuit breakers

Circuit breakers and cable are sized per the National Electric Code on a basis of actual continuous load current divided by 80%. For example, a 360 ampere load should be connected by cable capable of handling 450 amperes (360A / 0.80 = 450A) and therefore be protected by a 450 ampere rated circuit breaker. Other factors may need to be considered when sizing breakers in special applications.

When applied correctly, UL-tested 100% equipment rated breakers may be applied at full rating, therefore saving the user the cost of larger cable or bus. Using the example above, the 360 ampere load could be used with cable capable of handling 360 amperes (360A / 1.00 = 360A) and only a 400 ampere rated circuit breaker (400A is next available size CB).

1600A, S8 Frame — stored energy

Catalog number	List price
S8VQ16CW	**$ 13,168**
S8VQ16EW	**15,231**

2000A, S8 Frame — stored energy

Catalog number	List price
S8VQ20CW	**$ 15,148**
S8VQ20EW	**17,390**

① Three pole breakers are listed and approved for use in two pole applications with center-pole not connected.
② Applies to MCS only.

S8
1600A, 2000A & 2500A Accessories

Internal accessories
(Must be factory mounted for UL/CSA)

Item	Type	Factory installed catalog number suffix	List price
Closing coil	480VAC 240VAC 208VAC 120VAC 250VDC 125VDC 48VDC 24VAC/VDC	1 2 3 4 5 6 7 8	**$ 575**
Electric motor (inc. spring charged signal contact)	240,208VAC & 250VDC 120VAC/125VDC 48VDC 24 – 30VAC/VDC	2 4 7 8	**3217**
Shunt trip	480VAC 240,208VAC & 250VDC 24VAC/30VDC 120VAC/125VDC 48VAC/48VDC 24VDC	1 2 3 4 7 8	**518**
Undervoltage release	480VAC 240VAC 120VAC 250VDC 125VDC 48VDC 24VDC	1 2 4 5 6 7 8	**518**
Aux. contacts	2A/1B	A	**396**
Trip signal	1A/1B	B	**192**
Combo. aux. & trip contacts	2A/1B Aux & 1A/1B Trip	P	**588**
Padlockable button cover (open)	—	D	**144**
Key lock (open)	—	L	**155**

Connection accessories (includes sets of 3)

Item	Type	Catalog number	List price
Cable terminals 1600A Max.	1/0 – 750kcmil (4)	K8TL	**$ 274**
2500A Max.	1/0 – 750kcmil (6)	K8TM	**315**
Rear T conn.	2500A Max.	K8RT2500	**855**

Neutral ground fault current transformer

Item	Type	Catalog number	List price
Ground Fault Neutral CT	1600A 2000A 2500A	K8NCT-1600 K8NCT-2000 K8NCT-2500	**$ 888**

Note: Neutral GF CT required for proper GF operation.

Door flange

Item	Catalog number	List price
Face plate	K8FP	**$ 25**

Closing coil
Required for closing breaker electrically, the coil voltage must be specified at the time of order entry.

Internal accessory ratings

Accessory type	Voltage	Rating
Shunt trip	All	100VA/120Watts
Undervoltage releases	AC/DC	30VA (12 Watts/ 10VA (4 Watts)
Auxiliary contacts	240VAC 125VDC 250VDC	10A Max. 0.3A Max. 0.15A Max
Closing coil	AC/DC	30VA / 40VA

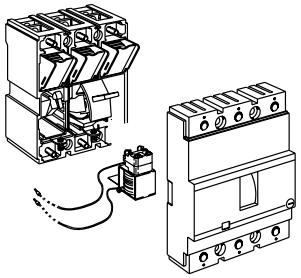
Stored energy electric motor operators

E.O.	Type	Inrush (VA)	Normal (watts)	Closing time	Opening time	Resetting time
MS8	Stored energy	1000	230	0.05s	0.035s	9.0s

Mechanical life of 10,000 cycles at 20 operations per hour.

Electrical accessories
Shunt trip, undervoltage release
S1

K5S4



S1 with K1S4

K5U4

Shunt trip

Voltage	Factory installation		Field installation	
	Catalog number suffix ①	List price adder	Catalog number S1 – S2	List price
48VAC/60VDC	S1		K1S1	
220/250VAC	S2		K1S2	
24 – 30VAC	S3		K1S3	
110 – 130VAC	S4	**$ 212**	K1S4	**$ 197**
250VDC	S5		K1S5	
110VDC	S6		K1S6	
48VDC	S7		K1S7	
24VDC	S8		K1S8	
220VDC	S9		K1S9	

For remote opening of circuit breaker and includes internal cut-off switch to protect solenoid. All shunt trips are left pole mounted and can not be used with undervoltage releases. All shunt trips are approved for use in ground fault systems. Shunt trips must be ordered with correct connector.

Shunt trip connectors (required)

Type	Voltage	Factory installation	Field installation	
			Catalog number S1 – S2	List price
Fixed mounted	All	Included	K2C-SU	**$ 15**

Electrical specifications

V	24, 120, 240, 480VAC ~ 50/60 Hz 24, 48, 125, 250VDC –
For S1 – S2 P	100VA~/120W– Instananeous duty

Undervoltage releases (IEC)

Voltage	Factory installation		Field installation	
	Catalog number suffix ①	List price adder	Catalog number S1 – S2	List Price
380/400VAC	U1		K2U1	
220/230VAC	U2		K2U2	
24VAC	U3		K2U3	
110VAC	U4	**$ 212**	K2U4	**$ 197**
110VDC	U6		K2U6	
48VDC	U7		K2U7	
24VDC	U8		K2U8	
48VAC	U9		K2U9	

Will trip circuit breaker when connected voltage drops to 35 – 70% of undervoltage release voltage rating. Will allow circuit breaker to close (ON) when voltage is approximately 85% of rated voltage. All undervoltage releases are left pole mounted and can not be used with shunt trips. Undervoltage releases must be ordered with correct connector.

Undervoltage release connectors (required)

Type	Voltage	Factory installation	Field kit	
			Catalog number S1 – S2	List Price
Fixed mounted	All	Included	K2C-SU	**$ 15**

Electrical specifications

V	24, 120, 240, 480VAC ~ 50/60 Hz 24, 48, 125, 250VDC –
For S1 – S2 P	6VA~/3W– Continuous duty

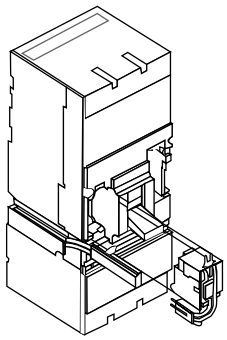
① For factory installation add suffix given to end of circuit breaker catalog number per accessory format.

Electrical accessories
Shunt trip, undervoltage release
S3 – S7

Acc.

K5S1

K6C-SUP



S5 with K5S2

K5U1

K6C-SUP

Shunt trip

Voltage	Factory installation		Field installation		
	Catalog number suffix ①	List price adder	Catalog numbers S3 – S4 – S5	Catalog numbers S6 – S7	List price
480VAC/250VDC	S1	$ 430	K5S1	K7S1	$ 415
240VAC	S2		K5S2	K7S2	
120VAC/125VDC	S4		K5S4	K7S4	
48VDC	S7		K5S7	K7S7	
24VAC/VDC	S8		K5S8	K7S8	
12VDC	S9		K5S9	K7S9	

For remote opening of circuit breaker and includes internal cut-off switch to protect solenoid. All shunt trips are left pole mounted and can not be used with UVRs. Except for 12VDC, all shunt trips are approved for use in GF systems. Shunt trips must be ordered with correct connector.

Shunt trip connectors (required)

Type circuit breaker	Voltage	Factory installation①	Field kit catalog number S3 – S4 – S5 – S6	Field kit catalog number S7	List price
Fixed mounted	All	included	K6C-SU	K7C-SU	$ 15
Plug-in/Draw-out	All	included	K6C-SUP	K7C-SUP	

Electrical specifications

V	24, 120, 240, 480VAC ~ 50/60 Hz 12, 24, 48, 125, 250 VDC –
For S3-S5 P For S6-S7	100 VA~/120W– Instantaneous duty 150 VA~/150W–

Undervoltage releases

Voltage	Factory installation		Field installation		
	Catalog number suffix ①	List price adder	Catalog numbers S3 – S4 – S5	Catalog numbers S6 – S7	List price
480VAC	U1	$ 430	K5U1	K7U1	$ 415
240VAC	U2		K5U2	K7U2	
120VAC	U4		K5U4	K7U4	
24VAC	U3		K5U3	K7U3	
250VDC	U5		K5U5	K7U5	
125VDC	U6		K5U6	K7U6	
48VDC	U7		K5U7	K7U7	
24VDC	U8		K5U8	K7U8	

Will trip CB when connected voltage drops to 35-70% of UVR voltage rating. Will allow CB to close (ON) when voltage is approximately 85% of rated voltage. All UVRs are left pole mounted and can not be used with shunt trips. UVRs must be ordered with correct connector.

Undervoltage release connectors (required)

Type circuit breaker	Voltage	Factory installation①	Field kit catalog number S3 – S4 – S5 – S6	Field kit catalog number S7	List price
Fixed mounted	All	included	K6C-SU	K7C-SU	$ 15
Plug-in/Draw-out	All	included	K6C-SUP	K7C-SUP	

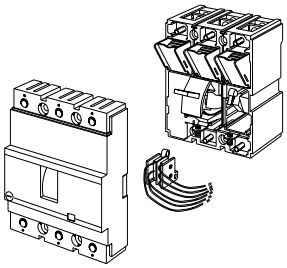
Electrical specifications

V	24, 120, 240, 480 VAC ~ 50/60 Hz 24, 48, 125, 250 VDC –
For S3-S5 P For S6-S7	6 VA~/3W– Continuous duty 10 VA~/4W–

① For factory installation add suffix given to end of circuit breaker catalog number per accessory format.

Isomax

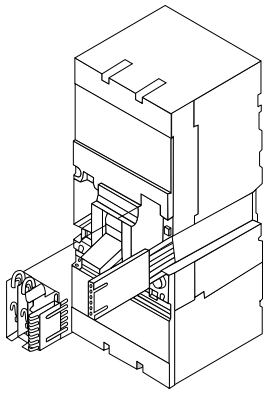
Electrical accessories
Auxiliary contacts
S1 – S7



S1 with auxiliaries

K5AS

K6C-ABP



S5 with K6C-AB

Auxiliary contacts — S1

Voltage	Factory install		Field installation	
	Catalog number suffix ①	List price adder	Catalog number S1	List price
2N.O./N.C. 1B.A. + 1N.O./N.C.	A BA	**$ 190**	K1AS K1BA	**$ 175**

The auxiliary contacts are accessory contacts for the indication of circuit breaker open-closed or tripped. Bell alarm contacts (B.A.) can be used to indicate circuit breaker tripping. All contacts are right pole mounted.
Availability:
a) 2 N.O. or N.C. Form C auxiliary contacts

Auxiliary contact connectors (required) — S1

Type	Voltage	Factory installation	Field installation	
			Catalog number S1	List price
Fixed mounted	All	Included	K2C-AB	**$ 15**

Electrical specifications — S1

Voltage	Maximum contact amperage rating
30 VDC	4A
127 VDC	4A
220 VAC	4A

N.O. = contact is open as circuit breaker is open
N.C. = contact is closed when circuit breaker is open
B.A. = will open/close only when circuit breaker trips

Auxiliary contacts — S3 – S7

Voltage	Factory installation		Field installation		
	Catalog number suffix ①	List price adder	Catalog numbers		List price
			S3 – S4 – S5	S6 – S7	
2 N.O./N.C.	A	**$ 275**	K5AS	K7AS	**$ 260**
1B.A. + 1N.O./1N.C. 1B.A. + 1N.O./1N.C.	BA BA3	**365**	K5BA —	K7BA K7BA-3	**350**

The auxiliary contacts are accessory contacts for the indication of circuit breaker open-closed or tripped. Bell alarm contacts (B.A.) can be used to indicate circuit breaker tripping. All contacts are right pole mounted.

Availability:
a) 2 N.O. or N.C. Form C auxiliary contacts
b) 1 N.O. or N.C. Form C auxiliary contacts plus 1 B.A. trip contact
c) 1 N.O. and 1 N.C. auxiliary contacts plus 1 B.A. trip contact (for S6 – S7 only).

Auxiliary contact connectors (required) — S3 – S7

Type circuit breaker	Voltage	Factory installation①	Field kit catalog number		
			S3 – S4 –- S5 – S6	S7	List price
Fixed mounted Plug-in/Draw-out	All All	included included	K6C-AB K6C-ABP	K7C-AB K7C-ABP	**$ 15**

Electrical specifications

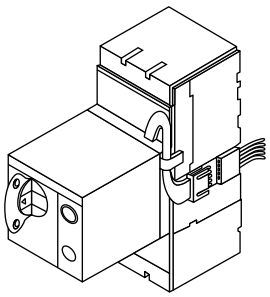
Voltage	Maximum contact amperage rating
125 VDC	0.3 A
250 VDC	0.15 A
250 VAC	6 A

N.O. = contact is open as circuit breaker is open
N.C. = contact is closed when circuit breaker is open
B.A. = will open/close only when circuit breaker trips

① For factory installation add suffix given to end of circuit breaker catalog number per accessory format.

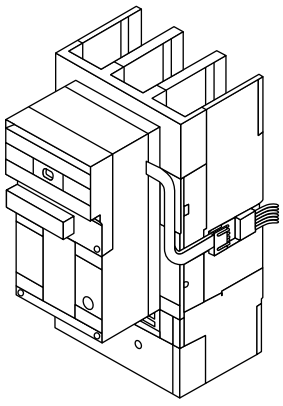
Electrical accessories
Motor operators, stored energy motor operators S3 – S7


K5M2


S4 with K5M2


K6C-M


K6M2


S7 with K7M4

Motor operator

Voltage	Catalog number S3 – S4 – S5	List price
240VAC/250VDC 120VAC/125VDC 48VDC 24VDC	K5M2 K5M4 K5M7 K5M8	$ 678

For remote control of circuit breaker opening and closing.
Complete with manual operating lever, padlock device and emergency opening push-button.
When ordering the connector always specify type and version of the circuit-breaker.
The following options are also available:
– key lock for open position
– key lock for open position of two or more circuit breakers (using the same key for groups of circuit breakers)

Motor operator connectors (required)

Type circuit breaker	Voltage	Field kit catalog number S3 – S4 – S5	List price
Fixed mounted Plug-in/Draw-out	All All	K6C-M K6C-MP	$ 15

Electrical specifications

V	120, 240VAC ~ 50/60 Hz 24, 48, 125, 250 VDC –
P inrush P normal Close time	500 VA~/500W– 350 VA~/500W– 0.1 s
Open time	0.1 s

Stored-energy motor operator

Voltage	Catalog number S6	Catalog number S7	List price
240VAC/250VDC 120VAC/125VDC 48VDC 24VDC	K6M2 K6M4 K6M7 K6M8	K7M2 K7M4 K7M7 K7M8	$ 2407

- Stored-energy motor operator with springs automatically pre-loaded by motor.
- Complete with shunt opening and closing release, and compartment door flange.
- When ordering the connector always specify type and version of the circuit-breaker.
- The following options are also available:
  – key lock for open position
  – key lock for open position of two or more circuit-breakers (using the same key for groups of circuit-breakers).

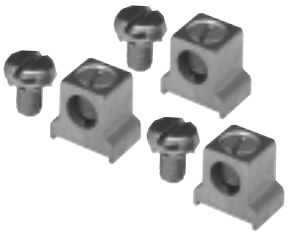
Stored-energy motor operator connectors (required)

Type circuit breaker	Voltage	Field kit catalog number S6	Field kit catalog number S7	List price
Fixed mounted Plug-in/Draw-out	All All	K6C-M K6C-MP	K7C-M K7C-MP	$ 15

Electrical specifications

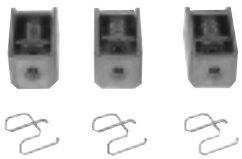
V	120, 240 VAC ~ 50/60 Hz 24, 48, 125, 250 VDC –
P inrush P normal Close time	660 VA~/600W– 180 VA~/180W– 0.09 s
Open time	1.2 s
Reset time	2.0 s

External accessories
Lugs and termination kits
S3 – S7



K4TB

K4ET-250



K4TES

K4TER

Standard cable lug kits

For breakers	Amps①	Wire range	Set of 2 catalog number	List price	Set of 3 catalog number	List price
S3	60	14AWG – 2AWG	K3TA-2	$ 4	K3TA	$ 6
S3 – S4	100	14AWG – 1/0	K4TB-2	4	K4TB	6
S3 – S4	150	2AWG – 4/0	K4TC-2	4	K4TC	6
S3 – S4 – S5	225	4AWG – 300kcmil	K4TD-2	10	K4TD	15
S4	250	6AWG – 350kcmil	K4TE-2	20	K4TE	30
S5	300	250kcmil – 500kcmil	K5TF-2	30	K5TF	45
S5	400	(2) 3/0 – 250kcmil	K5TG-2②	30	K5TG②	45
S6	600	(2) 250kcmil – 500kcmil	K6TH-2	50	K6TH	75
S6	800	(3) 2/0 – 400kcmil	K6TJ-2②	90	K6TJ②	135
S7	1200	(4) 4/0 – 500kcmil	K7TK-2	120	K7TK	180

Standard cable lugs, for use on line and load side of circuit breaker. Suitable for use with Cu or Al. Special versions available with taps and screws for control wire connection. Note: S6 and S7 lugs are Al9Cu (90°C); all others Al7Cu (75°C).

Standard cable lug kits with control power taps

For breakers	Amps①	Wire range	Set of 2 catalog number	List price	Set of 3 catalog number	List price
S3 – S4	100	14AWG – 1/0	K4TB-2C	$ 8	K4TBC	$ 12
S3 – S4	150	2AWG – 4/0	K4TC-2C	8	K4TCC	12
S3 – S4 – S5	225	4AWG – 300kcmil	K4TD-2C	14	K4TDC	21
S4	250	6AWG – 350kcmil	K4TE-2C	24	K4TEC	36
S5	300	250kcmil – 500kcmil	K5TF-2C	34	K5TFC	51
S5	400	(2) 3/0 – 250kcmil	K5TG-2C②	34	K5TGC②	51
S6	600	(2) 250kcmil – 500kcmil	K6TH-2C	54	K6THC	81
S6	800	(3) 2/0 – 400kcmil	K6TJ-2C②	94	K6TJC②	141
S7	1200	(4) 4/0 – 500kcmil	K7TK-2C	124	K7TKC	186

Extended front termination kits

Suitable for use with	Maximum amps	Set of 6 catalog number	List price
S3 – S4	250	K4ET-250	$ 46
S5	400	K5ET-400	114
S6	630	K6ET-600	150
S6	800	K6ET-800	170
S7	1250	K7ET-1250	240

For adding onto standard circuit breaker front terminals, extending available connection area for user termination. Suitable for spaded cable or bus connection. S3 – S5 include terminal covers.

Saddle cable lug kits (Cu cable only)

Suitable for use with	Max amps	Wire range	Set of 6 catalog number	List price
S3 – S4	250	14AWG – 250kcmil	K4TES	$ 30
S5	400	250kcmil – 500kcmil	K5TGS	90

These special non-aluminum cable lugs are for use with copper cable. Lugs are intended for use with copper cable or where non-aluminum connectors are required (marine, salt or corrosive environments).

Rear cable lug kits (Cu cable only)

Suitable for use with	Max amps	Wire range	Set of 6 catalog number	List price
S3 – S4	250	14AWG – 250kcmil	K4TER	$ 30
S5	400	250kcmil – 500kcmil	K5TGR	90
S6	600	250kcmil – 500kcmil	K6THR	150
S6	800	250kcmil – 500kcmil	K6TJR	170

For use where cable connection from the back-rear of the breaker is desired.

① Suggested lugs for circuit breaker up to amps shown. Cable size and type determine maximum amperes.
② Includes lug covers.

External accessories
Rotary and variable depth handle operators
S1 – S7

K5RH

K5VD-M, K5VD-S12, K5VD-H

Rotary handle operating mechanism

Frame	Catalog number	List price
S3 – S4 – S5	K5RH	$ 108
S6	K6RH	124
S7	K7RH	145

Mounts directly onto breaker. Includes door interlock to prevent CB door opening while CB is in ON position. Padlock provision included to padlock CB in open position. Can also be key locked with optional cylinder lock assembly. Door interlock bracket must be ordered separately, if required. See page 9.9.

Variable depth rotary handles

New pistol type 1, 3R, 12

Frame	Catalog number mechanism	List price	Shaft catalog number (length in inches)	List price	Handle catalog number (length in inches)	List price
S1–S2	K2VD-M	$ 59			OHB45J10 (1.8) OHG45J10 (1.8) OHB65J10 (2.6) OHG65J10 (2.6)	$ 70
S3–S4–S5	K5VD-M	49	OXP10X148 (5.8) OXP10X225 (8.9) OXP10X500 (19.7)	$ 24 26 32	OHB95J10 (3.7) OHG95J10 (3.7)	80
S6	K6VD-M	80			OHB125J10 (4.9) OHG125J10 (4.9)	90
S7	K7VD-M	80			OHB175J10 (6.9) OHG175J10 (6.9)	100

Pistol type 4

Frame	Catalog number mechanism	List price	Shaft catalog number (length in inches)	List price	Handle catalog number (length in inches)	List price
S1–S2	K2VD-M	$ 59			OHB45L10 (1.8) OHG45L10 (1.8) OHB65L10 (2.6) OHG65L10 (2.6)	$ 110
S3–S4–S5	K5VD-M	49	OXP10X148 (5.8) OXP10X225 (8.9) OXP10X500 (19.7)	$ 24 26 32	OHB95L10 (3.7) OHG95L10 (3.7)	120
S6	K6VD-M	80			OHB125L10 (4.9) OHG125L10 (4.9)	130
S7	K7VD-M	80			OHB175L10 (6.9) OHG175L10 (6.9)	140

Pistol type 4 — metal

S3–S4–S5	K5VD-M	$ 49				
S6	K6VD-M	80	K7VD-S25	$ 34	K7VD-HM	$ 190
S7	K7VD-M	80				

Square type 1

S1–S2	K2VD-M	$ 59			K2VD-H	$ 25
S3–S4–S5	K5VD-M	49	K5VD-S12	$ 24	K5VD-H	25
S6	K6VD-M	80	K7VD-S20	27	K7VD-H	28
S7	K7VD-M	80			K7VD-H	28

NOTE: Complete assembly requires a mechanism, shaft and handle.

Variable depth shaft support

For frames	Catalog number	List price
S3 – S4 – S5	K5VD-LSS	$ 25

New pistol handle catalog number explanation

OHB 125 J 10

- 10 — Shaft size (diameter in mm)
- J = Type 1, 3R, 12
L = Type 1, 3R, 4, 4X, 12 — J
- 125 — Physical size (length in mm)
- OHB — Color
B = black
G = gray

Isomax

External accessories
Flange handle operators
S1 – S6


K4FH-17S12

Flange handle
New version — solid shaft linkage

Breaker	NEMA type	Complete handle kit	List price	Mechanism only	List price	Shaft only	Shaft length	List price	Handle only	List price
S1 – S2	1,3R,12	K2FHD-12S12	$ 240	K2FHD-M	$ 128	K7FHD-S12	12	$ 19	K7FHD-HS12	$ 93
		K2FHD-17S12	248			K7FHD-S17	17	27		
		K2FHD-22S12	255			K7FHD-S22	22.5	34		
	4	K2FHD-12S4	280			K7FHD-S12	12	19	K7FHD-HS4	133
		K2FHD-17S4	288			K7FHD-S17	17	27		
		K2FHD-22S4	295			K7FHD-S22	22.5	34		
S3	1,3R,12	K3FHD-12S12	240	K3FHD-M	128	K7FHD-S12	12	19	K7FHD-HS12	93
		K3FHD-17S12	248			K7FHD-S17	17	27		
		K3FHD-22S12	255			K7FHD-S22	22.5	34		
	4	K3FHD-12S4	280			K7FHD-S12	12	19	K7FHD-HS4	133
		K3FHD-17S4	288			K7FHD-S17	17	27		
		K3FHD-22S4	295			K7FHD-S22	22.5	34		
S4	1,3R,12	K4FHD-12S12	240	K4FHD-M	128	K7FHD-S12	12	19	K7FHD-HS12	93
		K4FHD-17S12	248			K7FHD-S17	17	27		
		K4FHD-22S12	255			K7FHD-S22	22.5	34		
	4	K4FHD-12S4	280			K7FHD-S12	12	19	K7FHD-HS4	133
		K4FHD-17S4	288			K7FHD-S17	17	27		
		K4FHD-22S4	295			K7FHD-S22	22.5	34		
S5	1,3R,12	K5FHD-12S12	240	K5FHD-M	128	K7FHD-S12	12	19	K7FHD-HS12	93
		K5FHD-17S12	248			K7FHD-S17	17	27		
		K5FHD-22S12	255			K7FHD-S22	22.5	34		
	4	K5FHD-12S4	280			K7FHD-S12	12	19	K7FHD-HS4	133
		K5FHD-17S4	288			K7FHD-S17	17	27		
		K5FHD-22S4	295			K7FHD-S22	22.5	34		
S6	1,3R,12	K6FHD-12S12	523	K6FHD-M	411	K7FHD-S12	12	19	K7FHD-HS12	93
		K6FHD-17S12	531			K7FHD-S17	17	27		
		K6FHD-22S12	538			K7FHD-S22	22.5	34		
	4	K6FHD-12S4	563			K7FHD-S12	12	19	K7FHD-HS4	133
		K6FHD-17S4	571			K7FHD-S17	17	27		
		K6FHD-22S4	578			K7FHD-S22	22.5	34		

Available as complete kits including flange handle, shaft and breaker operating mechanism. Mechanism mounts directly onto breaker and shaft can be cut to the desired length for the breaker enclosure. Door is interlocked with the handle when the breaker is in the closed (ON) position; handles include interlock defeater for emergency override. Handle can be padlocked in the open (OFF) position. Can be field converted for left hand mounting.

Flange handle
New version — cable linkage

Breaker	NEMA type	Mech & handle kit①	List price	Mechanism only	List price	Cable only	Cable length	List price	Handle only	List price
S1 – S2	1,3R,12	K2FHDC-S12	$ 291	K2FHDC-M	$ 198	K6FHDC-036	36"(91mm)	$ 114	K7FHD-HS12	$ 93
						K6FHDC-060	60"(152mm)	146		
	4	K2FHDC-S4	331	K2FHDC-M	198	K6FHDC-036	36"(91mm)	114	K7FHD-HS4	133
						K6FHDC-060	60"(152mm)	146		
S3	1,3R,12	K3FHDC-S12	291	K3FHDC-M	198	K6FHDC-036	36"(91mm)	114	K7FHD-HS12	93
						K6FHDC-060	60"(152mm)	146		
	4	K3FHDC-S4	331	K3FHDC-M	198	K6FHDC-036	36"(91mm)	114	K7FHD-HS4	133
						K6FHDC-060	60"(152mm)	146		
S4	1,3R,12	K4FHDC-S12	356	K4FHDC-M	263	K6FHDC-036	36"(91mm)	114	K7FHD-HS12	93
						K6FHDC-060	60"(152mm)	146		
	4	K4FHDC-S4	396	K4FHDC-M	263	K6FHDC-036	36"(91mm)	114	K7FHD-HS4	133
						K6FHDC-060	60"(152mm)	146		
S5	1,3R,12	K5FHDC-S12	396	K5FHDC-M	303	K6FHDC-036	36"(91mm)	114	K7FHD-HS12	93
						K6FHDC-060	60"(152mm)	146		
	4	K5FHDC-S4	436	K5FHDC-M	303	K6FHDC-036	36"(91mm)	114	K7FHD-HS4	133
						K6FHDC-060	60"(152mm)	146		

Notes: For complete assembly; mechanism, cable and handle are required.
All mechanisms above mount onto the right side of the breaker.
For mounting of the cable on the left side of the breaker, add "L" to mechanism part number. Price is unchanged.

Door hardware

Item	Catalog number	List price
Safety door latch, 2 point with 6" handle	FH-DHK	$ 150
Roller for 3 point latch, add to FH-DHK	FH-3RL	30

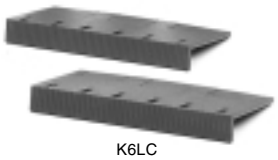
① Cable not included.

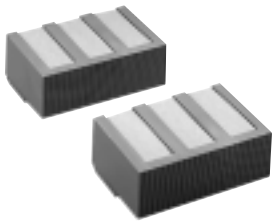
External accessories
S1 – S7

Acc.

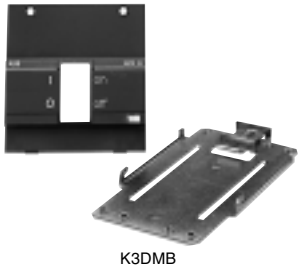
K5LD


K7KL


K6LC


K6LCH


K6LC-S


K3DMB

Front locking device

Item	Catalog number	List price
S1	K2LD	$ 16
S3 – S4 – S5	K5LD	14
S6	K6LD	16
S7	K7LD	20

Mounts directly onto front of CB. Includes padlock device for locking CB in open position. Can be used as a manual handle block, with padlock or with optional key lock accessory. Optional door interlock kit that will prevent CB door from opening while CB is in the closed (ON) position.

Door interlock bracket

Item	Catalog number S3 – S7	List price
Bracket	K7DB	$ 5

Key locks

Accessory	Keys	Catalog number		List price
		S3 – S4 – S5	S6 – S7	
Electric operator	different same	K5KL-EO K5KL-EO-2	K7KL-EO K7KL-EO-2	$ 25
Rotary HM & locking device	different same	K7KL K7KL-2	K7KL K7KL-2	

Keyed cylinder locks are available for mounting onto Isomax electric operators, rotary handle mechanisms and front locking devices. Key locks can be for one individual circuit breaker (different keys in each order) or for two circuit breakers using the same key.

Terminal covers for fixed circuit breakers

Frame	Low profile catalog number	List price	High profile catalog number	List price
S3 – S4	K4LC	$ 8	K4LCH	$ 16
S5	K5LC	12	K5LCH	24
S6	K6LC	18	K6LCH	32
S7	K7LC	40	—	—

Both high and low types are available for fixed circuit-breakers. Covers provide IP40 degree of protection for fixed mounted circuit breakers. Lug covers are required and included as standard with S5 **400A** and S6 **800A** cable lug kits. Covers up to S6 can be sealed with lug cover seal shown in next section.

Terminal cover seals

Suitable for use with breakers	Used with LC covers	List price
S3 – S4 – S5 – S6	K6LC-S	$ 5

These screws prevent the terminal covers from being removed.

DIN rail mounting kits

Suitable for use with breakers	Catalog number	List price
S1	K1DMB	$ 11
S3	K3DMB	24
S4	K4DMB	26
S5	K5DMB	38

Kit consists of mounting bracket to fix S3-S5 breakers onto **75mm DIN rail (EN 50023 rail)** and includes 45mm high front face plate to match up with miniature circuit breakers and manual motor starters. S1 breaker mounts on 35mm DIN rail.

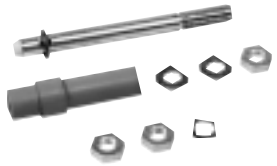
Mechanical interlock plate

Frame	Horizontal catalog number	List price	Vertical catalog number	List price
S3	K3MI-H	$ 570	K3MI-V	$ 570
S4	K4MI-H	570	K4MI-V	570
S5	K5MI-H	590	K5MI-V	590
S6	K6MI-H	620	K6MI-V	620
S7	K7MI-H	630	K7MI-V	630

Provides for mounting of two similar breakers on a single mounting plate. CBs are interlocked via a “walking beam” type interlock, preventing breakers from being ON or closed at the same type. Both breakers can be OFF or tripped. MIP is available in two versions, one with breakers mounted horizontally and then also a version for vertical mounting of breakers.

Isomax

Accessories
S1 – S7
IEC



K4RC

Rear plug-in & drawout circuit breakers

K7TUT

Rear connected stud kits①

For breakers	Max. amps	Set of 6 catalog number	List price
S3 – S4	250	K4RC	**$ 87**
S5	400	K5RC	**225**
S6	800	K6RC	**280**
S7	1200	K7RC	**340**

Provides means to connect breakers directly onto rear bus bars.

Rear plug-in and draw-out circuit breakers

Isomax breakers are available in both rear plug-in and complete draw-out configurations. Plug-in breakers can be rear bus, front bus or front cable connected and are available up to the S5 400A size. The draw-out configuration uses a unique racking system and is available for all breakers from S3 through S7.

Plug-in (3 pole)①

	Separate kits fixed and movable						Complete draw-out kits Includes both fixed and movable portion			
	Movable kit		Fixed base kit							
Frame	Movable	List price	Ext fr bus	List price	Rear conn.	List price	Ext fr bus	List price	Rear conn.	List price
S1	K1PMK	**$ 171**	K1PFC②	**$ 171**	K1PFR	**$ 207**	K1PC②	**$ 342**	K1PR	**$ 378**
S3	K4PMK	**203**	K3PFF	**190**	K3PFR	**230**	K3PF	**393**	K3PR	**433**
S4	K4PMK	**203**	K4PFF	**203**	K4PFR	**243**	K4PF	**406**	K4PR	**446**
S5	K5PMK	**238**	K5PFF	**278**	K5PFR	**278**	K5PF	**516**	K5PR	**516**

Draw-out (3 pole)①

	Separate kits fixed and movable						Complete draw-out kits Includes both fixed and movable portion			
	Movable kit		Fixed base kit							
Frame	Movable	List price	Ext fr bus	List price	Rear conn.	List price	Ext Fr bus	List price	Rear conn.	List price
S3	K4WMK	**$ 203**	K3WFF	**$ 230**	K3WFR	**$ 270**	K3WF	**$ 433**	K3WR	**$ 473**
S4	K4WMK	**203**	K4WFF	**283**	K4WFR	**323**	K4WF	**486**	K4WR	**526**
S5	K5WMK	**278**	K5WFF	**318**	K5WFR	**318**	K5WF	**596**	K5WR	**596**
S6 Horiz	K6WMK	**523**	K6WFF	**1346**	K6WFR-H	**1346**	K6WF	**1869**	K6WR-H	**1869**
S6 Vert	K6WMK	**523**	K6WFF	**1346**	K6WFR-V	**1346**	K6WF	**1869**	K6WR-V	**1869**
S7 Horiz	K7WMK	**821**	K7WFF	**2111**	K7WFR-H	**2111**	K7WF	**2932**	K7WR-H	**2932**
S7 Vert	K7WMK	**821**	K7WFF	**2111**	K7WFR-V	**2111**	K7WF	**2932**	K7WR-V	**2932**

Movable kit = parts needed to modify standard CB to movable type.
Fixed base kit = fix mount onto panel.
Ext Fr bus = fixed base with line and load side extended front bus connectors. (FF)
Rear Conn. = fixed base with line and load side rear bus connectors. (FR)
Complete kit = includes all parts required for plug-in or draw-out connection; does not include CB.
Plug-in = open breaker can be physically removed from fixed base without disconnecting cable or bus from fixed base. (P)
Draw-out = also known as withdrawable, breaker can be removed from fixed base via a through the door crank. Includes ON, TEST and OFF position. (W)

Four pole versions (plug-in and/or draw-out)

Take the above list prices times 1.35 for four (4) pole versions and add "-4" to the end of the catalog number.

Draw-out crank

Isomax frames	Catalog number	List price
S1 – S7	K7WCR	**$ 20**

Cable termination kits (3 pole only)①

Compression type cable lug kit used to modify extended front bus connectors for direct cable connection.

Frame	Set of 6	List price
S3	K4FCT	**$ 72**
S4	K4FCT	**72**
S5	K5FCT	**86**

Hand-held test kit (for all electronic trip types)

Isomax frames	Catalog number	List price
S4 – S5 – S6 – S7	K7TUT	**$ 210**

Isomax hand-held test kit is used to both test and exercise microprocessor trip units in breakers S4 through S7. Unit includes test forks that insert into the test plugs on all Isomax microprocessor trip units. Tester generates 15VDC signal that performs diagnostic on electronic trip functions and will confirm test by tripping the CB. Will not test S3 nor any molded case switch versions.

① IEC ratings only.
② Front cable connection.

Enclosures
Type 1, 3R/12
Type 7/9

Description

Type 1

- General purpose indoor enclosure intended for use in normal environments to provide a degree of protection against contact with enclosed equipment.
- Sheet steel, surface mount.
- Breaker is front-operable and can be padlocked via front hasp.
- Available through 2500A, 600VAC
- UL Listed for use as service entrance equipment (SUSE), per UL file E116374.

Type 3R/12

- Type 3R is intended for outdoor use providing protection against rain, sleet or snow.
- Type 12 is for use in indoor atmospheres to provide a degree of protection against circulating dust, lint, sawdust, falling dirt and dripping non-corrosive liquids.
- Surface-mounted, sheet steel enclosure.
- Breaker can be operated via separately ordered handle mechanism; door is interlocked with mechanism.
- Available through 2500A, 600VAC.
- UL Listed for use as service entrance equipment (SUSE), per UL file E116374.

Type 7/9

- Cast from copper-free aluminum (max. 0.025 copper content)
- Stainless steel shotblasted or sandblasted natural finish
- Standard conduit openings in top and bottom
- Breaker is operated from front handle and can be padlocked
- NEC Class I Groups D, Div. 1 & 2
  NEC Class II Groups E, F & G, Div 1 & 2
  NEC Class III
- External machined flange joint design
- Integral cast mounting feet
- Machined flange for ease of hinge installation
- Ground lug
- Cast mounting pan bosses
- All enclosures suitable for drilling & tapping
- UL panel listed per UL File # E183868

Isomax enclosures
Type 1 & 3R/12


S3E-1


S4E-3R12

Enclosures (Price does not include circuit breaker; order as a separate item.) ④

NEMA designation	Breaker type	Enclosure maximum rating AL cables	Enclosure maximum rating CU cables	Approximate dimensions① H x W x D (inches)	Catalog number	List price
Type 1	S1	100A	100A	14 x 10 x 3.1	S1E-1	**$ 200**
	S2②	125A	125A	16 x 11 x 3.1	S2E-1	**200**
	S3	150A	225A	22 x 12 x 4.5	S3E-1	**235**
	S4	225A	250A	30 x 17.5 x 4.5	S4E-1	**305**
	S5	400A	400A	30 x 17.5 x 4.5	S5E-1	**305**
	S6	800A	800A	44 x 22 x 6	S6E-1	**685**
	S7	1000A	1200A	44 x 22 x 6	S7E-1	**685**
	S8	2500A	2500A	88 x 36 x 24	S8ES250-1	**5285**
Type 3R/12③	S1	100A	100A	14 x 10 x 8.8	S1E-3R12	**305**
	S2 ②	125A	125A	16 x 11 x 8	S2E-3R12	**305**
	S3	150A	225A	22 x 12 x 9	S3E-3R12	**395**
	S4	225A	250A	30 x 17.5 x 9	S4E-3R12	**575**
	S5	400A	400A	30 x 17.5 x 9	S5E-3R12	**575**
	S6	800A	800A	44 x 22 x 11	S6E-3R12	**905**
	S7	1000A	1200A	44 x 22 x 11	S7E-3R12	**905**
	S8	2500A	2500A	88 x 36 x 24	S8ES250-3R12	**5285**

Neutral kits

Breaker type	Neutral cable capacity and wire range	Neutral kit catalog number	List price
S1 – S2	Neutral #14-1/0 Bonding Lug #14-1/0	S2NK125	**$ 100**
S3	Neutral #6-250 kcmil Bonding Lug #14-1/0	S3NK225	**135**
S4	Neutral #6-250 kcmil Bonding Lug #14-1/0 kcmil	S4NK250	**155**
S5	Neutral (2) #6-250 kcmil Bonding Lug #14-1/0 kcmil	S5NK400	**260**
S6	Neutral (2) #2-600 kcmil Bonding Lug #6-250 kcmil	S6NK800	**350**
S7	Neutral (4) #2-600 kcmil Bonding Lug #6-250 kcmil	S7NK1200	**535**
S8	Neutral (6) #1/0-750 kcmil Bonding Lug (2) #2-600 kcmil	—	included

① Enclosures may not meet size requirement for UL 100% rated breakers.
② Not UL approved.
③ Variable depth rotary handle must be ordered separately (S1 - S7).
④ Consult ABB for breakers installed in enclosures.

Isomax enclosures
Type 7/9

S5N400BW7

Explosion-proof enclosures
(Price does not include circuit breaker; order as a separate item for factory assembly.)

NEMA designation	Breaker type	Enclosure max. rating	Approximate dimensions H x W x D (inches)	Catalog number suffix	List price adder
Type 7/9	S3	Cu only 100A	17 x 10 x 8.65	7	**$ 2100**
	S3	Cu only 225A	22.5 x 11.5 x 8.77	7	**2850**
	S4	Cu only 250A	25 x 18 x 9.92	7	**4700**
	S5	Cu only 400A	30 x 17 x 9.25	7	**6600**
	S6	Cu only 600A	35 x 17 x 11	7	**8600**
	S6	Cu only 800A	41 x 17 x 11	7	**10,450**
	S7	Cu only 1200A	51 x 17 x 13	7	**22,450**

To order a breaker in an explosion-proof enclosure, add the suffix "7" to the end of the catalog number and add the list price adder to the list price of the breaker.
Example: **S5N400BW7**
S5N400BW breaker ..... $ 2151
Explosion proof enclosure 6600
Total ..... $ 8751

Additional options

NEMA designation	Breaker type	Enclosure max. rating	NEMA 4X Cat. no. adder	NEMA 4X List price adder	Stainless steel bolts Cat. no. adder	Stainless steel bolts List price adder	Captive bolts Cat. no. adder	Captive bolts List price adder	Drain Cat. no. adder	Drain List price adder
Type 7/9	S3	Cu only 100A	-X	**$ 130**	-S	**$ 20**	-B	**$ 145**	-D	
	S3	Cu only 225A	-X	**145**	-S	**25**	-B	**170**	-D	
	S4	Cu only 250A	-X	**145**	-S	**45**	-B	**355**	-D	
	S5	Cu only 400A	-X	**175**	-S	**60**	-B	**415**	-D	**$ 110**
	S6	Cu only 600A	-X	**250**	-S	**60**	-B	**465**	-D	
	S6	Cu only 800A	-X	**315**	-S	**60**	-B	**535**	-D	
	S7	Cu only 1200A	-X	**430**	-S	**80**	-B	**600**	-D	

To add additional options, simply add the suffix to the end of the catalog number.
Example: **S5N400BW7XSD**
S5N400BW breaker ..... $ 2151
Explosion proof enclosure 6600
NEMA 4X 175
Stainless steel bolts 60
Drain 110
Total ..... $ 9096

Catalog number information — Type 7/9

S4 N 250 BW7 - 2xxx

Frame size
S3 = 150 / 225A
S4 = 250A
S5 = 400A
S6 = 600 / 800A
S7 = 1200A

Interrupting rating class
B = Basic (240VAC)
N = Normal
H = High
L = Extra high
D = Special molded case switch

Current rating
015 = 15A
250 = 250A
400 = 400A
600 = 600A
800 = 800A
1200 = 1200A

Trip unit function
B = LI
C = LSI
D = Molded case switch (MCS)
E = LSIG
T = Thermal-magnetic
F = LSIG/K
H = LSIG/D
J = LSIG/DT
K = LSIG/DTK
M = Magnetic only (MCP)

Accessories (added in alpha-numeric order)
A = Auxiliary switch
B = Captive bolts
BA = Bell alarm
BA3 = Bell alarm (S6/S7 only)
D = Breather/drain
H = Fixed rotary handle mounted on CB
S_ = Shunt trip with voltage code
S = Stainless steel bolts
U_ = Undervoltage release with voltage code
X = NEMA 7/9/4X

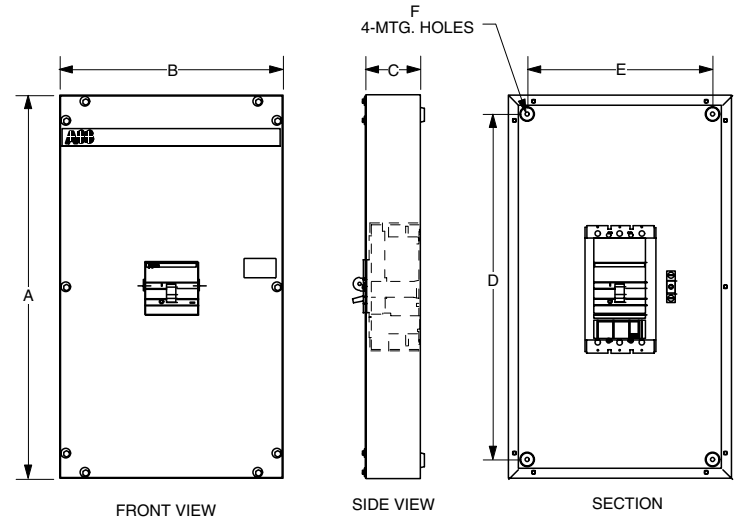
Number of poles
-2 = 2 pole
-4 = 4 pole
None = 3 pole

NEMA enclosure 7/9

Type connectors
W = None **L** = Lugs

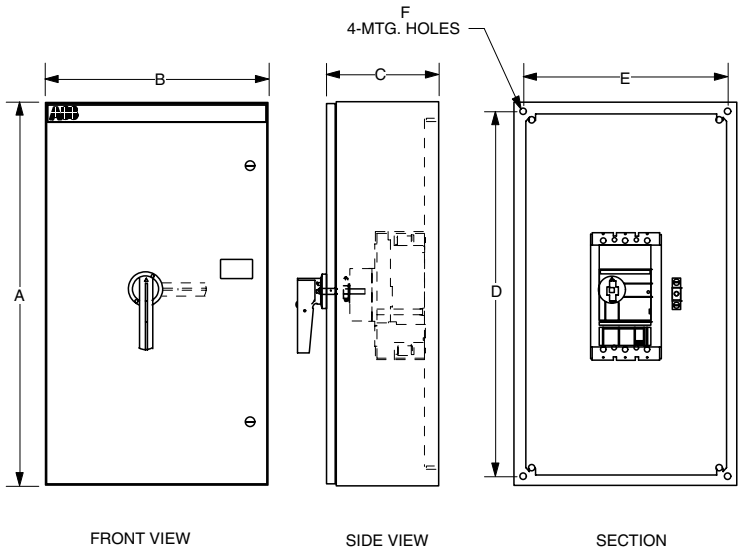
Approximate dimensions
S1 – S7 enclosures
NEMA 1, 3R & 12

NEMA 1



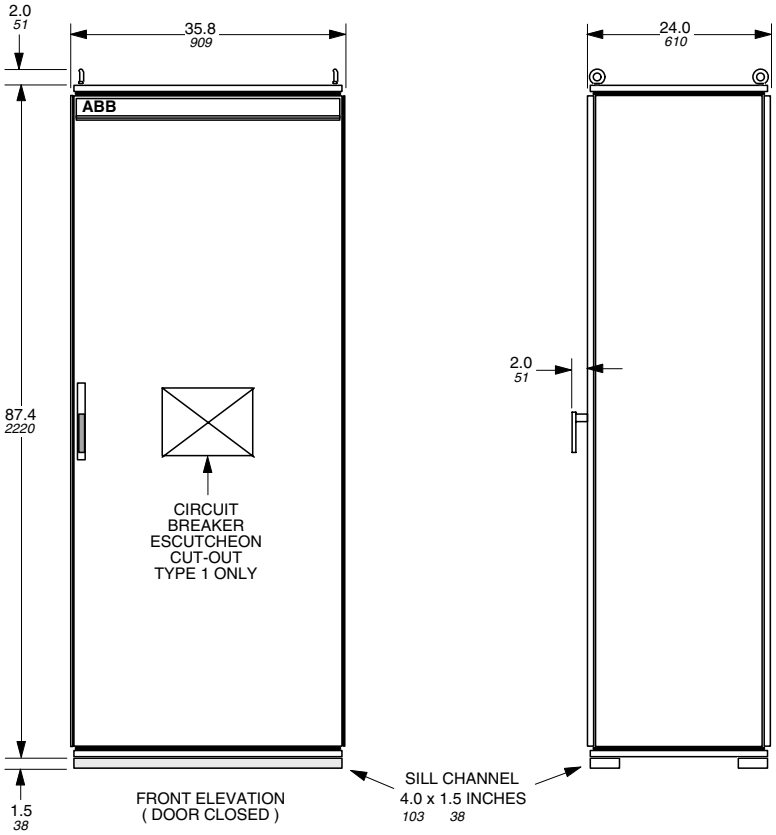
CAT.#	A	B	C	D	E	F
S1E-1	14.0 *355.6*	10.0 *254.0*	2.85 *72.39*	11.0 *279.4*	7.0 *177.8*	.312 *7.93*
S2E-1	16.0 *406.5*	11.0 *280.0*	2.85 *72.5*	13.0 *330.0*	8.0 *203.0*	.312 *7.93*
S3E-1	22.0 *559.0*	12.0 *305.0*	4.25 *108.0*	19.0 *482.0*	9.0 *229.0*	.312 *7.93*
S4E-1	30.0 *762.0*	17.5 *444.5*	4.25 *108.0*	27.0 *686.0*	14.5 *368.5*	.312 *7.93*
S5E-1	30.0 *762.0*	17.5 *444.5*	4.25 *108.0*	27.0 *686.0*	14.5 *368.5*	.312 *7.93*
S6E-1	44.0 *1118.0*	22.0 *559.0*	5.75 *146.0*	41.0 *1041.5*	19.0 *483.0*	.312 *7.93*
S7E-1	44.0 *1118.0*	22.0 *559.0*	5.75 *146.0*	41.0 *1041.5*	19.0 *483.0*	.312 *7.93*

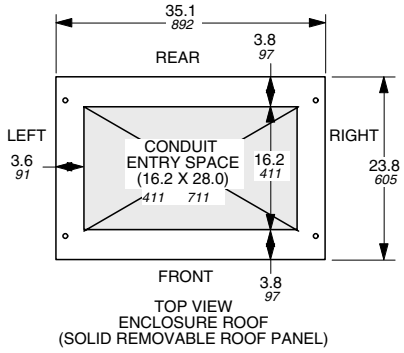
NEMA 3R, 12



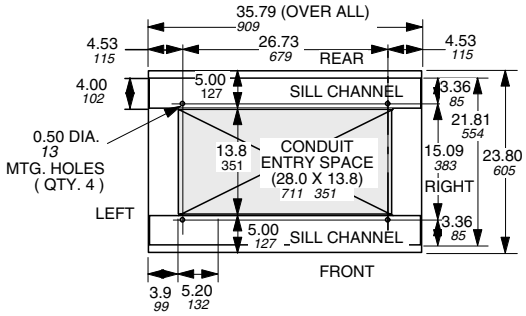
CAT.#	A	B	C	D	E	F
S1E-3R12	14.0 *355.6*	10.0 *254.0*	8.8 *223.52*	12.5 *317.50*	8.5 *215.90*	0.50 *13.7*
S2E-3R12	16.0 *406.5*	11.0 *280.0*	8.8 *224.0*	14.5 *368.5*	9.5 *242.0*	0.50 *13.7*
S3E-3R12	22.0 *559.0*	12.0 *305.0*	8.8 *224.0*	20.5 *520.5*	10.5 *267.0*	0.50 *13.7*
S4E-3R12	30.0 *762.0*	17.5 *444.5*	8.8 *224.0*	28.5 *724.0*	16.0 *406.5*	0.50 *13.7*
S5E-3R12	30.0 *762.0*	17.5 *444.5*	8.8 *224.0*	28.5 *724.0*	16.0 *406.5*	0.50 *13.7*
S6E-3R12	44.0 *1118.0*	22.0 *559.0*	10.8 *274.5*	42.5 *1080.0*	20.5 *521.0*	0.50 *13.7*
S7E-3R12	44.0 *1118.0*	22.0 *559.0*	10.8 *274.5*	42.5 *1080.0*	20.5 *521.0*	0.50 *13.7*

Approximate dimensions
S8 enclosures
NEMA 1, 3R & 12





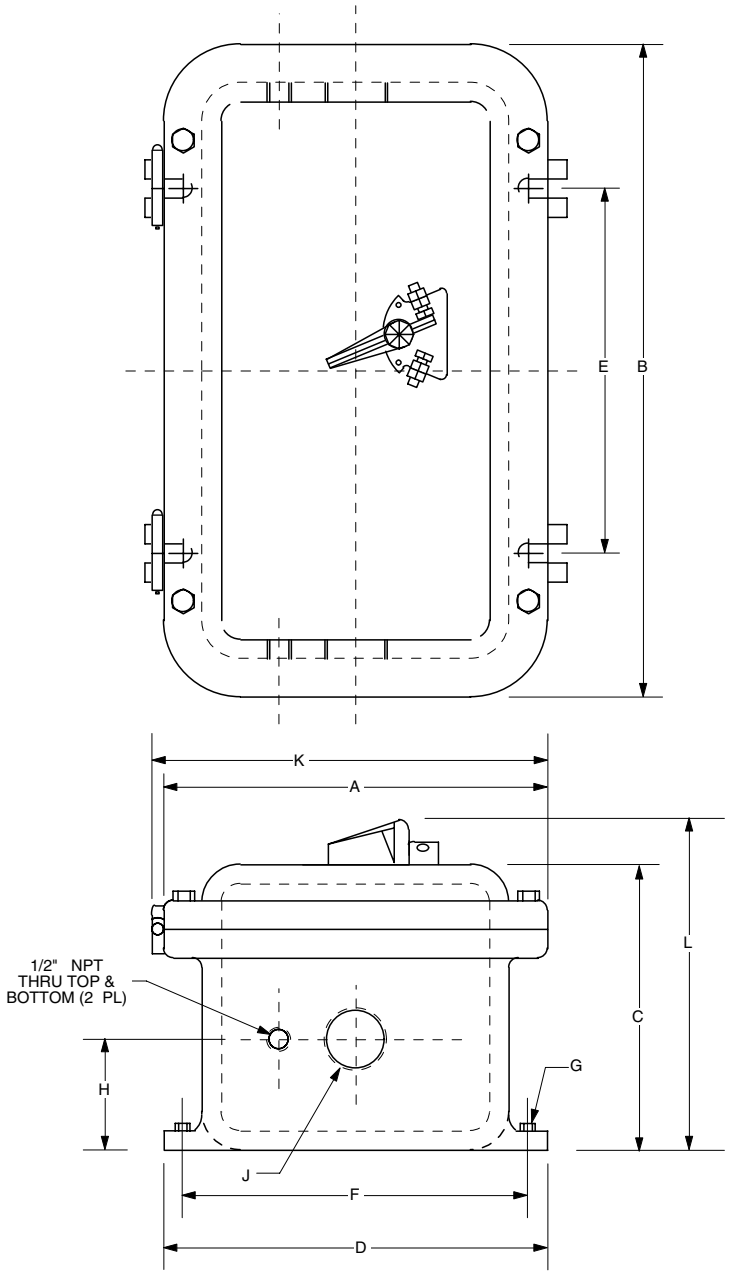
TOP VIEW
ENCLOSURE ROOF
(SOLID REMOVABLE ROOF PANEL)



BOTTOM VIEW
ENCLOSURE FLOOR
(SOLID NON-MOVABLE FLOOR PANEL)

Approximate dimensions
S1 – S7 enclosures
NEMA 7 & 9

NEMA 7 & 9



Breaker type	A	B	C	D	E	F	G	H	J	K	L	Wgt.(lbs)
S3 100A	10.00 *254.0*	17.00 *431.8*	7.44 *189.0*	10.00 *254.0*	9.50 *241.3*	9.00 *228.6*	3/8 *9.5*	2.88 *73.2*	1-1/2 *38.1*	10.31 *261.9*	8.65 *219.7*	43
S3 225A	11.50 *292.1*	22.50 *571.5*	7.56 *192.0*	11.00 *279.4*	14.50 *368.3*	9.75 *247.7*	3/8 *9.5*	3.00 *76.2*	2-1/2 *63.5*	11.81 *300.0*	8.77 *222.8*	70
S4 250A	17.00 *431.8*	25.00 *635.0*	8.50 *215.9*	18.00 *457.2*	14.38 *365.3*	15.75 *400.0*	1/2 *13*	3.13 *79.5*	2-1/2 *63.5*	17.81 *452.4*	9.92 *252.0*	124
S5 400A	17.13 *435.1*	29.13 *739.9*	7.63 *193.8*	18.00 *457.2*	18.75 *476.3*	15.75 *400.0*	1/2 *13*	2.75 *69.9*	3 *76.2*	17.94 *455.7*	9.05 *229.9*	141
S6 600A	17.00 *431.8*	35.00 *889.0*	9.63 *244.6*	18.00 *457.2*	23.00 *584.2*	15.75 *400.0*	1/2 *13*	3.75 *95.3*	4 *101.6*	17.81 *452.4*	11.05 *280.7*	203
S6 800A	17.00 *431.8*	41.00 *1041.4*	9.63 *244.6*	18.00 *457.2*	29.00 *736.6*	15.75 *400.0*	1/2 *13*	3.88 *98.6*	4 *101.6*	17.81 *452.4*	11.05 *280.7*	236
S7 1200A	17.13 *435.1*	51.13 *1298.7*	11.63 *295.4*	18.00 *457.2*	39.00 *990.6*	15.75 *400.0*	1/2 *13*	4.88 *124.0*	4 *101.6*	17.94 *455.7*	13.05 *331.5*	408

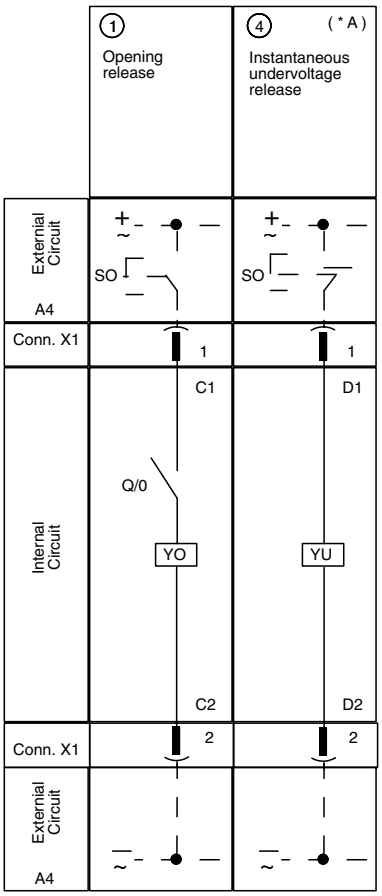
Ampacities of insulated conductors (From 1996 NEC Table 310-16)

Size AWG kcmil	Temperature rating of conductor 60° C (140° F) Types TW★ UF★	75° C (167° F) Types FEPW★ RH★, RHW★ THHW★ THW★ THWN★ XHHW★ USE★, ZW★	90° C (194° F) Types TA, TBS, SA SIS, FEP★ FEBP, MI RHH, RHW-2 THHN, THHW USE-2, XHH XHHW XHHW-2, ZW-2	60° C (140° F) Types TW★ UF★	75° C (167° F) Types★ RH★, RHW★ THHW★ THW★ THWN★ XHHW★ USE★	90° C (194° F) Types TA, TBS SA, SIS THHN★ THHW★ THW-2, THWN-2 RHH, RHW-2 USE-2 XHH, XHHW XHHW-2, SW-2	Size AWG kcmil
	Copper			Aluminum or copper-clad			
18	—	—	14	—	—	—	—
16	—	—	18	—	—	—	—
14	20★	20★	25★	—	—	—	—
12	25★	25★	30★	20★	20★	25★	12
10	30	35★	40★	25	30★	35★	10
8	40	50	55	30	40	45	8
6	55	65	75	40	50	60	6
4	70	85	95	55	65	75	4
3	85	100	110	65	75	85	3
2	95	115	130	75	90	100	2
1	110	130	150	85	100	115	1
1/0	125	150	170	100	120	135	1/0
2/0	145	175	195	115	135	150	2/0
3/0	165	200	225	130	155	175	3/0
4/0	195	230	260	150	180	205	4/0
250	215	255	290	170	205	230	250
300	240	285	320	190	230	255	300
350	260	310	350	210	250	280	350
400	280	335	380	225	270	305	400
500	320	380	430	260	310	350	500
600	355	420	475	285	340	385	600
700	385	460	520	310	375	420	700
750	400	475	535	320	385	435	750
800	410	490	555	330	395	450	800
900	435	520	585	355	425	480	900
1000	455	545	615	375	445	500	1000
1250	495	590	665	405	485	545	1250
1500	520	625	705	435	520	585	1500
1750	545	650	735	455	545	615	1750
2000	560	665	750	470	560	630	2000

★Unless otherwise specifically permitted elsewhere, the overcurrent protection for conductor types marked with a star (★) shall not exceed 15 amperes for No. 14, 20 amperes for No. 12, and 20 amperes for No. 10 copper; or 15 amperes for No. 12 and 25 amperes for No. 10 aluminum and copper-clad aluminum after any correction factors for ambient temperature and number of conductors have been applied.

Ambient temperature °C	Correction factors For ambient temperatures other than 30° C (86° F) multiply the allowable ampacities shown above by the appropriate factor shown below.						Ambient temperature °F
21 – 25	1.08	1.05	1.04	1.08	1.04	1.05	70 – 77
26 – 30	1.00	1.00	1.00	1.00	1.00	1.00	78 – 86
31 – 35	.91	.94	.96	.91	.94	.96	87 – 95
36 – 40	.82	.88	.91	.82	.88	.91	96 – 104
41 – 45	.71	.82	.87	.71	.82	.87	105 – 113
46 – 50	.58	.75	.82	.58	.75	.82	114 – 122
51 – 55	.41	.67	.76	.41	.67	.71	123 – 131
56 – 60	—	.58	.71	—	.58	.71	132 – 140
61 – 70	—	.33	.58	—	.33	.58	141 – 158
71 – 80	—	—	.41	—	—	.41	159 – 176

Wiring diagrams
Duty releases
S1①



Legend

◯ - Figure number of diagram

A4 - Example switchgear and connections for control and signalling, ouside the circuit-breaker

Q/0 - Auxiliary contacts of the circuit-breaker

SO - Pushbutton or contact for opening the circuit-breaker

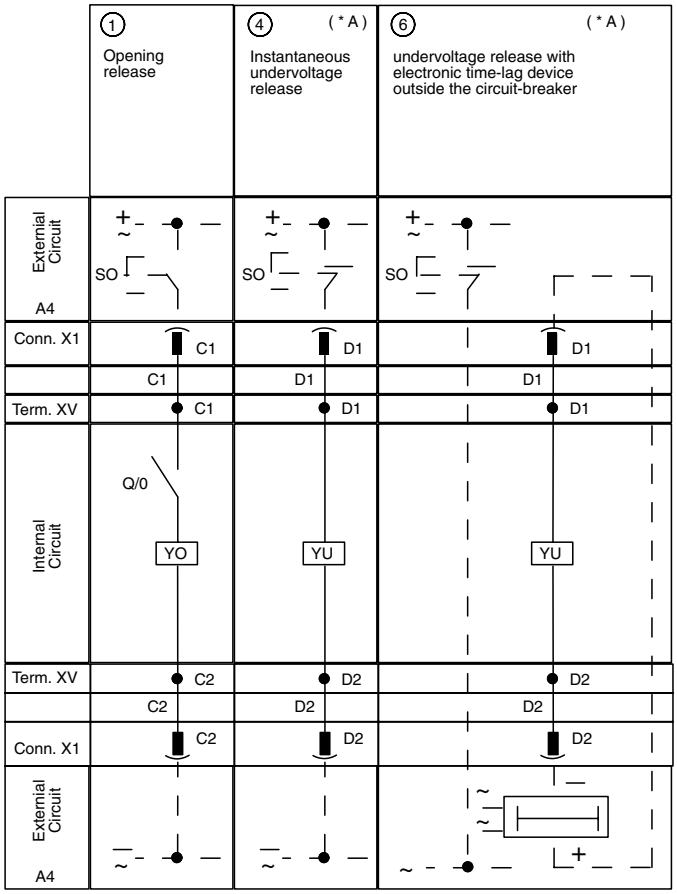
Incompatibility:
The circuits indicated in the following figures cannot be powered simultaneously on the same circuit-breaker:
1 - 4 - 5 - 6 2 - 3

Availability:
Connectors X1 and X2 are only supplied to order for circuit breakers S1 -S2.

Notes:
(* A) The undervoltage release is powered from upstream circuit-breaker or by an independent power supply: closing of the circuit-breaker is only allowed when the release is energized (the closing lock is implemented mechanically).

① Used for IEC S2.

Wiring diagrams
Duty releases
S3 – S7



Legend

○- Figure number of diagram

A4 - Example switchgear and connections for control and signalling, ouside the circuit-breaker

Q/0 - Auxiliary contacts of the circuit-breaker

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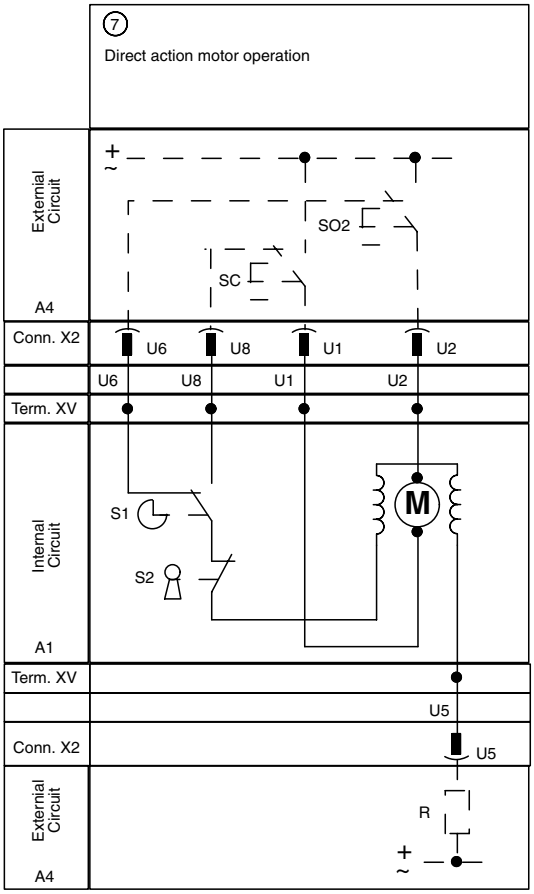
Incompatibility:
The circuits indicated in the following figures cannot be powered simultaneously on the same circuit-breaker:
1 - 4 - 5 - 6 2 - 3

Availability:
Connectors X1 and X2 are only supplied to order for circuit breakers S1 -S2.

Notes:
(* A) The undervoltage release is powered from upstream of the circuit-breaker or by an independent power supply: closing of the circuit-breaker is only allowed when the release is energised (the closing lock is implemented mechanically).

Wiring diagrams
Motor operators
S3 – S5



Legend

O- Figure number of diagram

A1 - Applications of the circuit-breaker

A4 - Example switchgear and connections for control and signalling, ouside the circuit-breaker

M - For S6 -S7: motor for opening the circuit-breaker and loading the closing springs of the circuit-breaker

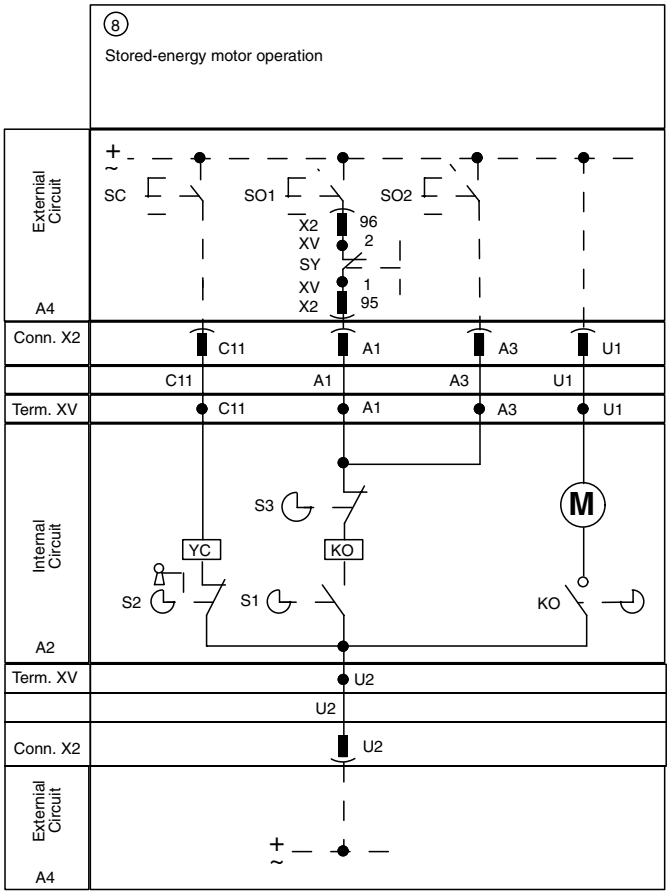
S1 - For S3 - S4 - S5: position contact operated by a circuit-breaker cam for S6 - S7: contact controlled by the motor operated cam: closes when the circuit-breaker reaches it's closed positon and opens when the circuit-breaker reaches its open position (doesn't switch when the circuit breaker goes into its tripped position)

S2 - For S3 - S4 - S5: safety contact operated by:
- key lock (if mounted)
- padlock device
- local control Allen key

SC - Pushbutton or contact for closing the circuit-breaker. For circuit breakers S3 - S4 -S5, the operating mechanism must have a time of not less than 100ms

S02 - Pushbutton or contact for opening the circuit-breaker. For circuit breakers S3 - S4 - S5, the operating mechanism must have a time of not less than 100 ms (see instructions for resetting the circuit-breaker after the releases have tripped.

Wiring diagrams
Motor operators
S6 – S7



Legend

O- Figure number of diagram

A1 - Applications of the circuit-breaker

A2 - Applications of the motor operators

A4 - Example switchgear and connections for control and signalling, outside the circuit breaker

S1 - For S3 - S4 - S5: position contact operated by a circuit breaker cam for S6 - S7: contact controlled by the motor operated cam: closes when the circuit breaker reaches its closed position and opens when the circuit breaker reaches its open position (doesn't switch when the circuit breaker goes into its tripped position)

S2 - For S3 - S4 - S5: safety contact operated by:
- key lock (if mounted
- padlock device
- local control Allen key

SC - Pushbutton or contact for closing the circuit breaker. For circuit breakers S3 - S4 - S5, the operating mechanism must have a time of not less than 100ms

SO1 Pushbutton or contact for opening the circuit breaker

S02 - For circuit breakers S3 - S4 - S5, the operating mechanism must have a time of not less than 100ms (see instructions for resetting the circuit breaker after the releases have tripped)

SY - Contact for electrical signalling of circuit breaker open due to tripping of thermomagnetic releases, YO, YO1, YU (tripped position)

KO - For S6 - S7: opening and spring-loading relay with held position make contact, released by a cam of the motor operator when the circuit breaker reaches its open position and the closing springs have been loaded

M - For S6 - S7: motor for opening the circuit breaker and loading the closing springs of the circuit breaker

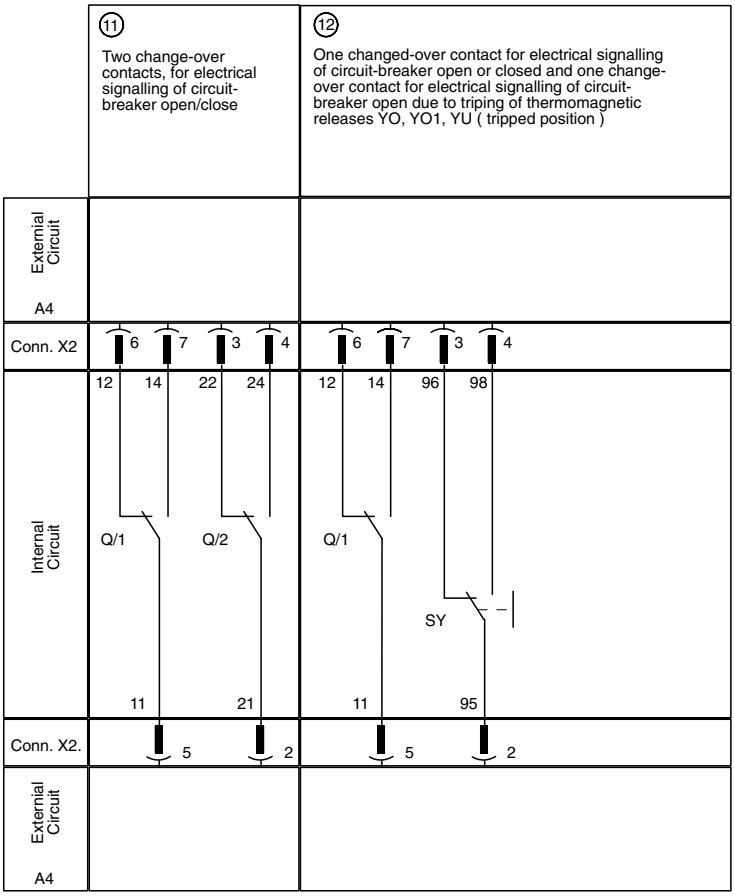
X1 - Connectors for the auxiliary circuits of the circuit breaker

X2 - For circuit breakers S1 - S2 supplied for order only

XV - Terminal block for accessories

YC - Closing release

Wiring diagrams
Auxiliary contacts
S1 ①



Legend

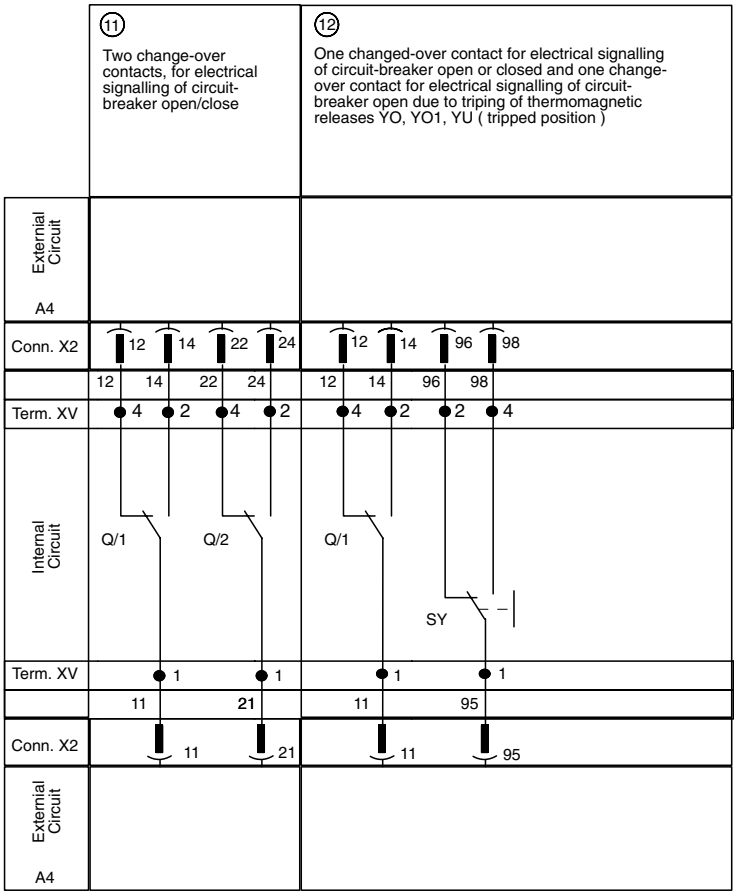
O- Figure number of diagram

A4 - Example switchgear and connections for control and signalling, outside the circuit breaker

Q/1...2 - Auxiliary contacts of the circuit breaker

SY - Contact for electrical signalling of circuit breaker open due to tripping of thermomagnetic releases YO, YO1, YU (tripped position)

① Used for IEC S2.



Legend

O- Figure number of diagram

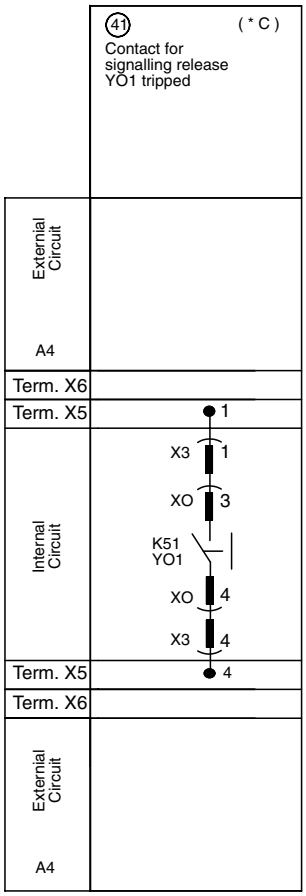
A4 - Example switchgear and connections for control and signalling, outside the circuit breaker

Q/1...2 - Auxiliary contacts of the circuit breaker

SY - Contact for electrical signalling of circuit breaker open due to tripping of thermomagnetic releases YO, YO1, YU (tripped position)

Isomax

Wiring diagrams
Auxiliary contacts
S4 – S7



Legend

O- Figure number of diagram

A4 - Example switchgear and connections for control and signalling, outside the circuit breaker

K51/YO1 - Electrical signalling of alarm for release YO1 tripped due to overcurrent or "trip test"

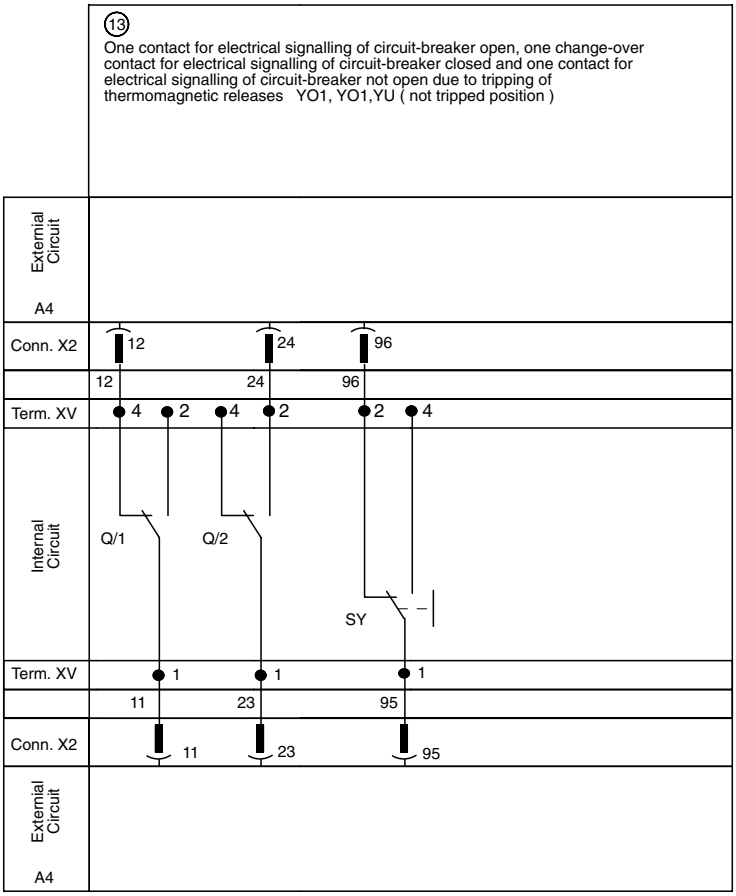
X3 - Connectors for the circuits of the microprocessor-based overcurrent release (with plug in or with-drawable circuit breakers, the connectors are pulled out at the same time as the circuit breaker

XO - Connector for the opening solenoid YO1

Incompatibility:
The circuits indicated in the following figures cannot be powered simultaneously on the same circuit breaker:
11 - 12 - 13 41 - 42 - 43 - 44

Availability:
Connectors X1 and X2 are only supplied to order for circuit breakers S1 - S2.

Notes:
(*C) The electrical signalling contact for the microprocessor-based overcurrent release, shown in Fig. 41, has the following electrical characteristics:
- ¥ rated voltage = 24V
- ¥ breaking capacity (resistive load = 3 W/VA)
- ¥ maximum interrupted current = 0.5A
- ¥ For S4 - S5 available with PR212/P release only



Legend

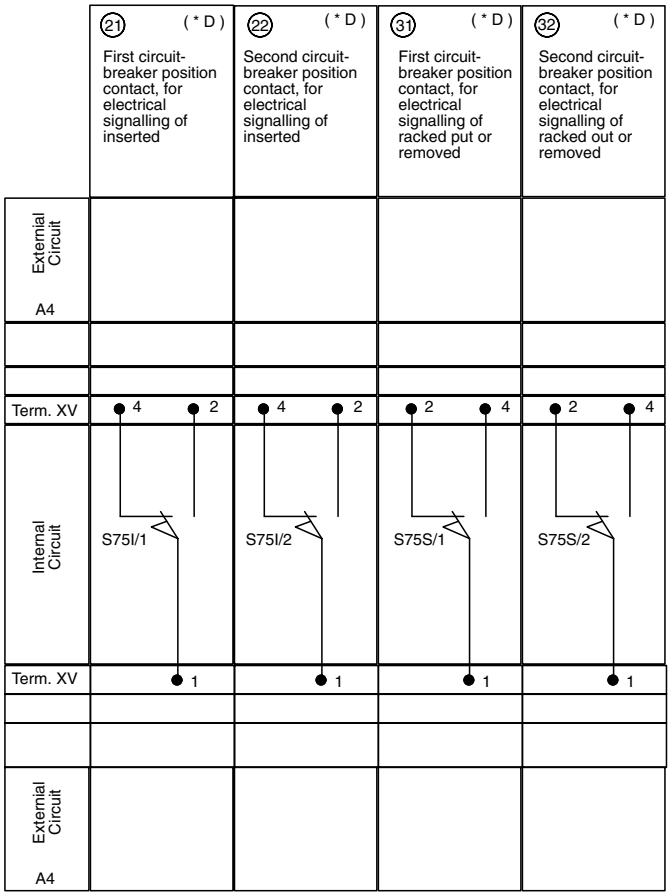
O- Figure number of diagram

A4 - Example switchgear and connections for control and signalling, outside the circuit breaker

Q/1...2 - Auxiliary contacts of the circuit breaker

SY - Contact for electrical signalling of circuit breaker open due to tripping of thermomagnetic releases YO, YO1, YU (tripped position)

Wiring diagrams
Position contacts
S3



Legend

O- Figure number of diagram

A4 - Example switchgear and connections for control and signalling, outside the circuit breaker

S75I/1...5 - Contacts for electrical signalling of circuit breaker in inserted position (only for plug in or withdrawable circuit breakers, see Note D.)

S75S/1...5 - Contacts for electrical signalling of circuit breaker in removed or racked out position (only for plug in or withdrawable circuit breakers, see Note D.)

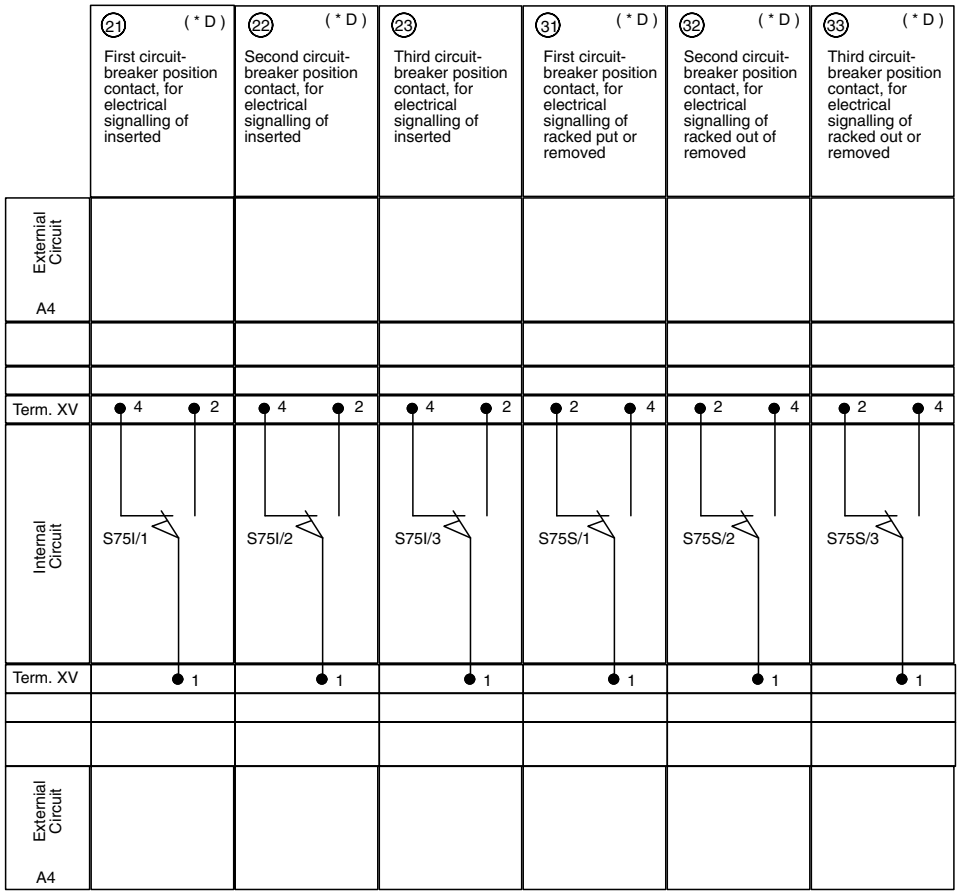
Incompatibility

The circuits indicated in the following figures cannot be powered simultaneously on the same circuit breaker:
20 - 21 - 31, 22 - 32, 23 - 33, 24 - 34, 25 - 35

Notes

(*D) The circuit breaker can be mounted with position contacts S75I and S75S in any combination up to a maximum of:
- ¥ Total of 2 contacts for S3
- ¥ Total of 3 contacts for S4, S5
- ¥ Total of 5 contacts for S6, S7

Wiring diagrams
Position contacts
S4 – S5



Legend

O- Figure number of diagram

A4 - Example switchgear and connections for control and signalling, outside the circuit breaker

S75I/1...5 - Contacts for electrical signalling of circuit breaker in inserted position (only for plug in or withdrawable circuit breakers, see Note D.)

S75S/1...5 - Contacts for electrical signalling of circuit breaker in removed or racked out position (only for plug in or withdrawable circuit breakers, see Note D.)

Incompatibility

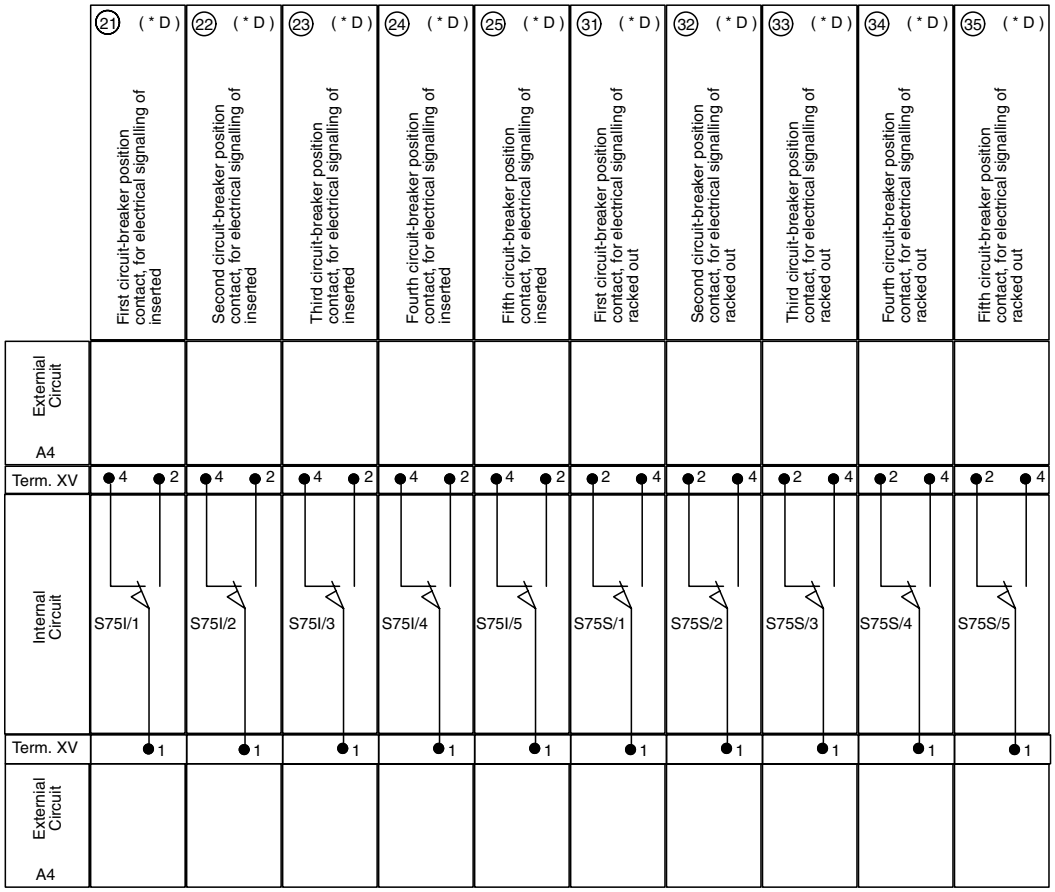
The circuits indicated in the following figures cannot be powered simultaneously on the same circuit breaker:
20 - 21 - 31, 22 - 32, 23 - 33, 24 - 34, 25 - 35

Notes

(*D) The circuit breaker can be mounted with position contacts S75I and S75S in any combination up to a maximum of:

- ¥ Total of 2 contacts for S3
- ¥ Total of 3 contacts for S4, S5
- ¥ Total of 5 contacts for S6, S7

Wiring diagrams
Position contacts
S6 – S7



Legend

O- Figure number of diagram

A4 - Example switchgear and connections for control and signalling, outside the circuit breaker

S75I/1...5 - Contacts for electrical signalling of circuit breaker in inserted position (only for plug in or withdrawable circuit breakers, see Note D.)

S75S/1...5 - Contacts for electrical signalling of circuit breaker in removed or racked out position (only for plug in or withdrawable circuit breakers, see Note D.)

Incompatibility

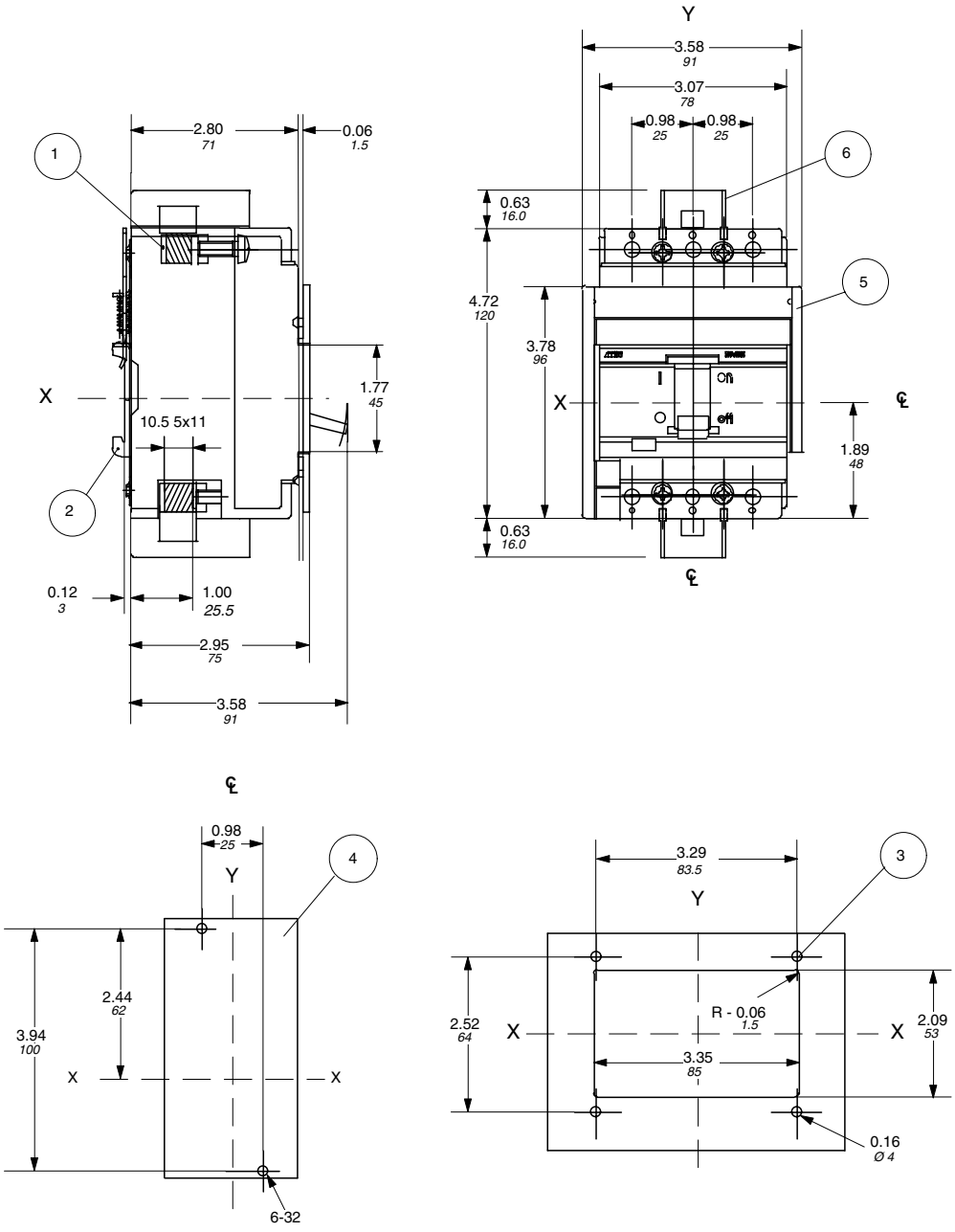
The circuits indicated in the following figures cannot be powered simultaneously on the same circuit breaker:
20 - 21 - 31, 22 - 32, 23 - 33, 24 - 34, 25 - 35

Notes

(*D) The circuit breaker can be mounted with position contacts S75I and S75S in any combination up to a maximum of:

- ¥ Total of 2 contacts for S3
- ¥ Total of 3 contacts for S4, S5
- ¥ Total of 5 contacts for S6, S7

Approximate dimensions
S1 Fixed version, front



LEGEND

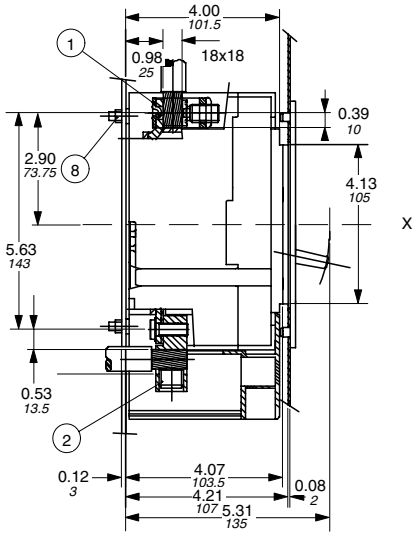
1-FRONT TERMINALS FOR CABLE OR FOR FLAT BAR
2-MOUNTING ON CHANNEL TO DIN EN 50022 (OPTIONAL)
3-COMPARTMENT DOOR SHEET STEEL DRILLING FOR FIXING THE FLANGE
4-MOUNTING ON SHEET STEEL
5-FLANGE FOR THE COMPARTMENT DOOR
6-INSULATING BARRIER

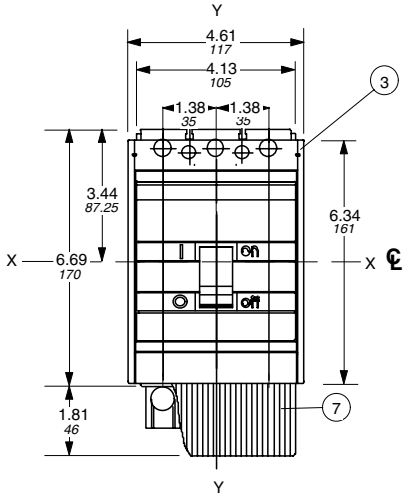
WIRE RANGE	WIRE TORQUE
14 AWG - 8 AWG	22 lb-in
6 AWG - 3 AWG	44 lb-in

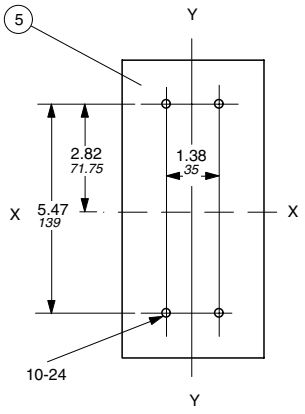
COPPER WIRE ONLY

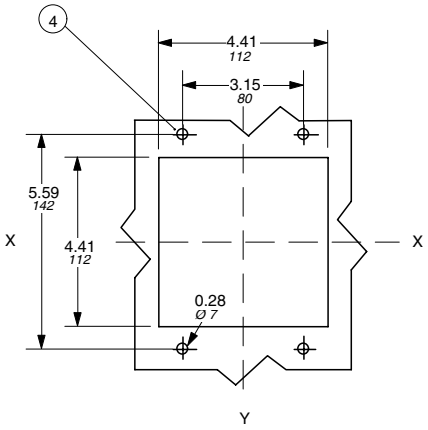
Approximate dimensions
S3 Fixed version, front

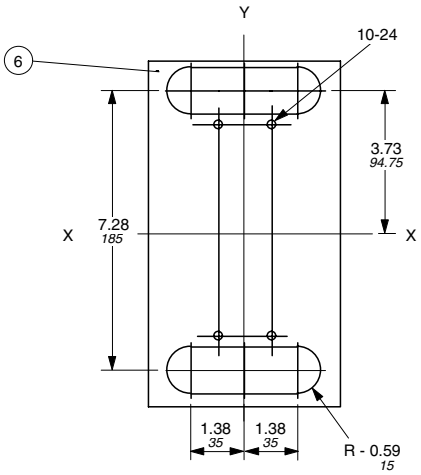
00.00 Inches
00.00 Millimeters











LEGEND

1-FRONT TERMINALS FOR CABLE CONNECTION
2-REAR TERMINALS FOR CABLE CONNECTION
3-FLANGE FOR THE COMPARTMENT DOOR
4-COMPARTMENT DOOR SHEET STEEL DRILLING FOR FIXING THE FLANGE
5-MOUNTING ON SHEET STEEL
6-MOUNTING ON SHEET STEEL WITH REAR CABLE TERMINALS
7-HIGH TERMINAL COVERS WITH IP 20 PROTECTION DEGREE
8-TIGHTENING TORQUE 17.70 lb-in

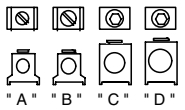
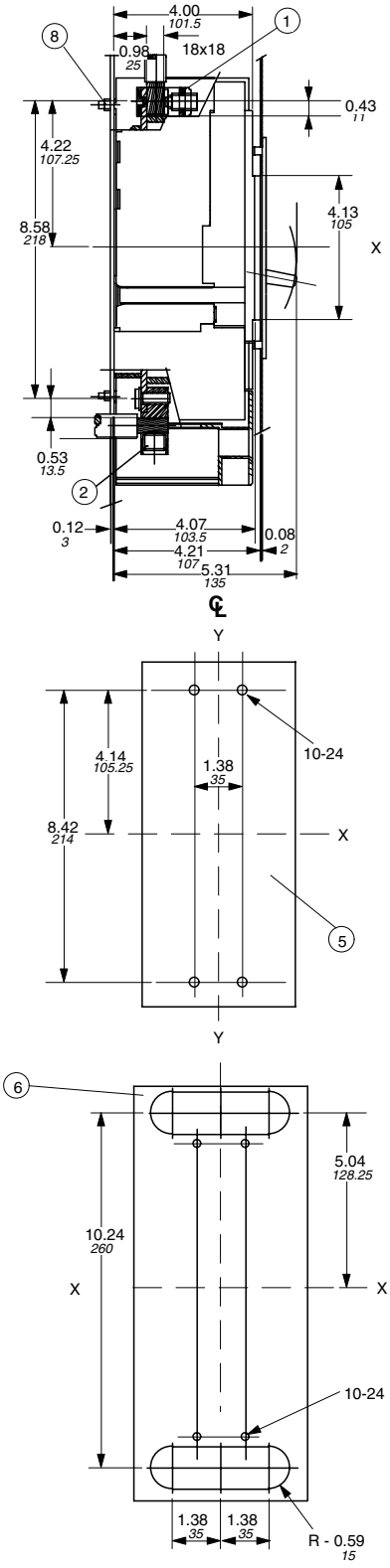
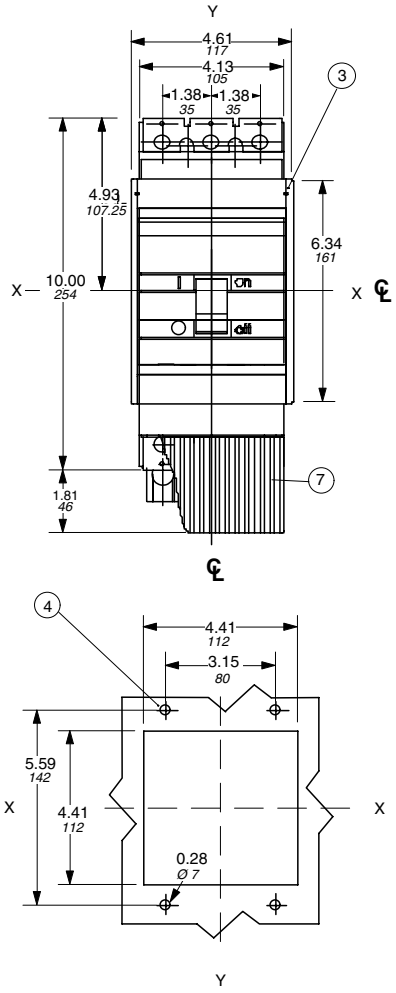


FIGURE	LUG KIT CAT. NO.	LUG NO.	TEMP.	WIRE RANGE	WIRE TORQUE	MOUNTING TORQUE	WIRE SCREW SIZE
A	K3TA, K3TA-2	D3477	75° C	14AWG - 2AWG	50 lb-in	130 lb-in	SLOT
B	K4TB, K4TB-2	D3447	75° C	14AWG - 1/0	50 lb-in	130 lb-in	SLOT
C	K4TC, K4TC-2	D3449	75° C	2AWG - 4/0	120 lb-in	150 lb-in	3/16
D	K4TD, K4TD-2	D3448	75° C	4AWG - 300kcmil	275 lb-in	150 lb-in	1/4

Approximate dimensions
S4 Fixed version, front





LEGEND

1-FRONT TERMINALS FOR CABLE CONNECTION
2-REAR TERMINALS FOR CABLE CONNECTION
3-FLANGE FOR THE COMPARTMENT DOOR
4-COMPARTMENT DOOR SHEET STEEL DRILLING FOR FIXING THE FLANGE
5-MOUNTING ON SHEET STEEL
6-MOUNTING ON SHEET STEEL REAR CABLE TERMINALS
7-HIGH TERMINAL COVERS WITH IP 20 PROTECTION DEGREE
8-TIGHTENING TORQUE 17.70 lb-in

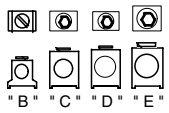
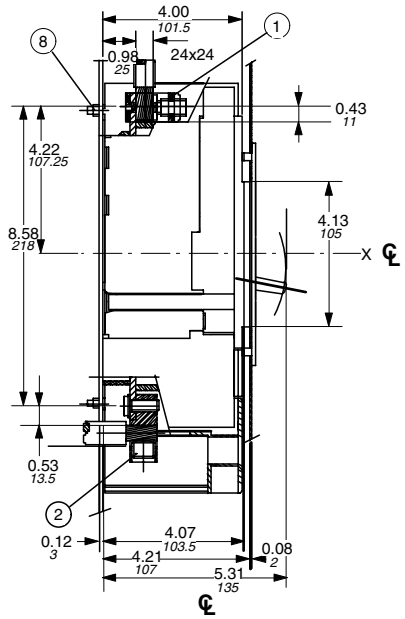
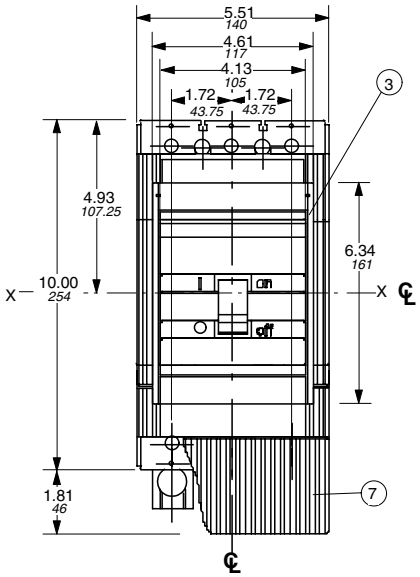


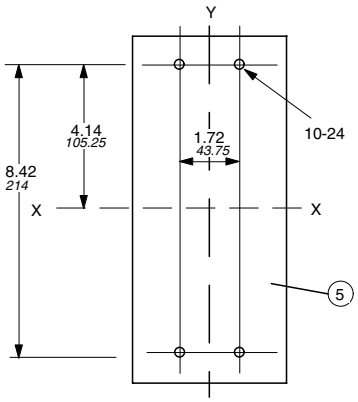
FIGURE	LUG KIT CAT. NO.	LUG NO.	TEMP.	WIRE RANGE	WIRE TORQUE	MOUNTING TORQUE	WIRE SCREW SIZE
A	K4TB, K4TB-2	D3447	75° C	14AWG - 1/0	50 lb-in	130 lb-in	SLOT
B	K4TC, K4TC-2	D3449	75° C	2AWG - 4/0	120 lb-in	150 lb-in	3/16
C	K4TD, K4TD-2	D3448	75° C	4AWG - 300 kcmil	275 lb-in	150 lb-in	1/4
D	K4TE, K4TE-2	D3472	75° C	6AWG - 350kcmil	275 lb-in	150 lb-in	5/16

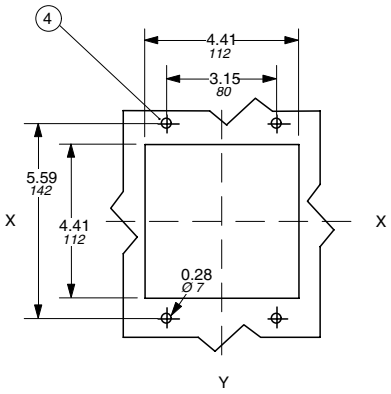
Approximate dimensions
S5 Fixed version, front

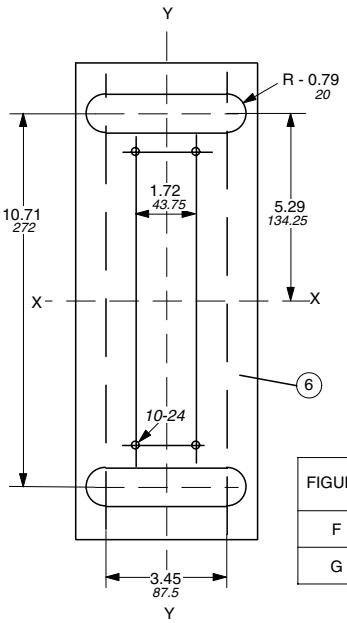
00.00 Inches
00.00 Millimeters











LEGEND

1-FRONT TERMINALS FOR CABLE CONNECTION
2-REAR TERMINALS FOR CABLE CONNECTION
3-FLANGE FOR THE COMPARTMENT DOOR
4-COMPARTMENT DOOR SHEET STEEL DRILLING FOR FIXING THE FLANGE
5-MOUNTING ON SHEET STEEL
6-MOUNTING ON SHEET STEEL REAR CABLE TERMINALS
7-HIGH TERMINAL COVERS WITH IP 20 PROTECTION DEGREE
8-TIGHTENING TORQUE 17.70 lb-in

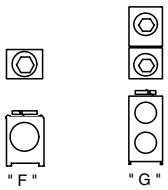
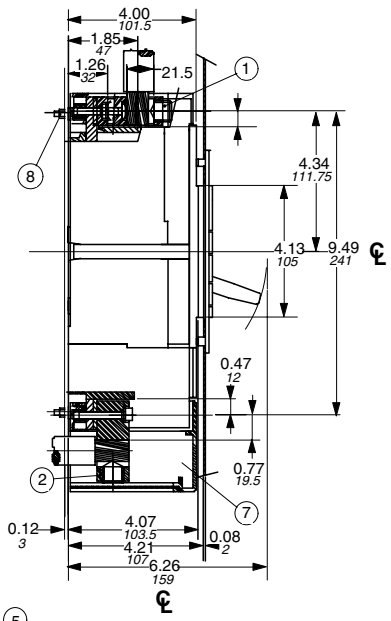
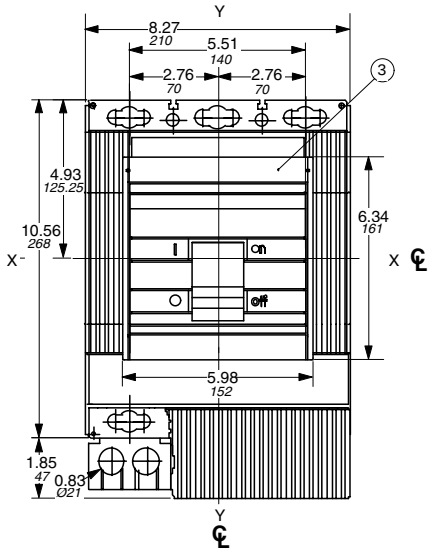
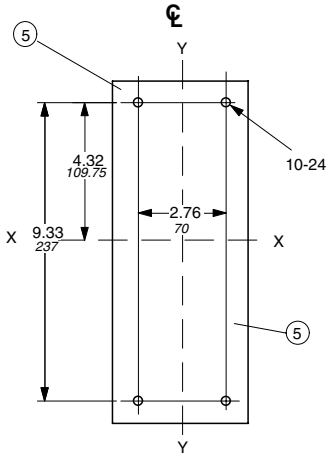


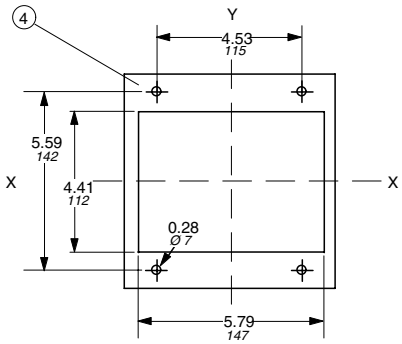
FIGURE	LUG KIT CAT. NO.	LUG NO.	TEMP.	WIRE RANGE	WIRE TORQUE	MOUNTING TORQUE	WIRE SCREW SIZE
F	K5TF, K5TF-2	D3450	75° C	250 - 500 kcmil	375 lb-in	175 lb-in	3/8
G	K5TG, K5TG-2	D3484	75° C	3/0 - 250 kcmil (2)	275 lb-in	175 lb-in	5/16

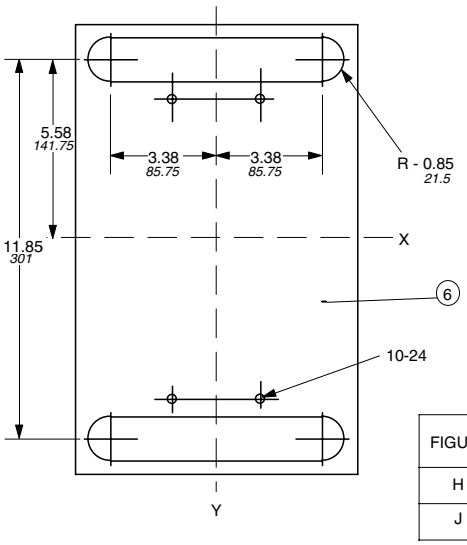
Approximate dimensions
S6 Fixed version, front











LEGEND

1-FRONT TERMINALS FOR CABLE PROTECTION
2-REAR TERMINALS FOR CABLE CONNECTION
3-FLANGE FOR THE COMPARTMENT DOOR
4-COMPARTMENT DOOR SHEET STEEL DRILLING TEMPLATE
5-MOUNTING ON SHEET STEEL
6-MOUNTING ON SHEET STEEL REAR CABLE TERMINALS
7-HIGH TERMINAL COVERS WITH IP 20 PROTECTION DEGREE
8-TIGHTENING TORQUE 17.70 lb-in

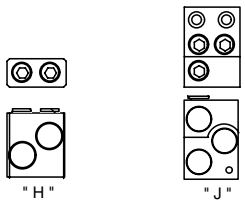
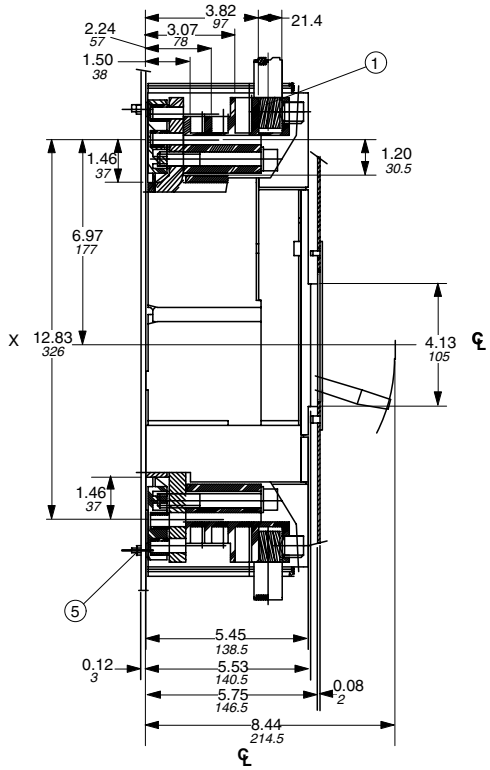
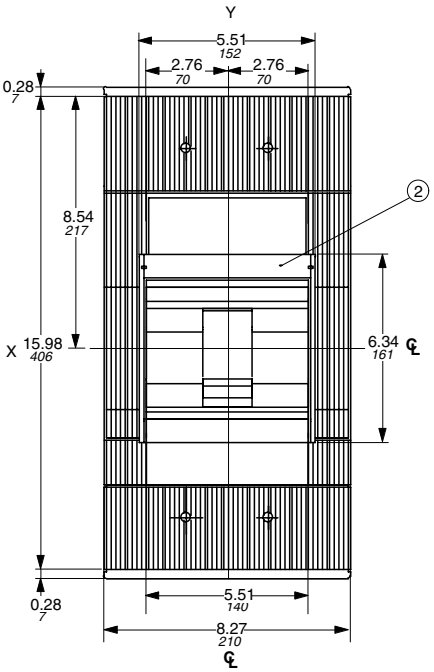


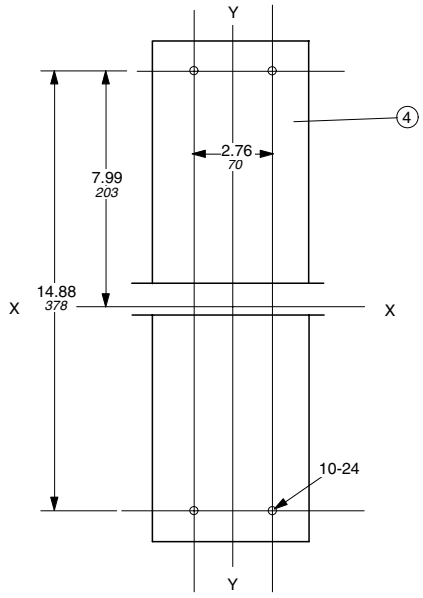
FIGURE	LUG KIT CAT. NO.	LUG NO.	TEMP.	WIRE RANGE	WIRE TORQUE	MOUNTING TORQUE	WIRE SCREW SIZE
H	K6TH, K6TH-2	D2957	90° C	250 - 500 kcmil (2)	275 lb-in	85 lb-in	5/16
J	K6TJ, K6TJ-2	D2958	90° C	3/0 - 400 kcmil (3)	375 lb-in	110 lb-in	3/8

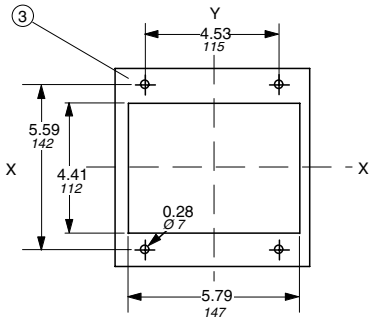
Approximate dimensions
S7 Fixed version, front

00.00 Inches
00.00 Millimeters



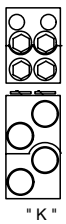






LEGEND

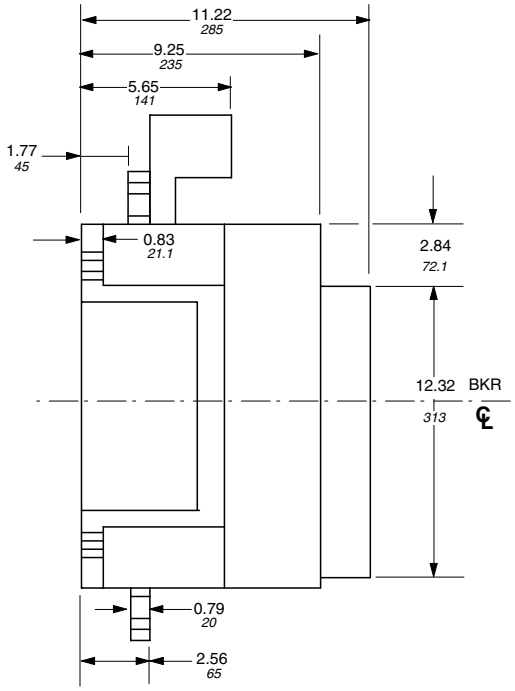
1-FRONT TERMINALS FOR CABLE CONNECTION
2-FLANGE FOR THE COMPARTMENT DOOR
3-COMPARTMENT DOOR SHEET STEEL DRILLING TEMPLATE
4-MOUNTING ON SHEET STEEL
5-TIGHTENING TORQUE 17.70 lb-in

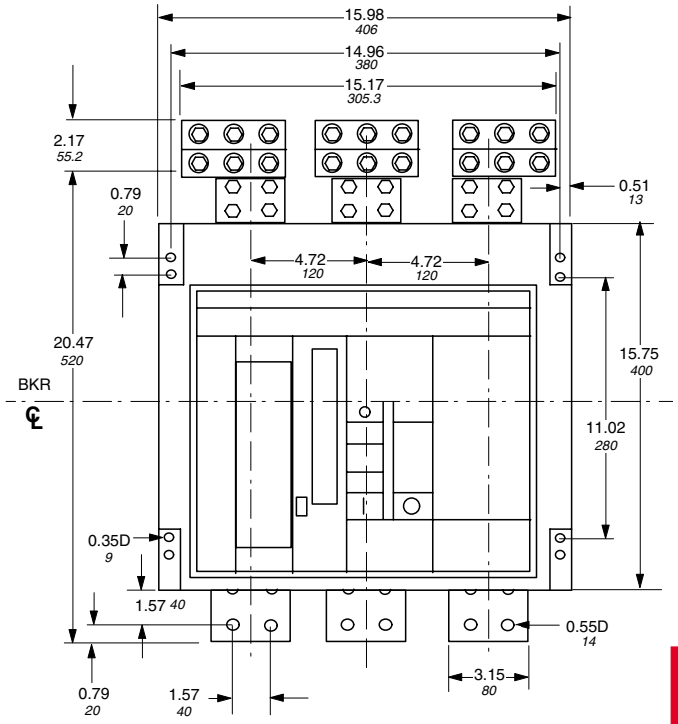


" K "

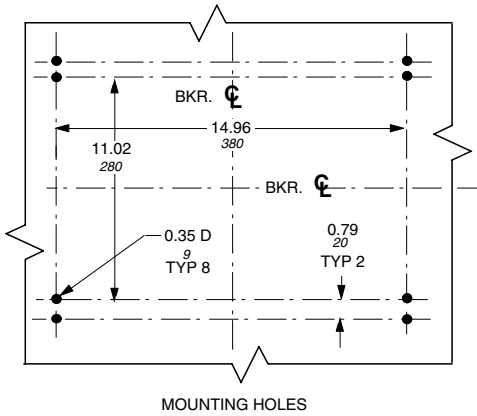
FIGURE	LUG KIT CAT. NO.	LUG NO.	TEMP.	WIRE RANGE	WIRE TORQUE	MOUNTING TORQUE	WIRE SCREW SIZE
K	K7TK, K7TK-2	D2959	90° C	4/0 - 500 kcmil (4)	375 lb-in	375 lb-in	3/8

Approximate dimensions
S8, fixed version, front
1600A / 2000A / 2500A

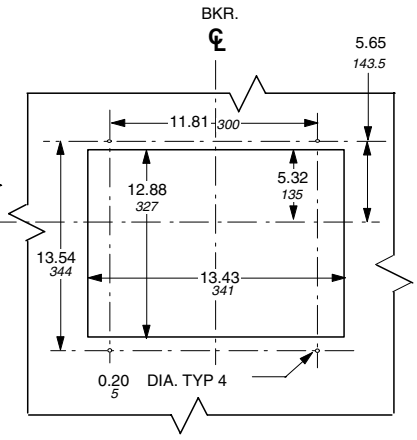




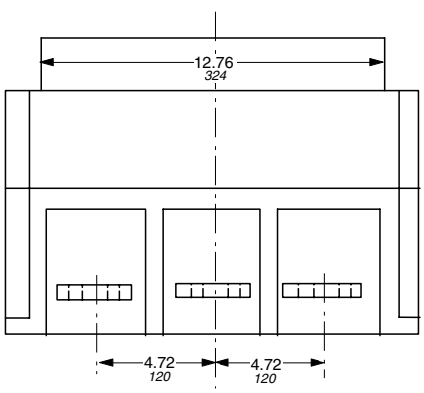
BREAKER



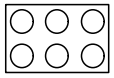
MOUNTING HOLES



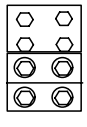
ESCUTCHEON CUT-OUT



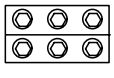
1600A LUG



2500A LUG



"L"



"M"

(2500A LUGS SHOWN ON BREAKER)

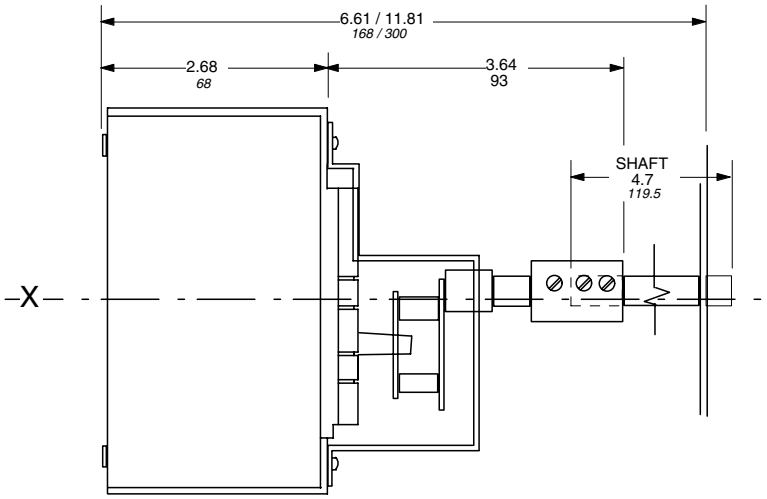
FIGURE	LUG KIT CAT. NO.	LUG NO.	TEMP.	WIRE RANGE	WIRE TORQUE	MOUNTING TORQUE	WIRE SCREW SIZE
L	K8TL	D1922	90° C	1/0 - 750 kcmil (4)	500 lb-in	500 lb-in	1/2
M	K8TM	D3185, D3186, D3187	90° C	1/0 - 750 kcmil (6)	500 lb-in	500 lb-in	1/2

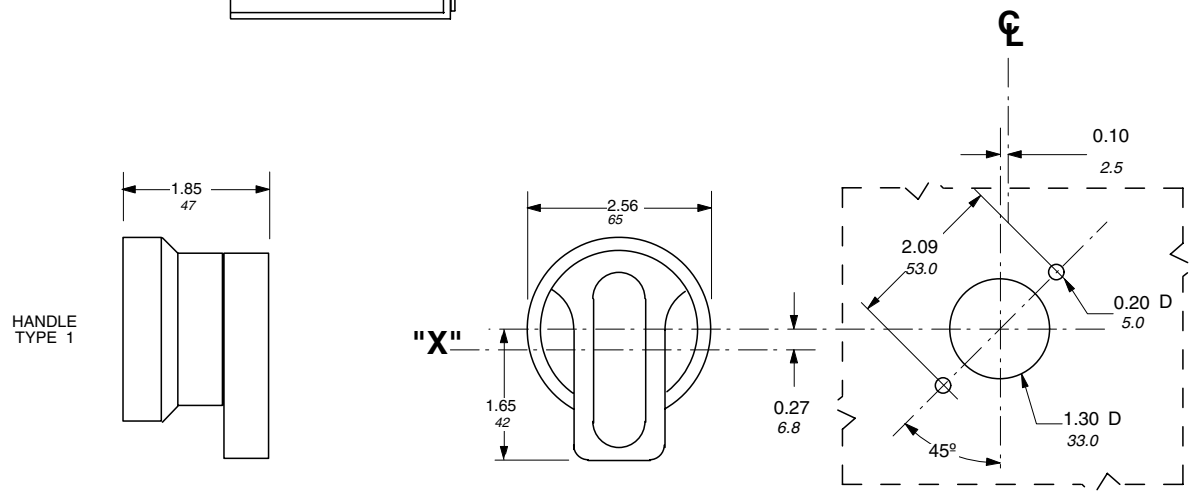
NOTE: Lugs are interchangeable and may be ordered as required by the installed wire gauge.

Approximate dimensions

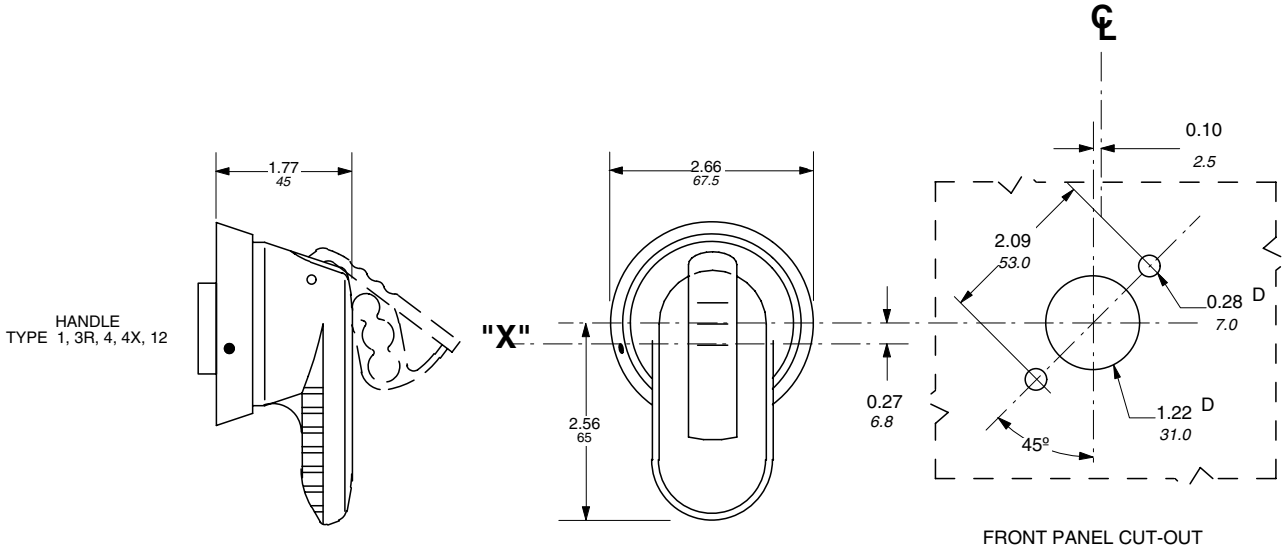
Variable depth handle mechanism, S1
Type 1, 3R, 4, 4X, 12

00.00 Inches
00.00 Millimeters





FRONT PANEL CUT-OUT

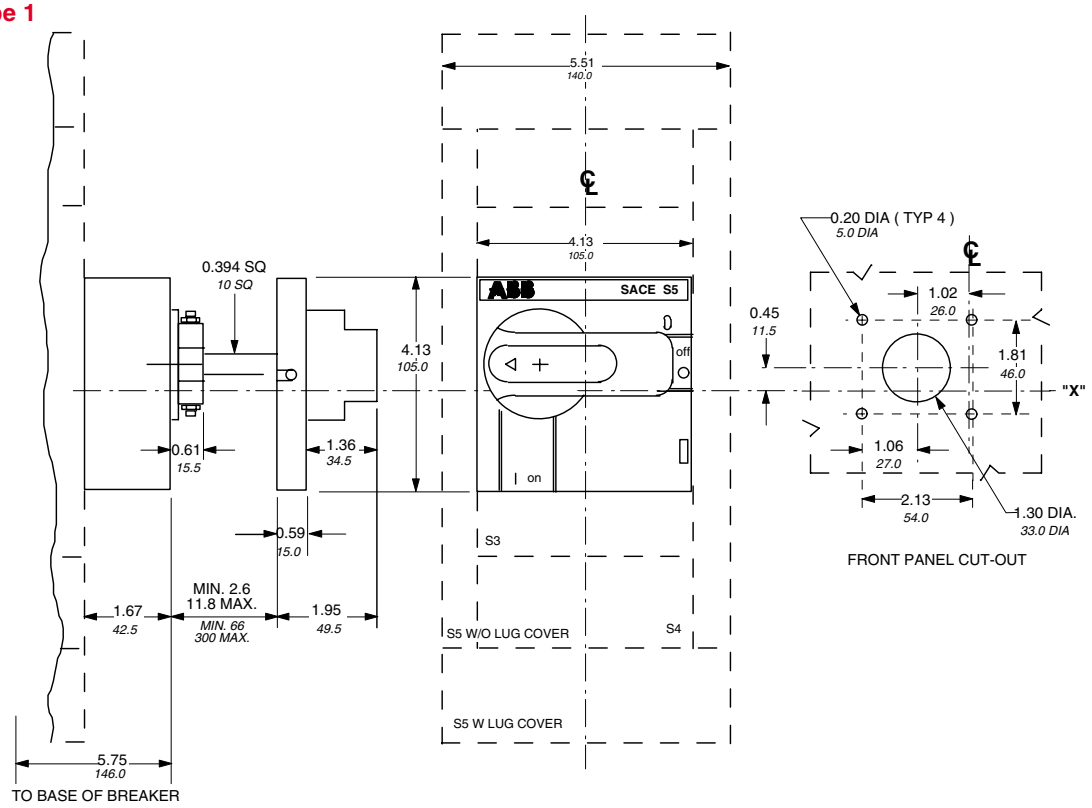


FRONT PANEL CUT-OUT

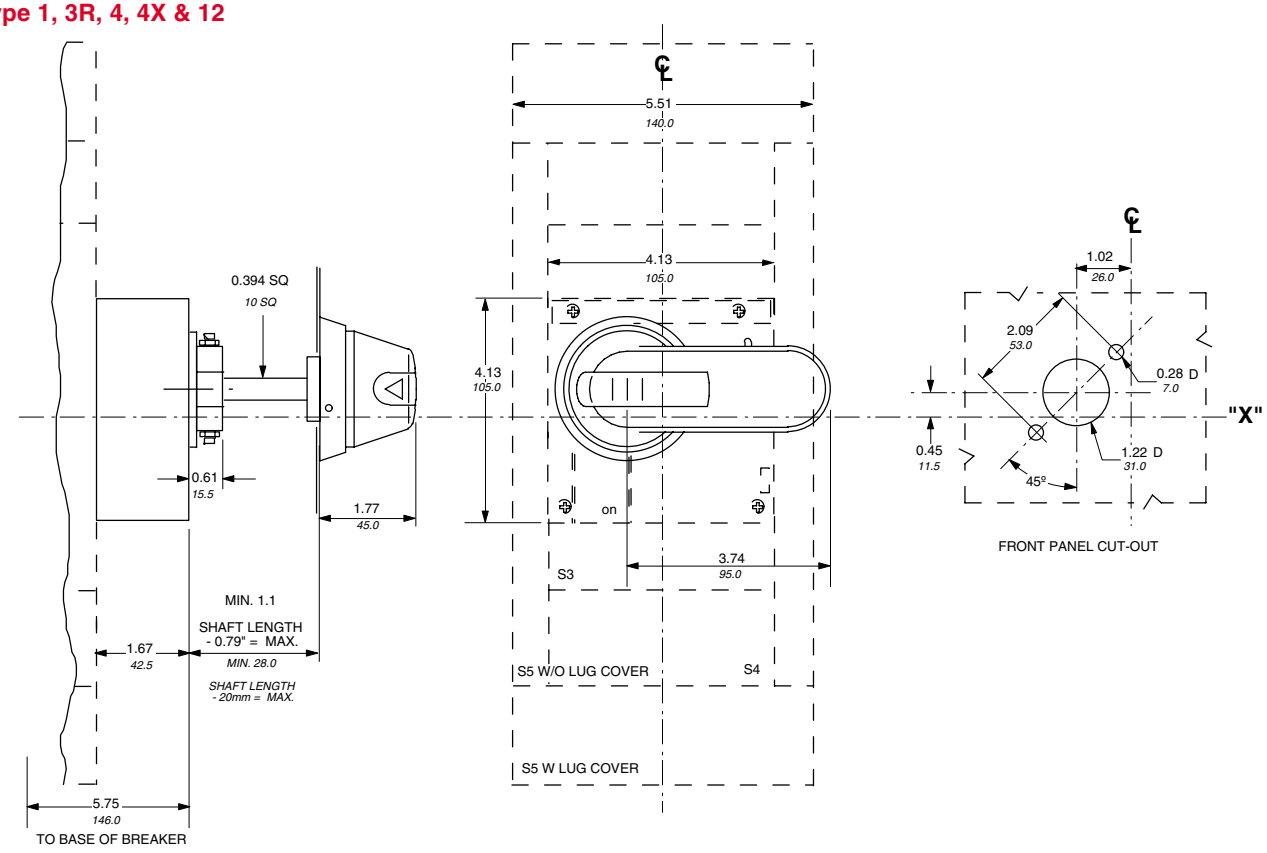
Isomax

Approximate dimensions
Variable depth handle mechanism, S3 – S5

Variable depth handle mechanism
S3 – S5, Type 1



Variable depth handle mechanism
S3 – S5, Type 1, 3R, 4, 4X & 12

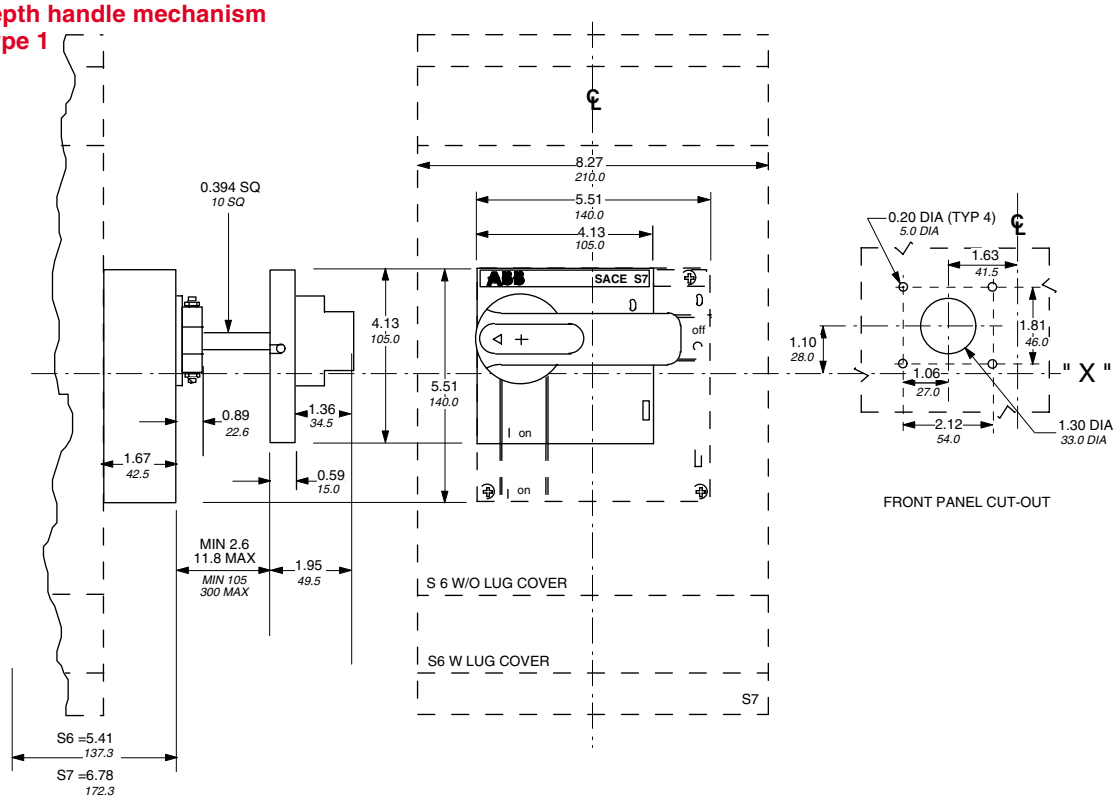


Isomax

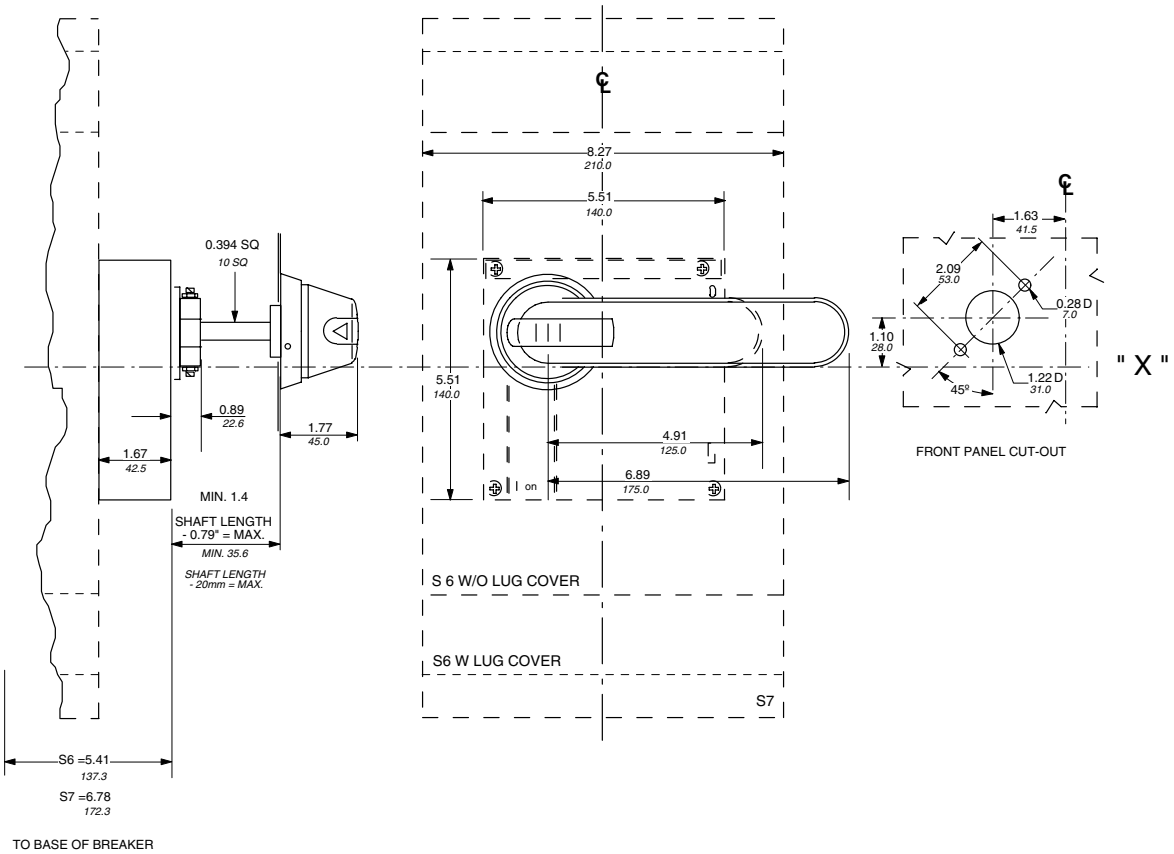
Approximate dimensions
Variable depth handle mechanism, S6 – S7

00.00 Inches
00.00 Millimeters

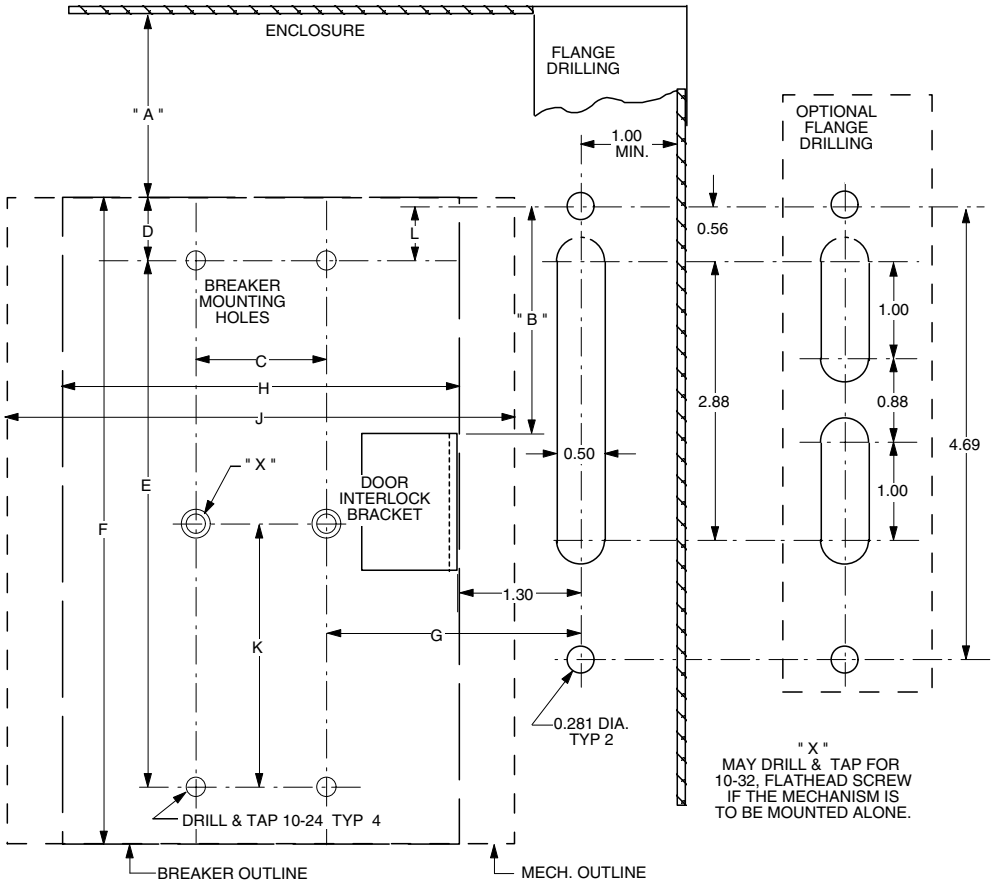
Variable depth handle mechanism S6 – S7, Type 1



Variable depth handle mechanism S6 – S7, Type 1, 3R, 4, 4X & 12



Approximate dimensions
S1 - S6 Flange handle, shaft operated

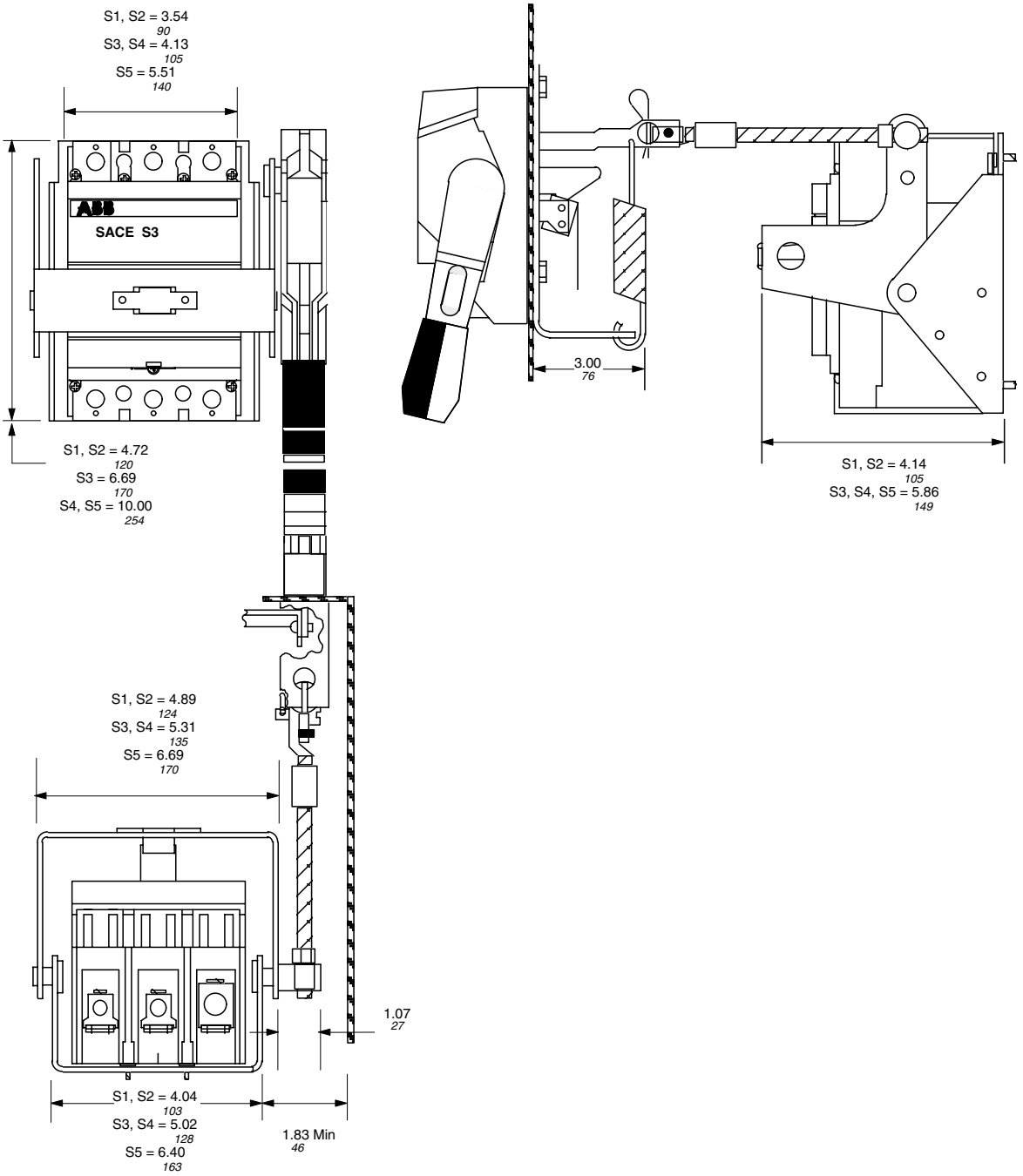


NOTES:
1. " A " DIM. IS THE WIRING BENDING SPACE AS REQUIRED BY THE NATIONAL ELECTRIC CODE.
2. " B " DIM. IS 2.340 in. IF ENCLOSURE DOES NOT HAVE A SAFETY DOOR INTERLOCK, AND 1.500 in. IF IT DOES HAVE A SAFETY DOOR INTERLOCK.

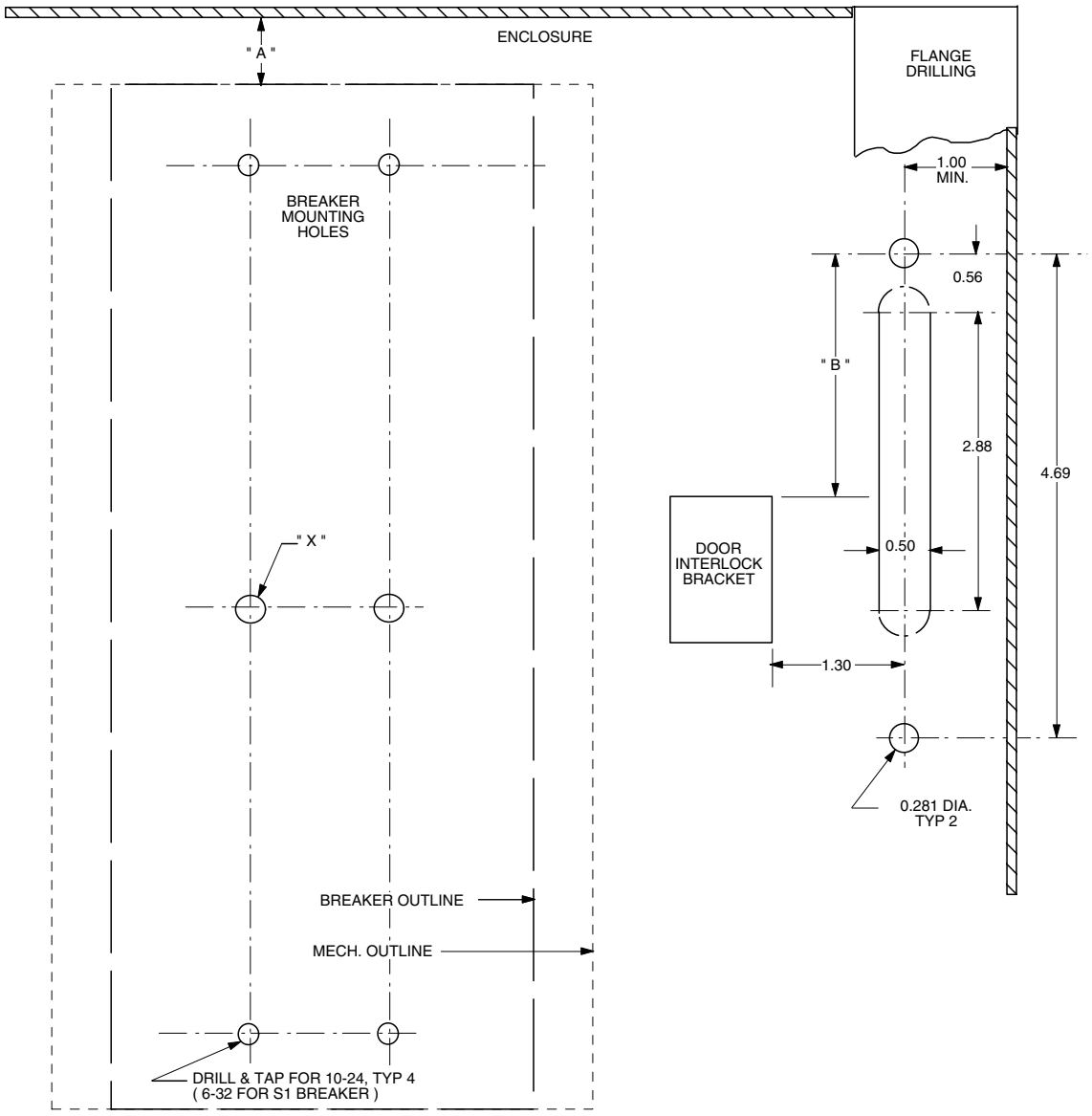
FRAME	C	D	E	F	G	H	J	K	L
S1	0.98	0.39	3.94	4.72	2.53	3.07	4.89	1.97	-.97
S2	1.18	0.39	3.94	4.72	2.53	3.54	4.89	1.97	-.97
S3	1.38	5.47	5.47	6.69	2.64	4.13	5.31	2.73	-.59
S4	1.38	8.43	8.43	10.00	2.64	4.13	5.31	4.22	+.76
S5	1.72	8.43	8.43	10.00	3.16	5.51	6.69	4.22	+.76
S6	2.76	9.33	9.33	10.55	4.41	8.27	10.36	4.66	+1.61

Approximate dimensions
Flange handle, shaft operated

00.00 Inches
00.00 Millimeters



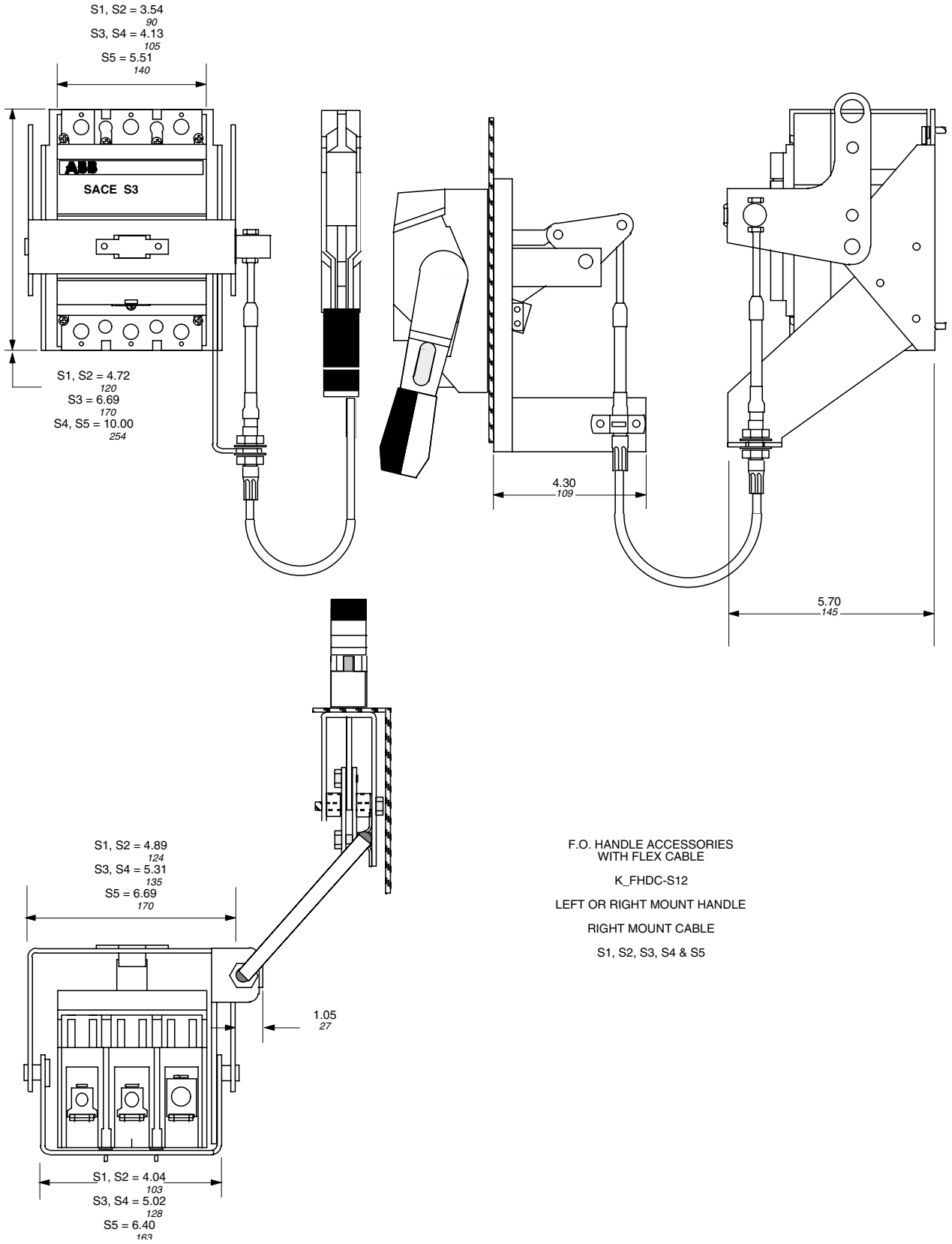
Approximate dimensions
S1 – S5 Flange handle, cable operated



NOTES:
1. " A " DIM. IS THE WIRING BENDING SPACE AS REQUIRED BY THE NATIONAL ELECTRIC CODE.
2. " B " DIM. IS 2.340 in. IF ENCLOSURE DOES NOT HAVE A SAFETY DOOR INTERLOCK, AND 1.500 in. IF IT DOES HAVE A SAFETY DOOR INTERLOCK.
3. " X " MAY DRILL & TAP FOR 10-32, FLATHEAD SCREW IF THE MECHANISM IS TO BE MOUNTED ALONE

Approximate dimensions
Flange handle, cable operated

00.00 Inches
00.00 Millimeters



F.O. HANDLE ACCESSORIES
WITH FLEX CABLE

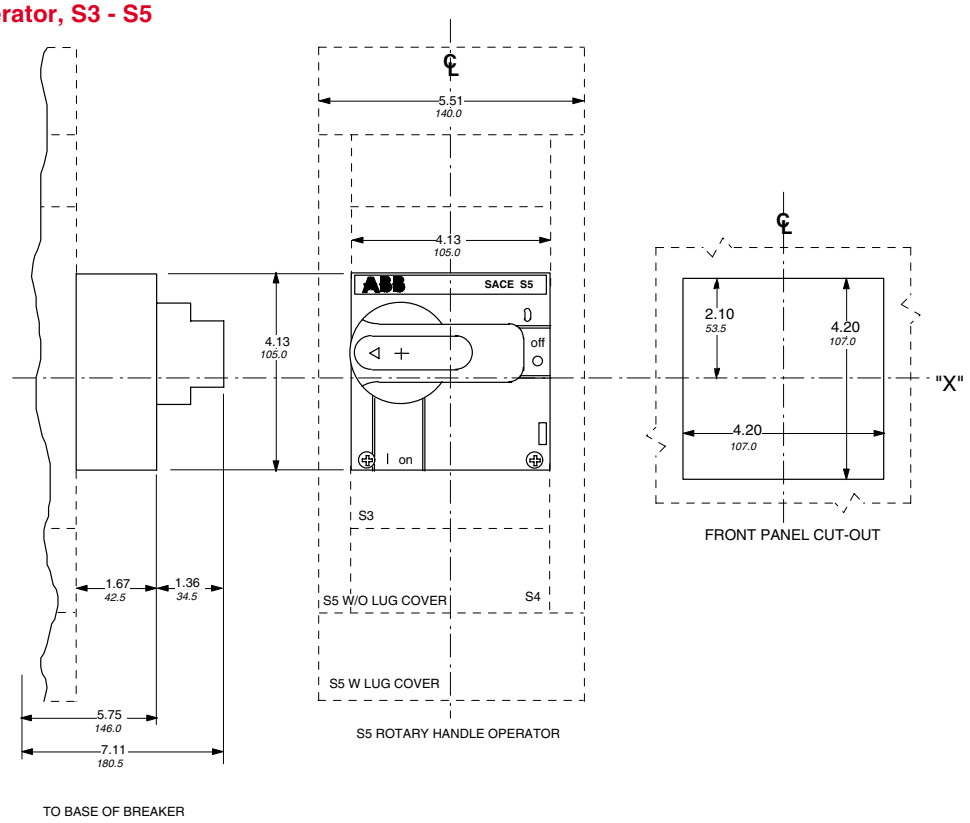
K_FHDC-S12

LEFT OR RIGHT MOUNT HANDLE

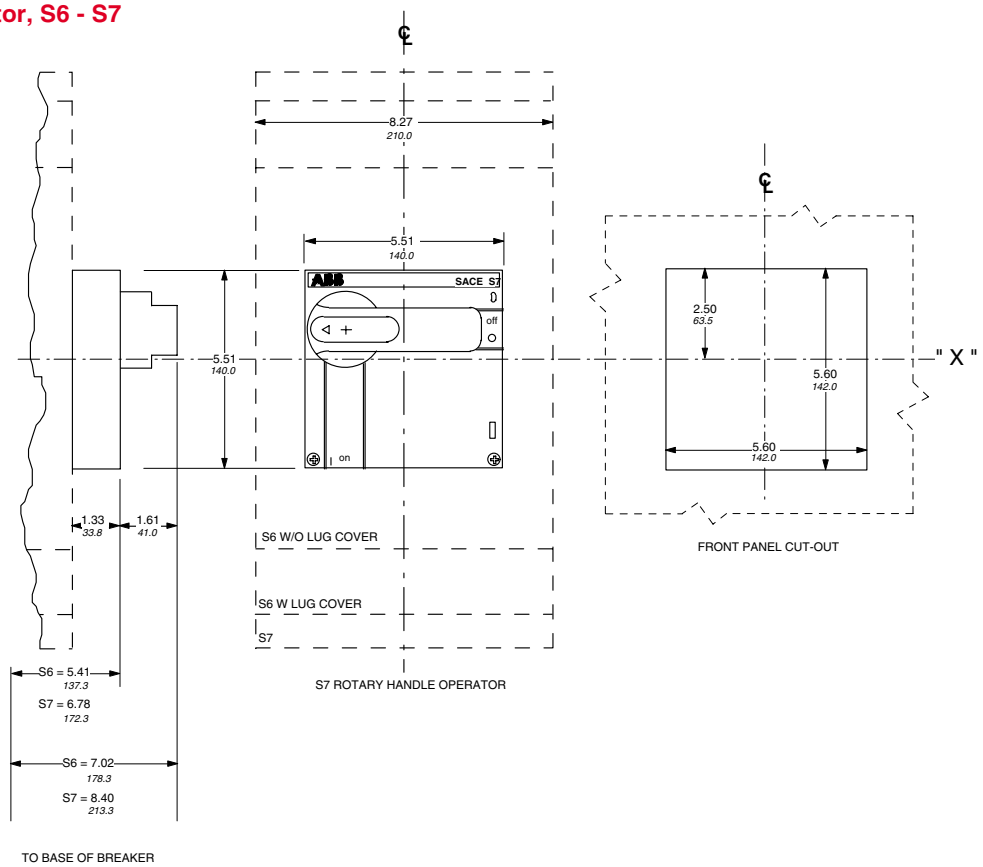
RIGHT MOUNT CABLE

S1, S2, S3, S4 & S5

Approximate dimensions
Rotary handle operator, S3 - S5



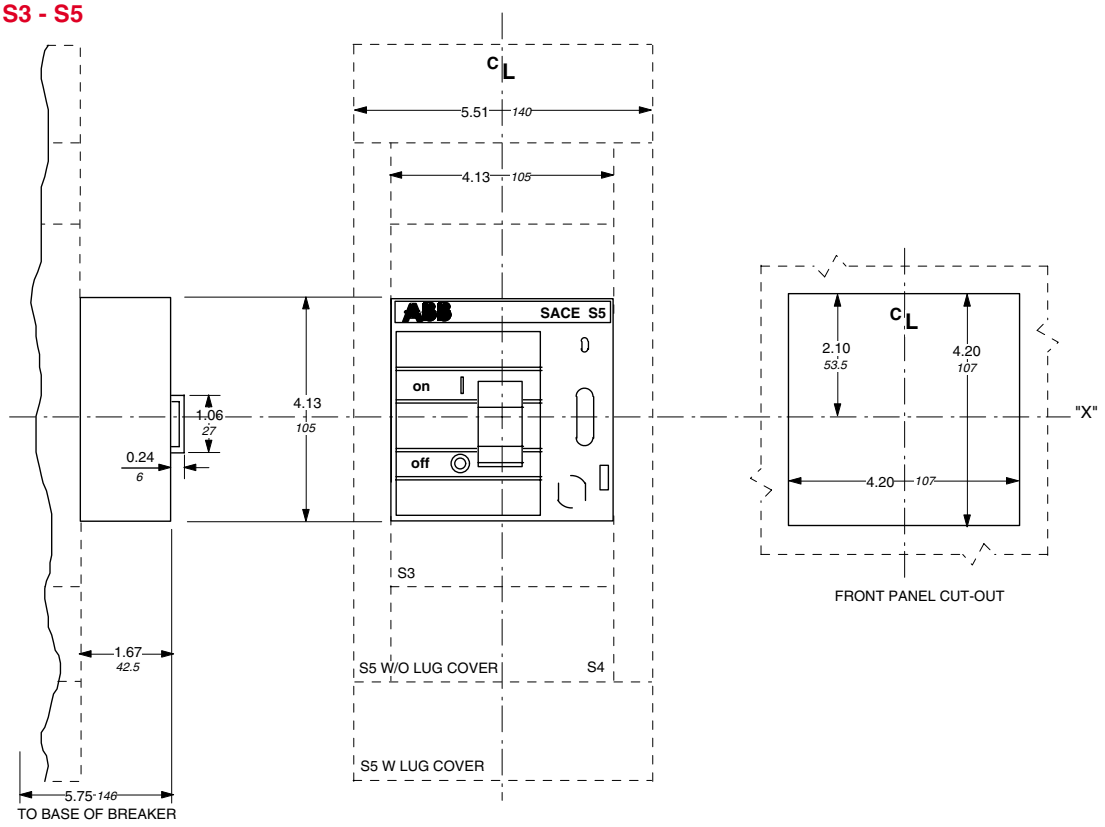
Rotary handle operator, S6 - S7



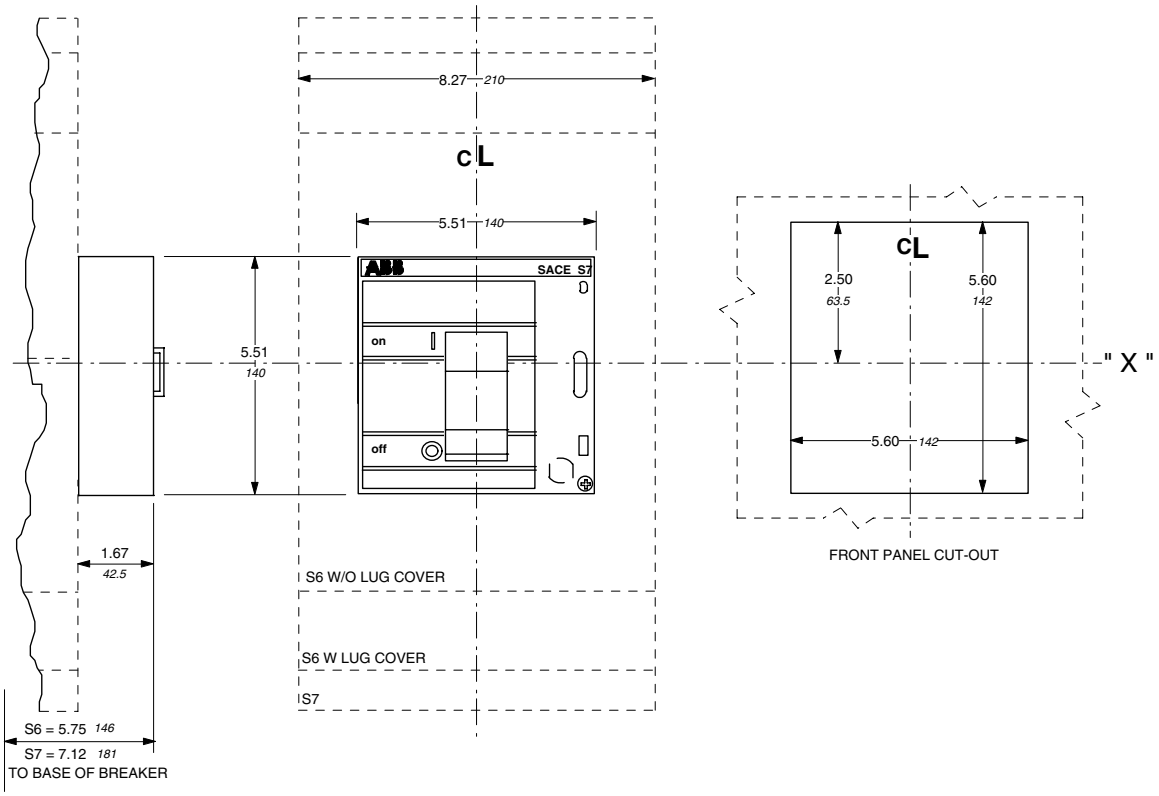
Approximate dimensions
Locking devices, S3 - S7

00.00 Inches
00.00 Millimeters

Locking device, S3 - S5

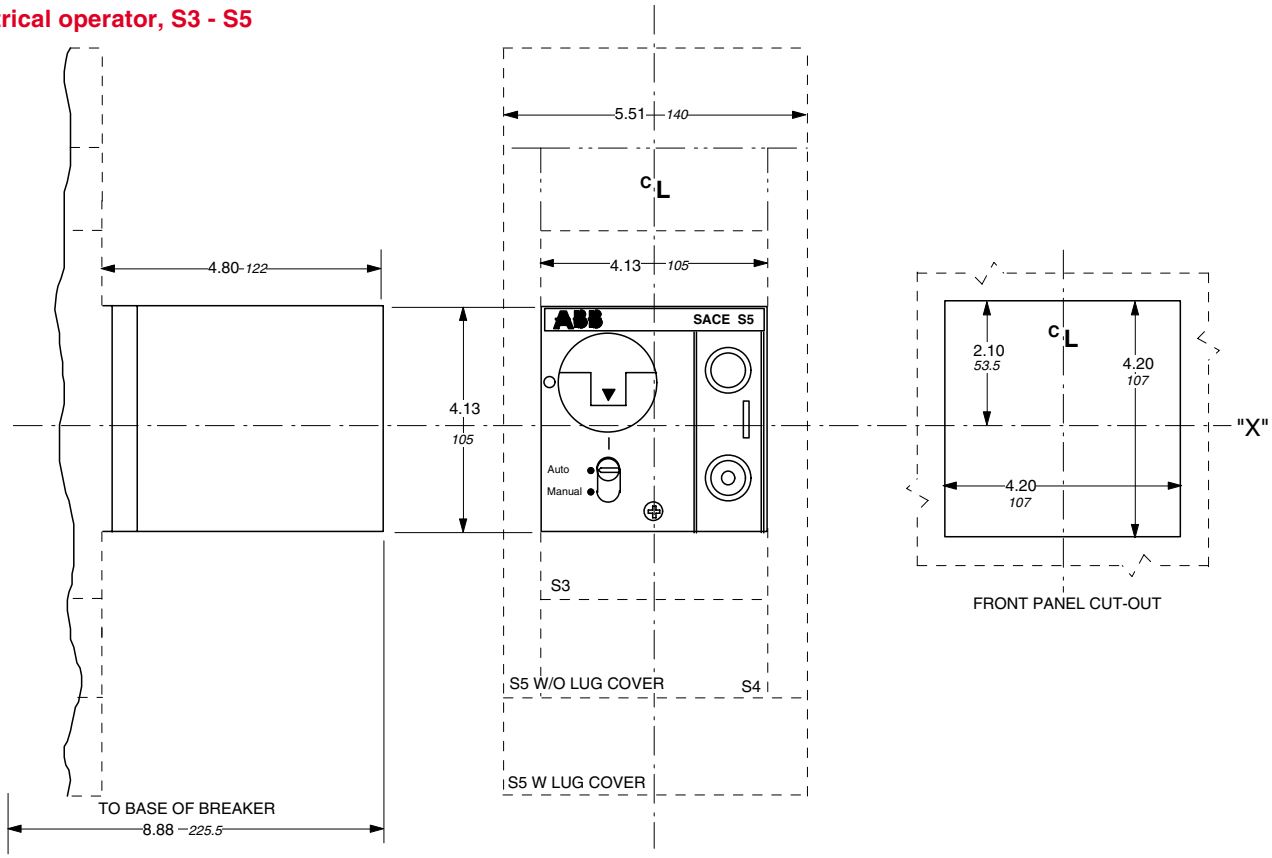


Locking device, S5 - S7

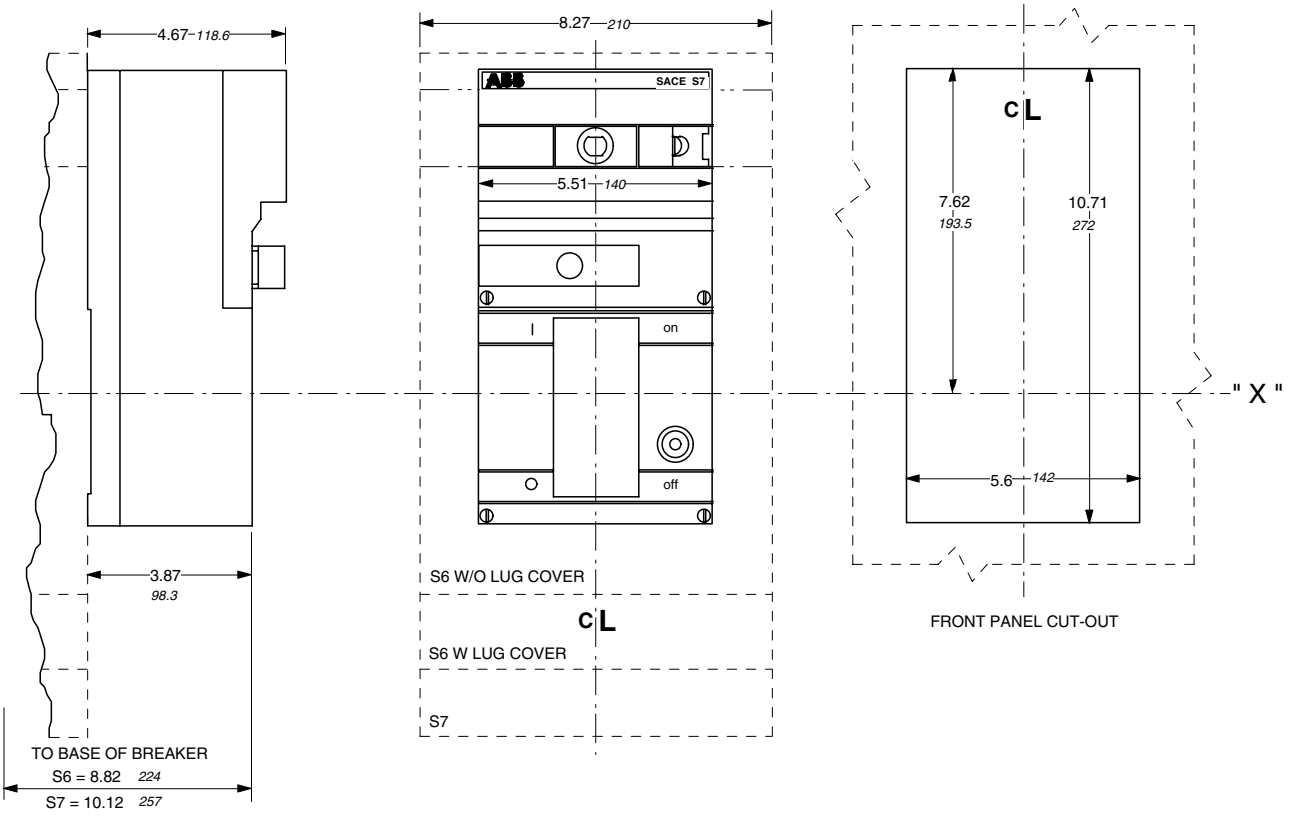


Approximate dimensions
Electrical operators, S3 - S7

Electrical operator, S3 - S5



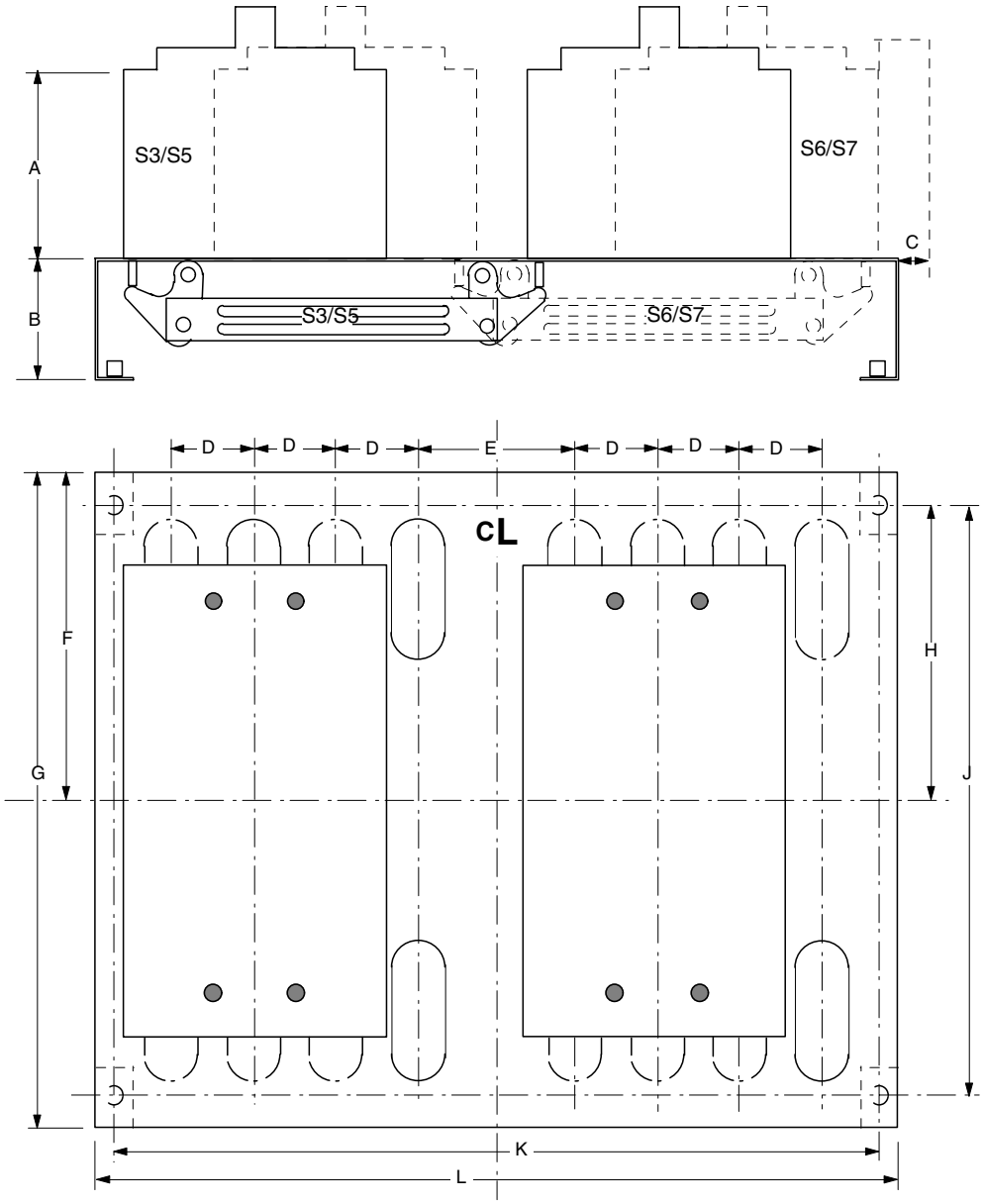
Electrical operator, S6 - S7



Isomax

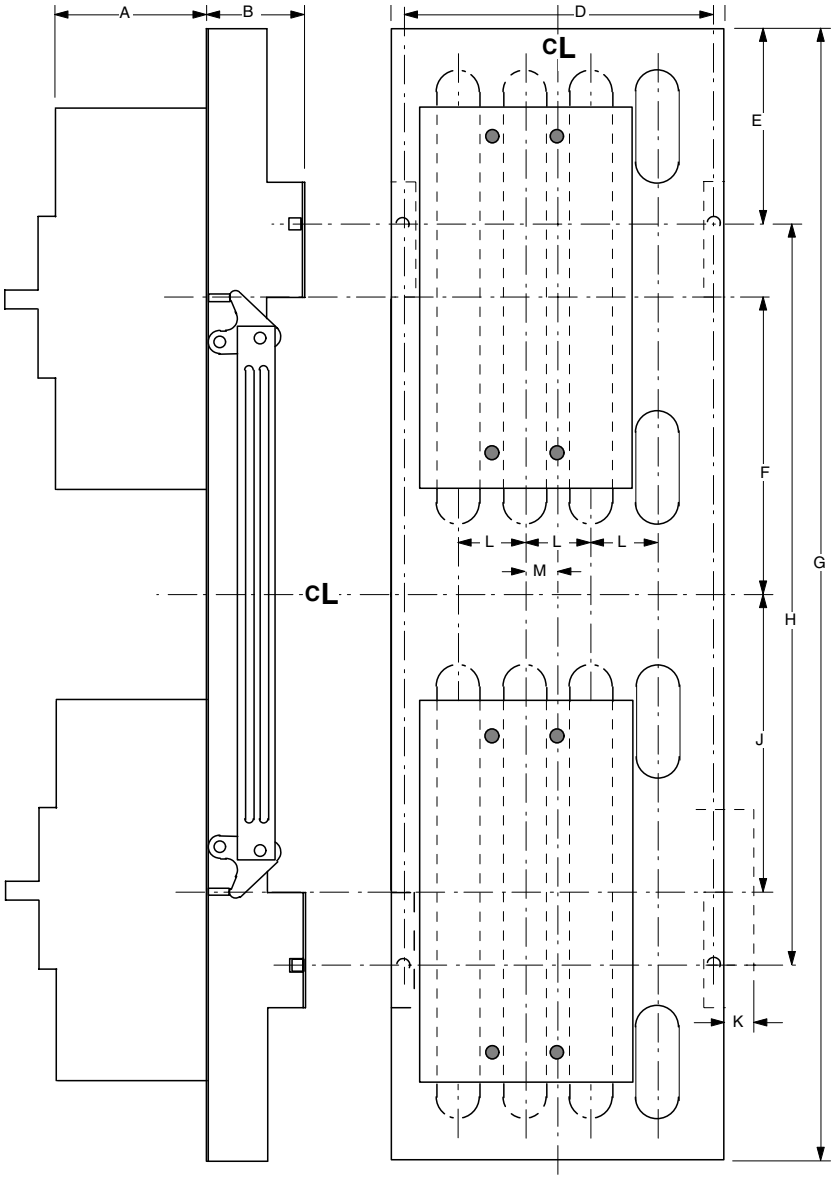
Approximate dimensions
Mechanically interlocked, horizontal, S3 – S7

00.00 Inches
00.00 Millimeters



FRAME	A	B	C	D	E	F	G	H	J	K	L
S3	4.08 *103.5*	2.56 *65*	0.47 *12*	1.38 *35*	2.60 *66*	5.31 *135*	10.43 *265*	4.57 *116*	8.96 *227.5*	12.76 *324*	13.78 *350*
S4	4.08 *103.5*	2.56 *65*	0.47 *12*	1.38 *35*	2.60 *66*	6.83 *173.5*	13.78 *350*	6.14 *156*	12.40 *315*	12.76 *324*	13.78 *350*
S5	4.08 *103.5*	2.56 *65*	0.63 *16*	1.72 *35*	3.29 *83.5*	6.83 *173.5*	13.78 *350*	6.14 *156*	12.40 *315*	15.85 *402.5*	16.93 *430*
S6	4.07 *103.5*	2.56 *65*	0.41 *10.5*	2.76 *70*	4.72 *120*	7.38 *187.5*	14.76 *375*	6.89 *175*	13.78 *350*	20.67 *525*	25.60 *650*
S7	5.53 *140.5*	2.56 *65*	0.22 *5.5*	2.76 *70*	4.72 *120*	8.86 *225*	17.72 *450*	8.27 *210*	16.54 *420*	21.65 *550*	25.98 *660*

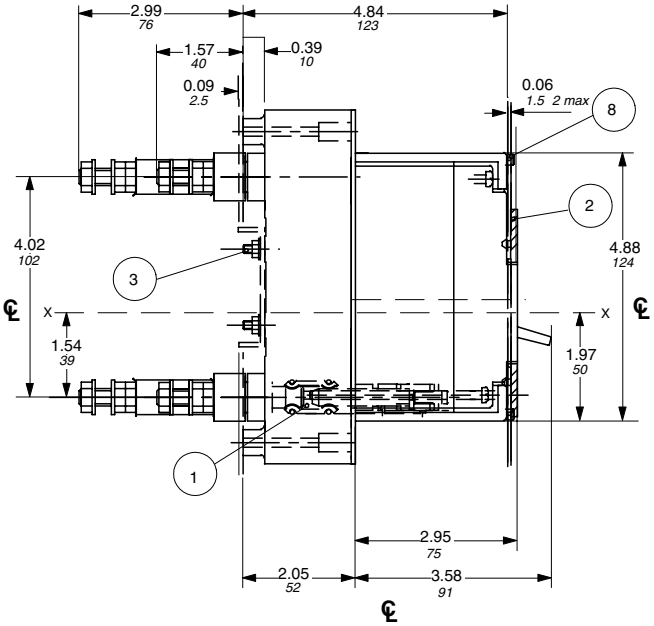
Approximate dimensions
Mechanically interlocked, vertical, S3 – S7

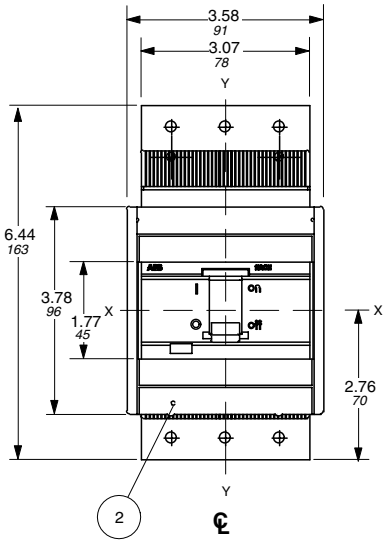


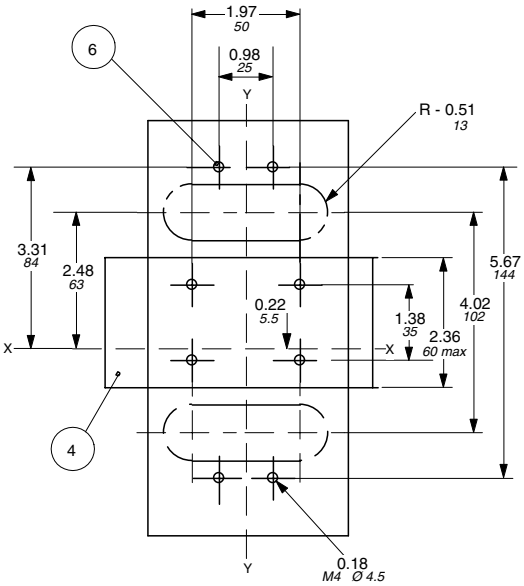
FRAME	A	B	C	D	E	F	G	H	J	K	L	M
S3	4.07 *103.5*	2.56 *65*	7.08 *180*	6.20 *157.5*	4.49 *114*	6.00 *152.5*	22.76 *578*	13.78 *350*	6.20 *157.5*	0.45 *11.5*	1.38 *35*	0.69 *17.5*
S4	4.07 *103.5*	2.56 *65*	7.08 *180*	6.20 *157.5*	5.12 *130*	7.81 *198.5*	29.53 *750*	19.29 *490*	7.70 *195.5*	0.45 *11.5*	1.38 *35*	0.69 *17.5*
S5	4.07 *103.5*	2.56 *65*	8.67 *180*	7.91 *201*	5.12 *130*	7.81 *198.5*	29.53 *750*	19.29 *490*	7.70 *195.5*	0.45 *11.5*	1.72 *43.75*	0.94 *23.75*
S6	4.07 *103.5*	2.56 *65*	12.20 *310*	11.02 *280*	5.81 *147.5*	8.82 *224*	32.28 *820*	20.67 *525*	8.82 *224*	0.67 *17*	2.76 *70*	1.44 *36.5*
S7	5.53 *140.5*	2.56 *65*	13.39 *340*	12.40 *315*	5.12 *14.43*	11.26 *286*	43.31 *1100*	34.45 *875*	11.26 *286*	0.0 *0*	2.76 *70*	1.38 *35*

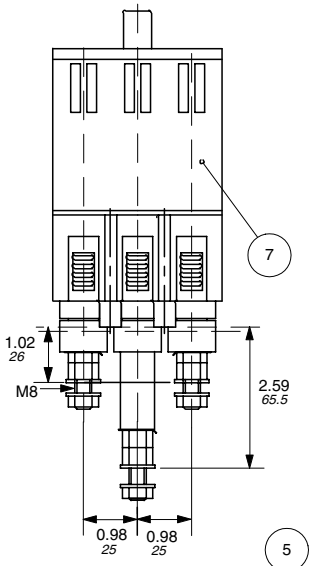
Approximate dimensions
S1 Plug-in rear

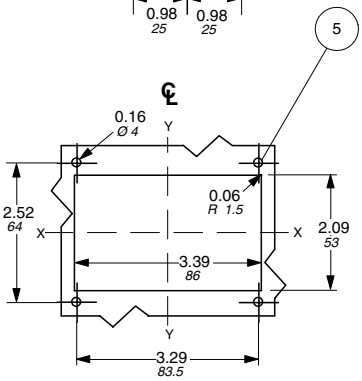
00.00 Inches
00.00 Millimeters







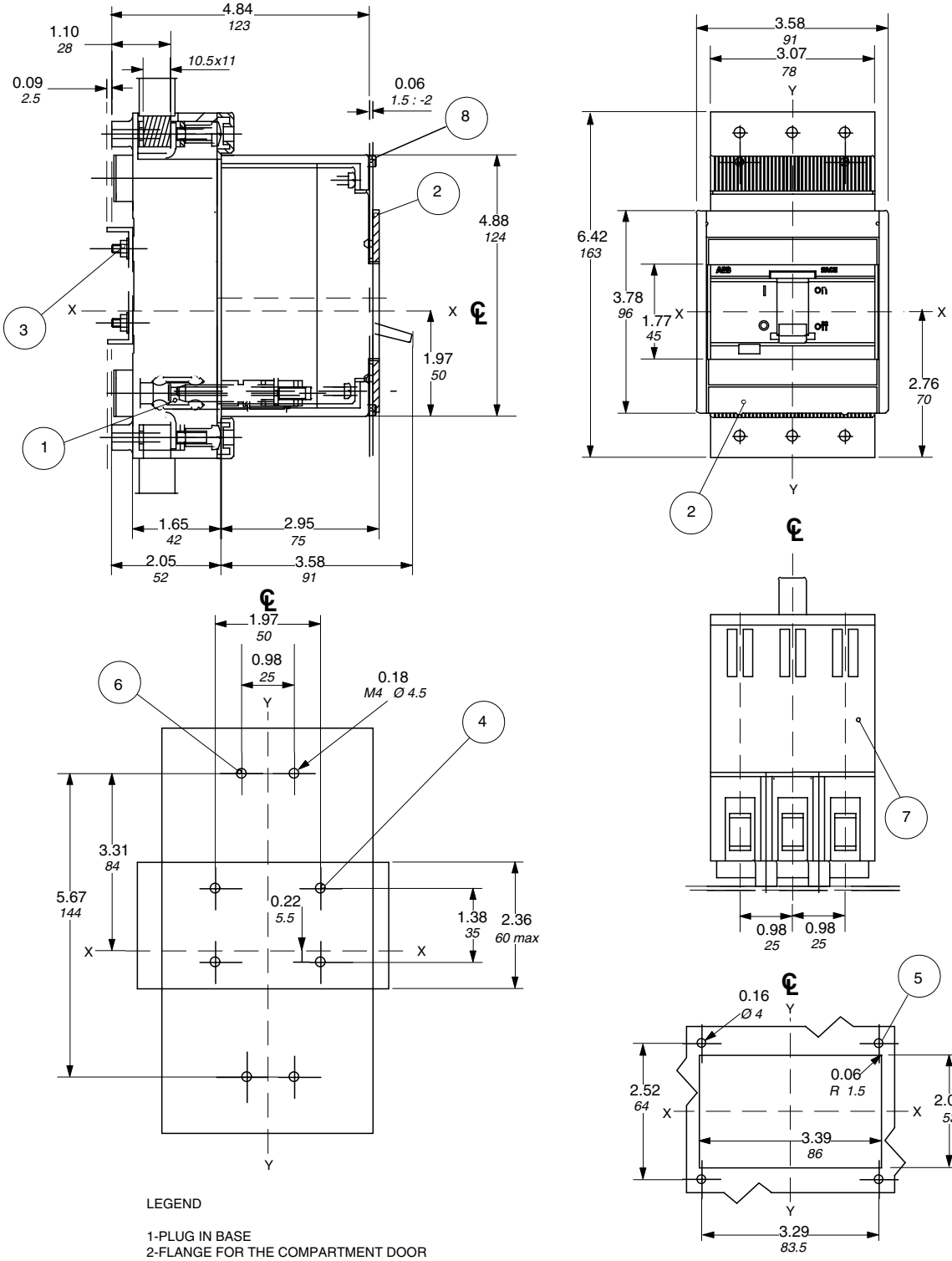




LEGEND

1-PLUG IN BASE
2-FLANGE FOR THE COMPARTMENT DOOR
3-MOUNTING SCREWS FOR PLUG IN BASE ON PLATE
4-MOUNTING HOLES FOR PLUG IN BASE ON CHANNEL
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-TERMINAL COVERS (SEPERATE ITEM)
8-SEALING SCREWS (OPTIONAL)

Approximate dimensions
S1 Plug-in front

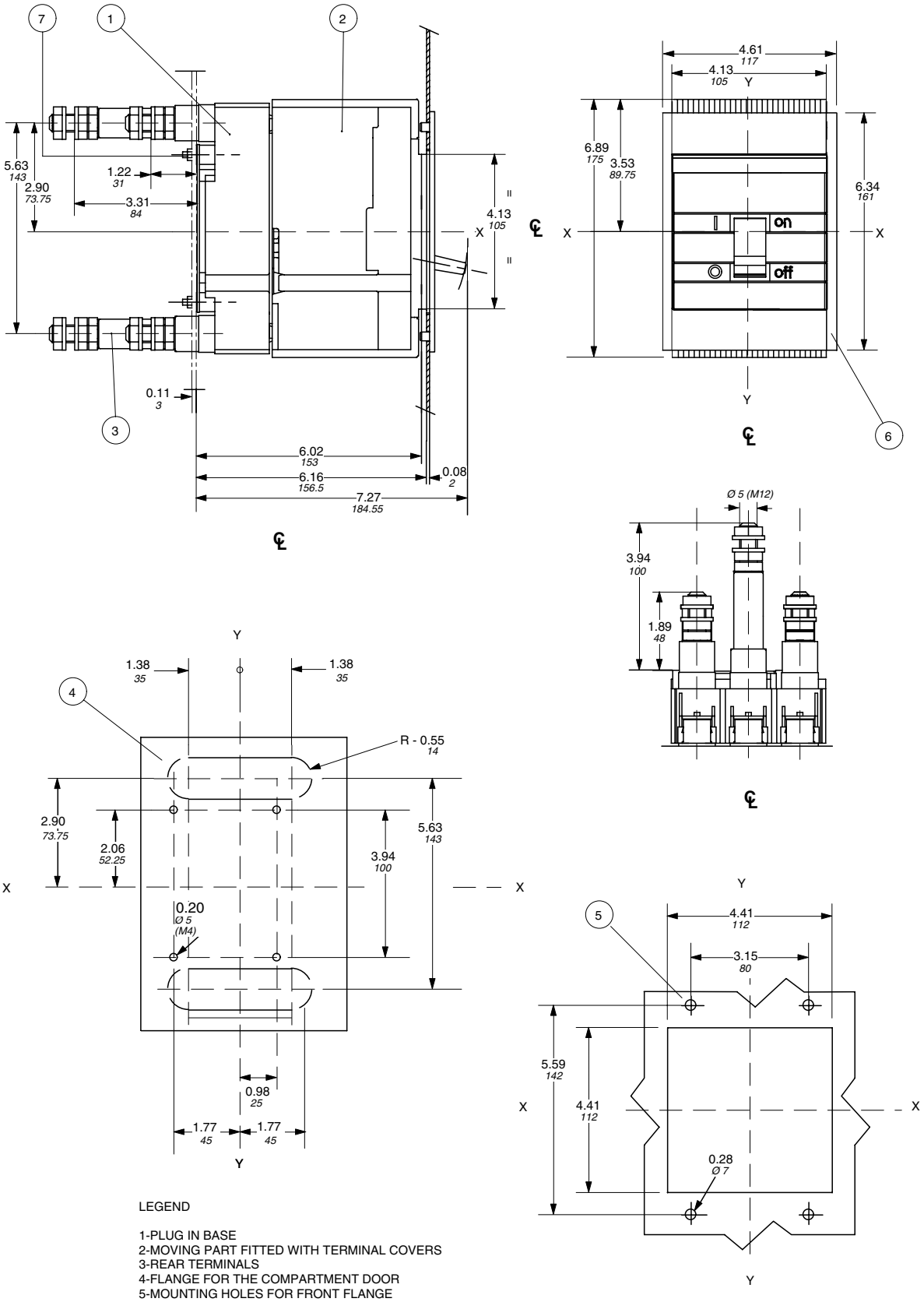


LEGEND

1-PLUG IN BASE
2-FLANGE FOR THE COMPARTMENT DOOR
3-MOUNTING SCREWS FOR PLUG IN BASE ON PLATE
4-MOUNTING HOLES FOR PLUG IN BASE ON CHANNEL
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-TERMINAL COVERS (SEPERATE ITEM)
8-SEALING SCREWS (OPTIONAL)

Approximate dimensions
S3 Plug-in rear

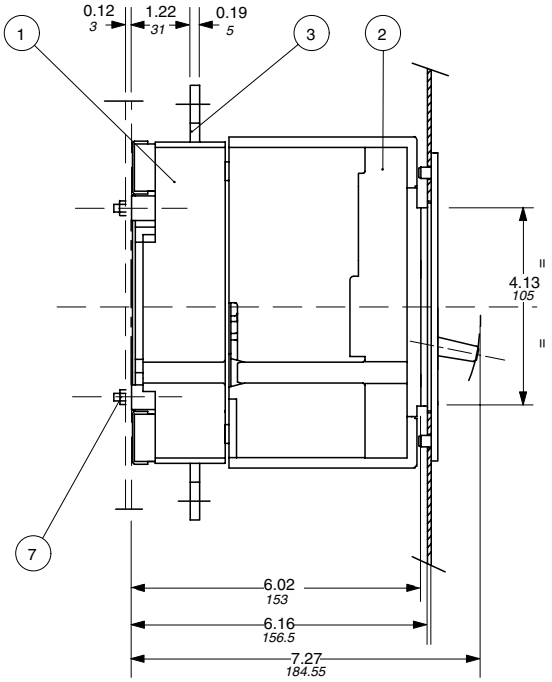
00.00 Inches
00.00 Millimeters

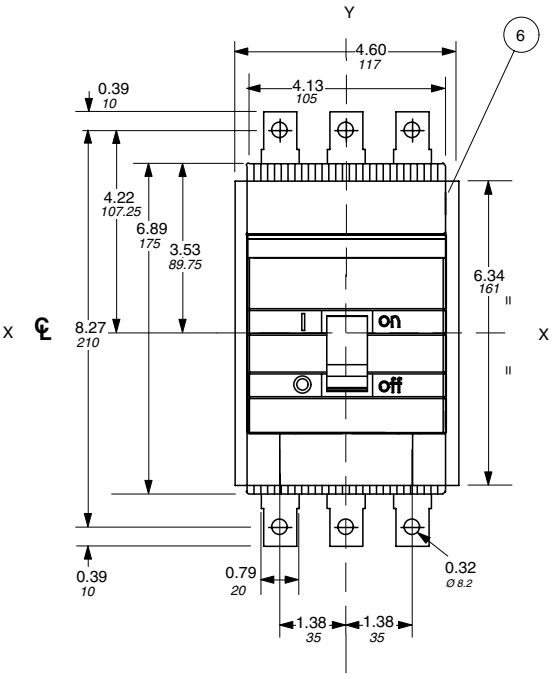


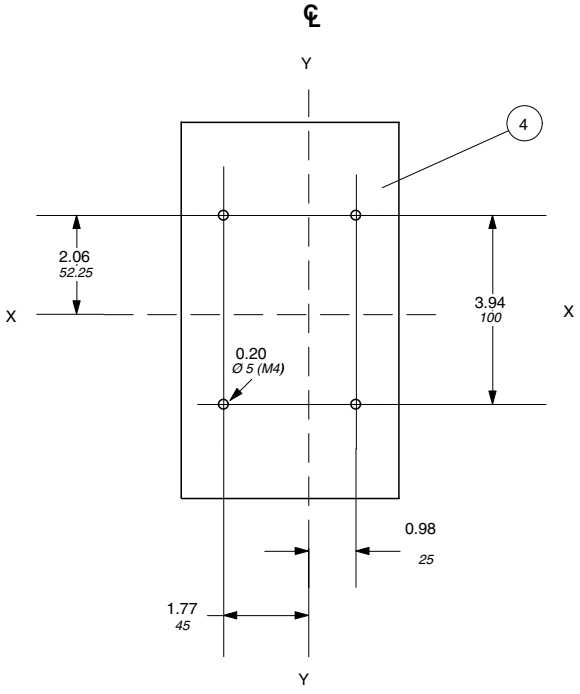
LEGEND

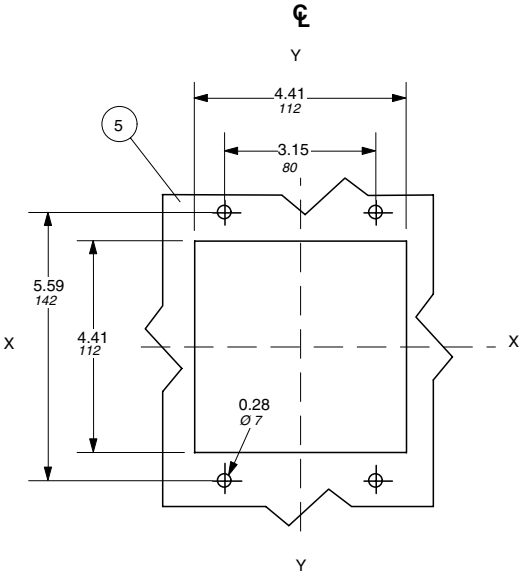
1-PLUG IN BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S3 Plug-in front







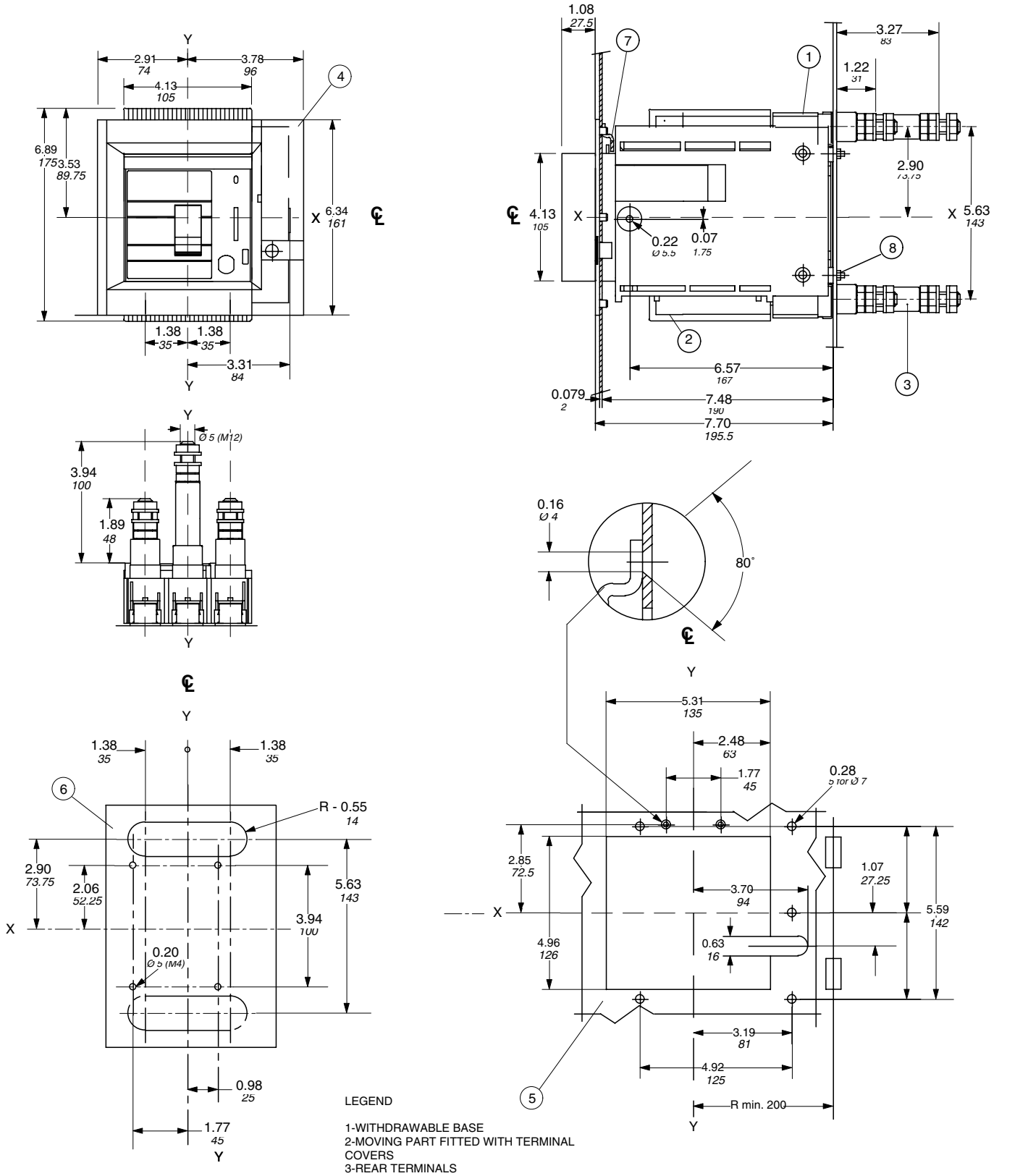


LEGEND

1-PLUG IN BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-FRONT TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S3 Withdrawable rear

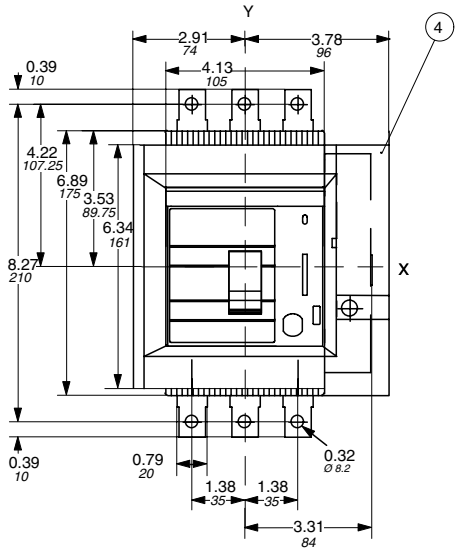
00.00 Inches
00.00 Millimeters

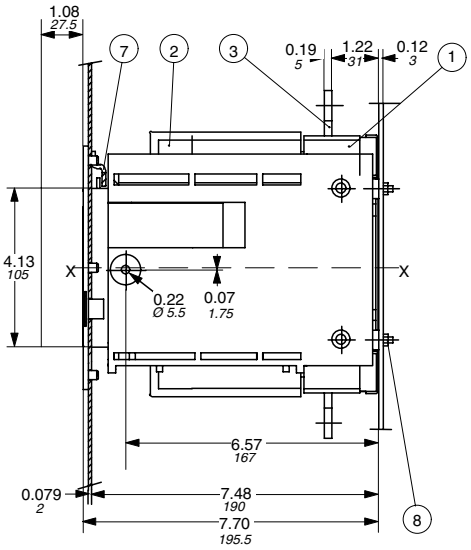


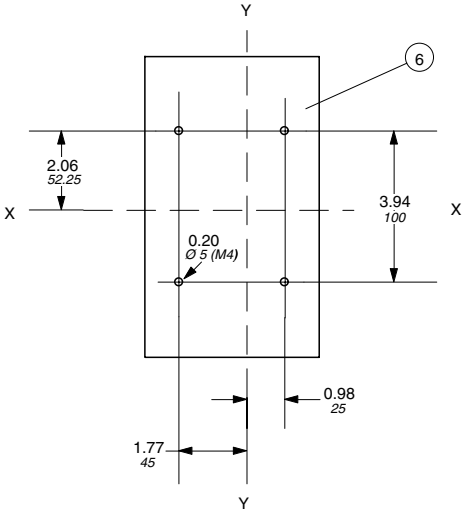
LEGEND

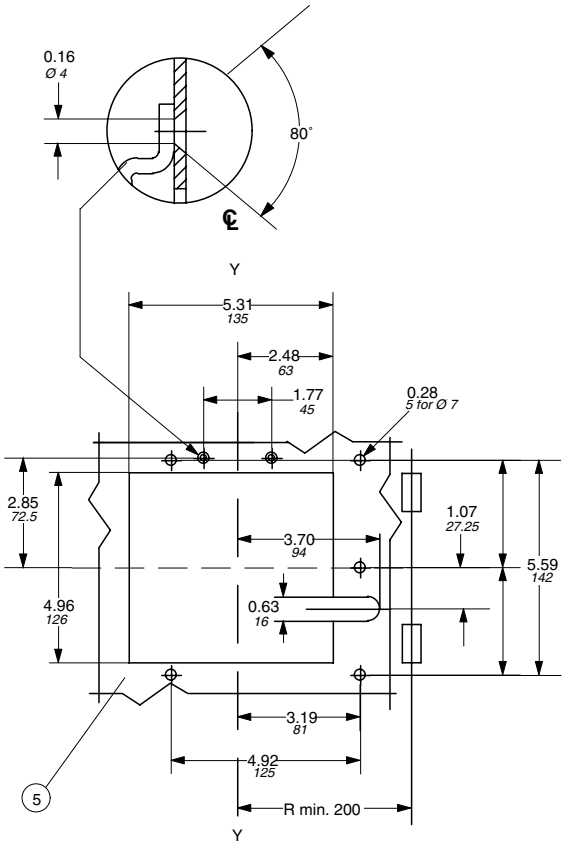
1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S3 Withdrawable front







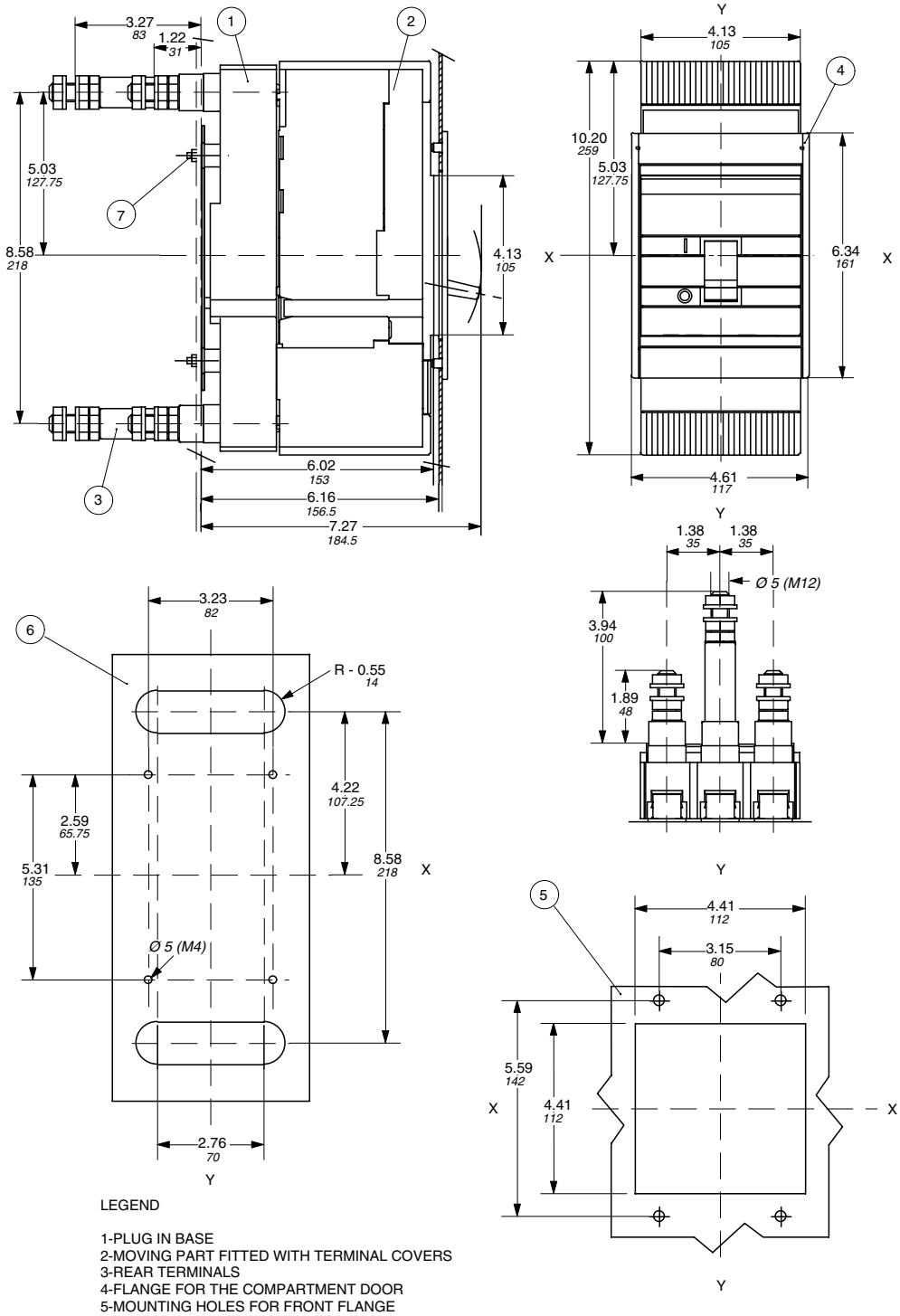


LEGEND

1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-FRONT TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S4 Plug-in rear

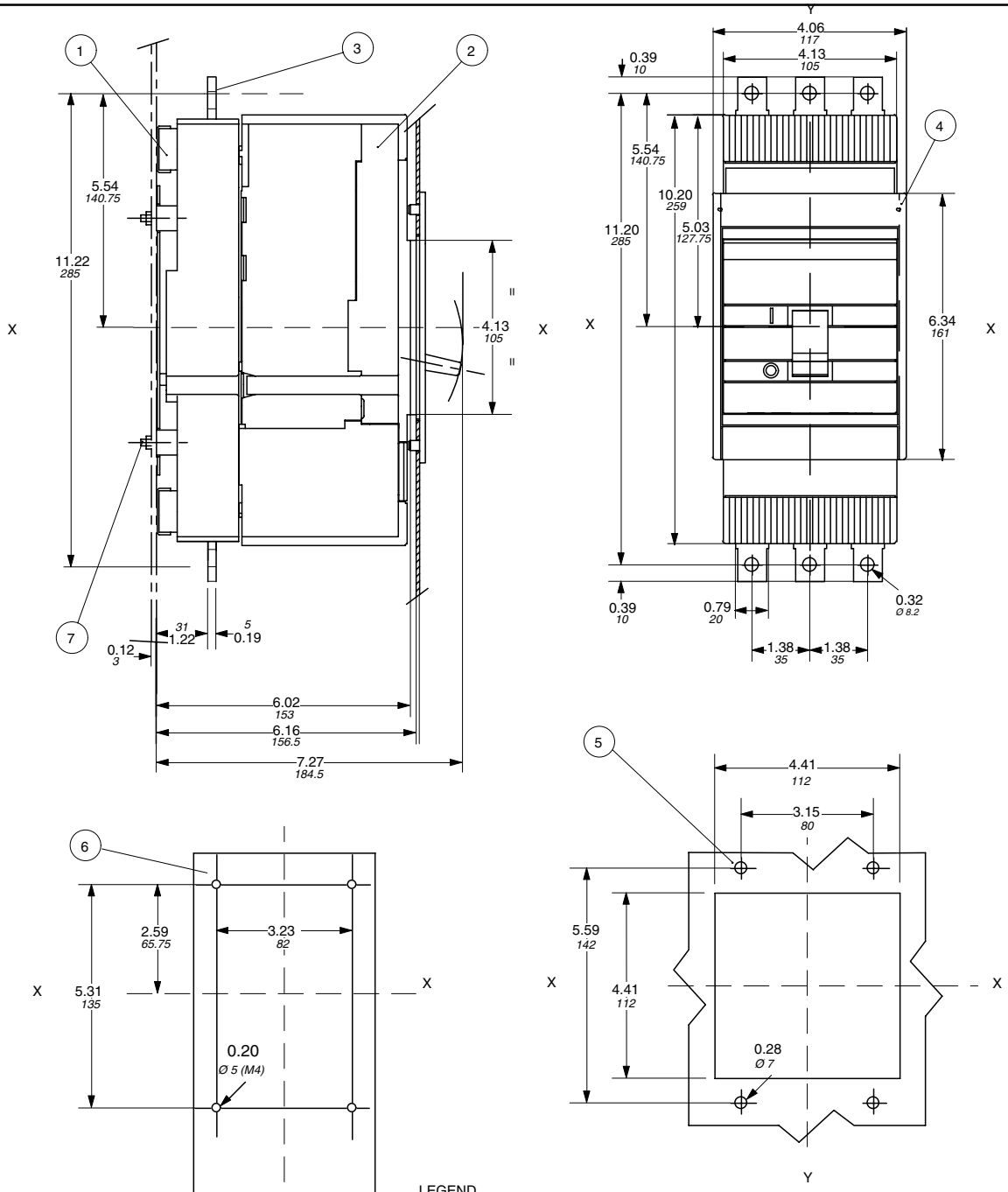
00.00 Inches
00.00 Millimeters



LEGEND

1-PLUG IN BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S4 Plug-in front

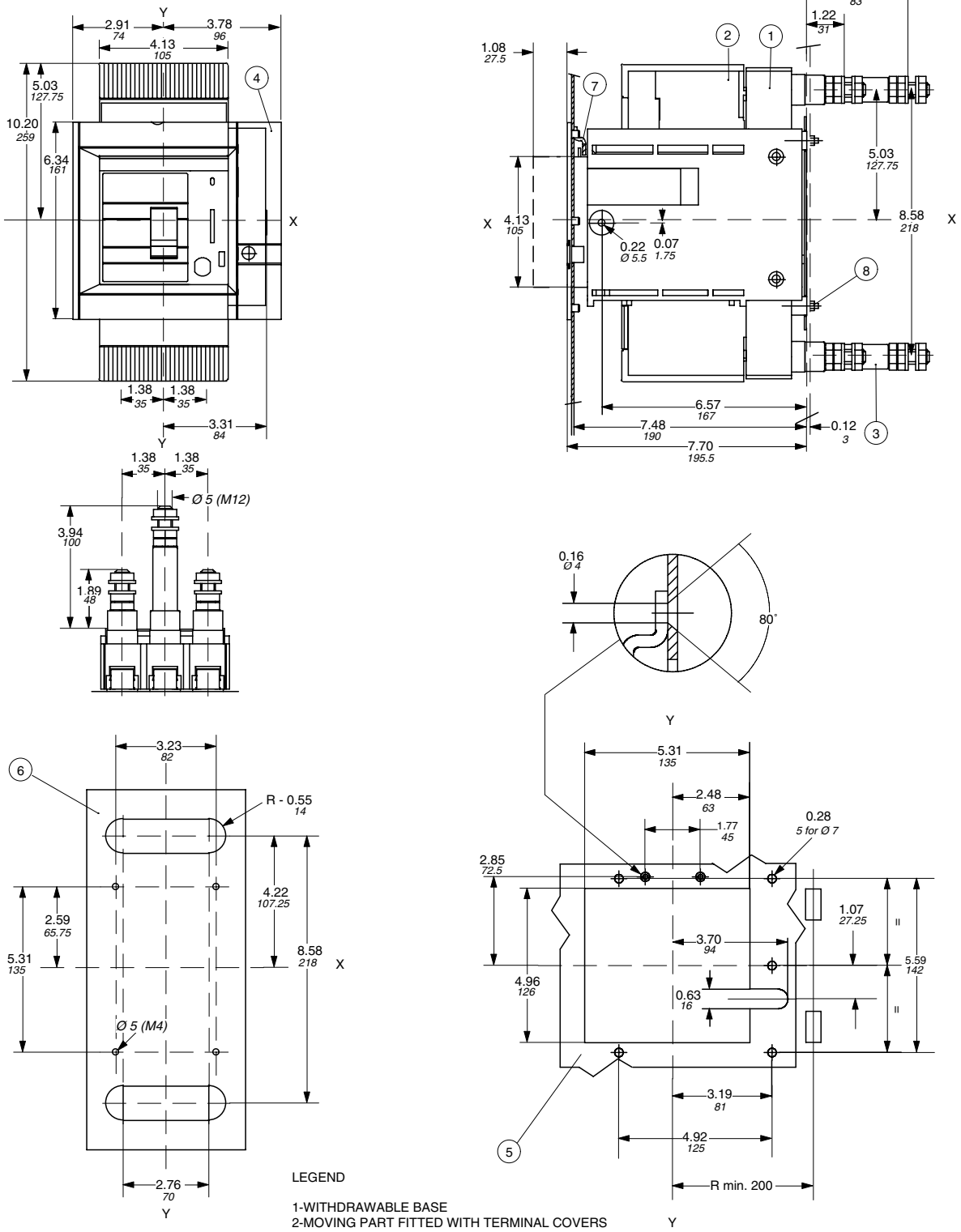


LEGEND

1-PLUG IN BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3- FRONT TERMINAL
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S4 Withdrawable rear

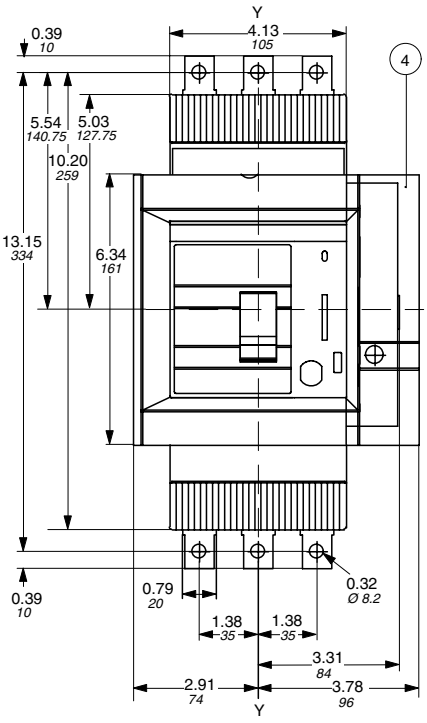
00.00 Inches
00.00 Millimeters

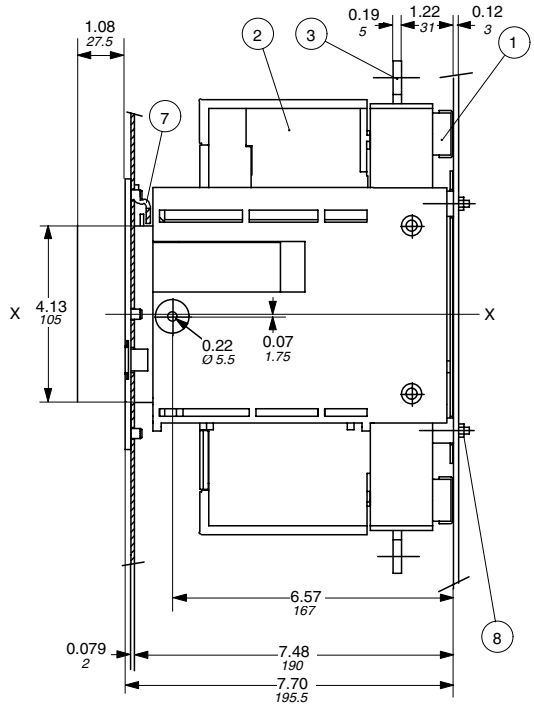


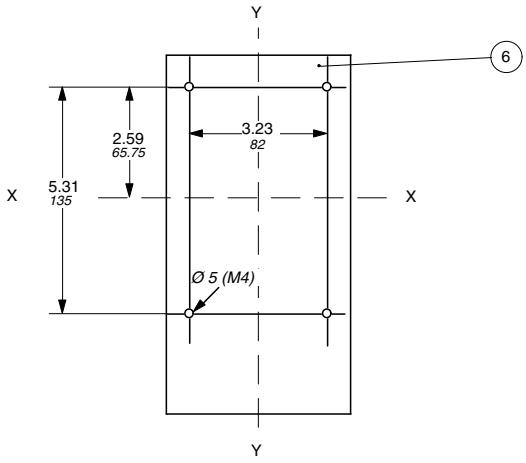
LEGEND

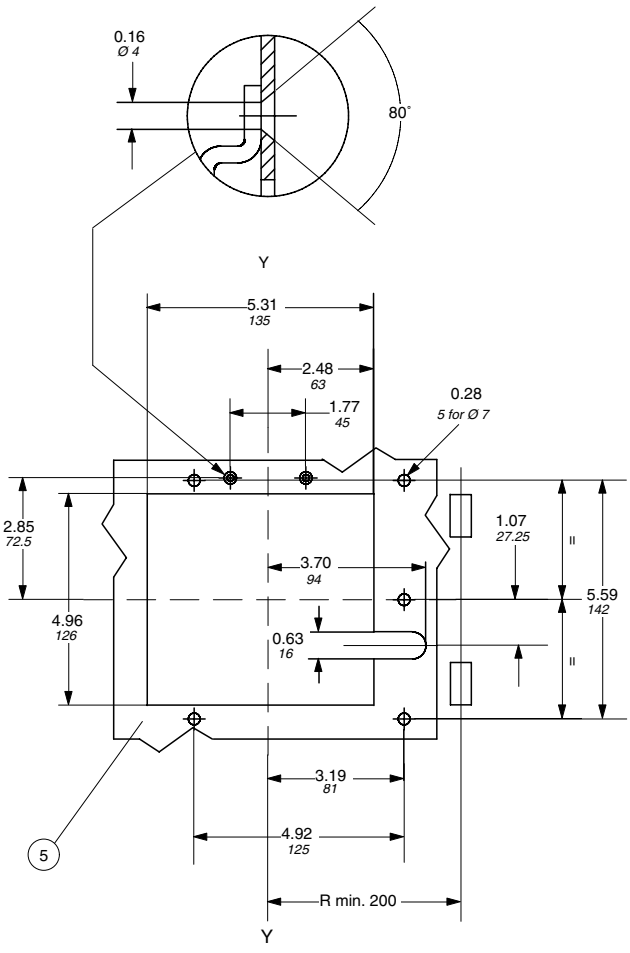
1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S4 Withdrawable front







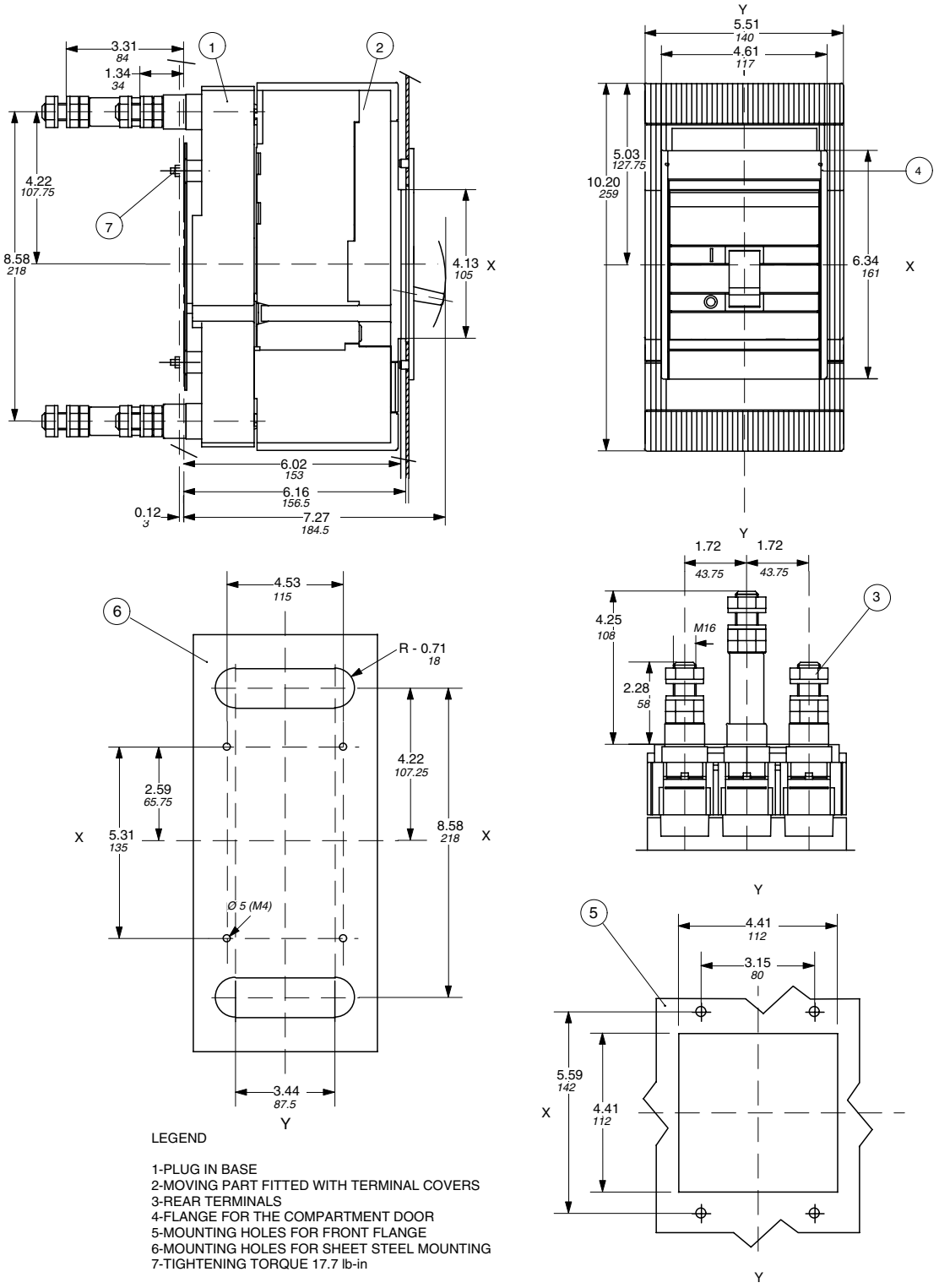


LEGEND

1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-FRONT TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S5 Plug-in rear

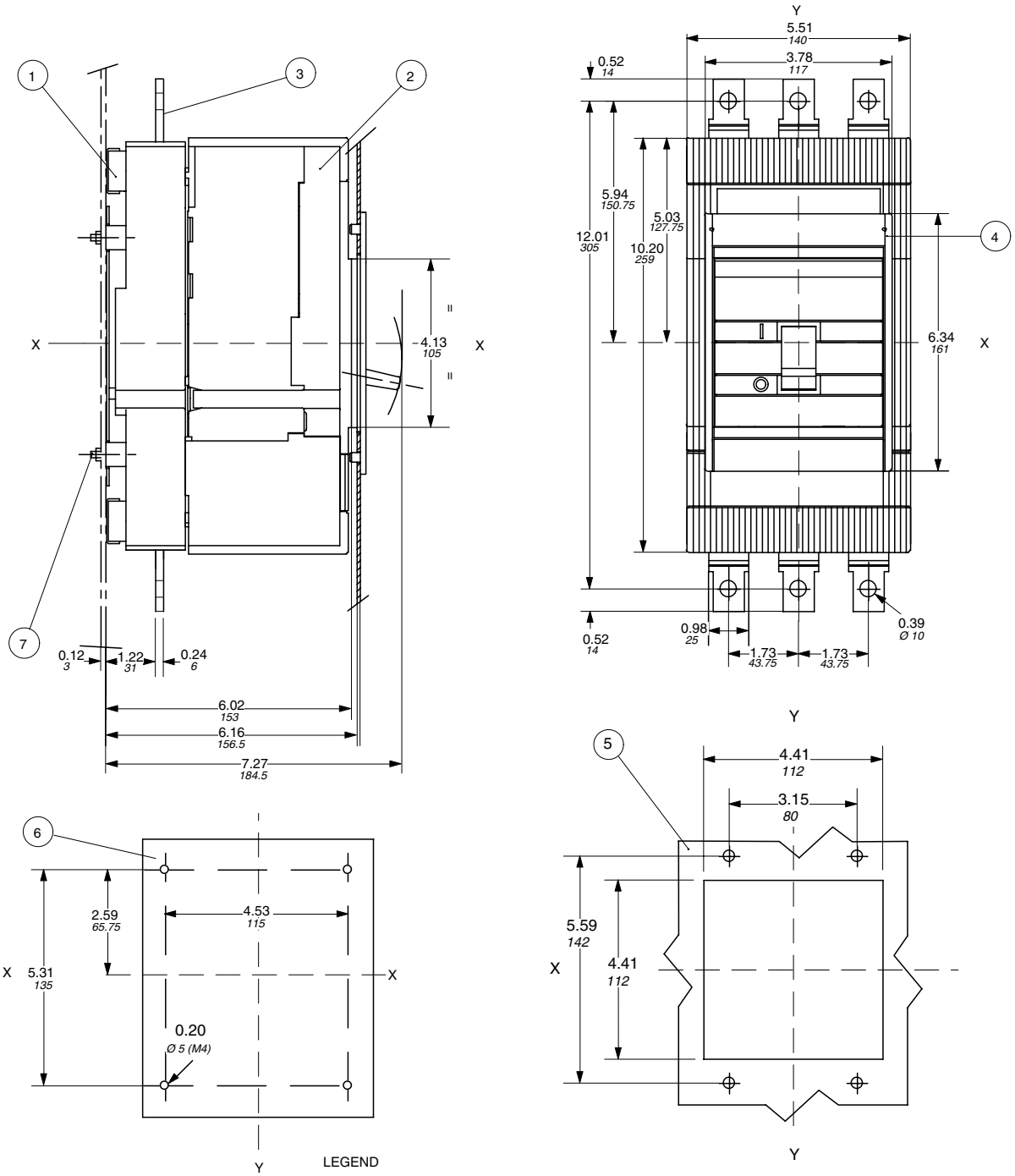
00.00 Inches
00.00 Millimeters



LEGEND

1-PLUG IN BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-TIGHTENING TORQUE 17.7 lb-in

Approximate dimensions
S5 Plug-in front

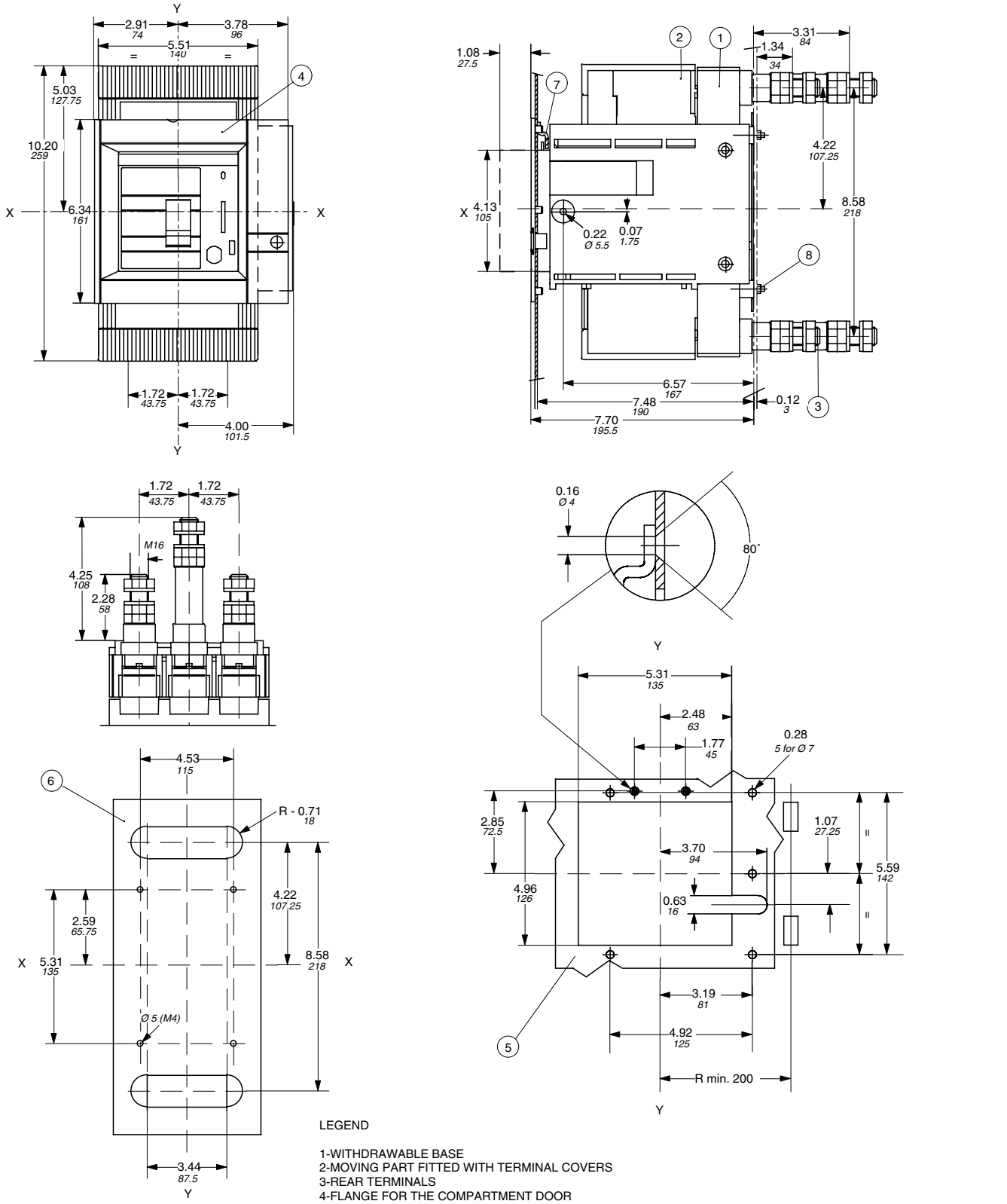


LEGEND

1-PLUG IN BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-FRONT TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-TIGHTENING TORQUE 17.7 lb-in

Approximate dimensions
S5 Withdrawable rear

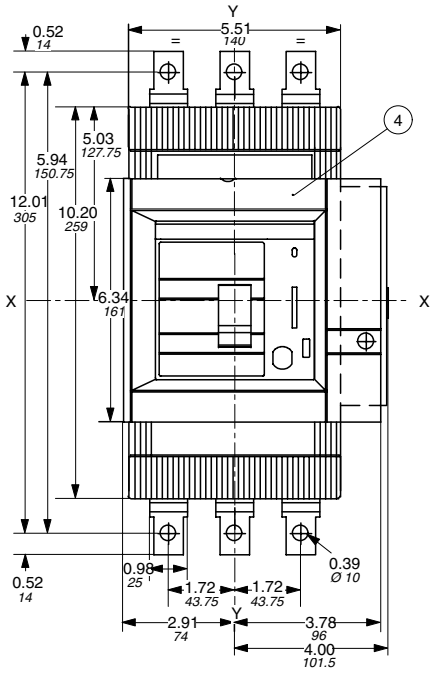
00.00 / *00.00* Inches / *Millimeters*

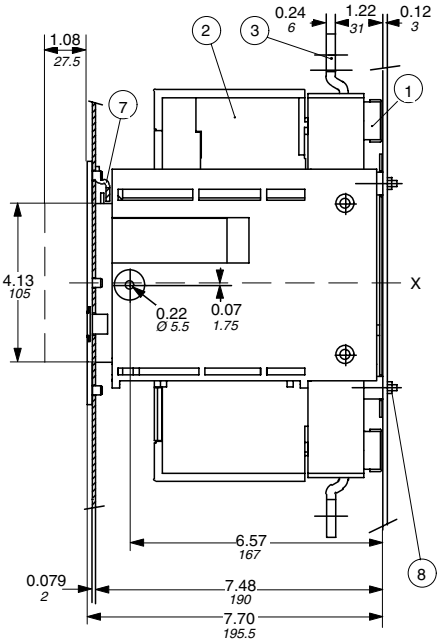


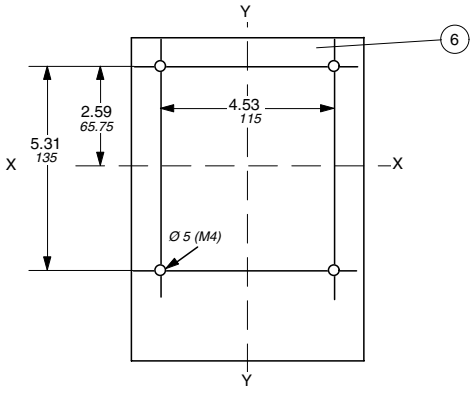
LEGEND

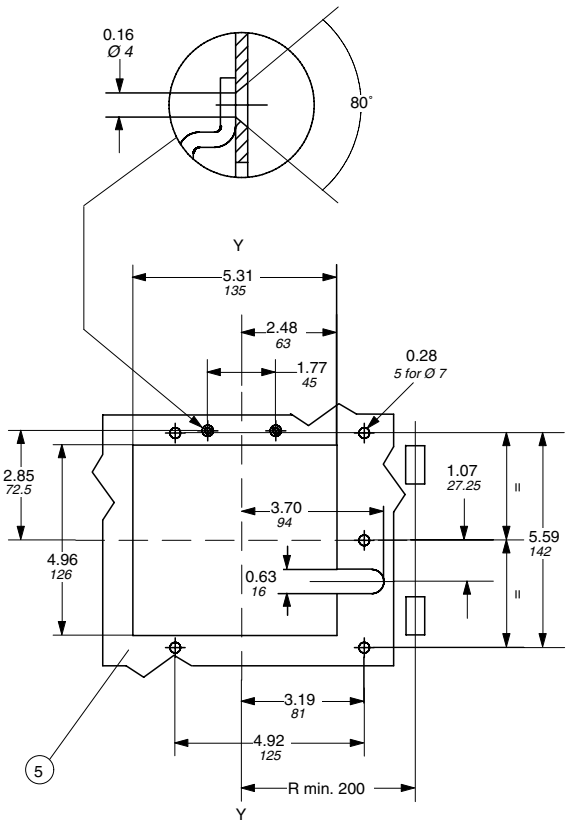
1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FRONT FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S5 Withdrawable front







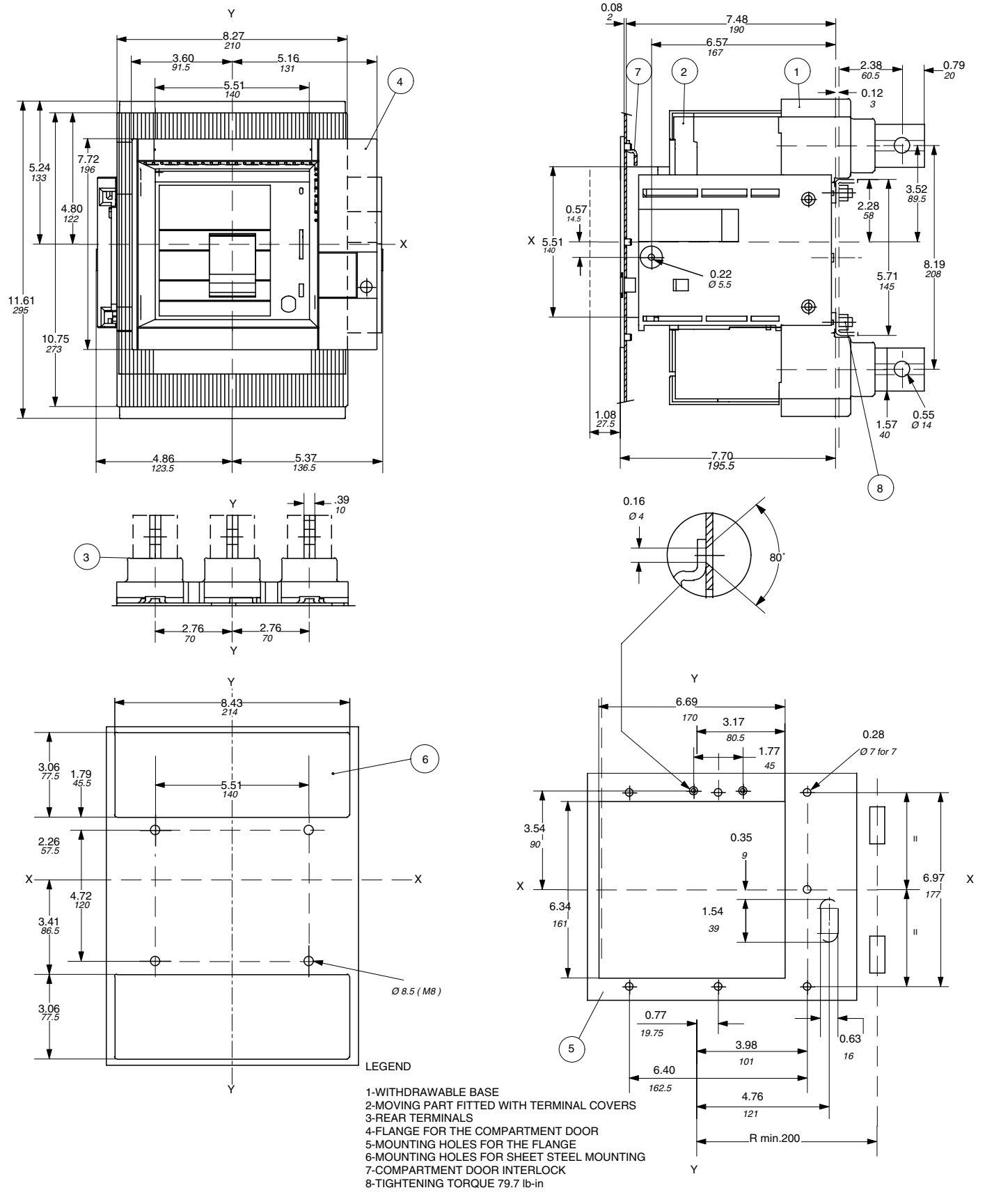


LEGEND

1- WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-FRONT TERMINALS
4-COMPARTMENT DOOR FLANGE
5-MOUNTING HOLES FOR FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 9.7 lb-in

Approximate dimensions
S6 Withdrawable rear

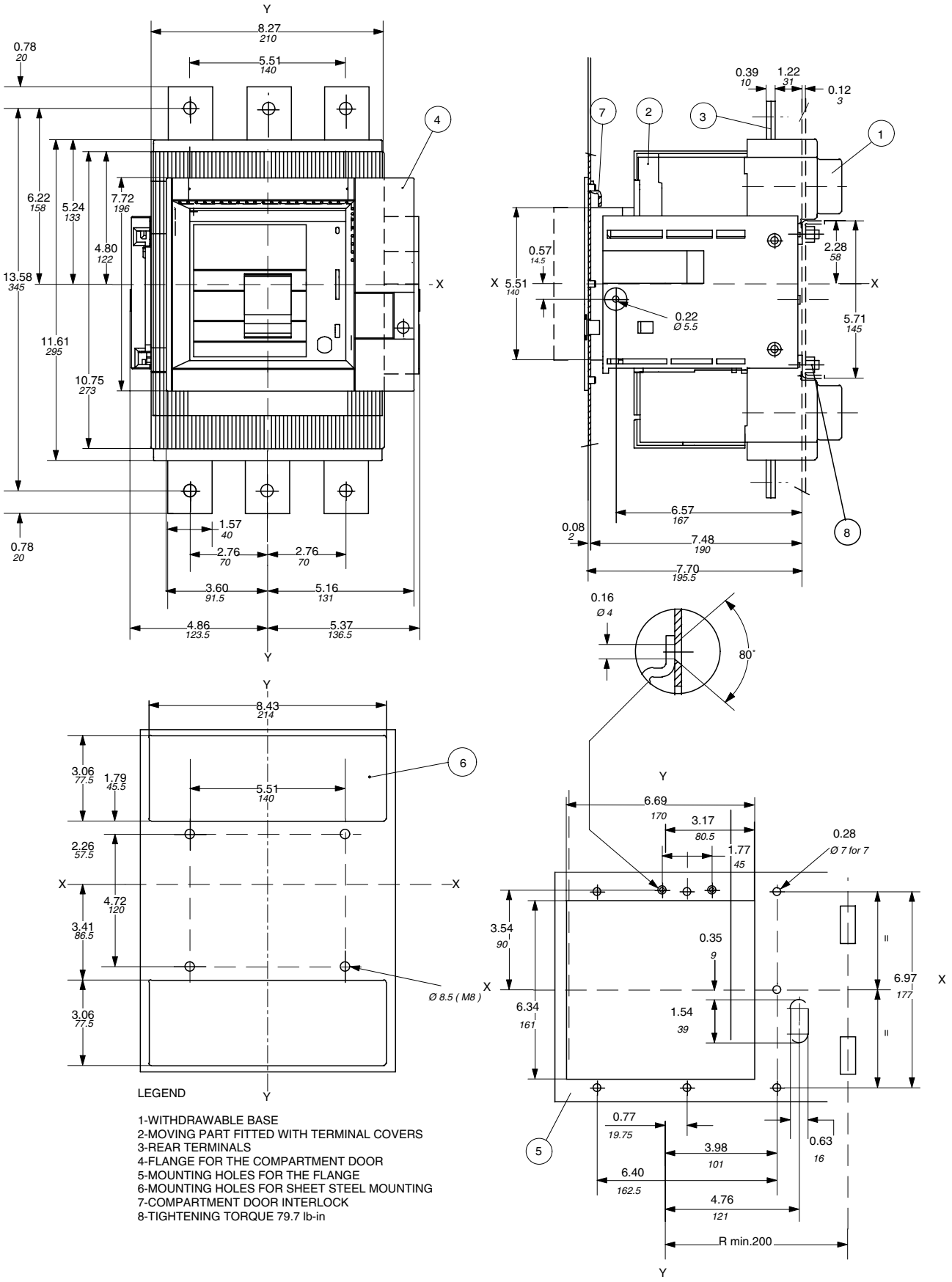
00.00 Inches
00.00 Millimeters



LEGEND

1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR THE FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 79.7 lb-in

Approximate dimensions
S6 Withdrawable front

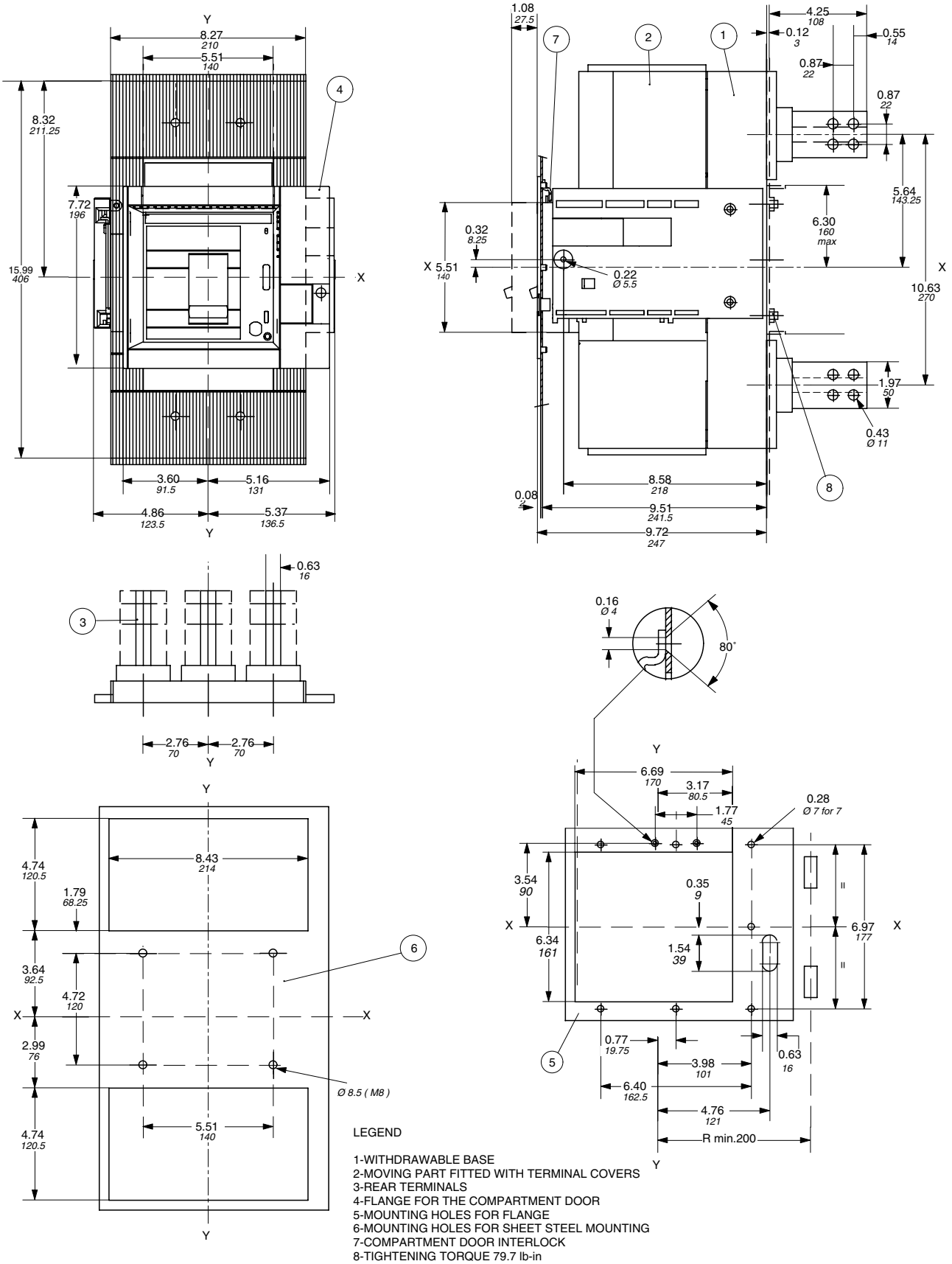


LEGEND

1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR THE FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 79.7 lb-in

Approximate dimensions
S7 Withdrawable rear

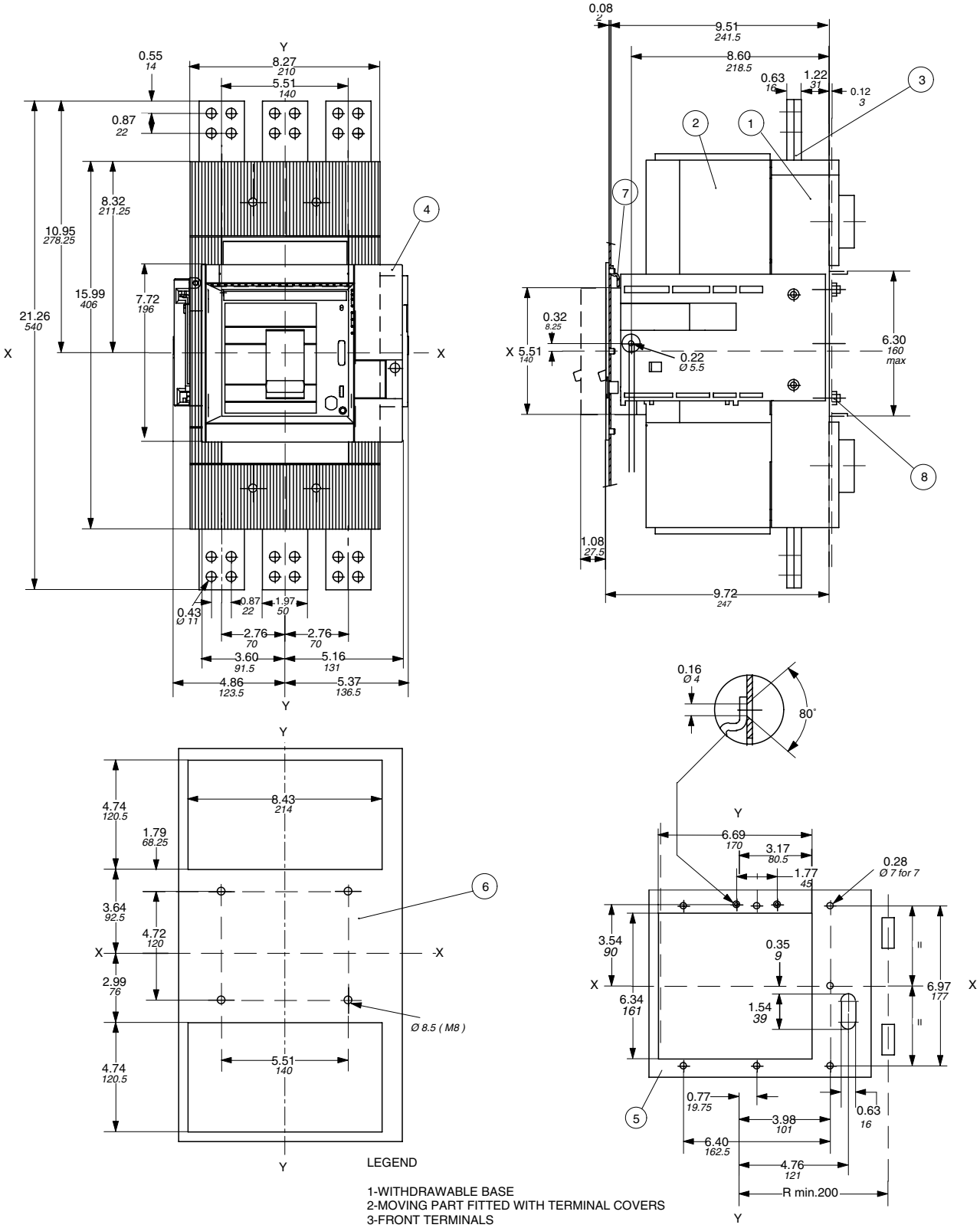
00.00 Inches
00.00 Millimeters



LEGEND

1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-REAR TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 79.7 lb-in

Approximate dimensions
S7 Withdrawable front



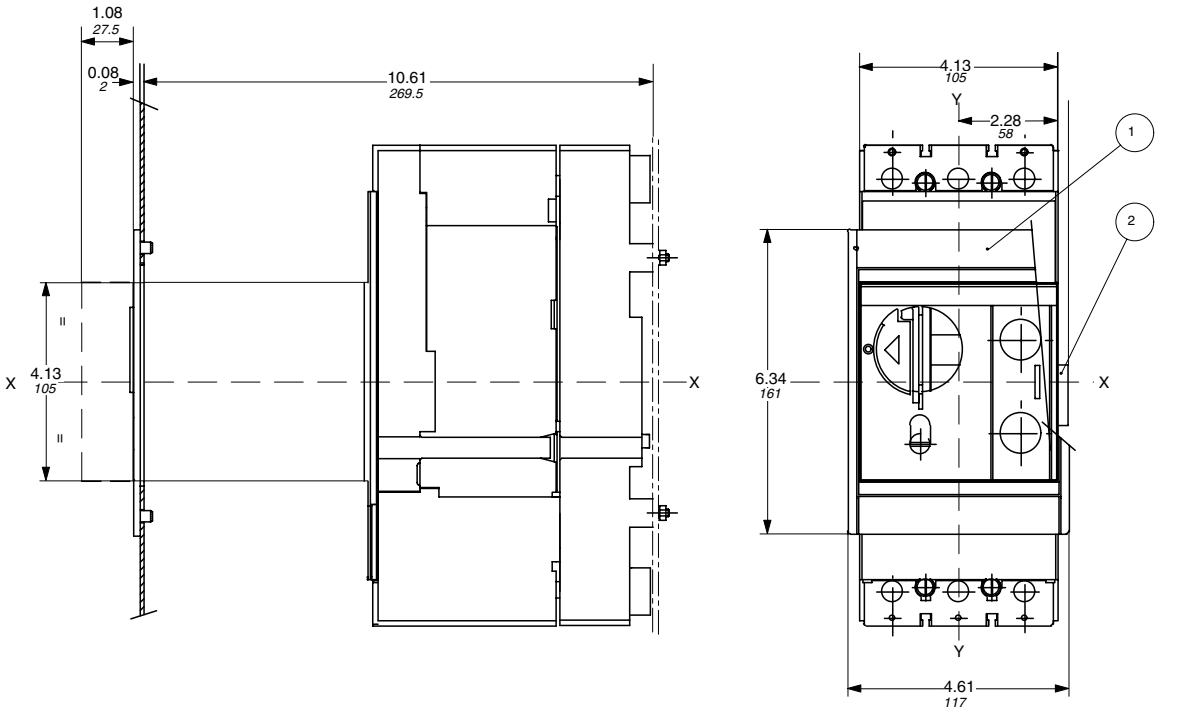
LEGEND

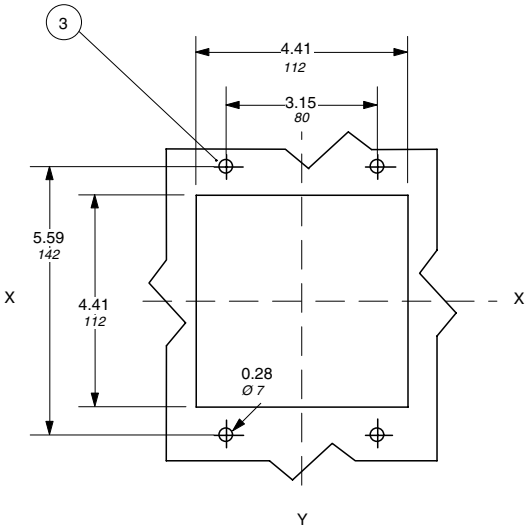
1-WITHDRAWABLE BASE
2-MOVING PART FITTED WITH TERMINAL COVERS
3-FRONT TERMINALS
4-FLANGE FOR THE COMPARTMENT DOOR
5-MOUNTING HOLES FOR FLANGE
6-MOUNTING HOLES FOR SHEET STEEL MOUNTING
7-COMPARTMENT DOOR INTERLOCK
8-TIGHTENING TORQUE 79.7 lb-in

Approximate dimensions

S3 - S4 Motor operator w/ plug-in front

00.00 Inches
00.00 Millimeters

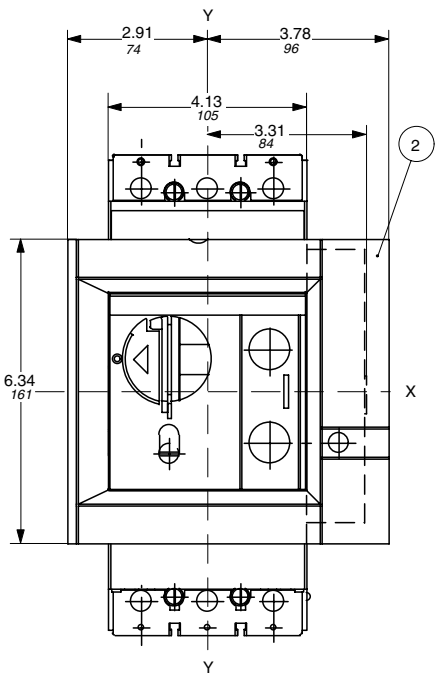


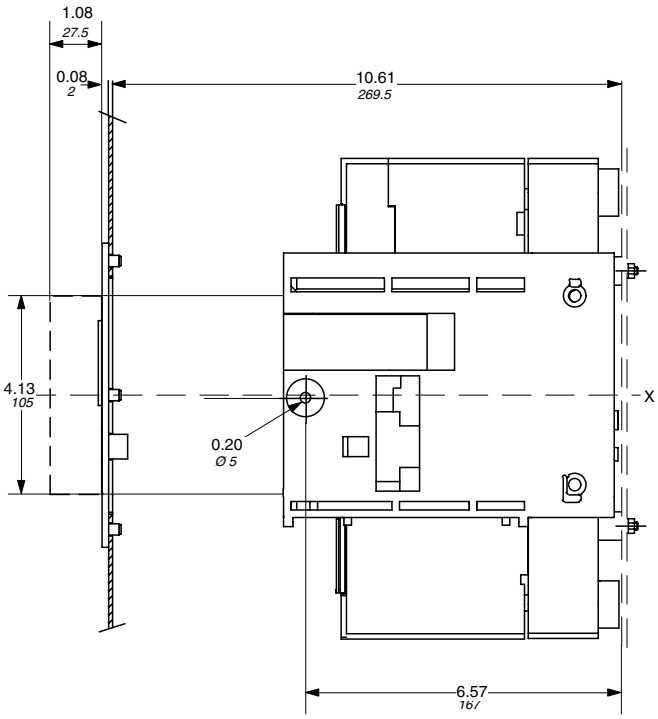


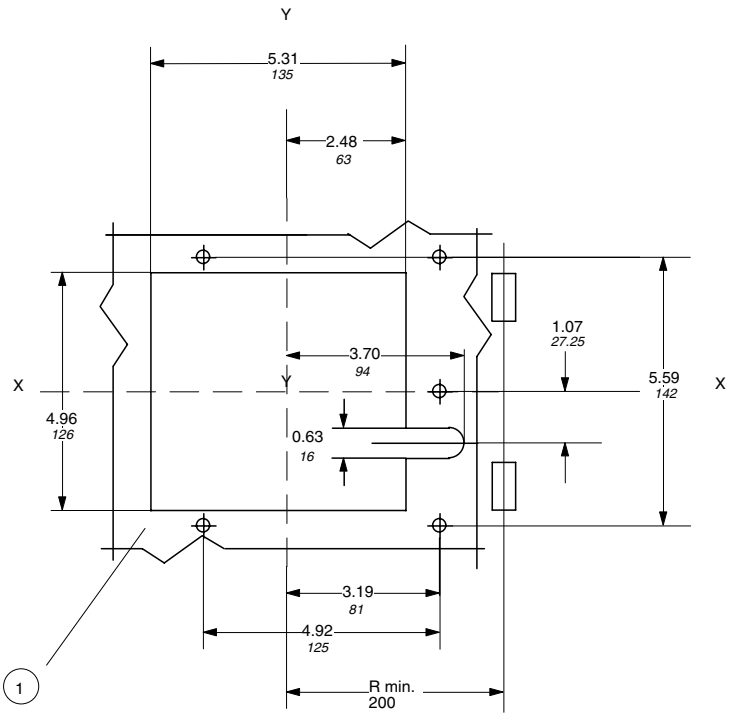
LEGEND

1-FLANGE FOR THE COMPARTMENT DOOR
2-PLUG FOR MOTOR OPERATOR
3-DRILLING TEMPLATE

Approximate dimensions
S3 - S4 Motor operator w/ withdrawable





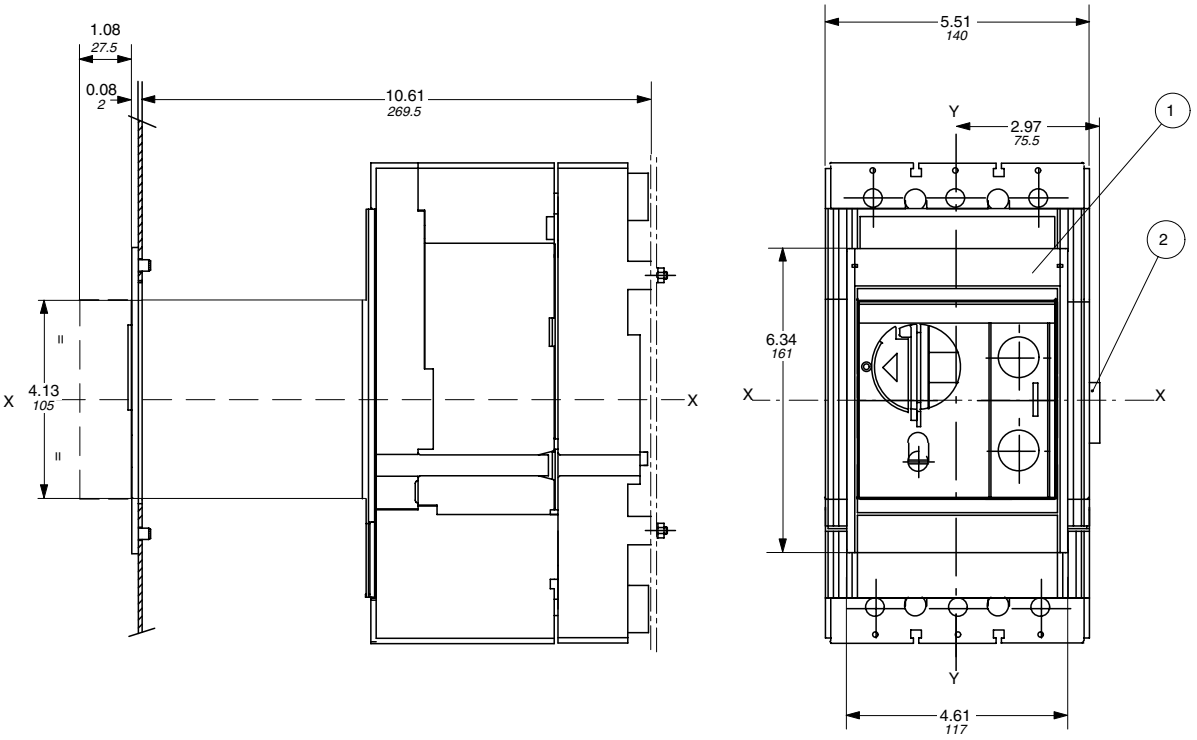


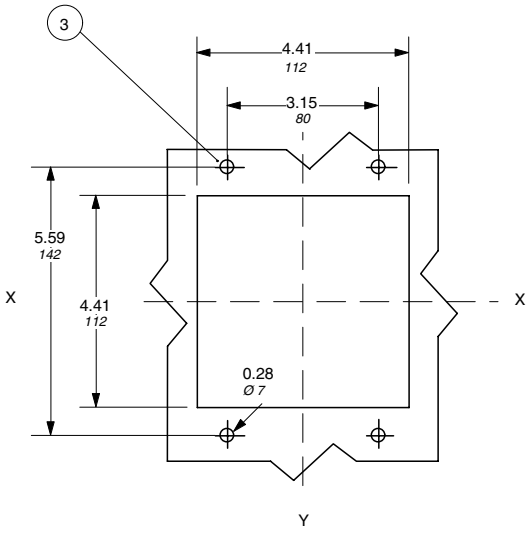
LEGEND

1-MOUNTING HOLES FOR FRONT FLANGE
2-FLANGE FOR THE COMPARTMENT DOOR

Approximate dimensions
S5 Motor operator w/ plug-in

00.00 Inches
00.00 Millimeters

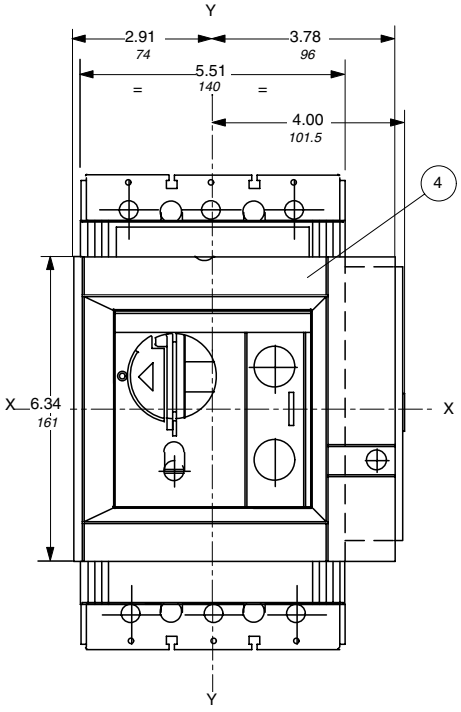


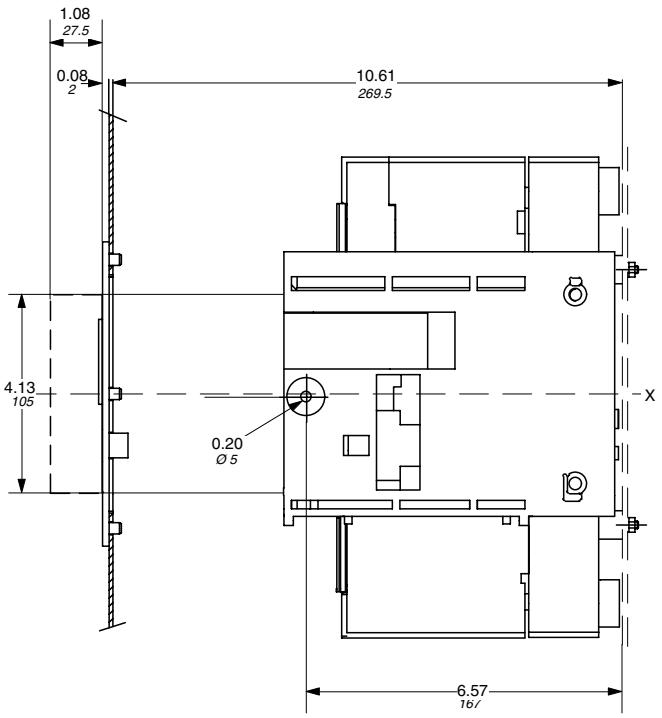


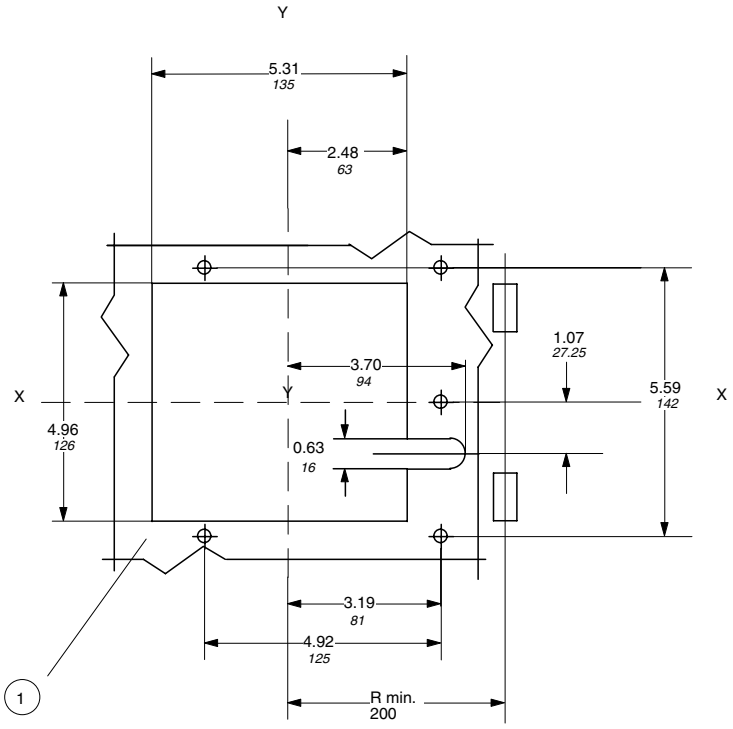
LEGEND

1-FLANGE FOR THE COMPARTMENT DOOR
2-PLUG FOR MOTOR OPERATOR
3-DRILLING TEMPLATE

Approximate dimensions
S5 Motor operator w/ withdrawable





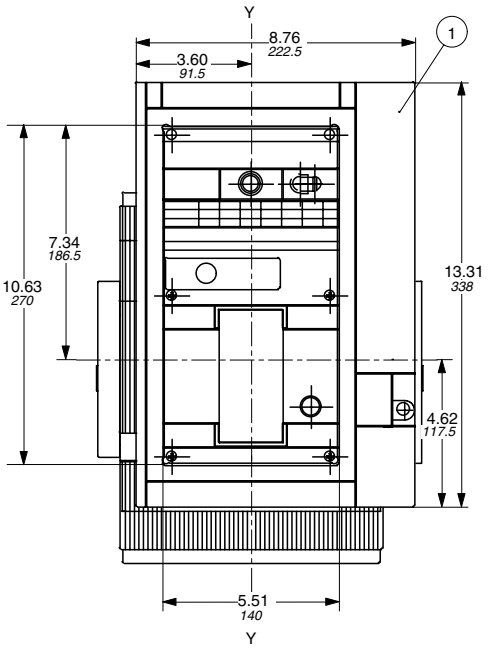


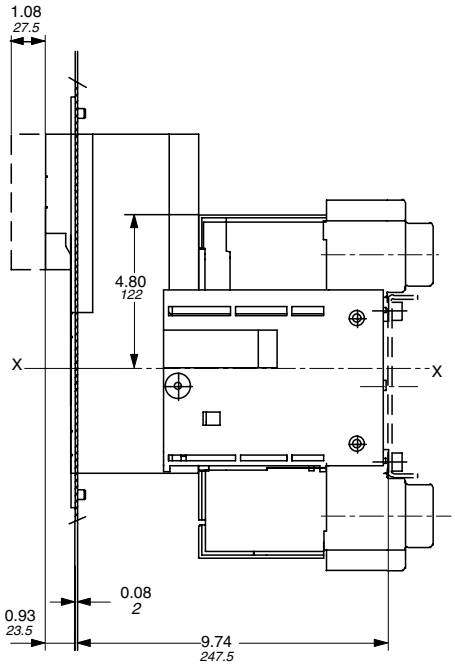
LEGEND

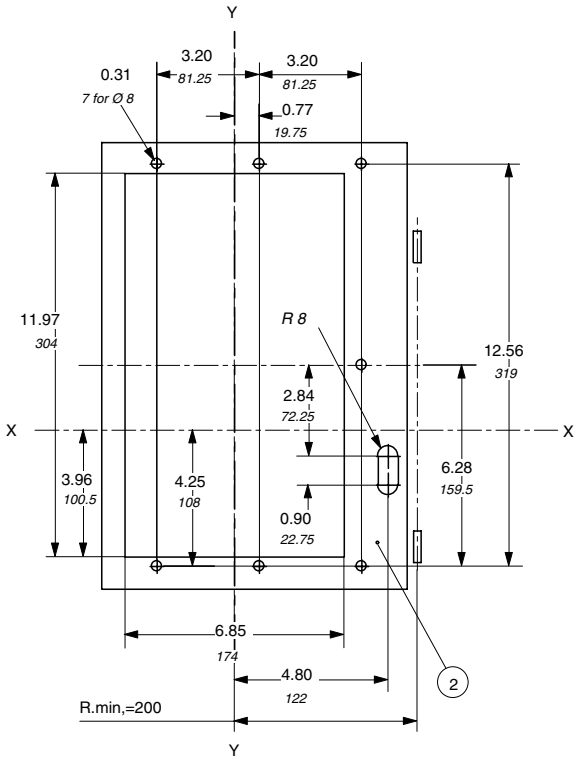
1-MOUNTING HOLES FOR FRONT FLANGE
2-FLANGE FOR THE COMPARTMENT DOOR

Approximate dimensions
S6 Motor operator w/ withdrawable

00.00 Inches
00.00 Millimeters



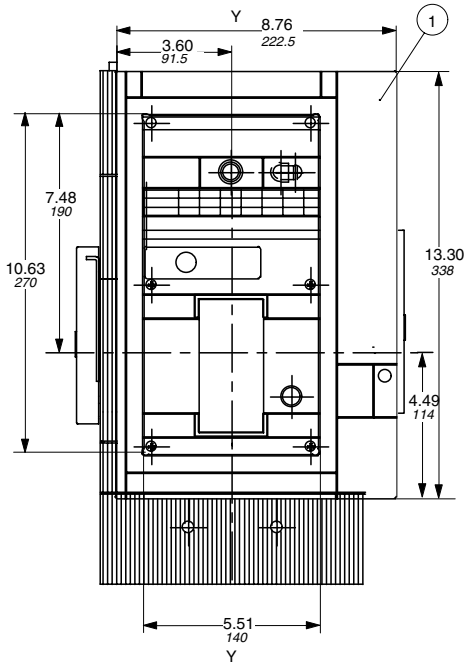


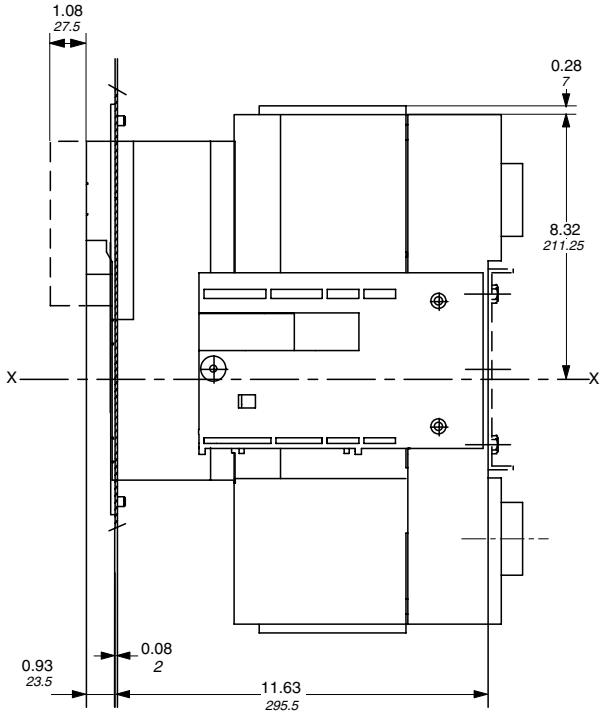


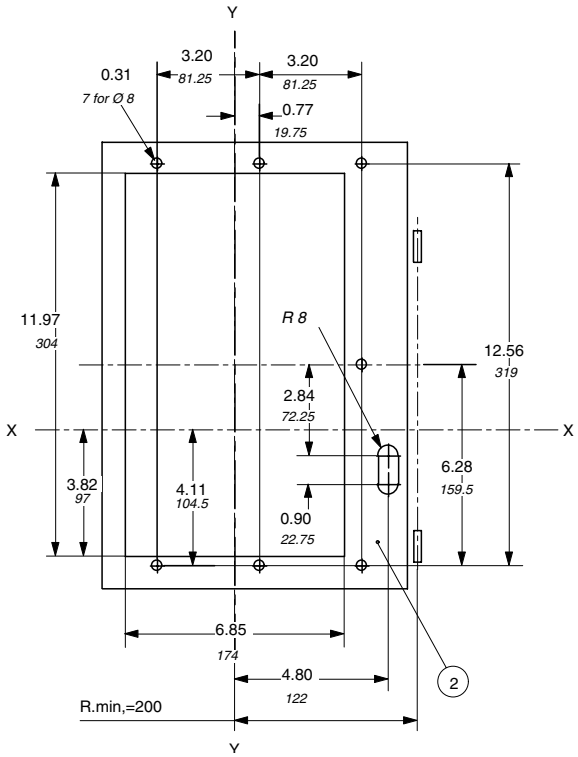
LEGEND

1-FLANGE FOR THE COMPARTMENT DOOR
2-DRILLING TEMPLATE

Approximate dimensions
S7 Motor operator w/ withdrawable







LEGEND

1-FLANGE FOR THE COMPARTMENT DOOR
2-DRILLING TEMPLATE

Isomax

Notes

00.00
00.00
Inches
Millimeters

General information
Emax

ABB's Emax series of low voltage power circuit breakers embodies over half a century's experience and technological development in power circuit breakers.The Emax offers a series of breakers that is totally innovative in its technological design, ease of installation and use, making it the ideal solution for the growing requirements of designers, switchboards and switchgear manufacturers, installers, OEMs and users.

The Emax power circuit breakers are UL Listed and meet the ANSI Standard for low voltage power circuit breakers.

ABB Emax power circuit breakers are available in five different models (four sizes) with rated continuous current from 800A to 5000A and rated short-circuit current range from 42kA to 125kA (480V).

Technical catalog 604022/011 is available upon request.

General information
UL general ratings and specifications

E1

E2

E3

Circuit breaker type			E1	E2		E3		
Performance level			**B-A**	**B-A**	**N-A**	**N-A**	**S-A**	**H-A**
Rated continuous current, UL1066		A	800	1600	1200	2000	1200	1200
File # E194191		A	1200	—	1600	2500	1600	1600
		A	—	—	—	—	2000	2000
		A	—	—	—	—	2500	2500
Rated short circuit current	240V	kA	42	42	65	65	85	85
	480V	kA	42	42	50	50	65	85
	600V	kA	35	42	50	50	65	65
Rated short time current		kA	35	42	50	50	65	65
Trip units								
PR111/P-A			•	•	•	•	•	•
PR112/P-A			•	•	•	•	•	•
Operation times								
Make time (max)		ms	80	80	80	80	80	80
Break time (I<ST current)(max)		ms	70	70	70	70	70	70
Break time (I>ST current)(max)		ms	30	30	30	30	30	30
Overall dimensions								
Fixed:	H=418mm / 16.46in D=302mm / 11.89in W (3 poles)	mm/in	296/11.65	296/11.65		404/15.91		
Drawout:	H=461mm / 18.15in D=396.5mm / 15.61in W (3 poles)	mm/in	324/12.76	324/12.76		432/17.01		
Weights (CB with releases, RH terminals and CTs, accessories exluded)								
Fixed 3 poles		Kg/lbs	42/93	46/101		68/150		
Drawout 3 poles		Kg/lbs	65/143	72/159		100/220		

Specifications common to the entire range

Rated max voltage	635V
Rated voltage	600V
Test voltage (1min 50/60Hz)	2.2kV
Frequency	50-60Hz
Number of poles	3
Versions	Fixed/Drawout

General information
UL general ratings and specifications

E4

E6

Circuit breaker type			E4			E6	
Performance level			**S-A**	**H-A**	**V-A**	**H-A**	**V-A**
Rated continuous current, UL 1066		A	3200	3200	3200	4000	4000
File # E194191		A	3600	3600	3600	5000	5000
		A	—	—	—	—	—
		A	—	—	—	—	—
Rated short circuit current	240V	kA	85	100	100	125	125
	480V	kA	65	85	100	85	125
	600V	kA	65	85	85	85	85
Rated short time current		kA	65	85	85	100	100
Trip units							
PR111/P-A			•	•	•	•	•
PR112/P-A			•	•	•	•	•
Operation times							
Make time (max)		ms	80	80	80	80	80
Break time (I<ST current)(max)		ms	70	70	70	70	70
Break time (I>ST current)(max)		ms	30	30	30	30	30
Overall dimensions							
Fixed: H=418mm / 16.46in D=302mm / 11.89in W (3 poles)		mm/in		566/22.28		782/30.79	
Drawout: H=461mm / 18.15in D=396.5 / 15.61in W (3 poles)		mm/in		594/23.39		810/31.89	
Weights (CB with releases, RH terminals and CTs, accessories excluded)							
Fixed 3 poles		Kg/lbs		95/209		140/309	
Drawout 3 poles		Kg/lbs		147/324		210/463	

Specifications common to the entire range

Rated max voltage	635V
Rated voltage	600V
Test voltage (1min 50/60Hz)	2.2kV
Frequency	50-60Hz
Number of poles	3
Versions	Fixed/Drawout

General information
Catalog number information
Emax breaker, UL

E 1 S 1 6 X X X X X X X X X X

Accessories: X = none
A = mechanical counter
B = button guard
F = A & B

Accessories: X = none
A = trip ind. mech.
B = trip ind. elect. & mech.
C = padlock (open)
D = keylock (open)
E = position lock
F = access pos. lock
G = A & C
H = A & D
J = A & E
K = A & F
L = A, C & E
M = A, C & F
N = B & C
P = B & D
Q = B & E
R = B & F
S = B, C & E
T = B, C & F
U = C & E
V = C & F
W = D & E
Y = D & F

Undervoltage trip: 0 = none
50/60Hz & VDC: A = 24VDC, B = 30, C = 48, D = 60, E = 110 – 120, F = 125 – 127, G = 220 – 240, H = 250, J = 380 – 400VAC, K = 440 – 480VAC

Shunt trip: 0 = none
50/60Hz & VDC: A = 24VDC, B = 30, C = 48, D = 60, E = 110 – 120, F = 125 – 127,G = 220 – 240, H = 250, J = 380 – 400VAC, K = 440 – 480VAC

Motor operator: (includes spring charged signal, P/N does not show)
0 = none, A = 24 – 30VAC/VDC, B = 48 – 60VAC/VDC, C = 110-130VAC/VDC, D = 220 – 250VAC/VDC, E = spring charged signal only

Contacts:
A = 4 aux
B = 10 aux
C = 15 aux
D = UV energ.N.O.
E = UV energ.N.C.
F = A & D
G = A & E
H = B&D
J = B & E
K = C & D
L = C & E

Closing coil: 0 = none
50/60Hz & VDC: A = 24VDC, B = 30, C = 48, D = 60, E = 110 – 120, F = 125 – 127, G = 220 – 240, H = 250, J = 380 – 400VAC, K = 440 – 480VAC

Terminal types: (Ist letter is upper terminal, 2nd letter is lower terminal)
H = rear horz., V = rear vert. ①
H = HH, V = VV
A = HV, B = VH

Trip unit: A = PR111/P, LI; B = PR111/P, LSI; C = PR111/P, LSIG
D = non-automatic; E = PR112/P, LSI; F = PR112/P, LSIG

Version: B = fixed breaker, UL; D = withdrawable breaker, UL, less cradle

Max. ampere rating: 08 = 800, 12 = 1200, 16 = 1600, 20 = 2000, 25 = 2500, 32 = 3200, 36 = 3600, 40 = 4000, 50 = 5000

Breaking capacity: B = basic, N = normal, S = standard, H = high, V = very high

Frame size: 1 = 1, 3P; 2 = 2, 3P; 3 = 3, 3P; 4 = 4, 3P; 6 = 6, 3P

Emax

① Will be shipped separately.

General information
Catalog number information
Emax, cradle (fixed part) UL

E 1 X 1 2 X X X

Accessories: X = none
A = shutter padlock

Contacts: 0 = none,
A = 5 position auxiliaries
B = 10 position auxiliaries

Terminal types: (Ist letter is upper terminal, 2nd letter is lower terminal)
H = rear horz., V = rear vert.
H = HH, V = VV
A = HV, B = VH

Max. ampere rating:
UL: 12 = 1200 (E1); 16 = 1600 (E2); 20 = 2000 (E3); 25 = 2500 (E3); 36 = 3600 (E4); 50 = 5000 (E6)

Version:K = cradle, UL

Frame size:
1 = 1, 3P; 2 = 2, 3P; 3 = 3, 3P; 4 = 4, 3P; 6 = 6, 3P

General information
Standard features

Fixed breaker		Drawout breaker	
Manual operated	Electrically operated	Manual operated	Electrically operated
T.U. — PR111/P, LI Aux. SW., 4 Spring charged indicator Flange English instructions Accessory support Terminal block Lifting plate	T.U — PR111/P, LI Motor operator Closing coil Shunt trip Aux. SW., 4 Spring charged indicator Flange English instructions Accessory support Terminal block Lifting plate	T.U. — PR111/P, LI Aux. SW., 4 Spring charged indicator Flange Crank English instructions Accessory support Sliding contacts Anti-insertion lock Lifting plate	T.U. — PR111/P, LI Motor operator Closing coil Shunt trip Aux. SW., 4 Spring charged indicator Flange Crank Accessory support Sliding contacts Anti-insertion lock Lifting plate

Emax
Fixed breakers
UL

Fixed breakers

Circuit breaker type	Frame amps	Interrupting ratings kA, 480V	Manually operated	Electrically operated	Set of three vertical terminals
E1B-A08	800	42	**$ 6815**	**$ 9176**	**$ 644**
E1B-A12	1200	42	**7321**	**9682**	**644**
E2N-A12	1200	50	**7819**	**10,180**	**690**
E3S-A12	1200	65	**8780**	**11,141**	**790**
E3H-A12	1200	85	**9048**	**11,409**	**790**
E2B-A16	1600	42	**7871**	**10,232**	**690**
E2N-A16	1600	50	**9082**	**11,443**	**690**
E3S-A16	1600	65	**9797**	**12,158**	**790**
E3H-A16	1600	85	**10,352**	**12,713**	**790**
E3N-A20	2000	50	**10,032**	**12,393**	**790**
E3S-A20	2000	65	**11,053**	**13,414**	**790**
E3H-A20	2000	85	**13,602**	**15,963**	**790**
E3N-A25	2500	50	**14,778**	**17,139**	**790**
E3S-A25	2500	65	**16,451**	**18,812**	**790**
E3H-A25	2500	85	**17,708**	**20,069**	**790**
E4S-A32	3200	65	**21,102**	**23,463**	**1664**
E4H-A32	3200	85	**21,566**	**23,927**	**1664**
E4V-A32	3200	100	**24,047**	**26,408**	**1664**
E4S-A36	3600	65	**23,939**	**26,300**	**1664**
E4H-A36	3600	85	**27,302**	**29,663**	**1664**
E4V-A36	3600	100	**28,666**	**31,027**	**1664**
E6H-A40	4000	85	**31,528**	**33,889**	**2783**
E6V-A40	4000	125	**43,932**	**46,293**	**2783**
E6H-A50	5000	85	**43,221**	**45,582**	**2783**
E6V-A50	5000	125	**51,684**	**54,045**	**2783**

Standard feature manually operated UL breaker:

- Rear horizontal terminals
- PR111 trip unit with LI protection functions
- Manual mechanical close and open pushbuttons
- CB open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Four N.O./N.C. auxiliary contacts for open/closed position indication
- Lifting plates
- Current transformers
- Terminal box

Emax
Withdrawable breakers
UL

Withdrawable breakers

Circuit breaker type	Frame amps	Interrupting ratings kA, 480V	Moving part only		Fixed part only	
			Manually operated	Electrically operated	RH terminals	Set of three vertical terminals
E1B-A08	800	42	**$ 7383**	**$ 9744**	**$ 2281**	**644**
E1B-A12	1200	42	**8375**	**10,736**	**2281**	**644**
E2N-A12	1200	50	**8814**	**11,175**	**2400**	**690**
E3S-A12	1200	65	**9220**	**11,581**	**2925**	**790**
E3H-A12	1200	85	**9633**	**11,994**	**2925**	**790**
E2B-A16	1600	42	**9320**	**11,681**	**2400**	**690**
E2N-A16	1600	50	**10,483**	**12,844**	**2400**	**690**
E3S-A16	1600	65	**10,931**	**13,292**	**2925**	**790**
E3H-A16	1600	85	**11,445**	**13,806**	**2925**	**790**
E3N-A20	2000	50	**11,386**	**13,747**	**2925**	**790**
E3S-A20	2000	65	**12,700**	**15,061**	**2925**	**790**
E3H-A20	2000	85	**14,262**	**16,623**	**2925**	**790**
E3N-A25	2500	50	**17,767**	**20,128**	**2925**	**790**
E3S-A25	2500	65	**20,315**	**22,676**	**2925**	**790**
E3H-A25	2500	85	**22,622**	**24,983**	**2925**	**790**
E4S-A32	3200	65	**23,800**	**26,161**	**6259**	**1664**
E4H-A32	3200	85	**24,447**	**26,808**	**6259**	**1664**
E4V-A32	3200	100	**25,863**	**28,224**	**6259**	**1664**
E4S-A36	3600	65	**26,863**	**29,224**	**6259**	**1664**
E4H-A36	3600	85	**30,865**	**33,226**	**6259**	**1664**
E4V-A36	3600	100	**31,948**	**34,309**	**6259**	**1664**
E6H-A40	4000	85	**34,676**	**37,037**	**7398**	**2783**
E6V-A40	4000	125	**46,570**	**48,931**	**7398**	**2783**
E6H-A50	5000	85	**46,402**	**48,763**	**7398**	**2783**
E6V-A50	5000	125	**57,078**	**59,439**	**7398**	**2783**

Standard feature electrically operated breaker — Moving part

- PR111 trip unit with LI protection feature
- Manual mechanical close and open pushbuttons
- CB open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Four N.O./N.C. auxiliary contacts for open-closed position indication
- Lifting plates
- Current transformers
- Racking device with closed door
- Circuit breaker racking position indicator
- Sliding contacts
- Fail safe device (not available with YU)

Standard feature electrically operated breaker — Fixed part

- Safety shutters
- Rear horizontal terminals
- Sliding contacts
- Anti-insertion lock
- Ground connection

Emax non-automatic air circuit breakers
(without trip unit and c.t.s.)
UL

Fixed breakers

Circuit breaker type	Frame amps	Interrupting ratings kA, 480V	Manually operated	Electrically operated	Set of three vertical terminals
E1B-A/MS08	800	42	**$ 5086**	**$ 7447**	**$ 644**
E1B-A/MS12	1200	42	**5592**	**7953**	**644**
E2N-A/MS12	1200	50	**6090**	**8451**	**690**
E3S-A/MS12	1200	65	**6944**	**9305**	**790**
E2B-A/MS16	1600	42	**6142**	**8503**	**690**
E2N-A/MS16	1600	50	**7353**	**9714**	**690**
E3S-A/MS16	1600	65	**7961**	**10,322**	**790**
E3N-A/MS20	2000	50	**8196**	**10,557**	**790**
E3S-A/MS20	2000	65	**9217**	**11,578**	**790**
E3N-A/MS25	2500	50	**12,942**	**15,303**	**790**
E3S-A/MS25	2500	65	**14,615**	**16,976**	**790**
E4S-A/MS32	3200	65	**18,733**	**21,094**	**1664**
E4H-A/MS32	3200	85	**19,197**	**21,558**	**1664**
E4S-A/MS36	3600	65	**21,570**	**23,931**	**1664**
E4H-A/MS36	3600	85	**24,933**	**27,294**	**1664**
E6H-A/MS40	4000	85	**28,946**	**31,307**	**2783**
E6H-A/MS50	5000	85	**40,639**	**43,000**	**2783**

Standard feature manually operated UL breaker:

Fixed breaker

- Rear horizontal terminals
- Manual mechanical close and open pushbuttons
- CB open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Lifting plates
- Terminal box

Emax non-automatic air circuit breakers
(without trip unit and c.t.s.)
UL

Withdrawable breakers

Circuit breaker type	Frame amps	Interrupting ratings kA, 480V	Moving part only		Fixed part only	
			Manually operated	Electrically operated	RH terminals	Set of three vertical terminals
E1B-A/MS08	800	42	**$ 5654**	**$ 8015**	**$ 2281**	**$ 644**
E1B-A/MS12	1200	42	**6646**	**9007**	**2281**	**644**
E2N-A/MS12	1200	50	**7085**	**9446**	**2400**	**690**
E3S-A/MS12	1200	65	**7384**	**9745**	**2925**	**790**
E2B-A/MS16	1600	42	**7591**	**9952**	**2400**	**690**
E2N-A/MS16	1600	50	**8754**	**11,115**	**2400**	**690**
E3S-A/MS16	1600	65	**9095**	**11,456**	**2925**	**790**
E3N-A/MS20	2000	50	**9550**	**11,911**	**2925**	**790**
E3S-A/MS20	2000	65	**10,864**	**13,225**	**2925**	**790**
E3N-A/MS25	2500	50	**15,931**	**18,292**	**2925**	**790**
E3S-A/MS25	2500	65	**18,479**	**20,840**	**2925**	**790**
E4S-A/MS32	3200	65	**21,431**	**23,792**	**6259**	**1664**
E4H-A/MS32	3200	85	**22,078**	**24,439**	**6259**	**1664**
E4S-A/MS36	3600	65	**24,494**	**26,855**	**6259**	**1664**
E4H-A/MS36	3600	85	**28,496**	**30,857**	**6259**	**1664**
E6H-A/MS40	4000	85	**32,094**	**34,455**	**7398**	**2783**
E6H-A/MS50	5000	85	**43,820**	**46,181**	**7398**	**2783**

Standard feature manually operated breaker

Withdrawable breaker – moving part

- Manual mechanical close and open pushbuttons
- Circuit breaker open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Lifting plates
- Racking device with closed door
- Circuit breaker racking position indicator
- Sliding contacts
- Fail-safe device (not available with YU)

Standard feature manually operated breaker

Withdrawable breaker – fixed part

- Safety shutters
- Rear horizontal terminals
- Sliding contacts
- Anti-insertion lock
- Ground connection

General information
IEC general ratings and specifications


E1


E2


E3


E4

Circuit breaker type				E1	E2			E3			
Performance level				B	B	N	L	N	S	H	L
Rated uninterrupted current (at 40°C) Iu			A	800	1600	1250	1250	2500	1250	1250	2000
breaking capacity			A	1250	2000	1600	1600	3200	1600	1600	2500
			A	—	—	2000	—	—	2000	2000	—
			A	—	—	—	—	—	2500	2500	—
			A	—	—	—	—	—	3200	3200	—
Capacity of neutral pole on four-pole circuit breakers			%Iu	100	100	100	100	100	100	100	100
Rated ultimate short-circuit	Icu	220/230/380/400/415V~	kA	40	40	65	130	65	75	100	130
breaking capacity		440V~	kA	40	40	65	110	65	75	100	110
		500/660/690V~	kA	36	40	55	85	65	75	85	85
		250V—	kA	36	40	55	—	65	75	75	—
Rated duty short-circuit	Ics	220/230/380/400/415V~	kA	40	40	65	130	65	75	85	130
breaking capacity		440V~	kA	40	40	65	110	65	75	85	110
		500/660/690V~	kA	36	40	55	65	65	75	85	65
		250V—	kA	36	40	55	—	65	75	75	—
Rated short-time withstand current	Icw	(1S)	kA	36	40	55	10	65	75	75	15
Rated short-circuit making	Icm	220/230//380/400/415V~	kA	84	84	143	286	143	165	220	286
capacity (peak value)		440V~	kA	84	84	143	242	143	165	220	242
		500/660/690V~	kA	75.6	84	121	187	143	165	187	187
Utilization category (in accordance with CEI EN 60947-2)				B	B	B	A	B	B	B	A
Isolation behavior (in accordance with CEI EN 60947-2)				•	•	•	•	•	•	•	•
Overcurrent protection											
Microprocessor-based releases for a.c. applications				•	•	•	•	•	•	•	•
Operating time											
Closing time (max)			ms	80	80	80	80	80	80	80	80
Break time for I<Icw (max) ①			ms	70	70	70	70	70	70	70	70
Break time for I>Icw (max)			ms	30	30	30	12	30	30	30	12
Dimensions											
Fixed: H=418mm D=302mm L(3/4 poli)=			mm	296/386	296/386			404/530			
Withdrawable: H=461mm D=396.5mm L(3/4 poli)=			mm	324/414	324/414			432/558			
Weights											
(circuit-breaker complete with releases and CT, excluding accessories)											
Fixed 3/4 pole			kg	42/50	46/55	46/55	45/53	68/80	68/80	68/80	67/79
Withdrawable 3/4 pole (including fixed part)			kg	65/80	72/89	72/89	70/87	100/125	100/125	100/125	100/120

Circuit-breaker type			E1B		E2 B-N			E2L		E3 N-S-H				
Rated uninterupted current (at 40°C)	Iu	A	800	1250	1250	1600	2000	1250	1600	1250	1600	2000	2500	3200
Mechanical life with regular routine maintenance		No. operations x 1000	25	25	25	25	25	20	20	20	20	20	20	20
Frequency	f	Operations per hour	60	60	60	60	60	60	60	60	60	60	60	60
Electrical life (440V~)		No. operations x 1000	10	10	15	12	10	4	3	12	10	9	8	6
Frequency	f	Operations per hour	30	30	30	30	30	20	20	20	20	20	20	20

① Without intentional delays.

General information
IEC general ratings and specifications

E6

Specifications common to the entire range

Voltages		
Rated service voltage	Ue	690~ / 250– V
Rated insulation voltage	Ui	1000 V
Rated impulse withstand voltage	Uimp	12 kV
Service temperature		-5 …+70 °C
Storage temperature		-40 …+70 °C
Frequency	f	50–60 Hz
Number of poles		3–4
Versions		Fixed / Withdrawable

Circuit breaker type				E4		E6	
Performance level				S	H	H	V
Rated uninterrupted current (at 40°C) Iu			A	4000	3200	5000	3200
			A	—	4000	6300	4000
			A	—	—	—	5000
			A	—	—	—	6300
			A	—	—	—	—
Capacity of neutral poles on four-pole circuit breakers			%Iu	50	50	50	50
Rated ultimate short-circuit breaking capacity	Icu	220/230/380/400/415V~	kA	75	100	100	150
		440V~	kA	75	100	100	150
		500/660/690V~	kA	75	85	75	85
		250V—	kA	75	100	100	100
Rated duty short-circuit breaking capacity	Ics	220/230/380/400/415V~	kA	75	100	100	125
		440V~	kA	75	100	100	125
		500/660/690V~	kA	75	85	75	85
		250V—	kA	75	100	100	100
Rated short-time withstand current	Icw		(1S)kA	75	100	100	100
Rated short-circuit making capacity (peak value)	Icm	220/230/380/400/415V~	kA	165	220	220	330
		440V~	kA	165	220	220	330
		500/660/690V~	kA	165	187	165	187
Utilization category (in accordance with CEI EN 60947-2)				B	B	B	B
Isolation behavior (in accordance with CEI EN 60947-2)				•	•	•	•
Overcurrent protection							
Microprocessor-based releases for a.c. applications				•	•	•	•
Operating time							
Closing time (max)			ms	80	80	80	80
Break time for I<Icw (max)①			ms	70	70	70	70
Break time for I>Icw (max)			ms	30	30	30	30
Dimensions							
Fixed: H=418mm D=302mm L(3/4 poli)=			mm	566/656		782/908	
Withdrawable: H=461mm D=396.5mm L(3/4 poli)=			mm	594/684		810/936	
Weights							
(circuit-breaker complete with releases and CT, excluding accessories)							
Fixed 3/4 pole			kg	95/115	95/115	140/170	140/170
Withdrawable 3/4 pole (including fixed part)			kg	147/190	147/190	210/260	210/260

Circuit-breaker type			E3L		E4 S-H		E6 H-V			
Rated uninterupted current (at 40°C)	Iu	(A)	2000	2500	3200	4000	3200	4000	5000	6300
Mechanical life with regular routine maintenance		(No. operations x 1000)	15	15	15	15	12	12	12	12
Frequency	f	(Operations per hour)	60	60	60	60	60	60	60	60
Electrical life (440V~)		(Operations x 1000)	2	1.8	7	5	5	4	3	2
Frequency	f	(Operations per hour)	20	20	10	10	10	10	10	10

① Without intentional delays.

General information
Catalog number information
Emax, IEC

E 1 S 1 6 X X X X X X X X X X

Accessories: X = none
A = mechanical counter
B = button guard
F = A & B

Accessories: X = none
A = trip ind. mech.
B = trip ind. elect. & mech.
C = padlock (open)
D = keylock (open)
E = position lock
F = access pos. lock
G = A & C
H = A & D
J = A & E
K = A & F
L = A,C & E
M = A, C & F
N = B & C
P = B & D
Q = B & E
R = B & F
S = B, C & E
T = B, C & F
U = C & E
V = C & F
W = D & E
Y = D & F

Undervoltage trip: 0 = none
50/60Hz & VDC: A = 24VDC, B = 30, C = 48, D = 60, E = 110 – 120, F = 120 – 127, G = 220 – 240, H = 240 - 250, J = 380 – 400VAC, K = 440 – 480VAC

Shunt trip: 0 = none
50/60Hz & VDC: A = 24VDC, B = 30, C = 48, D = 60, E = 110 – 120, F = 120 – 127, G = 220 – 240, H = 240 - 250, J = 380 – 400VAC, K = 440 – 480VAC

Motor operator: (includes spring charged signal, P/N does not show)
0 = none, A = 24 – 30VAC/VDC, B = 48 – 60VAC/VDC, C = 110-130VAC/VDC, D = 220 – 250VAC/VDC, E = spring charged signal only

Contacts:
A = 4 aux
B = 10 aux
C = 15 aux
D = UV energ.N.O.
E = UV energ.N.C.
F = A & D
G = A & E
H = B & D
J = B & E
K = C & D
L = C & E

Closing coil: 0 = none
50/60Hz & VDC: A = 24VDC, B = 30, C = 48, D = 60, E = 110 – 120, F = 120 – 127, G = 220 – 240, H = 240 - 250, J = 380 – 400VAC, K = 440 – 480VAC

Terminal types: (lst letter is upper terminal, 2nd letter is lower terminal)
H = rear horz., V = rear vert., F = front, L = rear flat
H = HH, V = VV, F = FF, L = LL,
A = HV, B = VH, C = HF, D = FH, E = HL, G = LH, J = VF, K = FV, M = VL, N = LV, P = FL, Q = LF

Trip unit: A = PR111/P, LI; B = PR111/P, LSI; C = PR111/P, LSIG; E = PR112/P, LSI; F = PR112/P, LSIG; G = PR112/P, LSI & PR112/PD; H = PR112/P, LSIG & PR112/PD, J = PR112/P, LSI & PR110/K; K = PR112/P, LSIG & PR110/K; L = PR112/PD, LSI & PR110/K; M = PR112/PD, LSIG & PR110/K; D = non-automatic

Version: F = fixed breaker, IEC; W = withdrawable breaker, IEC, less cradle

Max. ampere rating: 08 = 800, 12 = 1250, 16 = 1600, 20 = 2000, 25 = 2500, 32 = 3200, 40 = 4000, 50 = 5000, 63 = 6300

Breaking capacity: B = basic, N = normal, S = standard, H = high, V = very high, L = limiting

Frame size: 1 = 1, 3P; 2 = 2, 3P; 3 = 3, 3P; 4 = 4, 3P; 6 = 6, 3P; A = 1, 4P; B = 2, 4P; C = 3, 4P; D = 4, 4P; F = 6, 4P

General information
Catalog number information
Emax, cradle (fixed part), IEC

E 1 X 1 2 X X X

Accessories: X = none
A = shutter padlock

Contacts: 0 = none
A = 5 position auxiliaries
B = 10 position auxiliaries

Terminal types: (Ist letter is upper terminal, 2nd letter is lower terminal.)
H = rear horz., V = rear vert., F = front, L = rear flat
H = HH, V = VV, F = FF, L = LL,
A = HV, B = VH, C = HF, D = FH, E = HL, G = LH, J = VF, K = FV, M = VL, N = LV,
P = FL, Q = LF

Max. ampere rating: IEC: 12 = 1250 (E1); 20 = 2000 (E2); 32 = 3200 (E3); 40 = 4000 (E4); 63 = 6300 (E6)

Version: C = cradle, IEC

Frame size: 1 = 1, 3P; 2 = 2, 3P; 3 = 3, 3P; 4 = 4, 3P; 6 = 6, 3P
A = 1, 4P; B = 2, 4P; C = 3, 4P; D = 4, 4P; F = 6, 4P

Emax
Fixed breakers, 3 poles
IEC

Fixed breakers

Circuit breaker type	Frame amps	Interrupting ratings kA, 415V	Manually operated	Electrically operated	Set of three vertical terminals	Set of three front terminals
E1B08	800	40	**$ 6027**	**$ 8388**	**$ 644**	**$ 367**
E1B12	1250	40	**6656**	**9017**	**644**	**367**
E2N12	1250	65	**7314**	**9675**	**690**	**888**
E3S12	1250	75	**7808**	**10,169**	**790**	**1232**
E3H12	1250	100	**8036**	**10,397**	**790**	**1232**
E2L12	1250	130	**10,066**	**12,427**	**690**	**888**
E2B16	1600	40	**7293**	**9654**	**690**	**888**
E2N16	1600	65	**8014**	**10,375**	**690**	**888**
E3S16	1600	75	**8700**	**11,061**	**790**	**1232**
E3H16	1600	100	**9232**	**11,593**	**790**	**1232**
E2L16	1600	130	**11,422**	**13,783**	**690**	**888**
E2B20	2000	40	**8509**	**10,870**	**690**	**888**
E2N20	2000	65	**9024**	**11,385**	**690**	**888**
E3S20	2000	75	**9817**	**12,178**	**790**	**1232**
E3H20	2000	100	**11,762**	**14,123**	**790**	**1232**
E3L20	2000	130	**13,425**	**15,786**	**790**	**1232**
E3N25	2500	65	**13,870**	**16,231**	**790**	**1232**
E3S25	2500	75	**15,242**	**17,603**	**790**	**1232**
E3H25	2500	100	**16,948**	**19,309**	**790**	**1232**
E3L25	2500	130	**19,454**	**21,815**	**790**	**1232**
E3N32	3200	65	**17,963**	**20,324**	**790**	**1232**
E3S32	3200	75	**18,662**	**21,023**	**790**	**1232**
E3H32	3200	100	**20,217**	**22,578**	**790**	**1232**
E4H32	3200	100	**22,085**	**24,446**	**1664**	**1696**
E6V32	3200	150	**36,328**	**38,689**	**2783**	**2464**
E4S40	4000	75	**26,873**	**29,234**	**1664**	**1696**
E4H40	4000	100	**30,645**	**33,006**	**1664**	**1696**
E6V40	4000	150	**42,739**	**45,100**	**2783**	**2464**
E6H50	5000	100	**42,047**	**44,408**	**2783**	**2464**
E6V50	5000	150	**50,281**	**52,642**	**2783**	**2464**
E6H63	6300	100	**50,456**	**52,817**	**2783**	**2464**
E6V63	6300	150	**60,337**	**62,698**	**2783**	**2464**

Standard feature manually operated breaker —
Fixed breaker

- Rear horizontal terminals
- PR111 trip unit with LI protection functions
- Manual mechanical close and open pushbuttons
- CB open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Four N.O./N.C. auxiliary contacts for open-closed position indication
- Lifting plates
- Current transformers
- Terminal box

Emax
Withdrawable breakers, 3 poles
IEC

Withdrawable breakers

Circuit breaker type	Frame amps	Interrupting ratings kA, 415V	Moving part only		Fixed part		
			Manually operated	Electrically operated	RH terminals	Set of three vertical terminals	Set of three front terminals
E1B08	800	40	**$ 6501**	**$ 8862**	**$ 2281**	**$ 644**	**$ 367**
E1B12	1250	40	**7757**	**10,118**	**2281**	**644**	**367**
E2N12	1250	65	**8626**	**10,987**	**2400**	**690**	**888**
E3S12	1250	75	**8760**	**11,121**	**2925**	**790**	**1232**
E3H12	1250	100	**8897**	**11,258**	**2925**	**790**	**1232**
E2L12	1250	130	**12,180**	**14,541**	**2400**	**690**	**888**
E2B16	1600	40	**9097**	**11,458**	**2400**	**690**	**888**
E2N16	1600	65	**10,234**	**12,595**	**2400**	**690**	**888**
E3S16	1600	75	**10,674**	**13,035**	**2925**	**790**	**1232**
E3H16	1600	100	**11,100**	**13,461**	**2925**	**790**	**1232**
E2L16	1600	130	**15,920**	**18,281**	**2400**	**690**	**888**
E2B20	2000	40	**10,987**	**13,348**	**2400**	**690**	**888**
E2N20	2000	65	**11,182**	**13,543**	**2400**	**690**	**888**
E3S20	2000	75	**11,361**	**13,722**	**2925**	**790**	**1232**
E3H20	2000	100	**13,256**	**15,617**	**2925**	**790**	**1232**
E3L20	2000	130	**17,817**	**20,178**	**2925**	**790**	**888**
E3N25	2500	65	**15,220**	**17,581**	**2925**	**790**	**1232**
E3S25	2500	75	**17,896**	**20,257**	**2925**	**790**	**1232**
E3H25	2500	100	**19,528**	**21,889**	**2925**	**790**	**1232**
E3L25	2500	130	**22,892**	**25,253**	**2925**	**790**	**1232**
E3N32	3200	65	**22,337**	**24,698**	**2925**	**790**	**1232**
E3S32	3200	75	**23,340**	**25,701**	**2925**	**790**	**1232**
E3H32	3200	100	**23,724**	**26,085**	**2925**	**790**	**1232**
E4H32	3200	100	**23,842**	**26,203**	**6259**	**1664**	**1696**
E6V32	3200	150	**38,539**	**40,900**	**7398**	**2783**	**2464**
E4S40	4000	75	**30,399**	**32,760**	**6259**	**1664**	**1696**
E4H40	4000	100	**34,540**	**36,901**	**6259**	**1664**	**1696**
E6V40	4000	150	**45,340**	**47,701**	**7398**	**2783**	**2464**
E6H50	5000	100	**45,541**	**47,902**	**7398**	**2783**	**2464**
E6V50	5000	150	**53,341**	**55,702**	**7398**	**2783**	**2464**
E6H63	6300	100	**64,163**	**66,524**	**7398**	**2783**	**2464**
E6V63	6300	150	**78,427**	**80,788**	**7398**	**2783**	**2464**

Standard feature electrically operated breaker — Moving part

- PR111 trip unit with LI protection functions
- Manual mechanical close and open pushbuttons
- CB open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Four N.O./N.C. auxiliary contacts for open-closed position indication
- Lifting plates
- Current transformers
- Racking device with closed door
- Circuit breaker racking position indicator
- Sliding contacts

Standard feature electrically operated breaker — Fixed part

- Safety shutters
- Rear horizontal terminals
- Sliding contacts
- Anti-insertion lock
- Ground connection

Emax
Fixed breakers, 4 poles
IEC

Fixed breakers

Circuit breaker type	Frame amps	Interrupting ratings kA, 415V	Manually operated	Electrically operated	Set of four vertical terminals	Set of four front terminals
E1B08	800	40	**$ 7475**	**$ 9836**	**$ 837**	**$ 489**
E1B12	1250	40	**8293**	**10,654**	**837**	**489**
E2N12	1250	65	**9148**	**11,509**	**897**	**1183**
E3S12	1250	75	**9306**	**11,667**	**1027**	**1643**
E3H12	1250	100	**9591**	**11,952**	**1027**	**1643**
E2L12	1250	130	**12,725**	**15,086**	**897**	**1183**
E2B16	1600	40	**9121**	**11,482**	**897**	**1183**
E2N16	1600	65	**10,059**	**12,420**	**897**	**1183**
E3S16	1600	75	**10,413**	**12,774**	**1027**	**1643**
E3H16	1600	100	**10,550**	**12,911**	**1027**	**1643**
E2L16	1600	130	**14,488**	**16,849**	**897**	**1183**
E2B20	2000	40	**10,701**	**13,062**	**897**	**1183**
E2N20	2000	65	**11,371**	**13,732**	**897**	**1183**
E3S20	2000	75	**11,795**	**14,156**	**1027**	**1643**
E3H20	2000	100	**13,621**	**15,982**	**1027**	**1643**
E3L20	2000	130	**17,093**	**19,454**	**1027**	**1643**
E3N25	2500	65	**17,671**	**20,032**	**1027**	**1643**
E3S25	2500	75	**19,454**	**21,815**	**1027**	**1643**
E3H25	2500	100	**21,672**	**24,033**	**1027**	**1643**
E3L25	2500	130	**24,930**	**27,291**	**1027**	**1643**
E3N32	3200	65	**22,992**	**25,353**	**1027**	**1643**
E3S32	3200	75	**23,900**	**26,261**	**1027**	**1643**
E3H32	3200	100	**27,307**	**29,668**	**1027**	**1643**
E4H32	3200	100	**28,351**	**30,712**	**2163**	**2260**
E6V32	3200	150	**45,410**	**47,771**	**3618**	**3286**
E4S40	4000	75	**34,610**	**36,971**	**2163**	**2260**
E4H40	4000	100	**39,516**	**41,877**	**2163**	**2260**
E6V40	4000	150	**53,424**	**55,785**	**3618**	**3286**
E6H50	5000	100	**52,558**	**54,919**	**3618**	**3286**
E6V50	5000	150	**62,852**	**65,213**	**3618**	**3286**
E6H63	6300	100	**63,070**	**65,431**	**3618**	**3286**
E6V63	6300	150	**75,422**	**77,783**	**3618**	**3286**

Standard feature manually operated breaker —
Fixed breaker

- Rear horizontal terminals
- PR111 trip unit with LI protection functions
- Manual mechanical close and open pushbuttons
- CB open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Four N.O./N.C. auxiliary contacts for open-closed position indication
- Lifting plates
- Current transformers
- Terminal box

Emax
Withdrawable breakers, 4 poles
IEC

Withdrawable breakers

Circuit breaker type	Frame amps	Interrupting ratings kA, 415V	Moving part only		Fixed part		
			Manually operated	Electrically operated	RH terminals	Set of four vertical terminals	Set of four front terminals
E1B08	800	40	**$ 7717**	**$ 10,078**	**$ 2572**	**$ 837**	**$ 489**
E1B12	1250	40	**10,649**	**13,010**	**2572**	**837**	**489**
E2N12	1250	65	**11,372**	**13,733**	**3192**	**897**	**1183**
E3S12	1250	75	**11,906**	**14,267**	**3890**	**1027**	**1643**
E3H12	1250	100	**12,229**	**14,590**	**3890**	**1027**	**1643**
E2L12	1250	130	**15,402**	**17,763**	**3192**	**897**	**1183**
E2B16	1600	40	**11,395**	**13,756**	**3192**	**897**	**1183**
E2N16	1600	65	**12,873**	**15,234**	**3192**	**897**	**1183**
E3S16	1600	75	**12,472**	**14,833**	**3890**	**1027**	**1643**
E3H16	1600	100	**13,304**	**15,665**	**3890**	**1027**	**1643**
E2L16	1600	130	**20,264**	**22,625**	**3192**	**897**	**1183**
E2B20	2000	40	**13,851**	**16,212**	**3192**	**897**	**1183**
E2N20	2000	65	**15,661**	**18,022**	**3192**	**897**	**1183**
E3S20	2000	75	**14,873**	**17,234**	**3890**	**1027**	**1643**
E3H20	2000	100	**16,784**	**19,145**	**3890**	**1027**	**1643**
E3L20	2000	130	**22,714**	**25,075**	**3890**	**1027**	**1643**
E3N25	2500	65	**20,380**	**22,741**	**3890**	**1027**	**1643**
E3S25	2500	75	**22,816**	**25,177**	**3890**	**1027**	**1643**
E3H25	2500	100	**24,938**	**27,299**	**3890**	**1027**	**1643**
E3L25	2500	130	**29,312**	**31,673**	**3890**	**1027**	**1643**
E3N32	3200	65	**29,555**	**31,916**	**3890**	**1027**	**1643**
E3S32	3200	75	**29,893**	**32,254**	**3890**	**1027**	**1643**
E3H32	3200	100	**32,017**	**34,378**	**3890**	**1027**	**1643**
E4H32	3200	100	**32,589**	**34,950**	**8324**	**2163**	**2260**
E6V32	3200	150	**49,722**	**52,083**	**9839**	**3618**	**3286**
E4S40	4000	75	**41,350**	**43,711**	**8324**	**2163**	**2260**
E4H40	4000	100	**44,409**	**46,770**	**8324**	**2163**	**2260**
E6V40	4000	150	**58,496**	**60,857**	**9839**	**3618**	**3286**
E6H50	5000	100	**58,680**	**61,041**	**9839**	**3618**	**3286**
E6V50	5000	150	**68,820**	**71,181**	**9839**	**3618**	**3286**
E6H63	6300	100	**82,888**	**85,249**	**9839**	**3618**	**3286**
E6V63	6300	150	**101,432**	**103,793**	**9839**	**3618**	**3286**

Standard feature electrically operated breaker — Moving part

- PR111 trip unit with LI protection functions
- Manual mechanical close and open pushbuttons
- CB open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Four N.O./N.C. auxiliary contacts for open-closed position indication
- Lifting plates
- Current transformers
- Racking device with closed door
- Circuit breaker racking position indicator
- Sliding contacts

Standard feature electrically operated breaker — Fixed part

- Safety shutters
- Rear horizontal terminals
- Sliding contacts
- Anti-insertion lock
- Ground connection

Emax non-automatic air circuit breaker
Without trip unit and c.t.s.
IEC

Fixed breakers, 3 pole

Circuit breaker type	Frame amps	Manually operated	Electrically operated	Set of three vertical terminals	Set of three front terminals
E1B/MS08	800	**$ 4298**	**$ 6659**	**$ 644**	**$ 367**
E1B/MS12	1250	**4927**	**7288**	**644**	**367**
E2N/MS12	1250	**5585**	**7946**	**690**	**888**
E3S/MS12	1250	**5972**	**8333**	**790**	**1232**
E2B/MS16	1600	**5564**	**7925**	**690**	**888**
E2N/MS16	1600	**6285**	**8646**	**690**	**888**
E3S/MS16	1600	**6864**	**9225**	**790**	**1232**
E2B/MS20	2000	**6780**	**9141**	**690**	**888**
E2N/MS20	2000	**7295**	**9656**	**690**	**888**
E3S/MS20	2000	**7981**	**10,342**	**790**	**1232**
E3N/MS25	2500	**12,034**	**14,395**	**790**	**1232**
E3S/MS25	2500	**13,406**	**15,767**	**790**	**1232**
E3N/MS32	3200	**16,127**	**18,488**	**790**	**1232**
E3S/MS32	3200	**16,826**	**19,187**	**790**	**1232**
E4S/MS40	4000	**24,504**	**26,865**	**1664**	**1696**
E4H/MS40	4000	**28,276**	**30,637**	**1664**	**1696**
E6H/MS50	5000	**39,465**	**41,826**	**2783**	**2464**
E6H/MS63	6300	**47,874**	**50,235**	**2783**	**2464**

Standard feature manually operated breaker —
Fixed breaker

- Rear horizontal terminals
- Manual mechanical close and open pushbuttons
- Circuit breaker open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Lifting plates
- Terminal box

Emax non-automatic air circuit breaker
Without trip unit and c.t.s.
IEC

Fixed breakers, 3 pole

Circuit breaker type	Ampere frame amps	Moving part only		Fixed part RH terminals	Set of 3 vertical terminals	Set of 3 front terminals
		Manually operated	Electrically operated			
E1B/MS08	800	**$ 4772**	**$ 7133**	**$ 2281**	**$ 644**	**$ 367**
E1B/MS12	1250	**6028**	**8389**	**2281**	**644**	**367**
E2N/MS12	1250	**6897**	**9258**	**2400**	**690**	**888**
E3S/MS12	1250	**6924**	**9285**	**2925**	**790**	**1232**
E2B/MS16	1600	**7368**	**9729**	**2400**	**690**	**888**
E2N/MS16	1600	**8505**	**10,866**	**2400**	**690**	**888**
E3S/MS16	1600	**8838**	**11,199**	**2925**	**790**	**1232**
E2B/MS20	2000	**9258**	**11,619**	**2400**	**690**	**888**
E2N/MS20	2000	**9453**	**11,814**	**2400**	**690**	**888**
E3S/MS20	2000	**9525**	**11,886**	**2925**	**790**	**1232**
E3N/MS25	2500	**13,384**	**15,745**	**2925**	**790**	**1232**
E3S/MS25	2500	**16,060**	**18,421**	**2925**	**790**	**1232**
E3N/MS32	3200	**20,501**	**22,862**	**2925**	**790**	**1232**
E3S/MS32	3200	**21,540**	**23,865**	**2925**	**790**	**1232**
E4S/MS40	4000	**28,030**	**30,391**	**6259**	**1664**	**1696**
E4H/MS40	4000	**32,171**	**34,532**	**6259**	**1664**	**1696**
E6H/MS50	5000	**42,959**	**45,320**	**7398**	**2783**	**2464**
E6H/MS63	6300	**61,581**	**63,942**	**7398**	**2783**	**2464**

Standard feature manually operated breaker
Withdrawable breaker — moving part

- Manual mechanical close and open pushbuttons
- Circuit breaker open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Lifting plates
- Racking device with closed door
- Circuit breaker racking position indicator
- Sliding contacts

Standard feature manually operated breaker
Withdrawable breaker — fixed part

- Safety shutters
- Rear horizontal terminals
- Sliding contacts
- Anti-insertion lock
- Ground connection

Emax non-automatic air circuit breaker
Without trip unit and c.t.s.
IEC

Fixed breakers, 4 pole

Circuit breaker type	Frame amps	Manually operated	Electrically operated	Set of four vertical terminals	Set of four front terminals
E1B/MS08	800	**$ 5533**	**$ 7894**	**$ 837**	**$ 489**
E1B/MS12	1250	**6351**	**8712**	**837**	**489**
E2N/MS12	1250	**7206**	**9567**	**897**	**1183**
E3S/MS12	1250	**7221**	**9582**	**1027**	**1643**
E2B/MS16	1600	**7179**	**9540**	**897**	**1183**
E2N/MS16	1600	**8117**	**10,478**	**897**	**1183**
E3S/MS16	1600	**8328**	**10,689**	**1027**	**1643**
E2B/MS20	2000	**8759**	**11,120**	**897**	**1183**
E2N/MS20	2000	**9429**	**11,790**	**897**	**1183**
E3S/MS20	2000	**9710**	**12,071**	**1027**	**1643**
E3N/MS25	2500	**15,586**	**17,947**	**1027**	**1643**
E3S/MS25	2500	**17,369**	**19,730**	**1027**	**1643**
E3N/MS32	3200	**20,907**	**23,268**	**1027**	**1643**
E3S/MS32	3200	**21,815**	**24,176**	**1027**	**1643**
E4S/MS40	4000	**31,815**	**34,176**	**2163**	**2260**
E4H/MS40	4000	**36,721**	**39,082**	**2163**	**2260**
E6H/MS50	5000	**49,479**	**51,480**	**3618**	**3286**
E6H/MS63	6300	**59,991**	**62,352**	**3618**	**3286**

Standard feature manually operated breaker —
Fixed breaker

- Rear horizontal terminals
- Manual mechanical close and open pushbuttons
- Circuit breaker open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Lifting plates
- Terminal box

Emax non-automatic air circuit breaker
Without trip unit and c.t.s.
IEC

Fixed breakers, 4 pole

Circuit breaker type	Ampere frame amps	Moving part only		Fixed part RH terminals	Set of 4 vertical terminals	Set of 4 front terminals
		Manually operated	Electrically operated			
E1B/MS08	800	**$ 5775**	**$ 8136**	**$ 2572**	**$ 837**	**$ 489**
E1B/MS12	1250	**8707**	**11,068**	**2572**	**837**	**489**
E2N/MS12	1250	**9430**	**11,791**	**3192**	**897**	**1183**
E3S/MS12	1250	**9821**	**12,182**	**3890**	**1027**	**1643**
E2B/MS16	1600	**9453**	**11,814**	**3192**	**837**	**1183**
E2N/MS16	1600	**10,931**	**13,292**	**3192**	**897**	**1183**
E3S/MS16	1600	**10,387**	**12,748**	**3890**	**1027**	**1643**
E2B/MS20	2000	**11,909**	**14,270**	**3192**	**837**	**1183**
E2N/MS20	2000	**13,719**	**16,080**	**3192**	**897**	**1183**
E3S/MS20	2000	**12,788**	**15,149**	**3890**	**1027**	**1643**
E3N/MS25	2500	**18,295**	**20,656**	**3890**	**1027**	**1643**
E3S/MS25	2500	**20,731**	**23,092**	**3890**	**1027**	**1643**
E3N/MS32	3200	**27,470**	**29,831**	**3890**	**1027**	**1643**
E3S/MS32	3200	**27,808**	**30,169**	**3890**	**1027**	**1643**
E4S/MS40	4000	**38,555**	**40,916**	**8324**	**2163**	**2260**
E4H/MS40	4000	**41,614**	**43,975**	**8324**	**2163**	**2260**
E6H/MS50	5000	**55,601**	**57,962**	**9839**	**3618**	**3286**
E6H/MS63	6300	**79,809**	**82,170**	**9839**	**3618**	**3286**

Standard feature manually operated breaker
Withdrawable breaker — moving part

- Manual mechanical close and open pushbuttons
- Circuit breaker open/closed mechanical indicator
- Spring charged/discharged mechanical indicator
- Lifting plates
- Racking device with closed door
- Circuit breaker racking position indicator
- Sliding contacts

Standard feature manually operated breaker
Withdrawable breaker — fixed part

- Safety shutters
- Rear horizontal terminals
- Sliding contacts
- Anti-insertion lock
- Ground connection

Emax air circuit breakers
Installed optional features
UL & IEC

Prices refer to features mounted on the circuit breaker, see technical catalog (for spare parts please consult ABB Control)		List price
Options for trip units		
1) Overprice for trip unit PR111/P LSI		**$ 515**
2) Overprice for trip unit PR111/P LSIG		**1208**
3) Overprice for trip unit PR112/P LSI		**2210**
4) Overprice for trip unit PR112/P LSIG		**2904**
5) Automatic trip mechanical indicator with lockout		**188**
6) Automatic trip mechanical indicator with lockout and alarm contact		**348**
Electrical and mechanical accessories		
7) Shunt trip coil V_, Hz_	(included in the electrically operated breaker)	**374**
8) Closing coil V_, Hz_	(included in the electrically operated breaker)	**374**
9) Spring charging motor V_, Hz_ with limit switch and electrical indication charged springs	(included in the electrically operated breaker)	**1613**
10) Instantaneous undervoltage trip release V_, Hz_		**456**
11) Energized undervoltage release signalling contact		**82**
12) Auxiliary contacts (MOC) as alternative to the 2 N.O. + 2 N.C. standard supply		
12a) 5N.O. + 5N.C. (not available when PR112 is mounted)		**753**
12b) Additional 15 contacts set, field convertable N.O. or N.C., mounted outside the breaker and connected through flexible cable		**1507**
13) Auxiliary contacts (TOC) for service / test / disconnected position indication (cradle mounted)		
13a) 5 contacts		**377**
13b) 10 contacts		**753**
14) Mechanical operation counter		**418**
Locks / interlocks		
15) Transparent shield for Open and Close pushbuttons		**48**
16) Key lock in Open position (different keys)		**202**
17) Key interlock in Open position (different keys)		**202**
18) Padlocking device in Open position (padlocks not supplied)		**162**
19) Key + padlocking device to lock the breaker in service, test or disconnected position		**202**
20) Accessory to lock the breaker in test, or disconnected position only		**212**
21) Padlocking bracket for the safety shutters on the cradle		**43**
22) Door lock (prevents door opening when breaker is closed)		**888**

Neutral current transformer (required for 4 wire ground fault systems)

For breaker	Amps	Catalog number	List price
E1 – E2	250A	KE2NCT-250	**$ 406**
	400A	KE2NCT-400	
	800A	KE2NCT-800	
	1000A	KE2NCT-1000	
	1200A	KE2NCT-1200	
	1250A	KE2NCT-1250 ①	
	1600A	KE2NCT-1600	
E3	250A	KE3NCT-250	**414**
	400A	KE3NCT-400	
	800A	KE3NCT-800	
	1000A	KE3NCT-1000	
	1200A	KE3NCT-1200	
	1250A	KE3NCT-1250 ①	
	1600A	KE3NCT-1600	
	2000A	KE3NCT-2000	
	2500A	KE3NCT-2500	
E4	1600A	KE4NCT-1600	
	2000A	KE4NCT-2000	
	2500A	KE4NCT-2500	
	3200A	KE4NCT-3200	
	3600A	KE4NCT-3600	
	4000A	KE4NCT-4000 ①	
E6	3200A	KE6NCT-3200 ①	
	4000A	KE6NCT-4000	
	5000A	KE6NCT-5000	
	6300A	KE6NCT-6300 ①	

① IEC only.

Emax
External accessories
Mechanical interlocks①

Mechanical interlocks

For breaker	Interlock type	Catalog number	List price
Interlock plate for fixed curcuit breaker E1 – E6	All	KE6MLP	**$ 241**

NOTE: order for fixed circuit breaker only

Interlock for fixed circuit breaker/fixed part of withdrawable circuit breaker

For breaker	Interlock type	Catalog number	List price
E1 – E6	A, B, D C	KE6MLA KE6MLC	**628**

NOTE: order one accessory for each fixed circuit breaker/fixed part of withdrawable circuit breaker

Interlock for fixed circuit breaker/mobile part of withdrawable circuit breaker

For breaker	Interlock type	Catalog number	List price
E1 – E2 E3 E4, 3 pole E4, 4 pole/ E6, 3 pole E6, 4 pole	All	KE2ML KE3ML KE4ML-3 KE 6ML-3 KE6ML-4	**145**

NOTE: order one accessory for each fixed circuit breaker/mobile part of withdrawable circuit breaker

Interlock cables

For breaker	Interlock type	Horizontal Catalog number	Vertical Catalog number	List price
E1 – E6	A	KE6MLC-HA	KE6MLC-VA	**$ 97**
	B	KE6MLC-HB	KE6MLC-VB	**193**
	C	KE6MLC-HC	KE6MLC-VC	**193**
	D	KE6MLC-HD	KE6MLC-VD	**193**

NOTE: order type of cable for each interlock

Emax

① Consult factory

Transparent front cover (IP54)

For breaker	Catalog number	List price
E1 – E6	KE6DC	**$ 557**

Electronic time delay for UVR

For breaker	Delay	Voltage	Catalog number	List price
E1 – E6	0.5 – 1 – 1.5 – 2 – 3.5	24/30V 48V 110/125V 220/250V	KE6TL8 KE6TL7 KE6TL5 KE6TL3	**$ 428**

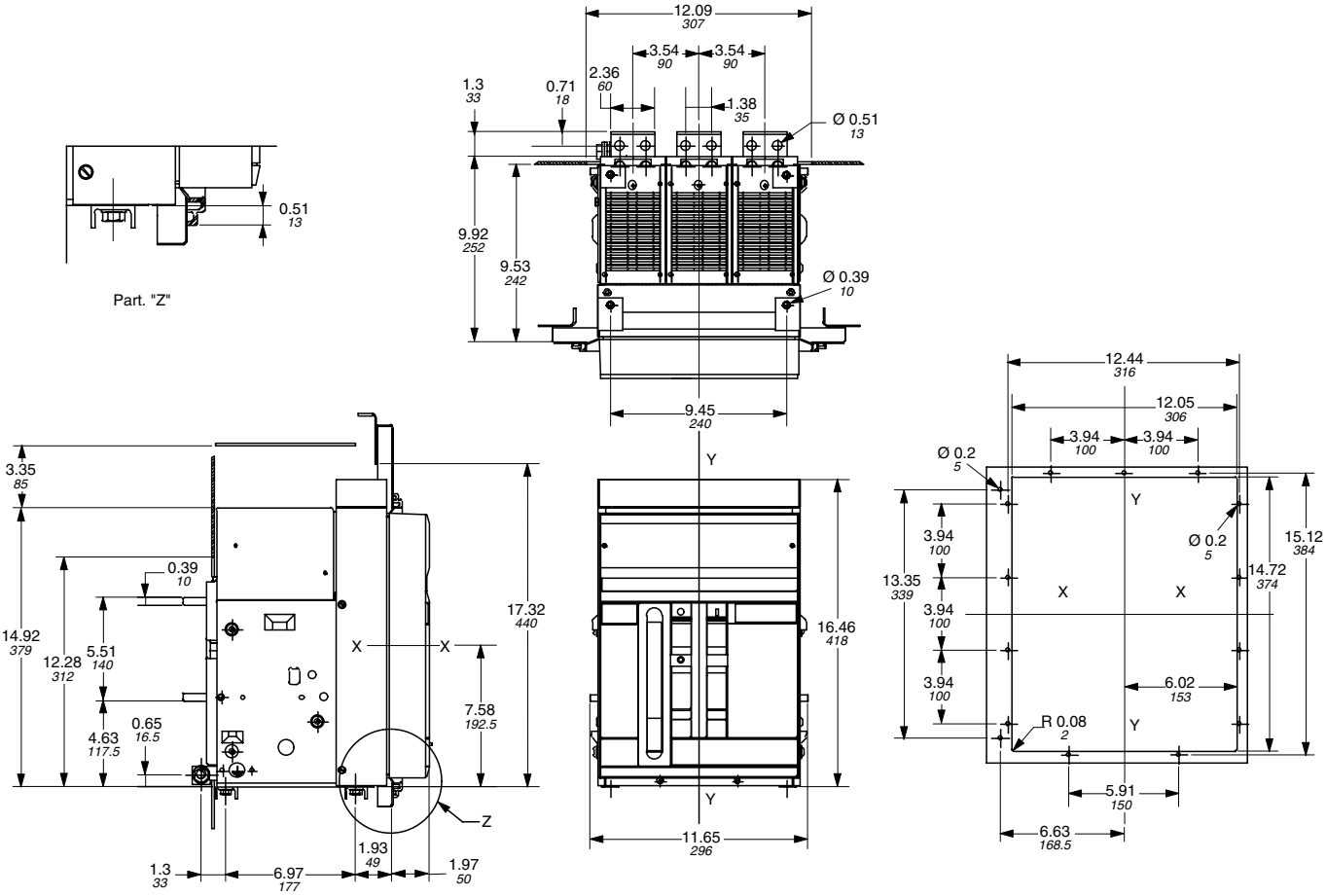
Kirk key lock adaptor plate (in open position)

For breaker	Interlock type	Catalog number	List price
E1 – E6	Adaptor plate	KE6KKA	**$ 1050**

NOTE: provision for kirk key lock (kirk key lock not included)

Approximate dimensions
E1, fixed with horizontal rear terminals

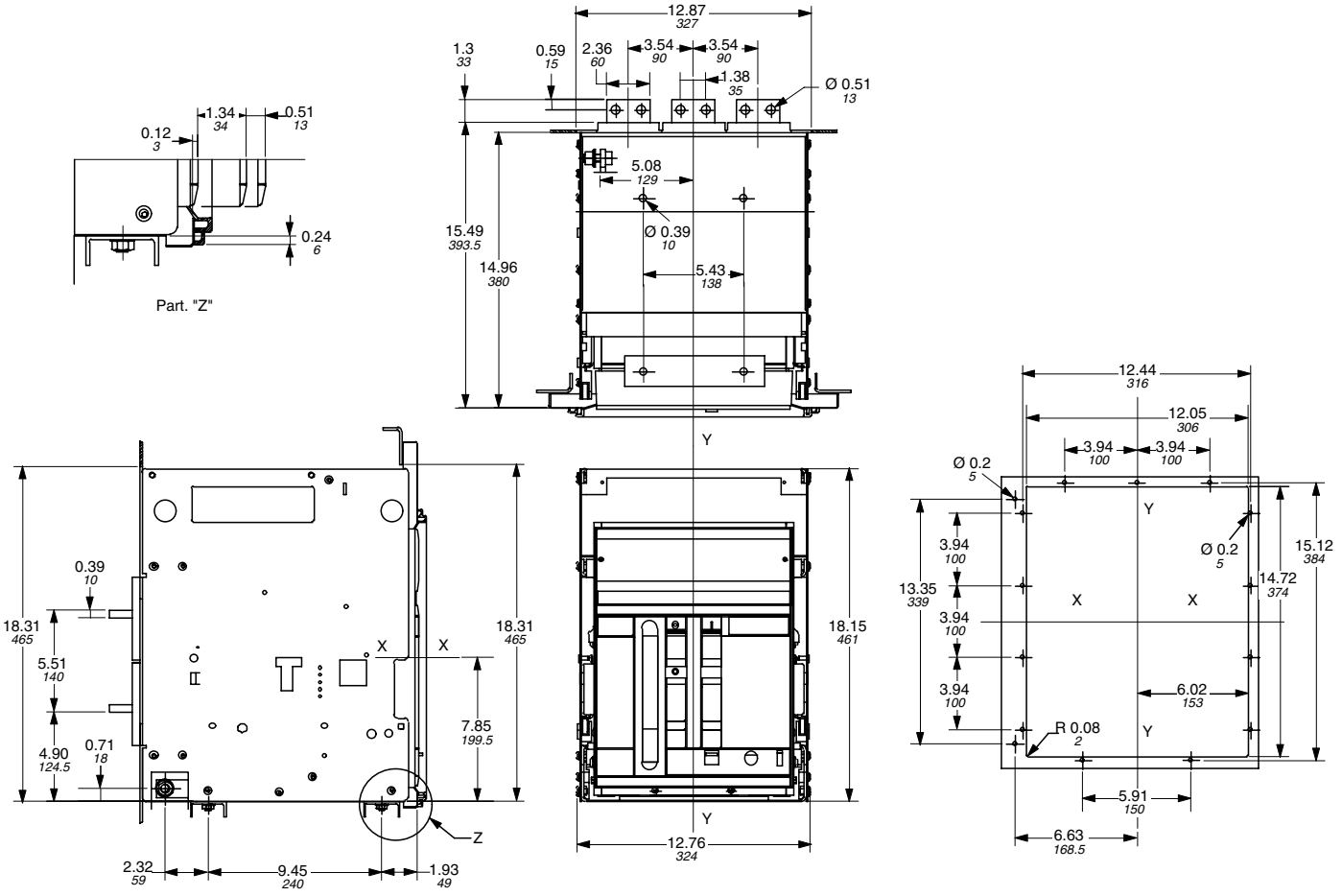
00.00 Inches
00.00 Millimeters



Emax

00.00 Inches
00.00 Millimeters

Approximate dimensions
E1, withdrawable with horizontal rear terminals

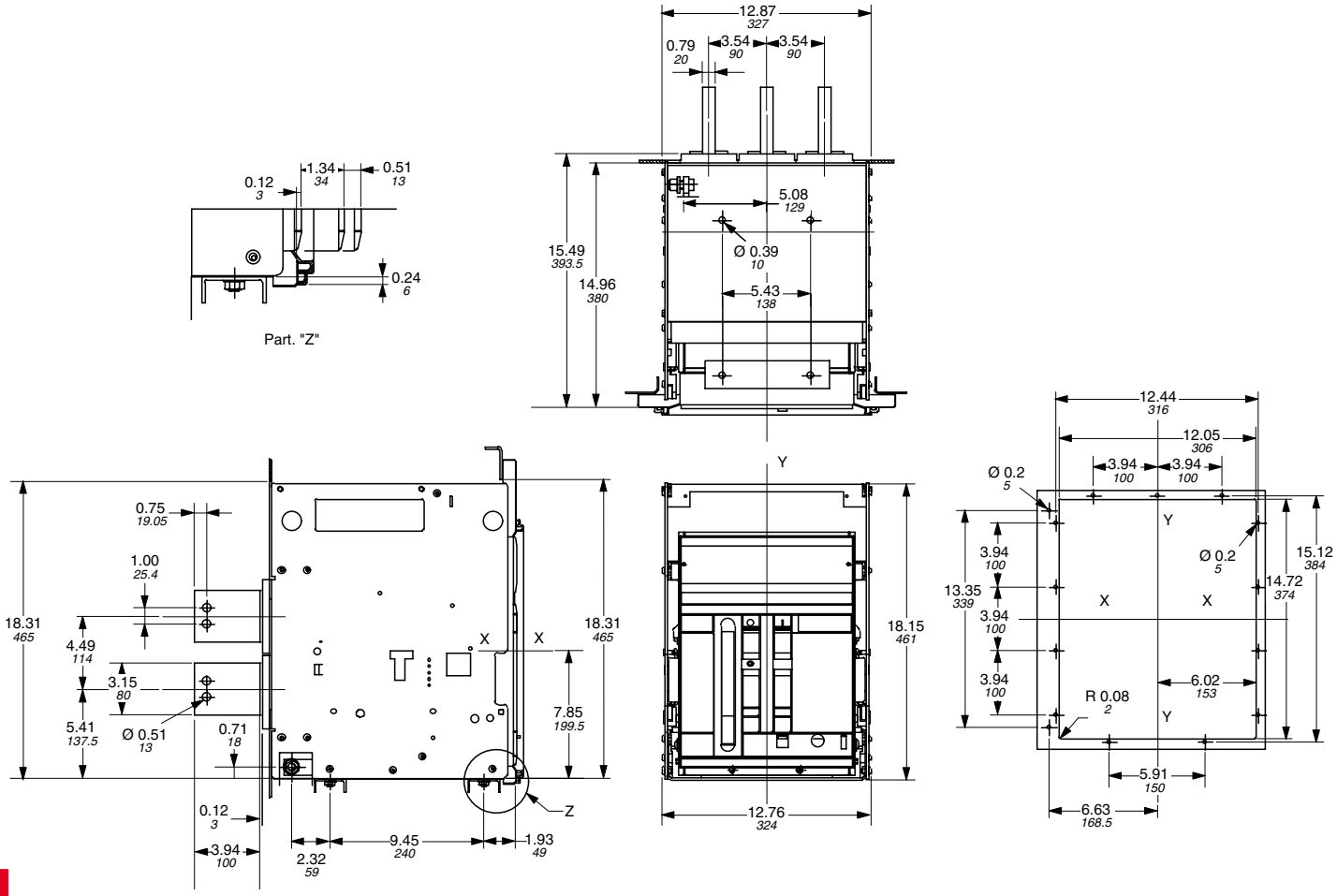


Emax

Approximate dimensions

E1 - E2, withdrawable with vertical rear terminals

00.00 Inches
00.00 Millimeters

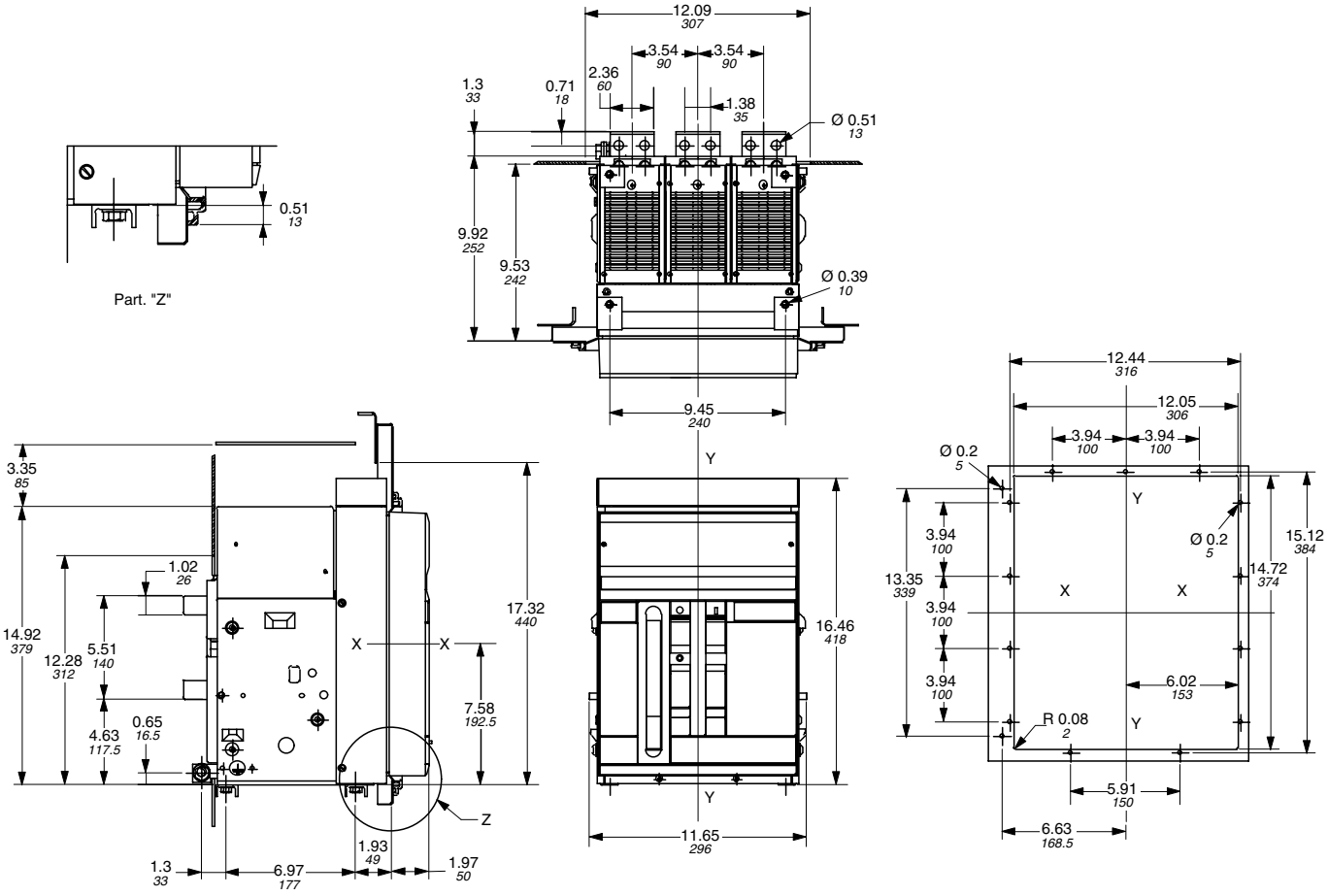


Emax

00.00 Inches
00.00 Millimeters

Approximate dimensions

E2, fixed with horizontal rear terminals

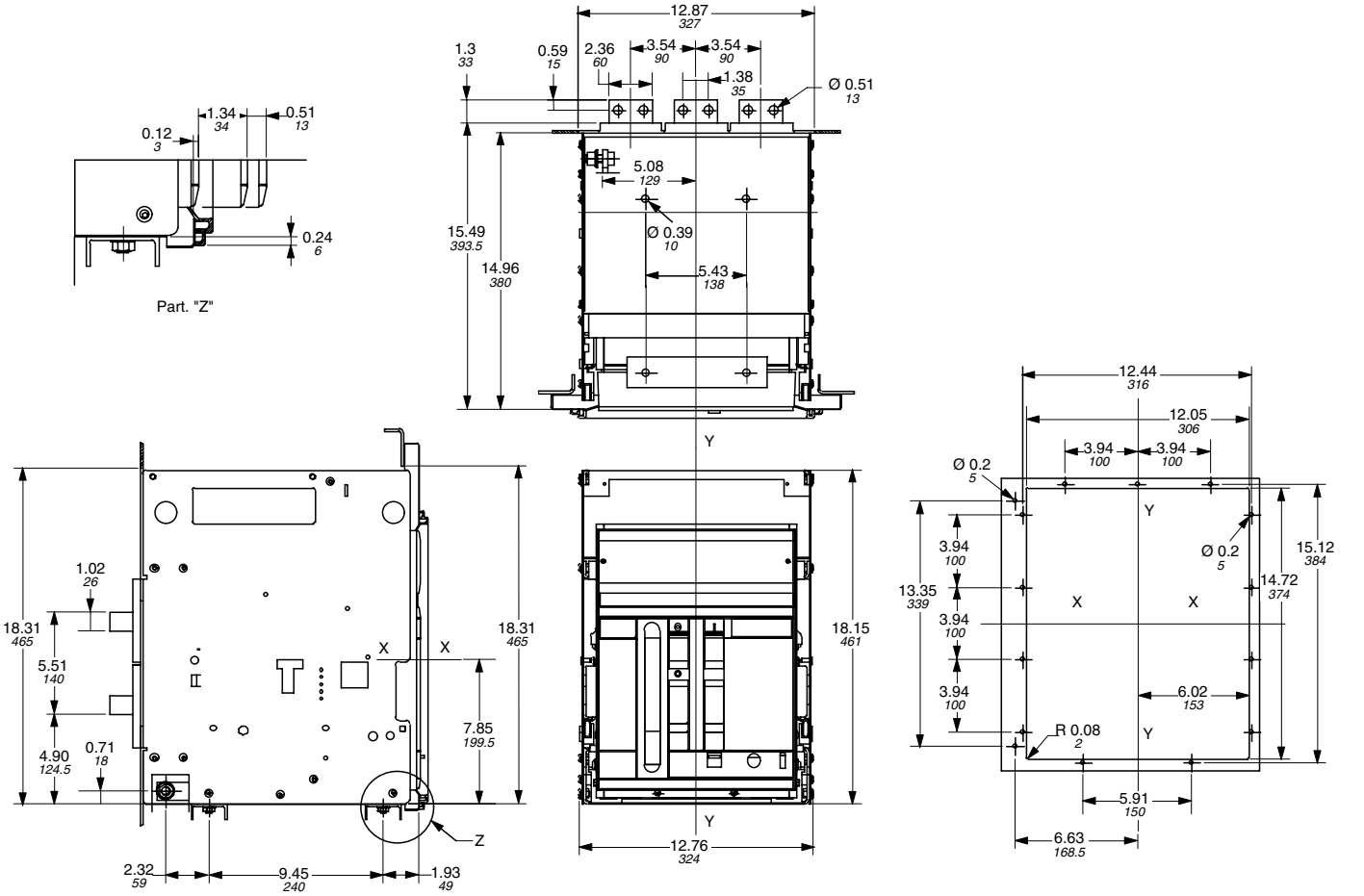


Emax

Approximate dimensions

E2, withdrawable with horizontal rear terminals

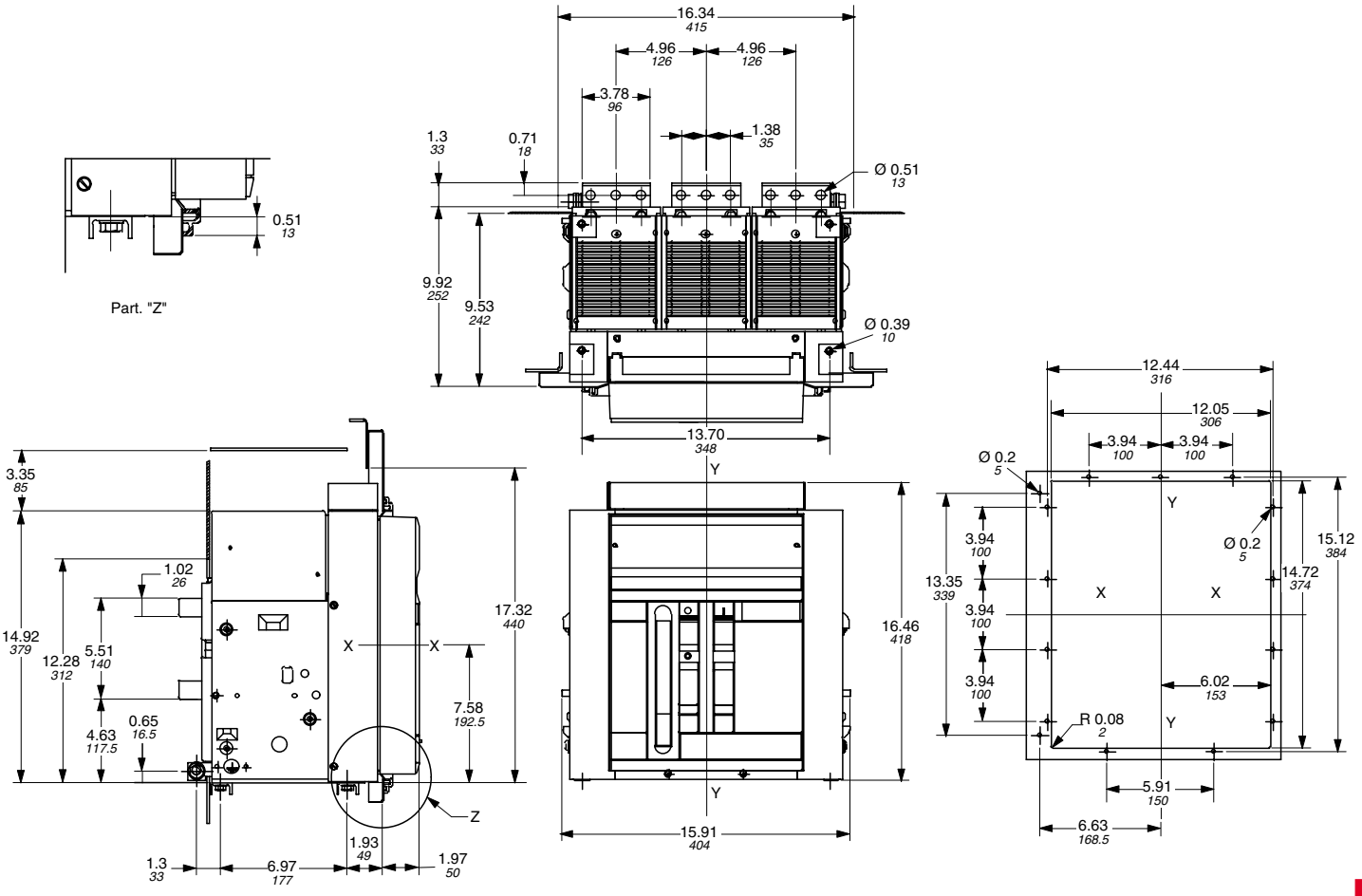
00.00 Inches
00.00 Millimeters



Emax

00.00 Inches
00.00 Millimeters

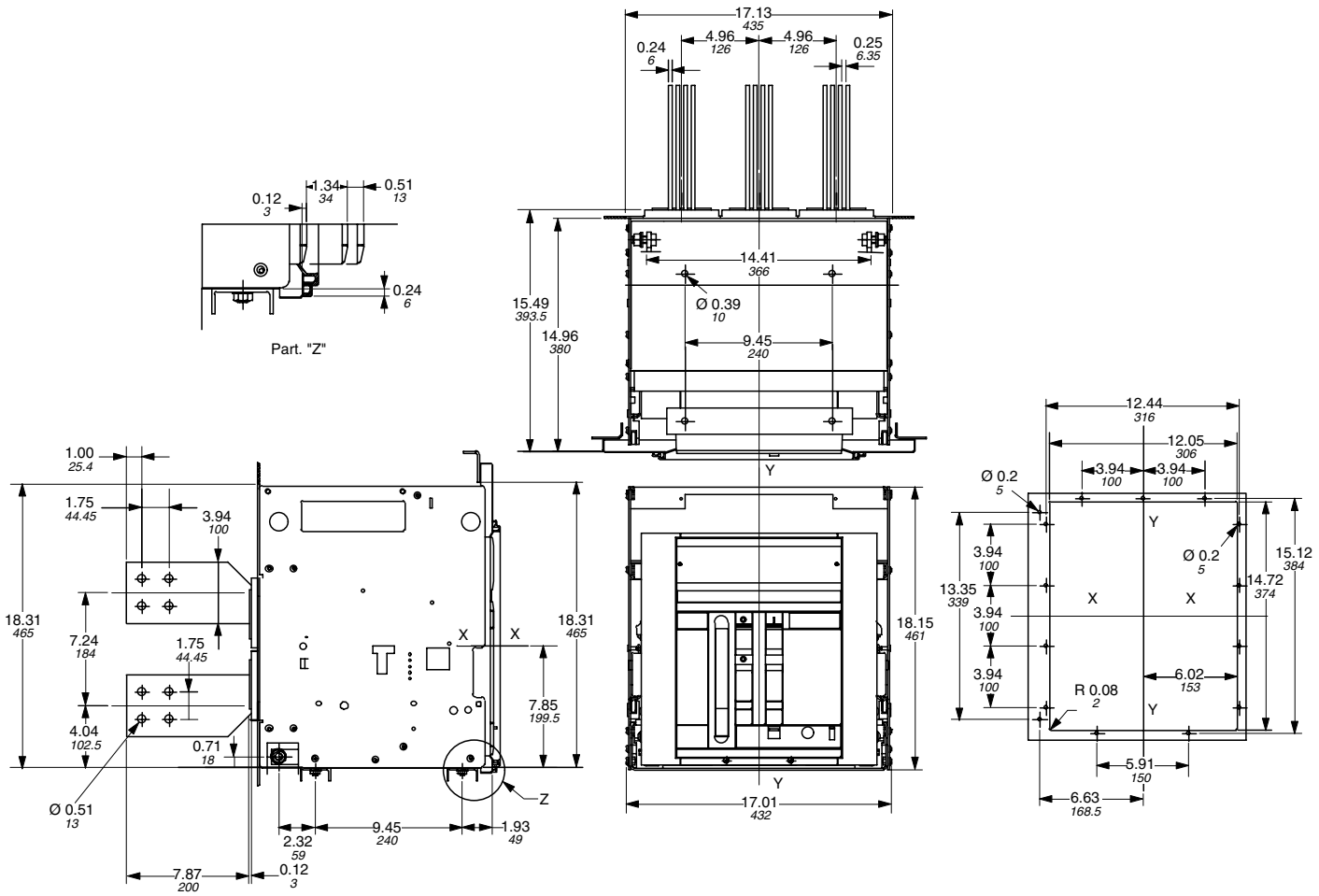
Approximate dimensions
E3, fixed with horizontal rear terminals



Emax

Approximate dimensions

E3 (2500A), withdrawable with vertical rear terminals

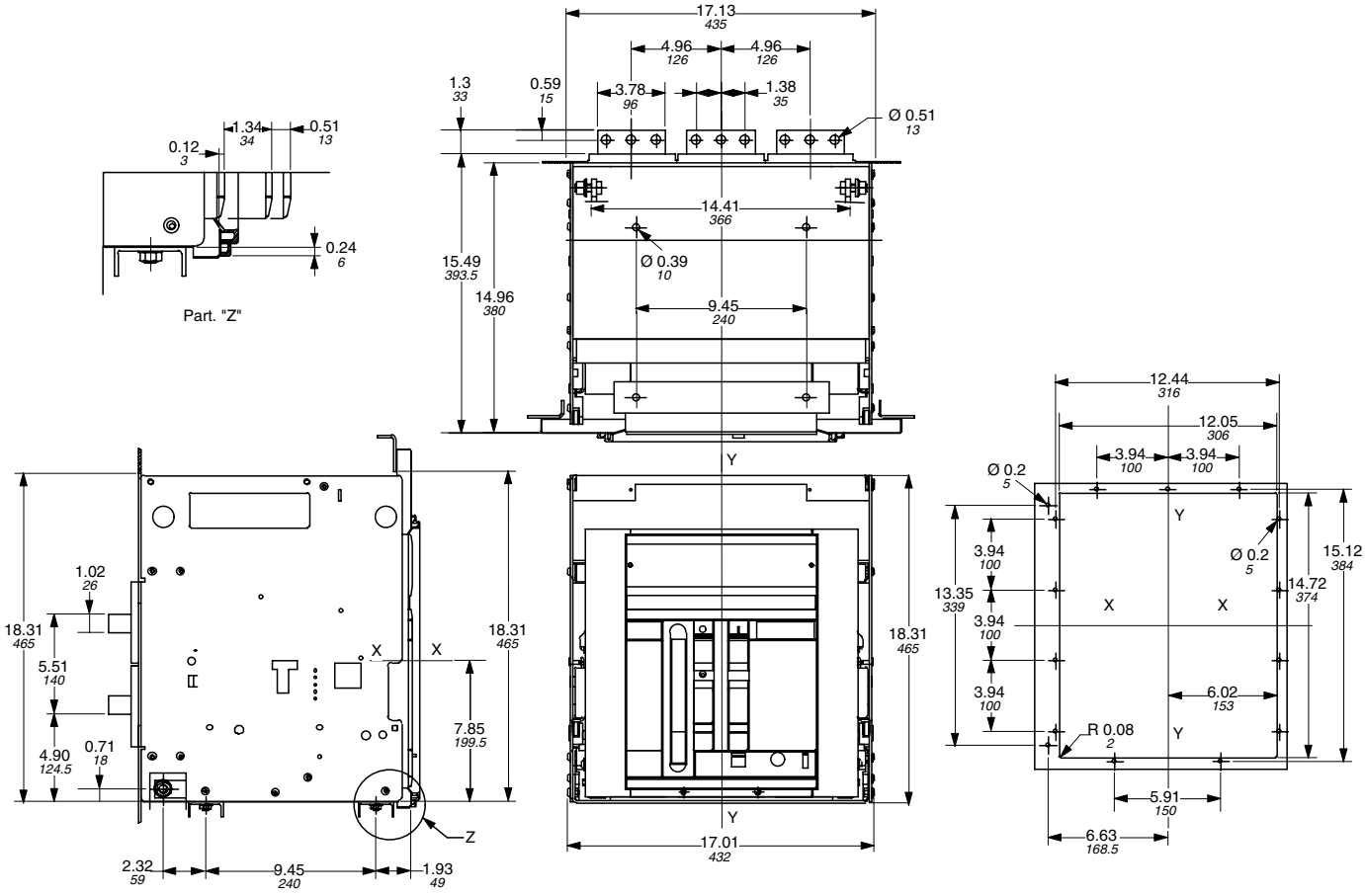


Emax

00.00 Inches
00.00 Millimeters

Approximate dimensions

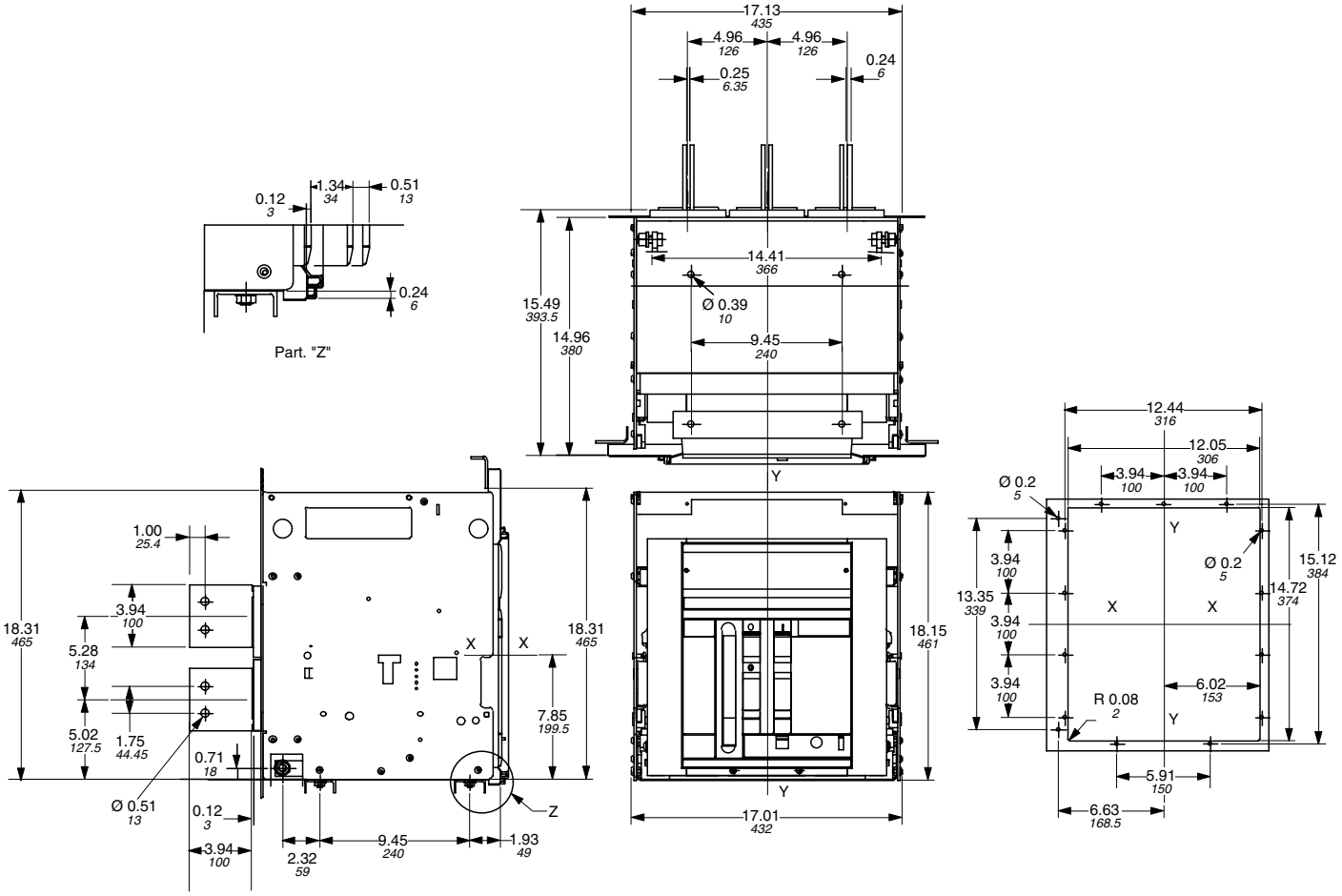
E3, withdrawable with horizontal rear terminals



Emax

Approximate dimensions

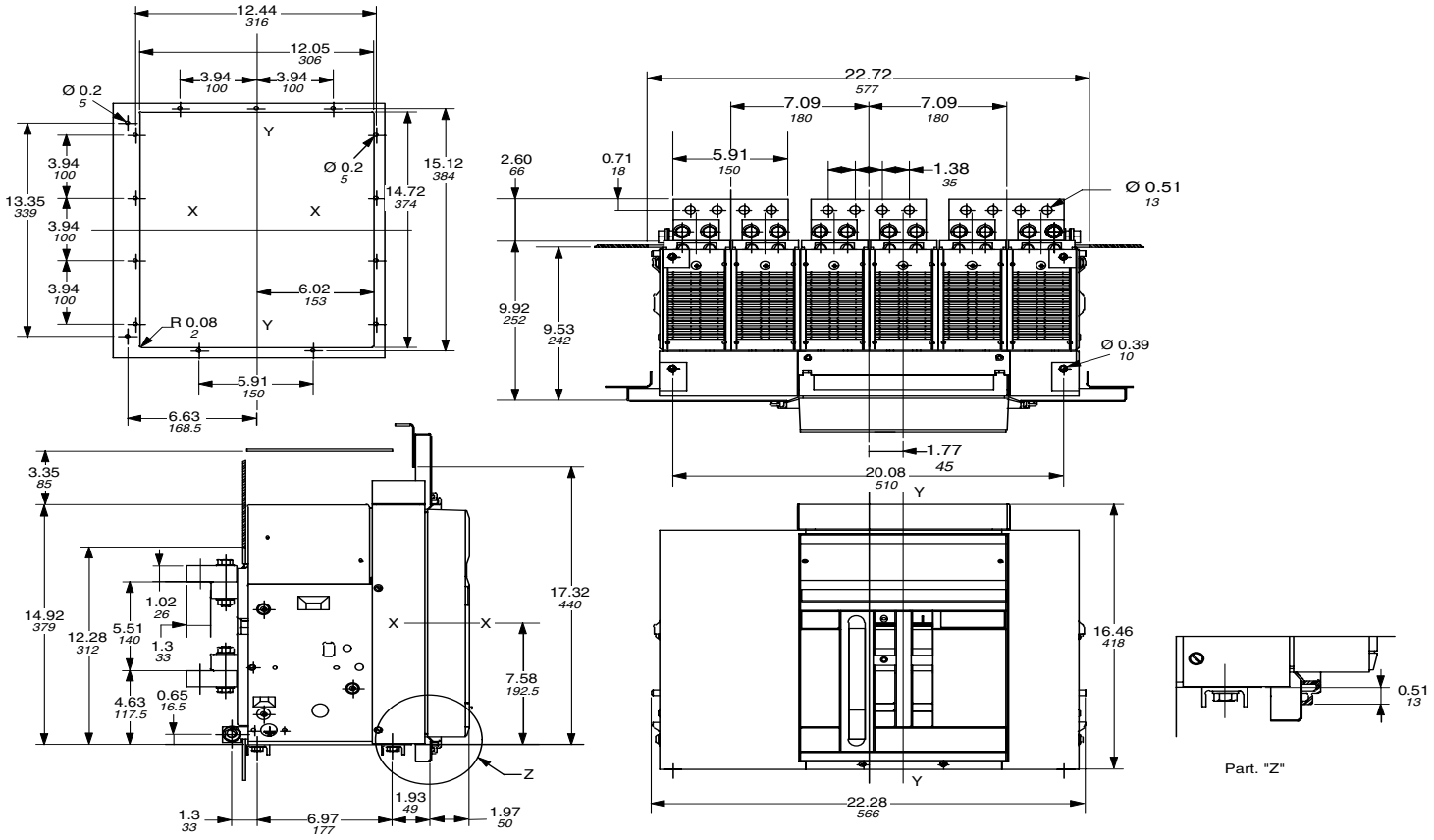
E3 (1200A/1600A/2000A), withdrawable with vertical rear terminals



Emax

00.00 Inches
00.00 Millimeters

Approximate dimensions
E4, fixed with horizontal rear terminals

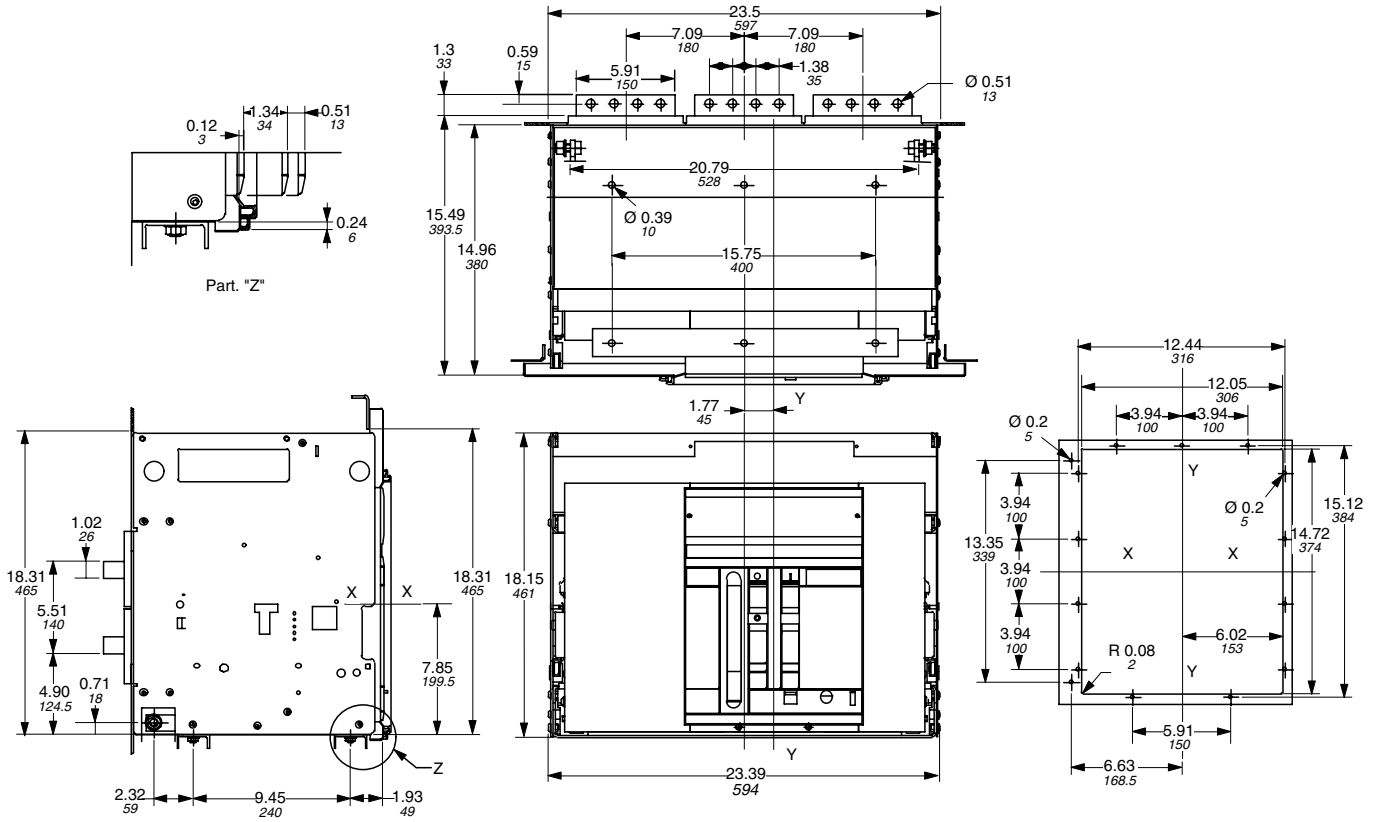


Emax

Approximate dimensions

E4, withdrawable with horizontal rear terminals

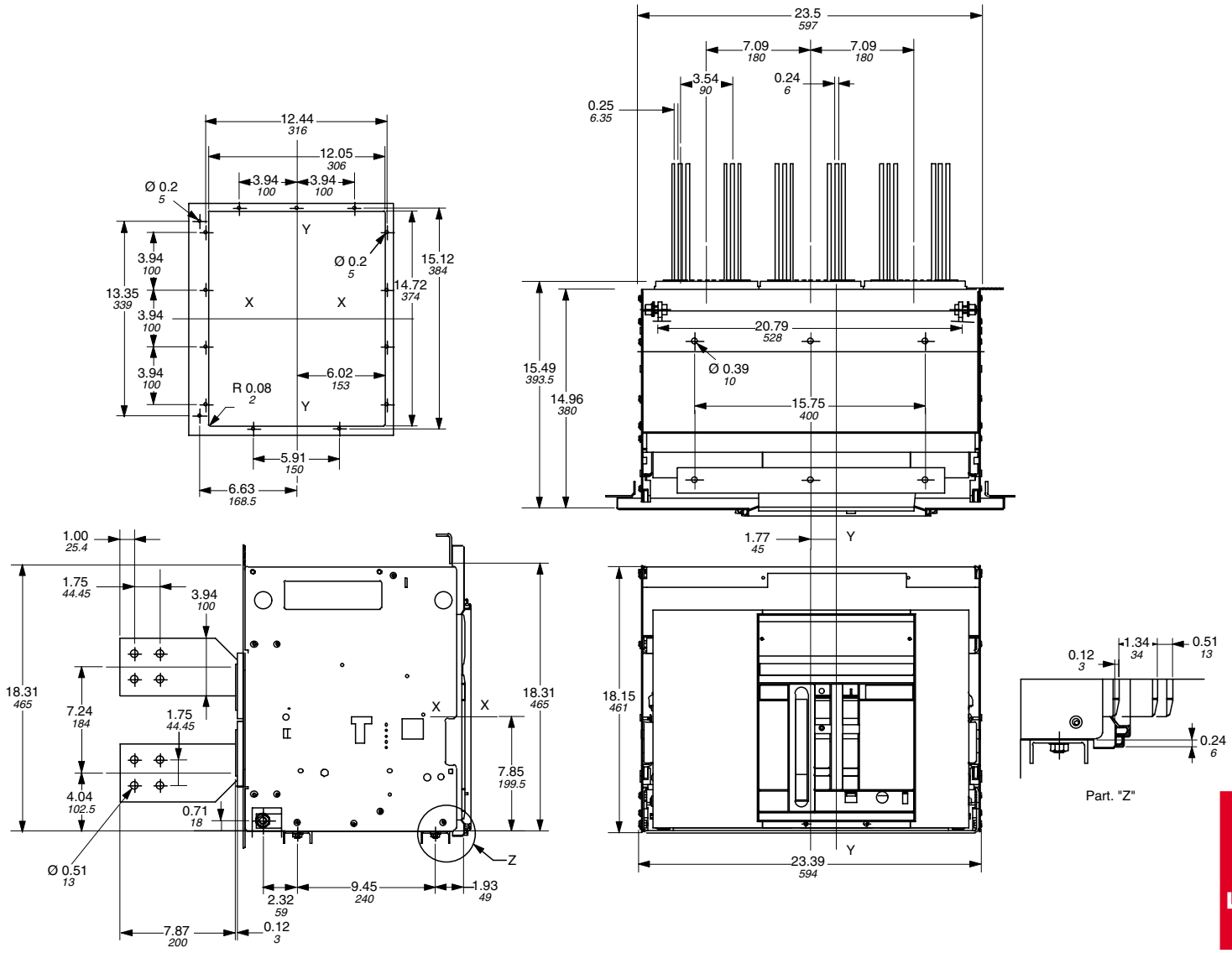
00.00 Inches
00.00 Millimeters



Emax

00.00 Inches
00.00 Millimeters

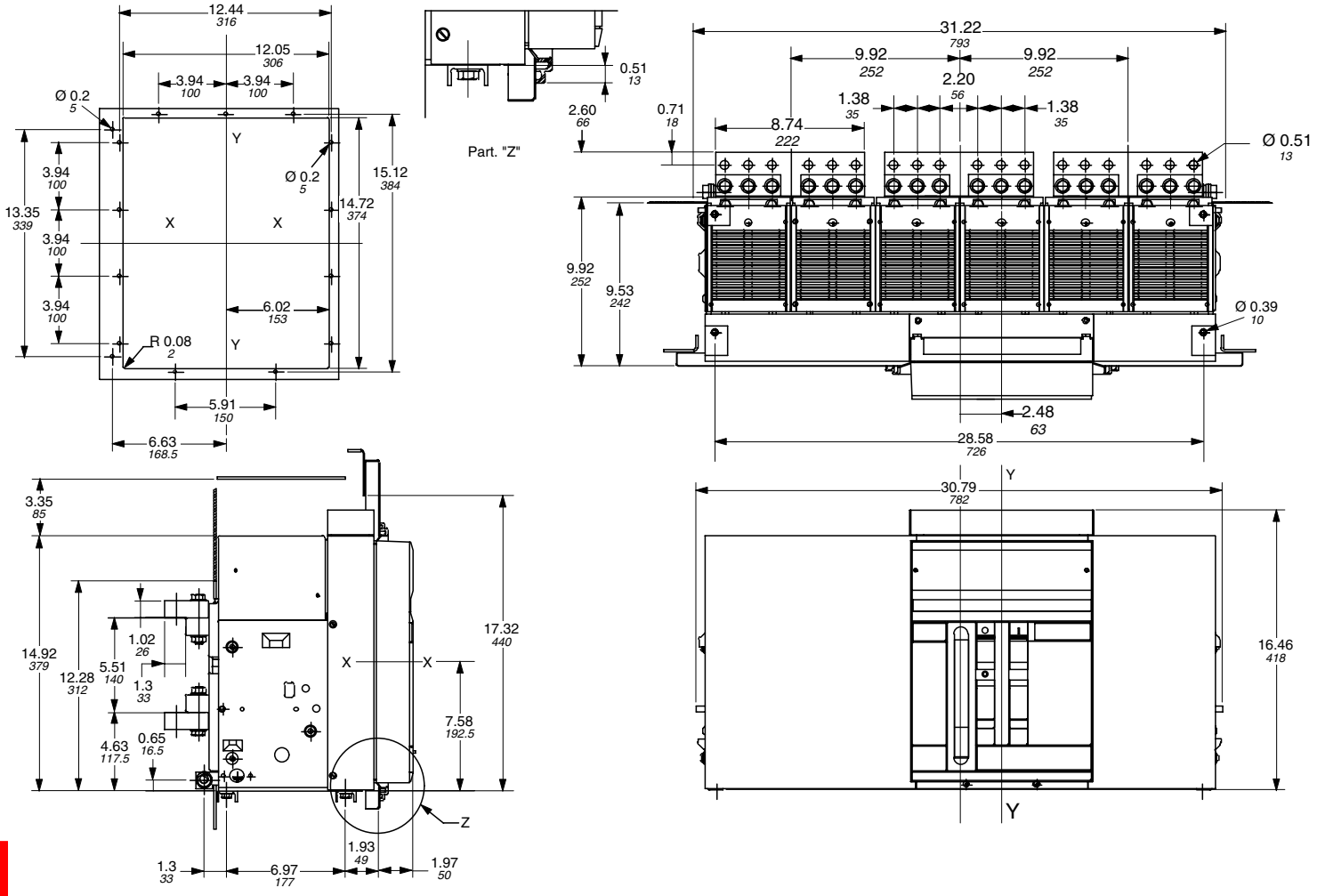
Approximate dimensions
E4, withdrawable with vertical rear terminals



Emax

Approximate dimensions

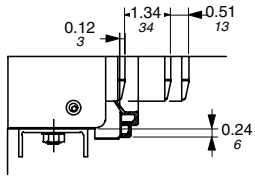
E6, fixed with horizontal rear terminals



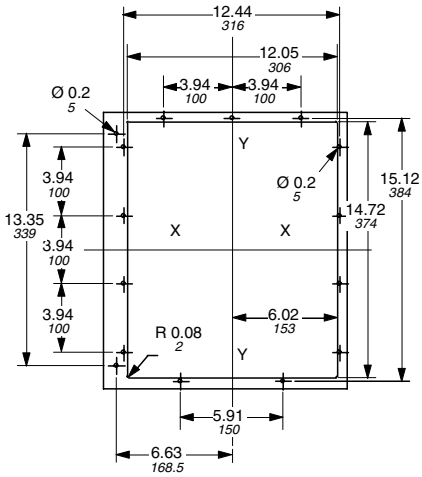
Emax

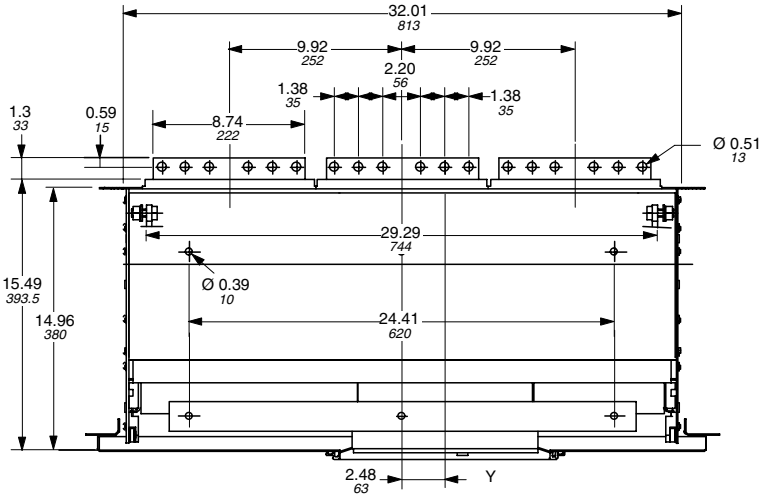
00.00 Inches
00.00 Millimeters

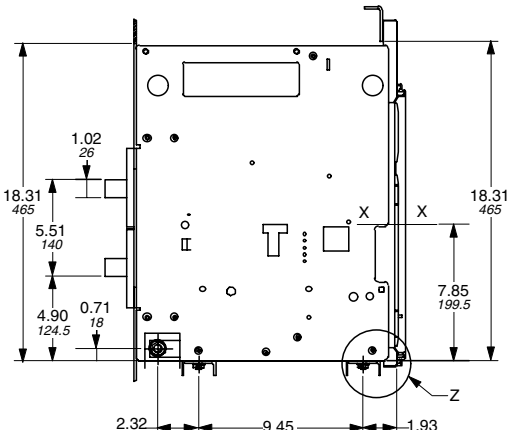
Approximate dimensions
E6, withdrawable with horizontal rear terminals

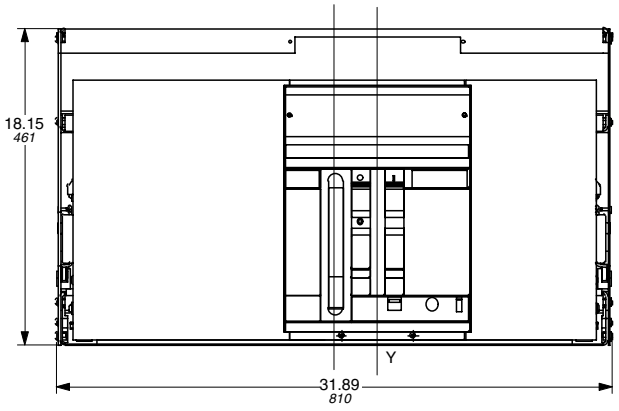


Part. "Z"







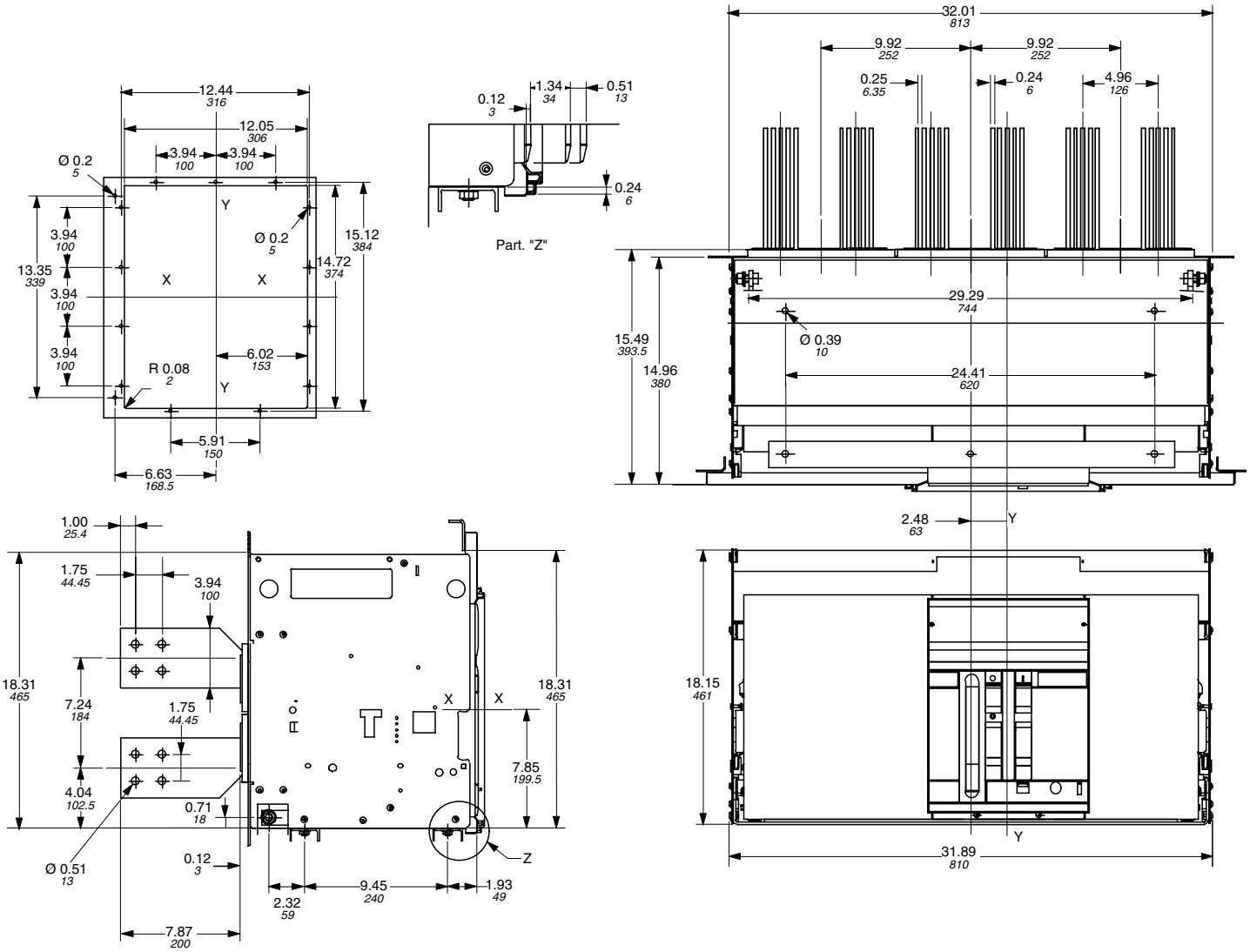


Emax

Approximate dimensions

E6, withdrawable with vertical rear terminals

00.00 Inches
00.00 Millimeters

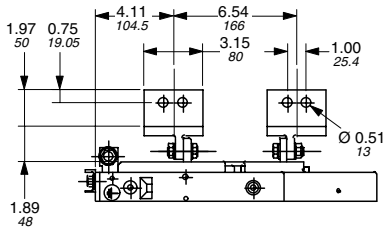


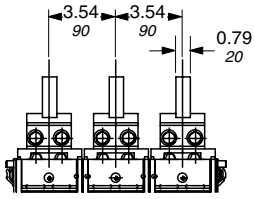
Emax

00.00 Inches
00.00 Millimeters

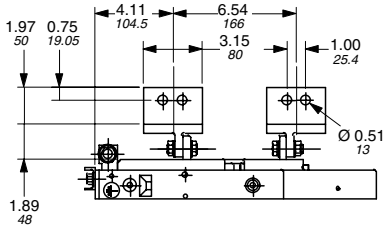
Approximate dimensions
E1 - E6, withdrawable with vertical rear terminals

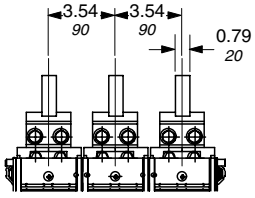
E1



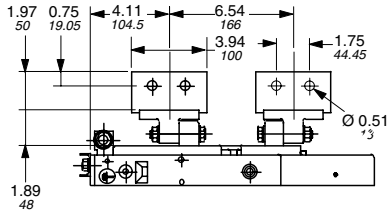


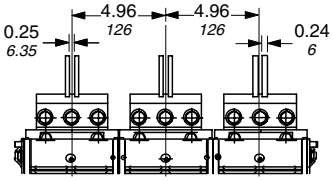
E2



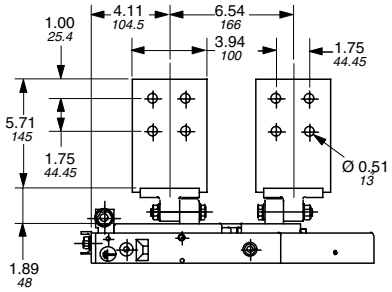


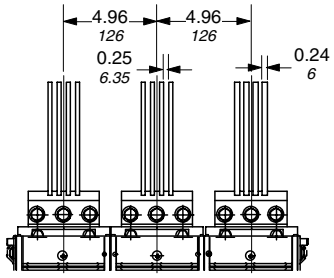
E3 (1200A - 2000A)



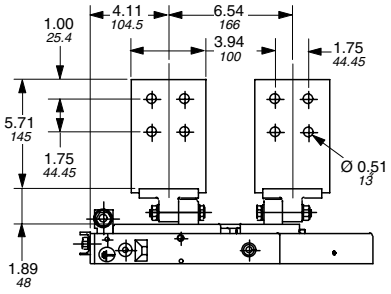


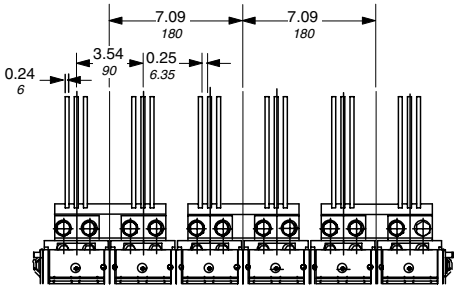
E3 (2500A)



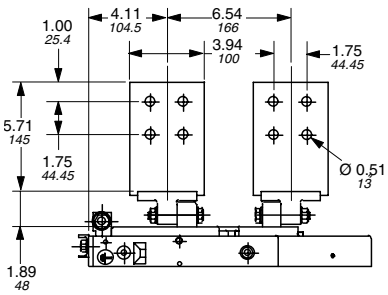


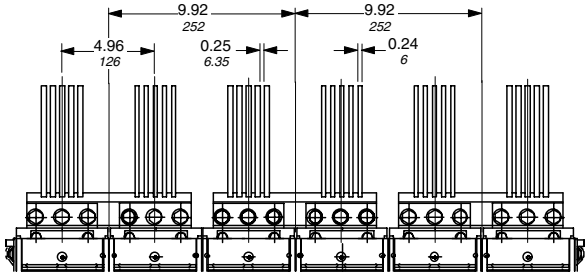
E4





E6





Emax

Notes

00.00 Inches
00.00 Millimeters

Emax

Terms and conditions

These terms and conditions govern all sales and shipments of control equipment products (including parts and accessories). ABB Control Inc. hereby gives notice of its objection to any different or additional terms and conditions except for such as may be expressly accepted by it in writing.

Prices

Prices are subject to change without notice. Prices will be the prices in effect at the time of shipment by ABB Control Inc. and include freight, prepaid and allowed to first destination in the continental United States. In the event of a price change, the effective date of the change will be the date shown on the new price discount sheets. However, where a price change is made by letter or telegram, the effective date will be given as part of the announcement.

Taxes

The price does not include any federal, state or local property, license, privilege, sales, use, excise, gross receipts or other like taxes which may now or hereafter be applicable. Payment by ABB Control Inc. of any such taxes shall be for the account of purchaser.

Standard terms of payment

Standard terms of payment are according to the appropriate discount schedule (AC 5000 – AC 5002).

Payment and late charges

ABB Control Inc. may require full or partial payment in advance if, in its sole judgement, the financial condition of the purchaser, at any time prior to delivery, does not merit the terms of payment specified.

If shipments are delayed by the purchaser or by reason of any of the causes referred to in the paragraph entitled "Excusable Delay," payments shall become due from the date when ABB Control Inc. is prepared to make shipment. Products held for the purchaser as a result of such delay shall be at the risk and expense of the purchaser.

If the purchaser fails to pay any invoice when due, ABB Control Inc. may defer deliveries under this or any other contract with purchaser, except upon prior receipt of satisfactory security for or cash in payment of any such invoice. Failure on the part of purchaser to pay invoices when due shall at the option of ABB Control Inc. constitute a default under this contract.

A service charge, the lesser of the highest rate allowed by law or 11/2% per month, or fraction thereof, for a maximum charge of 18% per annum will be charged on all overdue accounts.

Delivery

Delivery of products shall be FOB point of shipment regardless of transportation costs being "allowed", "prepaid" or collect". Where the scheduled delivery of products and parts is delayed by the purchaser or by reason of any of the causes referred to in the paragraph entitled Excusable Delay, ABB Control Inc. may deliver such products by moving them to storage for the account of and at the risk of the purchaser. Shipping dates are approximate and are based upon prompt receipt of all necessary information from purchaser. ABB Control Inc. reserves the right to make delivery in installments.

Purchaser pick-up

No allowance will be made in lieu of transportation charges if the purchaser accepts shipment at the factory, warehouse or freight station. Transportation charges will not be deducted from the purchase price.

Origin, method of shipment and routing

ABB Control Inc. shall determine the point of origin of shipment, the method of transportation and the routing of shipment. Costs for shipment by means requested by purchaser different from ABB Control Inc.'s standard means of shipment are invoiced to the purchaser as a separate charge.

Freight charges will be added to the price of any order under $100.

Excusable delay

ABB Control Inc. shall not be liable for loss, damage, detention or delay, nor be deemed to be in default from causes beyond its reasonable control, including without limitation, fire, flood, strike or other labor difficulty, act or omission of any governmental authority or of the purchaser, insurrection or riot, embargo, delays or shortage in transportation or inability to obtain necessary labor, materials or manufacturing facilities from usual sources.

In the event of delay in performance due to any such cause, the date of delivery will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

Warranty

ABB Control Inc. warrants that on date of shipment to purchaser, the goods will be the kind and quality described herein, merchantable and free of defects in workmanship and material.

Terms and conditions

If within one year from date of initial operation, but not more than eighteen months from date of shipment, should any failure to conform with this warranty appear within such time, ABB Control Inc. shall, if given prompt notice by purchaser, correct such nonconformity, at its option, either by repair or replacement F.O.B. repair facility or by refund of the purchase price of the nonconforming product or part. Return of products to ABB Control Inc. pursuant to this paragraph shall be at purchaser's risk and expense. *The foregoing warranty is exclusive and in lieu of all other warranties of quality, expressed or implied, and all other warranties, including any warranty of merchantability or fitness for a particular purpose are hereby disclaimed.*

Correction of nonconformities in the manner and for the period of time provided above shall be purchaser's exclusive remedy and shall constitute fulfillment of all liabilities of ABB Control Inc. whether in warranty, strict liability, contract, negligence, tort or otherwise with respect to any nonconformance or defect in the product.

The foregoing warranty shall not apply to any product which has been: a) improperly repaired or altered, b) subjected to misuse, misapplication, negligence or accident, c) used in a manner contrary to manufacturer's directions.

Limitation of liability

ABB Control Inc.'s liability to purchaser on any claim in connection with the product shall not exceed the purchase price of the product which gives rise to the claim.

IN NO EVENT SHALL ABB CONTROL INC. BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES whether in warranty, contract, strict liability, tort, negligence or otherwise including but not limited to loss of profits or revenue, loss of use of the product or any associated product, cost of capital, cost of substitute products, facilities or services, downtime costs or claims of customers of the purchaser for such or other damages.

Except as prohibited by law, all causes of action against ABB Control Inc. shall expire unless brought within one year of the time of accrual thereof. *ABB CONTROL INC. NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR IT ANY OTHER OR FURTHER LIABILITY THAN AS SET OUT ABOVE.*

Patent indemnity

ABB Control Inc. will at its own expense defend any suit which may be brought against the Purchaser based on a claim that any apparatus or part furnished under contract constitutes an infringement of any United States letter patent (provided ABB Control Inc. is notified promptly of such suit and copies of all papers therein are delivered to ABB Control Inc.), and ABB Control Inc. agrees to pay all judgements and costs recovered in any such suit and to reimburse the Purchaser for costs of expenses incurred in the defense of any such claim or suit. In case said apparatus or any part is held to constitute infringement and the use of the apparatus or part is enjoined, ABB Control Inc. shall at its own expense, either procure for the Purchaser the right to continue using the apparatus or part or replace it with non-infringing apparatus; or modify it so it becomes non-infringing, or remove the apparatus and refund the purchase price and the transportation and installation cost thereof. The foregoing states the entire liability of ABB Control Inc. for patent infringement by apparatus or any part thereof.

Shipping loss or damage

In the event of shipping loss or damage: 1) Notification must be given to ABB Control Inc. within 72 hours of delivery; 2) Written notice of apparent loss or damage must be made on the carrier's delivery receipt; and 3) Concealed damage must be immediately reported to the delivering carrier with a request for inspection. Purchaser shall comply with the foregoing procedure whether or not ABB Control Inc. has the risk of loss at the point of loss or damage to the shipment.

Title – risk of loss

The products sold hereunder shall remain the property of ABB Control Inc. and shall remain personal property until fully paid for in cash, and purchaser agrees, if requested by ABB Control Inc. to execute a further security agreement covering the products sold, and to perform all acts which may be necessary to perfect and assure retention of title to such products by ABB Control Inc. Not withstanding any agreement with respect to delivery terms, risk of loss or damage shall pass to the purchaser and delivery shall be deemed to be complete upon delivery to a private or common carrier or upon moving into storage, whichever occurs first, at the point of shipment.

Termination

Any order or contract may be terminated by the purchaser only on written notice and upon payment of reasonable and proper termination charges, including without limitation, all costs identified to the order of contract incurred by ABB Control Inc. up to the date of notice of termination and all charges incurred by ABB Control Inc. in respect of the termination.

Returns

In no event will ABB Control Inc. be responsible for unauthorized return of products. Returns will be accepted only at ABB Control Inc.'s option and subject to terms specified by ABB Control Inc. Authorization and shipping instructions for return of products must be obtained from ABB Control Inc. prior to return shipment. Product must be returned with proper identification. When a purchaser requests authorization to return for his own reasons, the return is subject to a minimum restocking charge of 20% for standard inventoried product and for any transportation paid by ABB Control Inc., both out and ingoing. Returns will be accepted up to 60 days after invoice date. Goods returned for purchaser's reason are subject to inspection and must be in good working condition, as new, and in original cartons.

Purchase orders

Except as provided below, all orders must be in writing and show quantities and prices, complete description (including catalog numbers) of products requested and mutually agreed delivery dates.

Verbal orders received via telephone or otherwise must be confirmed within 5 days either by mail, telex or the equivalent. Verbal orders with a purchase price over $5,000 will not be processed until such written confirmation is received.

Unless otherwise agreed in writing, an addition to a previously entered order will be accepted only at then applicable prices, discount schedules, conditions of sale, etc.

Special quotations

Special quotations will automatically expire 30 days from issuance unless renewed in writing by ABB Control Inc.

Assignment

Any assignment of this contract, or any rights hereunder, without prior written consent of ABB Control Inc. by a duly authorized representative thereof shall be void.

Partial invalidity

If any provisions herein or portions thereof conflict with any statute or rule of law of the jurisdiction of applicable law or wherein the contract may be sought to be enforced, then such provisions or portions thereof shall be deemed void to the extent that they may so conflict, but without invalidating the remaining portions of such provisions or other provisions hereof.

Remedies

The remedies expressly provided for in the Conditions of Sale shall be in addition to any other remedies which ABB Control Inc. may have under the Uniform Commercial Code or other applicable law.

Choice of law

The construction and performance of this contract and the rights and remedies of the parties hereto shall be governed by the laws of the State of Texas.

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Worldwide approvals ①

The CE Mark

Within the European Union, EU, conformity of products and the proper application of the CE marking to machines and control equipment is necessary for marketing electrical equipment. The intent is to ensure compliance with all relevant EU Directives.

ABB Low Voltage Apparatus

ABB is a global group serving customers in electric power generation, transmission and distribution, industrial building systems, and rail transportation. ABB Low Voltage Apparatus develops, produces and markets low voltage products such as contactors, starters, pushbuttons, soft starters, arc guard systems, relays, mini-contactors, manual motor starters, Isomax MCCBs, MCBs and disconnect switches. With six manufacturing units within the European Union, we are ideally located to develop, manufacture and provide low voltage equipment to comply with the EU directive.

Background

The guarantee of free trade of goods within the Community is the most important objective. This will eliminate trade restrictions that result from different technical regulations in each individual member country. Harmonization of existing European standards and regulations, is being accomplished and already partially realized. Based on this goal, a new concept for creating directives was formed in 1985 by the European Community (EC) Commission to produce directives with a wide range of application which contain only the most basic safety requirements.

The CE Mark

The CE mark is prescribed by law and assures the European free trade of goods. It is short for ”Communauté Européen”, and is displayed on goods and/or packaging which acts as an external symbol for the inspection of products. It also illustrates the manufacturer’s responsibility to uphold the community’s directives.

ABB´s commitment to the directives

ABB Low Voltage Apparatus producing companies will attach the CE mark in accordance with the product directives. Our products will conform as follows:

- Declarations of conformity for ABB products will be available when required by the relevant EU directives.
- Those products required to do so will bear CE marking as specified by the relevant EU directives and CE marking regulations.
- Necessary technical documentation will be on file and made available to authorized organizations upon written request.

Terms

① Approvals listed may not apply to products listed in this publication.

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AC 1600
March, 2000