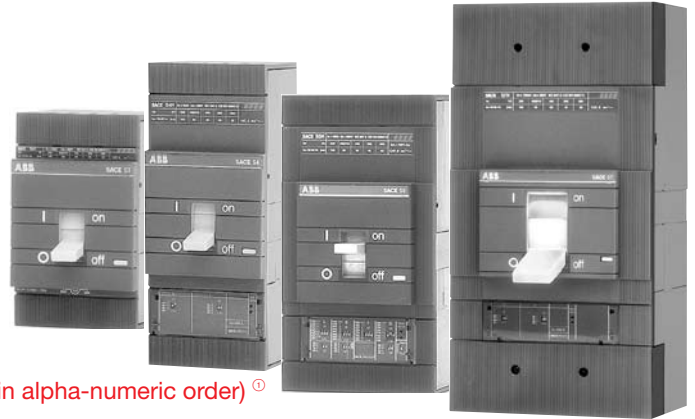




Isomax

Molded case circuit breakers

S3, S6 - S8



S6 N 400 B W -4 xxx

Accessories (added in alpha-numeric order) ①

- A** = Auxiliary Switch
- BA** = Bell Alarm
- BA3** = Bell Alarm (S6/S7 only)
- 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 – 10X Mag | M = Magnetic only (MCP) |
| G = Thermal-magnetic – 2.5 - 3X Mag ② | |

Current rating

- 015** = 15A
- 250** = 250A
- 400** = 400A
- 1200** = 1200A

Interrupting rating class

- | | |
|-------------------------------|---------------------------------------|
| B = Basic (240VAC) | NQ = Normal, 100% rated |
| N = Normal | HQ = High, 100% rated |
| H = High | LQ = Extra High, 100% rated |
| L = Extra High | D = Special molded case switch |
| BQ = Basic, 100% rated | |

(No trip IEC)

Frame size

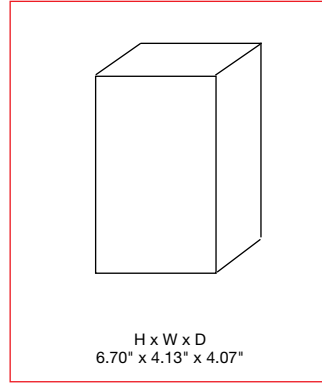
- | | |
|------------------------|------------------------|
| S3 = 150 / 225A | S6 = 600 / 800A |
| S4 = 250A | S7 = 1200A |
| S5 = 400A | |

① Consult ABB for factory installed accessories.
② Consult ABB for availability.

S3

150/225A

Standard thermal-magnetic



Standard S3 package includes complete circuit breaker and mounting hardware. Order cable lugs as a separate item, standard 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 bimetals 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)
- G = 3X Mag (100 - 225A 3-pole only)

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 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 S3 family are suitable for reverse feed applications.

Molded case switches

UL489 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	85 ^①
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

15

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, 600VAC/500VDC catalog number	List price	3 pole, 600VAC/DC catalog number	List price	
S3N	25kA	15A	500A	S3N015TW-2	\$ 316	S3N015TW	\$ 413	
		20A	500A	S3N020TW-2		S3N020TW		
		25A	500A	S3N025TW-2		S3N025TW		
		30A	500A	S3N030TW-2		S3N030TW		
		35A	500A	S3N035TW-2		S3N035TW		
		40A	500A	S3N040TW-2		S3N040TW		
		50A	500A	S3N050TW-2	S3N050TW			
		60A	600A	S3N060TW-2	S3N060TW			
		70A	700A	S3N070TW-2	S3N070TW	407	S3N080TW	504
		80A	800A	S3N080TW-2	S3N080TW			
		90A	900A	S3N090TW-2	S3N090TW			
		100A	1000A	S3N100TW-2	S3N100TW			
125A	1250A	S3N125TW-2	S3N125TW	911	S3N125TW	1131		
150A	1500A	S3N150TW-2	S3N150TW					
175A ^①	1750A	S3N175TW-2	S3N175TW					
200A ^①	2000A	S3N200TW-2	S3N200TW					
225A ^①	2250A	S3N225TW-2	S3N225TW					

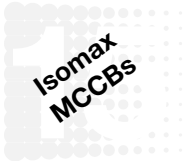
S3H

Breaker	IC at 480VAC	Rating	Magnetic trip	2 pole, 600VAC/500VDC catalog number	List price	3 pole, 600VAC/DC catalog number	List price	
S3H	50kA	15A	500A	S3H015TW-2	\$ 527	S3H015TW	\$ 619	
		20A	500A	S3H020TW-2		S3H020TW		
		25A	500A	S3H025TW-2		S3H025TW		
		30A	500A	S3H030TW-2		S3H030TW		
		35A	500A	S3H035TW-2		S3H035TW		
		40A	500A	S3H040TW-2		S3H040TW		
		50A	500A	S3H050TW-2	S3H050TW			
		60A	600A	S3H060TW-2	S3H060TW			
		70A	700A	S3H070TW-2	S3H070TW	617	S3H080TW	702
		80A	800A	S3H080TW-2	S3H080TW			
		90A	900A	S3H090TW-2	S3H090TW			
		100A	1000A	S3H100TW-2	S3H100TW			
125A	1250A	S3H125TW-2	S3H125TW	1376	S3H125TW	1586		
150A	1500A	S3H150TW-2	S3H150TW					
175A ^①	1750A	S3H175TW-2	S3H175TW					
200A ^①	2000A	S3H200TW-2	S3H200TW					
225A ^①	2250A	S3H225TW-2	S3H225TW					

S3L

Breaker	IC at 480VAC	Rating	Magnetic trip	2 pole, 600VAC/500VDC catalog number	List price	3 pole, 600VAC/DC catalog number	List price
S3L	65k	15A	500A	S3L015TW-2	\$ 634	S3L015TW	\$ 824
		20A	500A	S3L020TW-2		S3L020TW	
		25A	500A	S3L025TW-2		S3L025TW	
		30A	500A	S3L030TW-2		S3L030TW	
	85kA	35A	500A	S3L035TW-2	634	S3L035TW	824
		40A	500A	S3L040TW-2		S3L040TW	
		50A	500A	S3L050TW-2		S3L050TW	
		60A	600A	S3L060TW-2		S3L060TW	
	65kA	70A	700A	S3L070TW-2	816	S3L070TW	1010
		80A	800A	S3L080TW-2		S3L080TW	
		90A	900A	S3L090TW-2		S3L090TW	
		100A	1000A	S3L100TW-2		S3L100TW	
65kA	125A	1250A	S3L125TW-2	1818	S3L125TW	2260	
	150A	1500A	S3L150TW-2		S3L150TW		
	175A ^①	1750A	S3L175TW-2		S3L175TW		
	200A ^①	2000A	S3L200TW-2		S3L200TW		
225A ^①	2250A	S3L225TW-2	S3L225TW				

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	560
		60A	600A	S3NQ060TW	
		70A	700A	S3NQ070TW	
		80A	800A	S3NQ080TW	
		90A	900A	S3NQ090TW	
		100A	1000A	S3NQ100TW	
125A	1250A	125A	1250A	S3NQ125TW	1257
		150A	1500A	S3NQ150TW	
		175A ^①	1750A	S3NQ175TW	
		200A ^①	2000A	S3NQ200TW	
		225A ^①	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	780
		60A	600A	S3HQ060TW	
		70A	700A	S3HQ070TW	
		80A	800A	S3HQ080TW	
		90A	900A	S3HQ090TW	
		100A	1000A	S3HQ100TW	
125A	1250A	125A	1250A	S3HQ125TW	1762
		150A	1500A	S3HQ150TW	
		175A ^①	1750A	S3HQ175TW	
		200A ^①	2000A	S3HQ200TW	
		225A ^①	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	500A	35A	500A	S3LQ035TW	1123
			40A	500A	S3LQ040TW	
			50A	500A	S3LQ050TW	
			60A	600A	S3LQ060TW	
		700A	700A	70A	700A	S3LQ070TW
				80A	800A	S3LQ080TW
				90A	900A	S3LQ090TW
				100A	1000A	S3LQ100TW
125A	1250A	125A	1250A	S3LQ125TW	2511	
		150A	1500A	S3LQ150TW		
		175A ^①	1750A	S3LQ175TW		
		200A ^①	2000A	S3LQ200TW		
		225A ^①	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	3	12 – 36	S3N003MW	\$ 568				
	480VAC 18kA	5	20 – 60	S3N005MW					
	600VAC 10kA	10	40 – 120	S3N010MW					
	240VAC 35kA	25	100 – 300	S3N025MW	\$ 568				
	480VAC 18kA								
	600VAC 10kA								
	240VAC 75kA	50	200 – 600	S3N050MW	633				
	480VAC 35kA					100	400 – 1200	S3N100MW	763
	600VAC 14kA					125	500 – 1500	S3N125MW	929
	150					600 – 1500	S3N150MW	929	

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

Molded case switches

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

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/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 front lugs (saddle) CU rear lugs	14AWG – 250kcmil	250	—	—	Set of 6 catalog number K4TES K4TER	30
	6AWG – 250kcmil	250	—	—		
Extended front bar	—	250	—	—	K4ET-250	46

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

② 480VAC maximum.

③ With fuse or MCCB protected circuit.

Discount schedule SM – S3 MCPs only
Discount schedule S3 – Circuit breakers
Discount schedule SA – Lugs

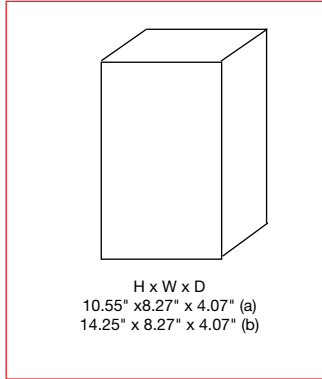
S6

600A / 800A, 600V

Electronic and thermal-magnetic trip type



S6



H x W x D
10.55" x 8.27" 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
- G = 2.5 Mag (3-pole only)

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

UL489 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
500VDC [Ⓢ]	35	50	65
600VDC [Ⓢ]	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

Catalog Number number	Rating	Magnetic trip
S6N600GW	3 pole, 600 Amp thermal magnetic, I _m =2.5 x I _{th}	1500A
S6N800GW	3 pole, 800 Amp thermal magnetic, I _m =2.5 x I _{th}	2000A

[Ⓢ] 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, I²t (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	LI	S6N600BW-2	\$ 2847	S6N600BW	\$ 3608
		PR212	LSI	S6N600CW-2	4237	S6N600CW	4998
		PR212	LSIG	—	—	S6N600EW	6998
S6H	65kA	PR211	LI	S6H600BW-2	4275	S6H600BW	5271
		PR212	LSI	S6H600CW-2	5665	S6H600CW	6661
		PR212	LSIG	—	—	S6H600EW	8661
S6L	100kA	PR211	LI	S6L600BW-2	5481	S6L600BW	6482
		PR212	LSI	S6L600CW-2	6871	S6L600CW	7872
		PR212	LSIG	—	—	S6L600EW	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	LI	S6N800BW-2	\$ 3842	S6N800BW	\$ 4802
		PR212	LSI	S6N800CW-2	5232	S6N800CW	6192
		PR212	LSIG	—	—	S6N800EW	8192
S6H	65kA	PR211	LI	S6H800BW-2	5275	S6H800BW	6465
		PR212	LSI	S6H800CW-2	6665	S6H800CW	7855
		PR212	LSIG	—	—	S6H800EW	9855
S6L	100kA	PR211	LI	S6L800BW-2	6476	S6L800BW	7676
		PR212	LSI	S6L800CW-2	7866	S6L800CW	9066
		PR212	LSIG	—	—	S6L800EW	11,066

Trip settings

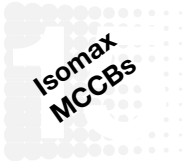
Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.55-0.6-0.65-0.7-0.75-0.8-0.85-0.875-0.9-0.925-0.95-0.975-1.0 x Frame rating PR212 A - B - C - D
S	Short time pick-up Short time delay	1.0 – 10.0 0.05 – 0.5 sec.	Off-1.0-2.0-3.0-4.0-6.0-8.0-10.0 x Frame rating A - B - C - D (I ² t 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) — PR211

Frame	Set points								Setting
	0.4	0.5	0.6	0.7	0.8	0.9	0.95	1.0	
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)	6000A	S6N600TW-2	\$ 2847	S6N600TW	\$ 3608
		800A (560 – 800A)	8000A	S6N800TW-2	3842	S6N800TW	4802
S6H	50kA	600A (420 – 600A)	6000A	S6H600TW-2	4275	S6H600TW	5271
		800A (560 – 800A)	8000A	S6H800TW-2	5275	S6H800TW	6465
S6L	65kA	600A (420 – 600A)	6000A	S6L600TW-2	5481	S6L600TW	6482
		800A (560 – 800A)	8000A	S6L800TW-2	6476	S6L800TW	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	LI	S6NQ600BW	\$ 3969
		PR212	LSI	S6NQ600CW	5498
		PR212	LSIG	S6NQ600EW	7698
S6H	65kA	PR211	LI	S6HQ600BW	5798
		PR212	LSI	S6HQ600CW	7327
		PR212	LSIG	S6HQ600EW	9527
S6L	100kA	PR211	LI	S6LQ600BW	7130
		PR212	LSI	S6LQ600CW	8659
		PR212	LSIG	S6LQ600EW	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	LI	S6NQ800BW	\$ 5282
		PR212	LSI	S6NQ800CW	6811
		PR212	LSIG	S6NQ800EW	9011
S6H	65kA	PR211	LI	S6HQ800BW	7112
		PR212	LSI	S6HQ800CW	8641
		PR212	LSIG	S6HQ800EW	10,841
S6L	100kA	PR211	LI	S6LQ800BW	8444
		PR212	LSI	S6LQ800CW	9973
		PR212	LSIG	S6LQ800EW	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.	0.4-0.5-0.55-0.6-0.65-0.7-0.75-0.8-0.85-0.875-0.9-0.925-0.95-0.975-1.0 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 ² t 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

15

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	240VAC	65kA	900 – 7200A 1200 – 9600A	S6N600MW-2 S6N800MW-2	\$ 2847 3842	S6N600MW S6N800MW	\$ 3608 4802
	800	480VAC 600VAC	50kA 25kA					
S6H	600	240VAC	150kA	900 – 7200A 1200 – 9600A	S6H600MW-2 S6H800MW-2	4275 5270	S6H600MW S6H800MW	5271 6465
	800	480VAC 600VAC	65kA 35kA					
S6L	600	240VAC	200kA	900 – 7200A 1200 – 9600A	S6L600MW-2 S6L800MW-2	5481 6476	S6L600MW S6L800MW	6482 7676
	800	480VAC 600VAC	100kA 42kA					

Molded case switches

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

Neutral current transformer (required for 4 wire GF systems)

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

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	(2) 250kcmil – 500kcmil	600	K6TH-2 K6TJ-2 ①	\$ 50 90	K6TH K6TJ ①	\$ 75 135
CU/AL front lugs	(3) 2/0 – 400kcmil	800				
CU rear lugs	(2) 250kcmil – 350kcmil	600	—	—	Set of 6 catalog number K6THR K6TJR	150 170
		800	—	—		
Extended front bar	—	600	—	—	K6ET-600	150
Extended front bar	—	800	—	—	K6ET-800	170

① Includes lug cover.

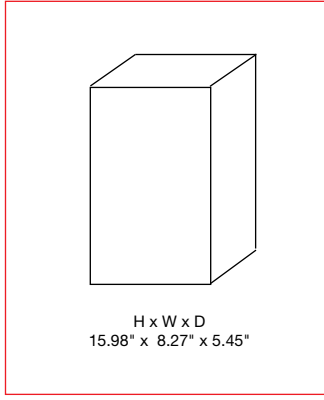
② Suggested lugs for a circuit breaker up to amps shown. Cable size and type determine maximum amperage.

③ With fuse or MCCB protected circuit.

S7

1200A, 600 VAC

Electronic trip type



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)

15 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 a UL/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

UL489 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	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

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, I²t (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	LI	S7H1000BW-2	\$ 6959	S7H1000BW	\$ 7724
		PR212	LSI	S7H1000CW-2	8039	S7H1000CW	8804
		PR212	LSIG	—	—	S7H1000EW	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	LI	S7H1200BW-2	\$ 6959	S7H1200BW	\$ 7724
		PR212	LSI	S7H1200CW-2	8039	S7H1200CW	8804
		PR212	LSIG	—	—	S7H1200EW	10,604

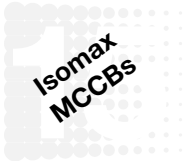
Trip settings

Adjustment	Trip function	Range	Individual settings
L	Long time pick-up Long time delay	0.4 – 1.0 3.0 – 18 sec.	0.4-0.5-0.55-0.6-0.65-0.7-0.75-0.8-0.85-0.875-0.9-0.925-0.95-0.975-1.0 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 ² t 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) – PR211

Frame	Set points								Setting
	0.4	0.5	0.6	0.7	0.8	0.9	0.95	1.0	
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	LI	S7HQ1000BW	\$ 8495
		PR212	LSI	S7HQ1000CW	9684
		PR212	LSIG	S7HQ1000EW	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	LI	S7HQ1200BW	\$ 8495
		PR212	LSI	S7HQ1200CW	9684
		PR212	LSIG	S7HQ1200EW	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.	0.4-0.5-0.55-0.6-0.65-0.7-0.75-0.8-0.85-0.875-0.9-0.925-0.95-0.975-1.0 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 (1 st 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 ②		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		1000	—	S7D1000W	
	600VAC	25kA	1250	—	S7D1250W	

Neutral current transformer (required for 4 wire GF systems)

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

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	240
					K7ET-1250	

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

② With fuse or MCCB protected circuit.

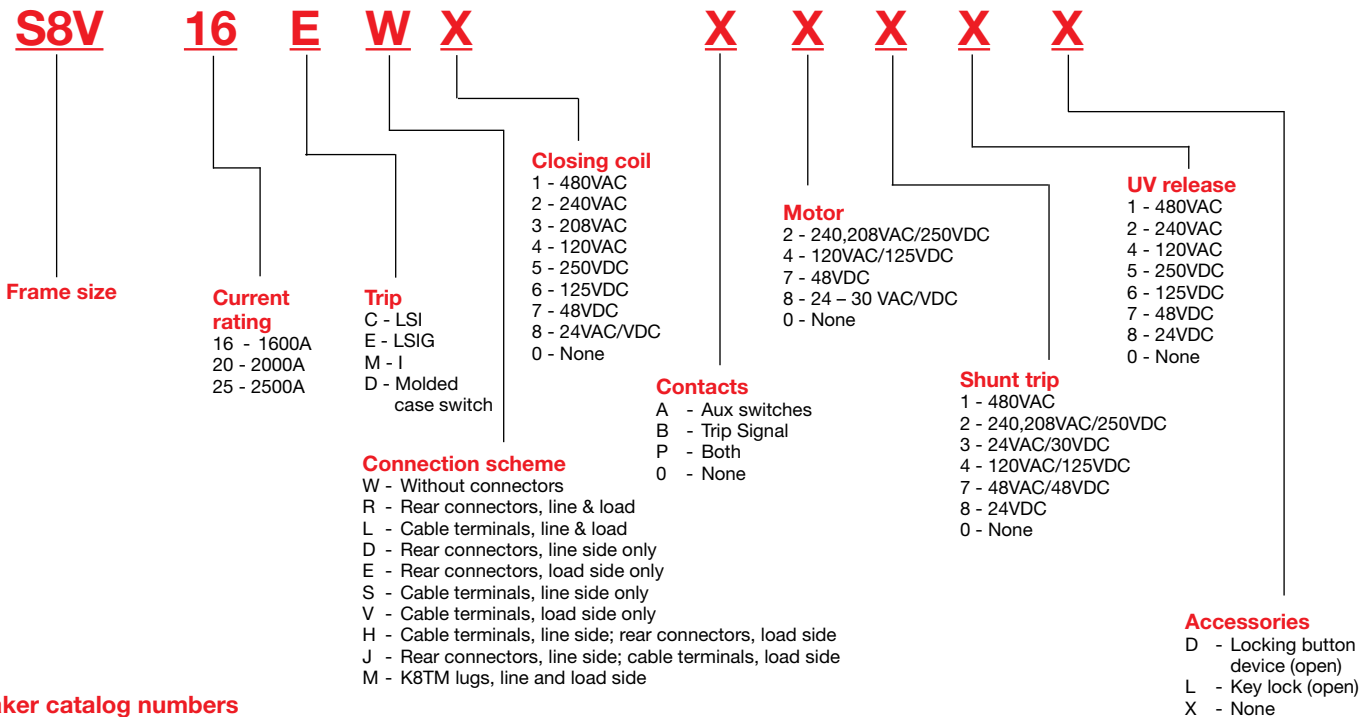
S8 1600 / 2000 / 2500A Insulated case circuit breaker

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.



Catalog number information

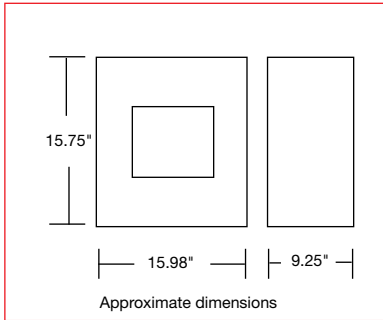


Breaker catalog numbers

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

15

S8 1600 / 2000 / 2500A Insulated case circuit breaker



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 [Ⓞ]

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	85
600VDC [Ⓞ]	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 ² t 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 x Frame rating A - B - C - D

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Continuous amperage settings (long time adjustment)

Frame	Set points								Setting
	0.4	0.5	0.6	0.7	0.8	0.9	0.95	1.0	
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 100% rated

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

2000A, S8 Frame 100% rated

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

[Ⓞ] Three pole breakers are listed and approved for use in two pole applications with center-pole not connected.
[Ⓜ] 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	1	\$ 575
	240VAC	2	
	208VAC	3	
	120VAC	4	
	250VDC	5	
	125VDC	6	
	48VDC	7	
	24VAC/VDC	8	
Electric motor (inc. spring charged signal contact)	240,208VAC & 250VDC	2	3217
	120VAC/125VDC	4	
	48VDC	7	
	24 – 30VAC/VDC	8	
Shunt trip	480VAC	1	518
	240,208VAC & 250VDC	2	
	24VAC/30VDC	3	
	120VAC/125VDC	4	
	48VAC/48VDC	7	
	24VDC	8	
Undervoltage release	480VAC	1	518
	240VAC	2	
	120VAC	4	
	250VDC	5	
	125VDC	6	
	48VDC	7	
	24VDC	8	
	Aux. contacts	2A/1B	
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

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.

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	K8NCT-1600	\$ 888
	2000A	K8NCT-2000	
	2500A	K8NCT-2500	

Note: Neutral GF CT required for proper GF operation.

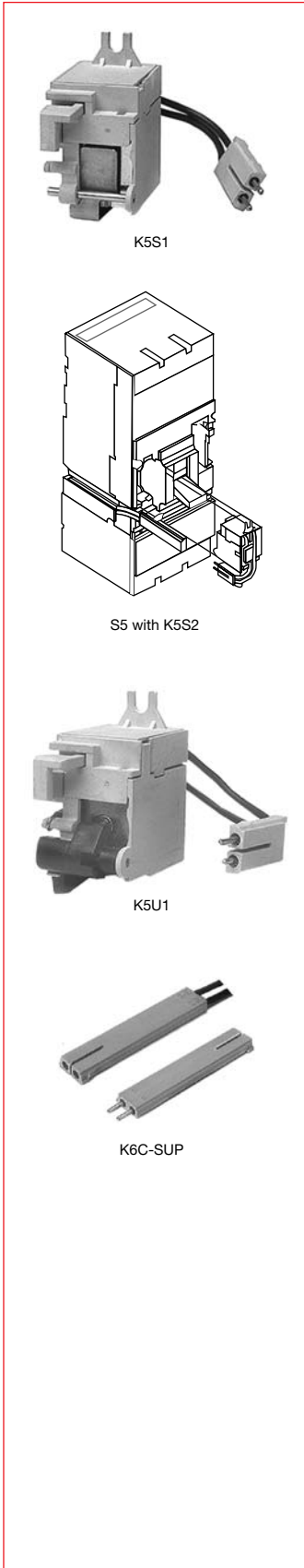
Door flange

Item	Catalog number	List price
Face plate	K8FP	\$ 25

Electrical accessories

Shunt trip, undervoltage release

S3, S6 – S7



Shunt trips

Voltage	Factory installation		Field installation		
	Catalog number suffix ①	List price adder	S3	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	

Low power shunt trips

Voltage	Factory installation		Field installation		
	Catalog number suffix ①	List price adder	S3	Catalog numbers S6 – S7	List price
24VDC	SA	\$ 430	K5SA	K7SA	\$ 415
120VAC	SB		K5SB	K7SB	

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 installation ①	Field kit catalog number		
			S3 – S6	S7	List price
Fixed mounted	All	included	K6C-SU	K7C-SU	\$ 15
Plug-in/Draw-out	All	included	K6C-SUP	K7C-SUP	

Electrical specifications – shunt trips (standard)

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

Undervoltage releases

Voltage	Factory installation		Field installation		
	Catalog number suffix ①	List price adder	S3	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 installation ①	Field kit catalog number		
			S3– S6	S7	List price
Fixed mounted	All	included	K6C-SU	K7C-SU	\$ 15
Plug-in/Draw-out	All	included	K6C-SUP	K7C-SUP	

Electrical specifications – UVR & low power shunt trips

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

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

Electrical accessories

Auxiliary contacts

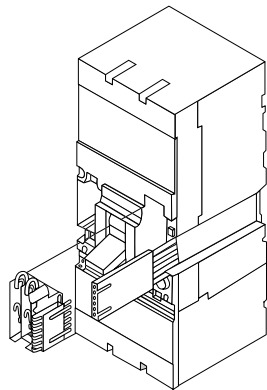
S3, S6 – S7



K5AS



K6C-ABP



S5 with K6C-AB

Auxiliary contacts, S3, S6 – S7

Contacts	Factory installation		Field installation		List price
	Catalog number suffix ^①	List price adder	Catalog numbers		
			S3	S6 – S7	
2 Form Cs	A	\$ 275	K5AS	K7AS	\$ 260
1 BA & 1 C	BA	365	K5BA	K7BA	350
1 B BA & 1A+1B	BA3		—	K7BA-3	

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.

Auxiliary contact connectors (required), S3, S6 – S7

Type circuit breaker	Voltage	Factory installation ^①	Field kit catalog number		List price
			S3– S6	S7	
Fixed mounted	All	included	K6C-AB	K7C-AB	\$ 15
Plug-in/Draw-out	All	included	K6C-ABP	K7C-ABP	

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.
 ② Not UL approved for field installation.

Electrical accessories

Motor operators, stored energy motor operators S3, S6 - S7



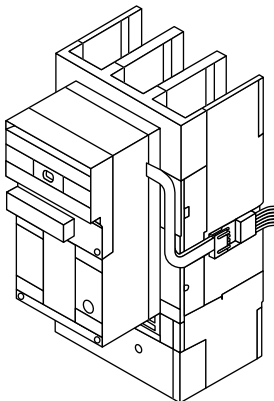
K5M2



K6C-M



K6M2



S7 with K7M4

Motor operator

Voltage	Catalog number S3	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	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	500 VA~/500W-
P normal	350 VA~/500W-
Close time	0.1 s
Open time	0.1 s

Stored-energy motor operator

Voltage	Catalog number		List price
	S6	S7	
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		List price
		S6	S7	
Fixed mounted Plug-in/Draw-out	All All	K6C-M K6C-MP	K7C-M K7C-MP	\$ 15

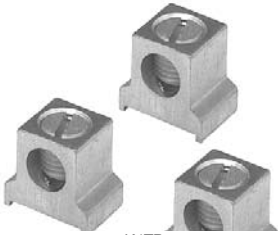
Electrical specifications

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

External accessories

Lugs and termination kits

S3, S6 – S7



K4TB



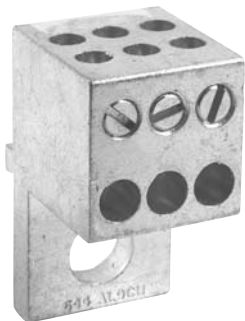
K4ET-250



K4TES



K4TER



K4TN

Standard cable lug kits

For breakers	Amps ^①	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	100	14AWG – 1/0	K4TB-2	4	K4TB	6
S3	150	2AWG – 4/0	K4TC-2	4	K4TC	6
S3	225	4AWG – 300kcmil	K4TD-2	10	K4TD	15
S6	600	(2) 250kcmil – 500kcmil	K6TH-2	50	K6TH	75
S6	800	(3) 2/0 – 400kcmil	K6TJ-2 ^②	90	K6TJ ^②	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	Amps ^①	Wire range	Set of 2 catalog number	List price	Set of 3 catalog number	List price
S3	100	14AWG – 1/0	K4TB-2C	\$ 8	K4TBC	\$ 12
S3	150	2AWG – 4/0	K4TC-2C	8	K4TCC	12
S3	225	4AWG – 300kcmil	K4TD-2C	14	K4TDC	21
S6	600	(2) 250kcmil – 500kcmil	K6TH-2C	54	K6THC	81
S6	800	(3) 2/0 – 400kcmil	K6TJ-2C ^②	94	K6TJC ^②	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	250	K4ET-250	\$ 46
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	250	14AWG – 250kcmil	K4TES	\$ 30

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	250	6AWG – 250kcmil	K4TER	\$ 30
S6	600	(2) 2/0 – 350kcmil	K6THR	150
S6	800	(3) 250kcmil – 350kcmil	K6TJR	170

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

Distribution cable lug kit

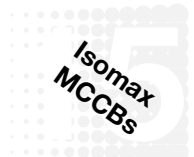
Suitable for use with	Max amps	Wire range	Set of 3 catalog number	List price
S3	250	(6) #14 - 6	K4TN	\$ 125

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

External accessories

Rotary and variable depth handle operators

S3, S6 – S7



K5RH



OHB65J10



OHB95J10



OHB125J10



K5VD-M, K5VD-S12,
K5VD-H

Rotary handle operating mechanism

Frame	Catalog number	List price
S3	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 15.88.

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
S3	K5VD-M	49	OXF10X148 (5.8)	\$ 24 26 32	OHB95J10 (3.7) OHG95J10 (3.7)	80
			OXF10X225 (8.9) OXF10X500 (19.7)		OHB125J10 (4.9) OHG125J10 (4.9)	90
S6	K6VD-M	80			OHB175J10 (6.9) OHG175J10 (6.9)	100
S7	K7VD-M	80				

Pistol type 4, 4X

Frame	Catalog number mechanism	List price	Shaft catalog number (length in inches)	List price	Handle catalog number (length in inches)	List price
S3	K5VD-M	49	OXF10X148 (5.8)	\$ 24 26 32	OHB95L10 (3.7) OHG95L10 (3.7)	120
			OXF10X225 (8.9) OXF10X500 (19.7)		OHB125L10 (4.9) OHG125L10 (4.9)	130
S6	K6VD-M	80			OHB175L10 (6.9) OHG175L10 (6.9)	140
S7	K7VD-M	80				

Square type 1

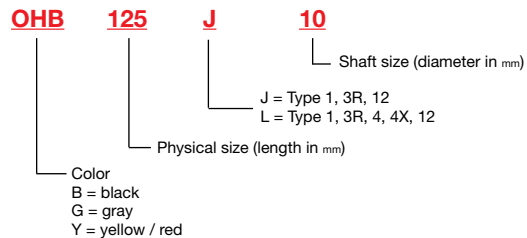
Frame	Catalog number mechanism	List price	Shaft catalog number	List price	Handle catalog number	List price
S3	K5VD-M	49	K5VD-S12	\$ 24	K5VD-H	\$ 25
S6	K6VD-M	80	K7VD-S20	27	K7VD-H	28
S7	K7VD-M	80			K7VD-H	28

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

Variable depth shaft support

For frames	Catalog number	List price
S3	K5VD-LSS	\$ 25

New pistol handle catalog number explanation



External accessories

Flange handle operators

S3 & S6



K7FHD-HS12

Flange handle

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
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		
S3	4, 4X	K3FHD-12S4	280	K3FHD-M	128	K7FHD-S12	12	19	K7FHD-HS4	133
		K3FHD-17S4	288			K7FHD-S17	17	27		
		K3FHD-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		
S6	4, 4X	K6FHD-12S4	563	K6FHD-M	411	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.

Door hardware kits — Solid shaft linkage & cable operated

Item	Catalog number	List price
Door hardware kit, right hand, 2 point latch for enclosures less than 40 inches high	FH-DHK	\$ 150
Roller for 3 point latch, add to FH-DHK	FH-3RL	30

Enclosure depths

Minimum

Breaker	Depth (inches)
S3	10
S6	11

Maximum

For maximum depth, add 4 inches to the shaft length

① Cable not included.

External accessories

Flange handle operators

S3, S6 – S7



K7FCH

Flange handle

Cable linkage

Breaker	NEMA type	Mechanism only	List price	Cable only	Cable length	List price	Handle only	List price
S3	1,3R,12	K4FPM	110	K5C036	36" (91cm)	114	K5FCH	213
				K5C048	48" (122cm)	146	K5FCH4	243
	4, 4X	K4FPM	110	K5C060	60" (152cm)	160		
S6	1,3R,12	K6FPM	220	K5C072	72" (183cm)	175	K7FCH	310
				K5C084	84" (213cm)	204		
				K5C096	96" (244cm)	221		
	4, 4X	K6FPM	220	K5C108	108" (274cm)	238	K7FCH4	415
				K5C120	120" (305cm)	256		
				K7C048	48" (122cm)	190		
S7	1,3R,12	K7FPM	220	K7C060	60" (152cm)	220	K7FCH	310
				K7C072	72" (183cm)	256		
				K7C084	84" (213cm)	270		
	4, 4X	K7FPM	220	K7C096	96" (244cm)	320	K7FCH4	415
				K7C120	120" (305cm)	350		

Notes: For complete assembly; mechanism, cable and handle are required.
All cables mount onto the right side of the breaker.
Handle can be mounted on the right or left side.

Door hardware kits, S3, S6 - S7 Cable operated

Item	Catalog number	List price
Door hardware kit, right hand, 2 point latch for enclosures less than 40 inches high	KDH2R	\$ 200
Door hardware kit, right hand, 3 point latch for enclosures 40 inches high or greater	KDH3R	225

Enclosure depths

Minimum

Breaker	Depth (inches)
S3 - S6	8
S7	10

Maximum

Maximum depth is determined by cable length.

External accessories S3, S6 – S7



K5LD



K7KL



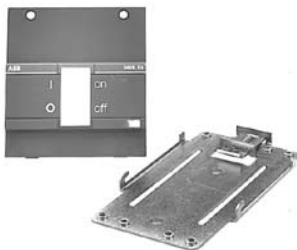
K6LC



K6LCH



K6LC-S



K3DMB

Front locking device

Item	Catalog number	List price
S3	K5LD	\$ 14
S6	K6LD	16
S7	K7LD	20
S3	K5LDW ①	14
S6	K6LDW ①	16
S7	K7LDW ①	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, S6 - S7	List price
Bracket	K7DB	\$ 5

Key locks

Accessory	Keys	Catalog number		List price
		S3	S6 – S7	
Electric operator	different	K5KL-EO	K7KL-EO	\$ 25
	same	K5KL-EO-2	K7KL-EO-2	
Rotary HM & locking device	different	K7KL	K7KL	
	same	K7KL-2	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	K4LC	8	K4LCH	\$ 16
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 & 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
S3	K3DMB	\$ 24

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
S6	K6MI-H	620	K6MI-V	620
S7	K7MI-H	630	K7MI-V	630

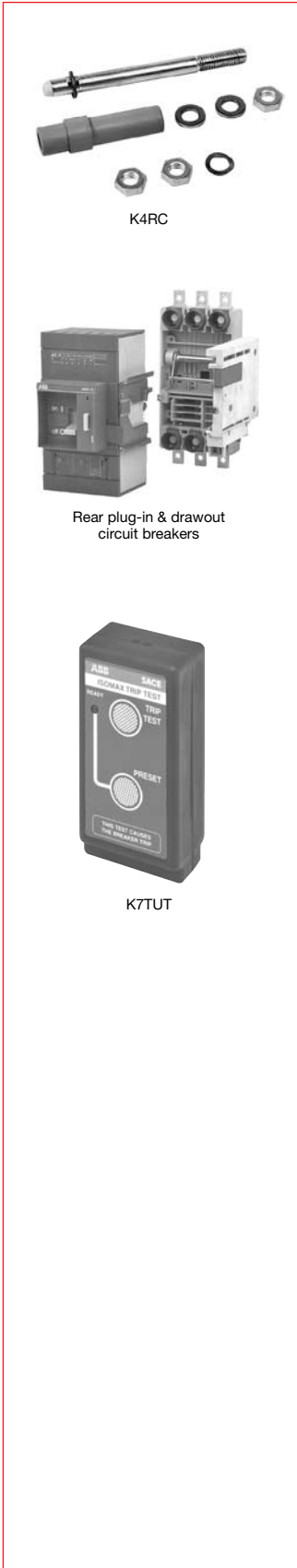
Provides for mounting of two similar breakers on a single mounting plate. CBs are interlocked via a "walking beam" type interlock, preventing breakers from being ON or closed at the same type. Both breakers can be OFF or tripped. MIP is available in two versions, one with breakers mounted horizontally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

① Required for drawout breakers.

Accessories

S3, S6 – S7

IEC



K4RC

Rear plug-in & drawout circuit breakers

K7TUT

Rear connected stud kits^①

For breakers	Max. amps	Set of 6 catalog number	List price
S3	250	K4RC	\$ 87
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

Frame	Movable kit		Separate kits fixed and movable				Complete plug-in kits			
	Movable	List price	Front bus	List price	Rear conn.	List price	Front bus	List price	Rear conn.	List price
S3	K4PMK	203	K3PFF	190	K3PFR	230	K3PF	393	K3PR	433

Draw-out (3 pole)^{①②}

Frame	Movable kit		Separate kits fixed and movable				Complete draw-out kits			
	Movable	List price	Front bus	List price	Rear conn.	List price	Front bus	List price	Rear conn.	List price
S3	K4WMK	\$ 203	K3WFF	\$ 230	K3WFR	\$ 270	K3WF	\$ 433	K3WR	\$ 473
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
S3, S6 – S7	K7WCR	\$ 20

Cable termination kits (3 pole only)^③

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

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

Isomax frames	Catalog number	List price
S6 – S7	K7TUT	\$ 210

Isomax hand-held test kit is used to both test and exercise microprocessor trip units in breakers S6 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.

③ Requires front locking device to prevent drawout while breaker is closed.

Enclosures Type 1 & 3R/12

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

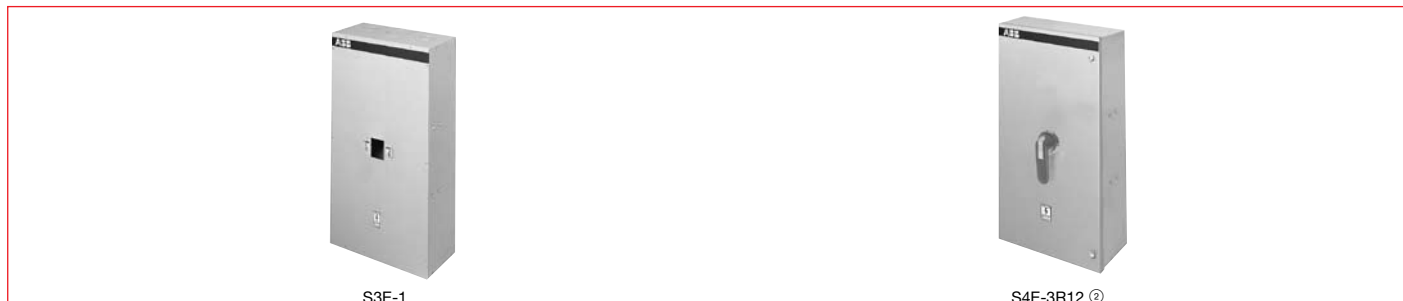
- Type 3R is intended for outdoor use providing protection against rain, sleet or snow.
- Type 12 is for use in indoor atmospheres to provide a degree of protection against circulating dust, lint, sawdust, falling dirt and dripping non-corrosive liquids.
- Surface-mounted, sheet steel enclosure.
- Breaker 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

Enclosures Type 1 & 3R/12



Enclosures (Price does not include circuit breaker; order as a separate item.) ③

NEMA designation	Breaker type	Enclosure maximum rating		Approximate dimensions① H x W x D (inches)	Catalog number	List price
		AL cables	CU cables			
Type 1	S3	150A	225A	22 x 12 x 4.5	S3E-1	235
	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/12②	S1	100A	100A	14 x 10 x 8.8	S1E-3R12	305
	S3	150A	225A	22 x 12 x 9	S3E-3R12	395
	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
S3	Neutral #6-250 kcmil Bonding Lug #14-1/0	S3NK225	135
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

NOTE: The list price adder for factory installation of an enclosed circuit breaker is 50% of the enclosure list price.

① Enclosures may not meet size requirement for UL 100% rated breakers.
 ② Variable depth rotary handle must be ordered separately (S3, S6 - S7).
 ③ Consult ABB for breakers installed in enclosures.

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
	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 4XStainless steel boltsCaptive boltsDrain

NEMA designation	Breaker type	Enclosure max. rating	Cat. no. adder	List price adder	Cat. no. adder	List price adder	Cat. no. adder	List price adder	Cat. no. adder	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	
	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

15

S6 N 600 B W 7 - 4 xxx

● **Frame size**

- S3 = 150 / 225A
- 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**

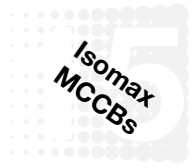
● **Type connectors**

- W = None
- L = Lugs

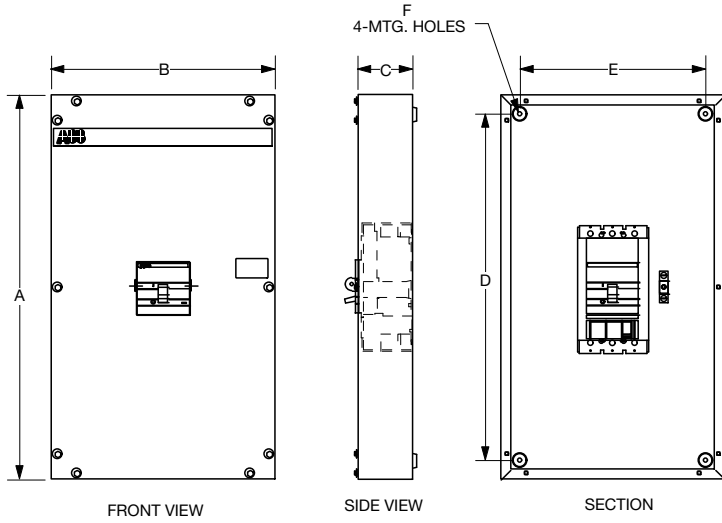
Enclosures

Approximate dimensions

S3, S6 – S7, NEMA 1, 3R & 12

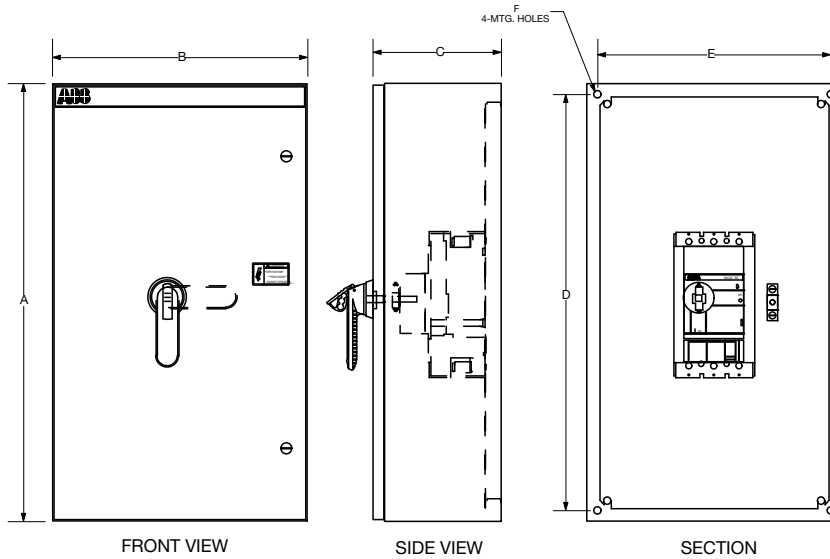


NEMA 1



Cat. #	A	B	C	D	E	F
S3E-1	22.0 559.0	12.0 305.0	4.25 108.0	19.0 482.0	9.0 229.0	0.312 7.93
S6E-1	44.0 1118.0	22.0 559.0	5.75 146.0	41.0 1041.5	19.0 483.0	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	0.312 7.93

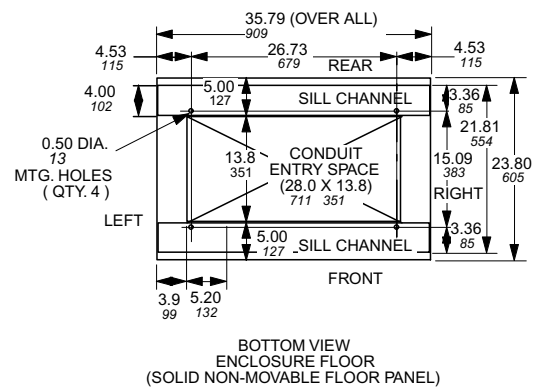
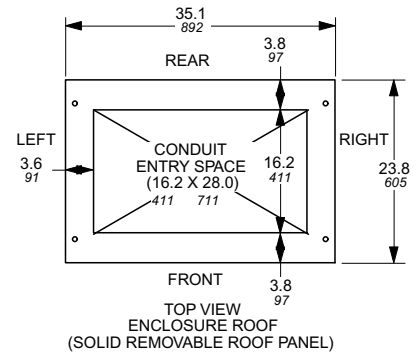
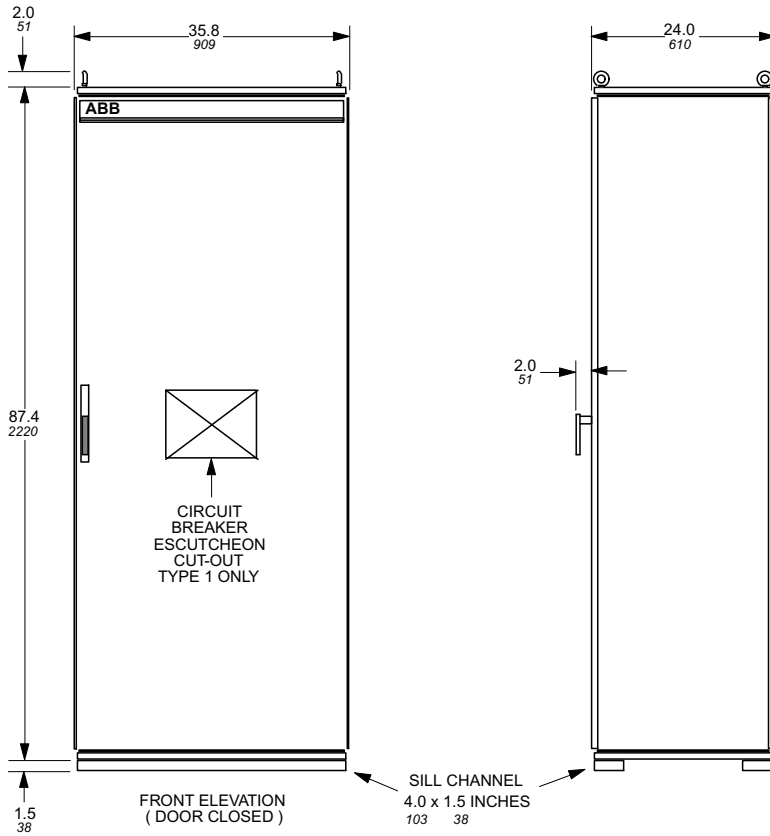
NEMA 3R, 12



Cat. #	A	B	C	D	E	F
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
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

Enclosures

Approximate dimensions
S8, NEMA 1, 3R & 12



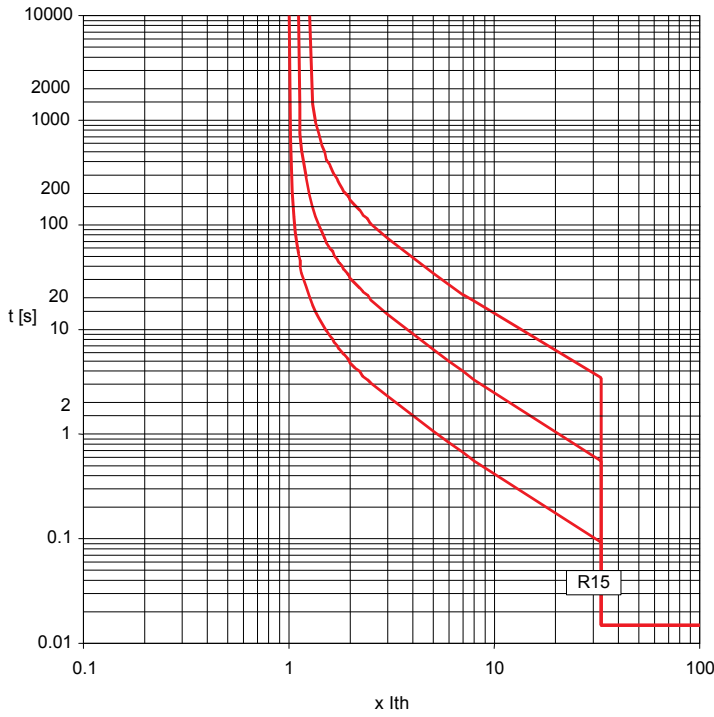
Protective releases

Thermal-magnetic overcurrent release

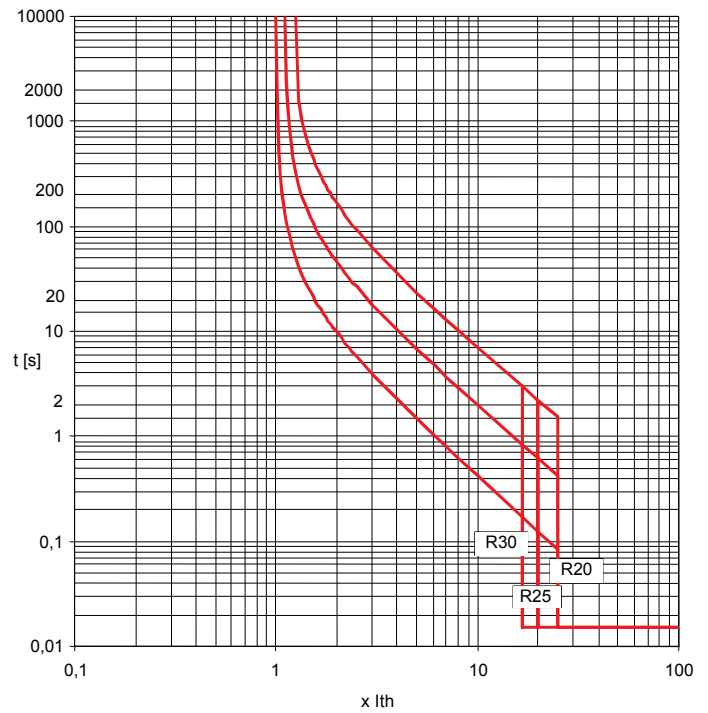
Time-current curves, S3



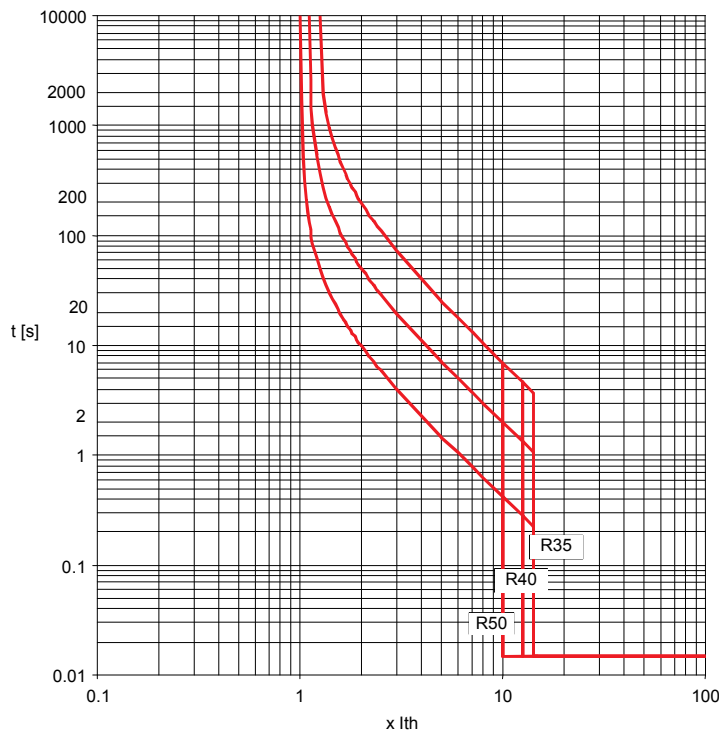
S3, R15



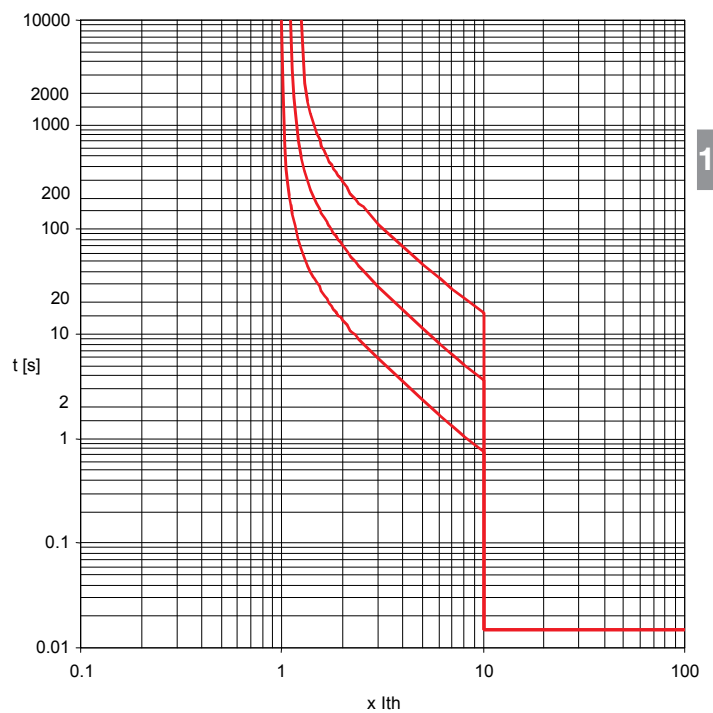
S3, R20-R30



S3, R35-R50



S3, R50-R100



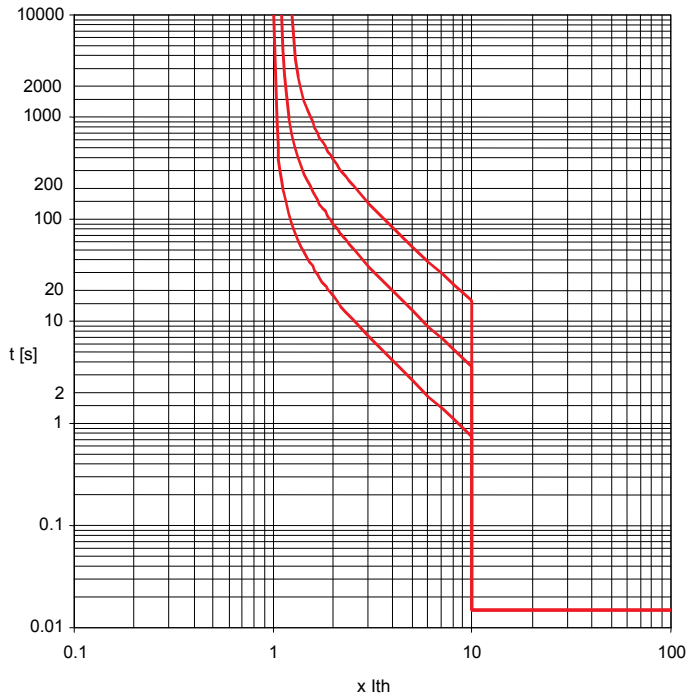
Ⓢ Direct current may shift tripping characteristic. Consult ABB.

Protective releases

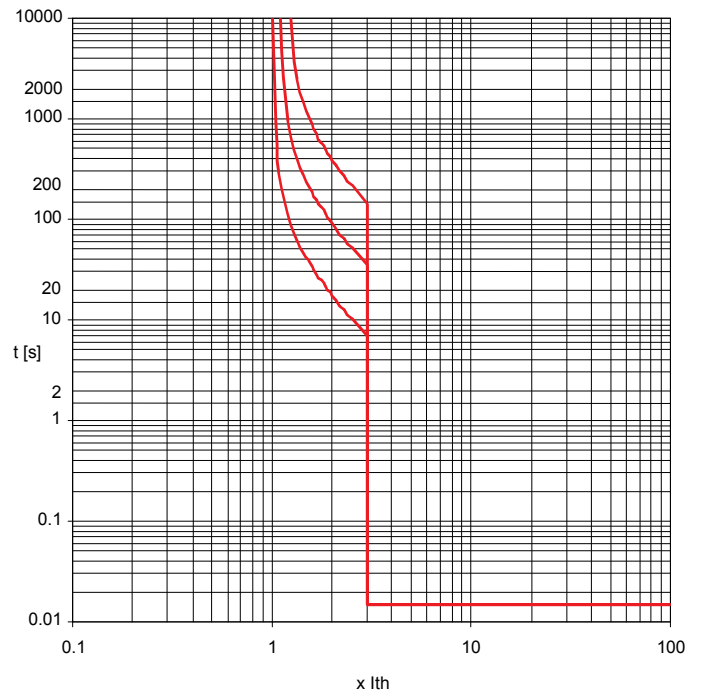
Thermal-magnetic overcurrent release

Time-current curves, S3

S3, R125-R225 – 10X I_m



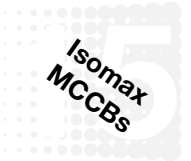
S3, R150-R225 – 3X I_m



Trip curves for distribution

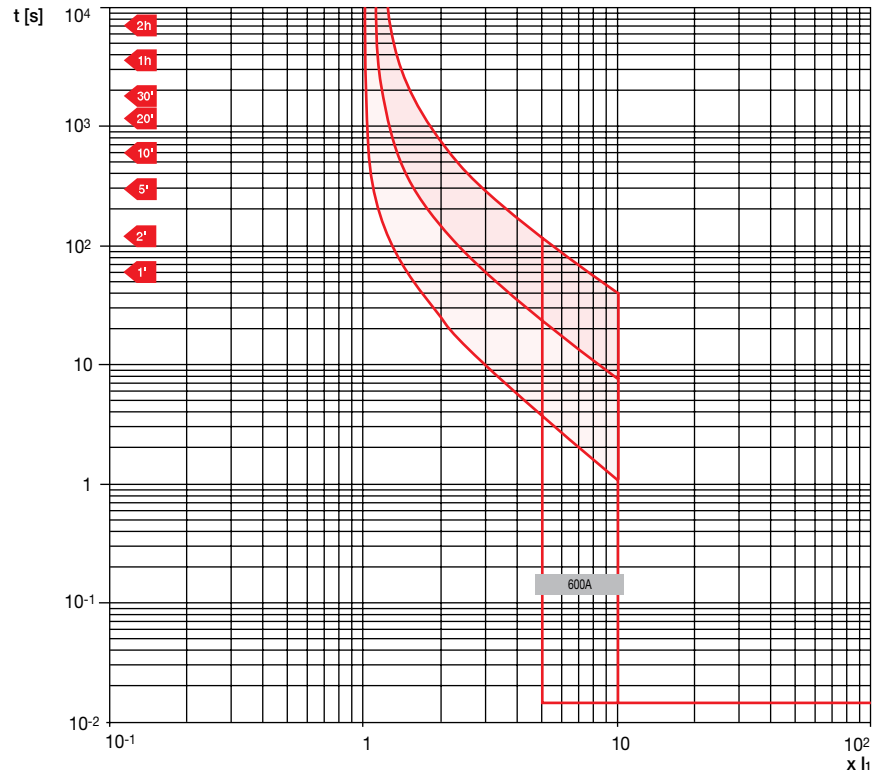
Circuit breakers w/thermomagnetic trip units

Isomax S6



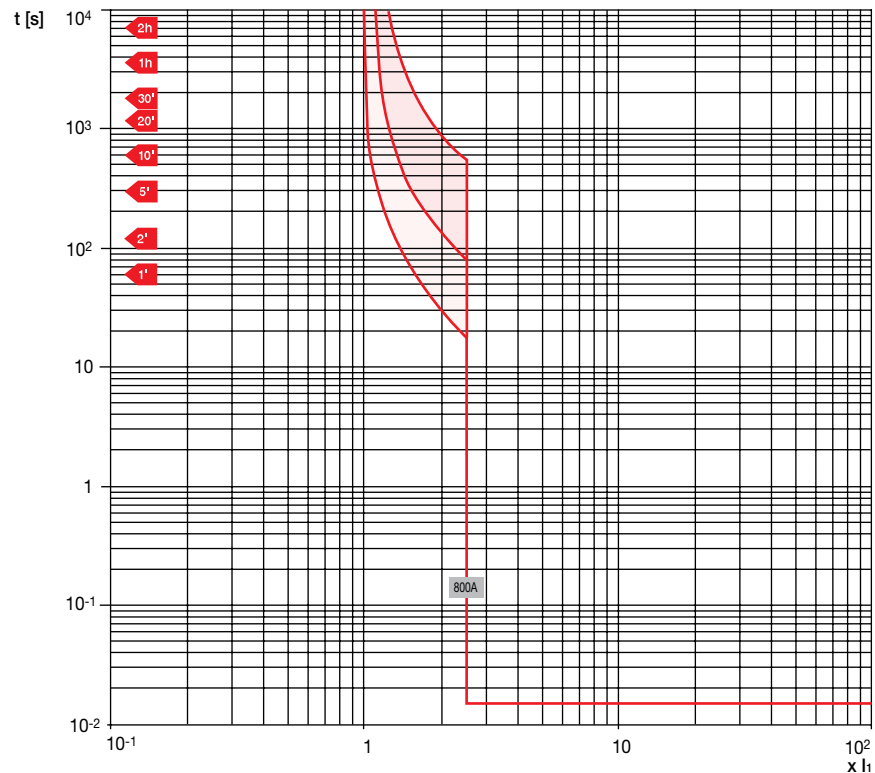
S6 600 TMD

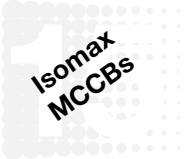
$I_n = 800 \text{ A}$
 $I_s = 5 \div 10 I_n$



S6 800 TMD

$I_n = 800 \text{ A}$
 $I_s = 2.5 I_n$





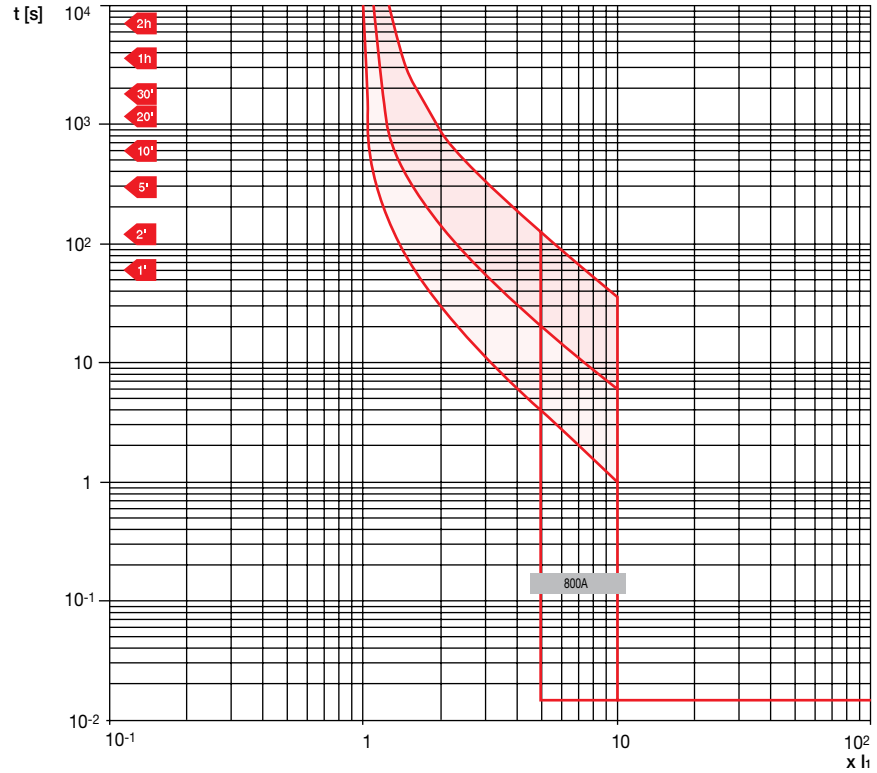
Trip curves for distribution

Circuit breakers w/thermomagnetic trip units

Isomax S6

S6 800 TMD

$I_n = 800 \text{ A}$
 $I_3 = 5 \div 10 I_n$



Protective releases

Microprocessor trip release

S6 – S8



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

The microprocessor based overcurrent relays (actual RMS) for Isomax S circuit-breakers 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 Modbus
- 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 (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.

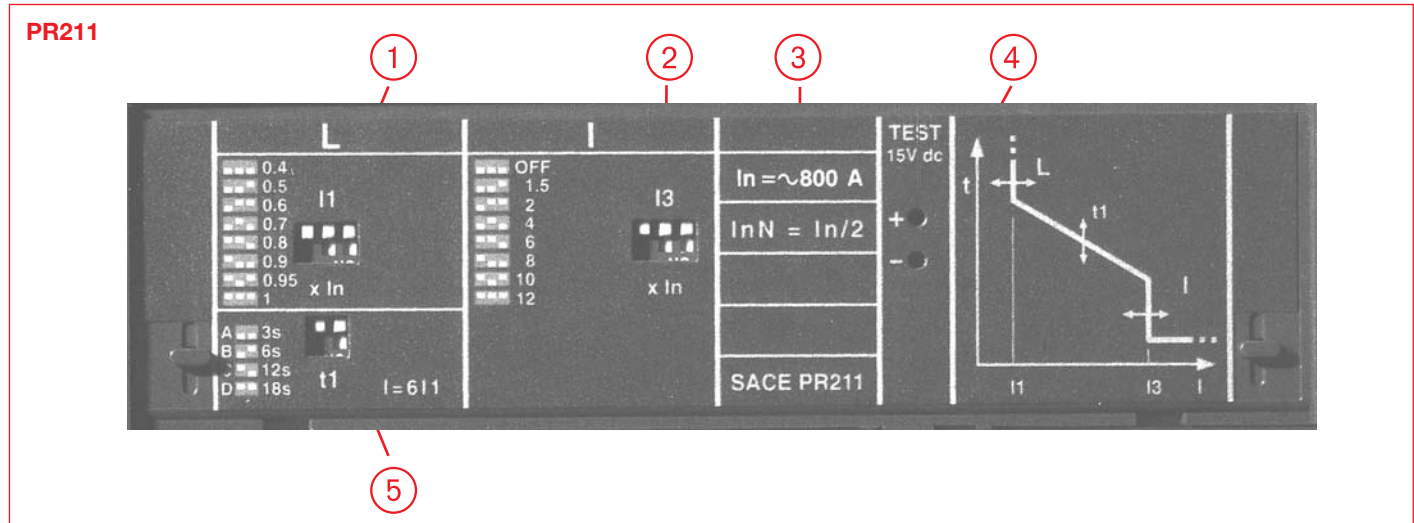
Circuit-breaker rated current change according to ambient temperature. The tripping characteristics of Isomax S6 – S8 with electronic trip units are unaffected by ambient temperatures from -25°C to +70°C.

Protective releases

Microprocessor based overcurrent relays, PR211 for S6 & S7 breakers

Protective functions and set values

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



Key

- 1 Dip-switch for function L setting (I1)
- 2 Dip-switch for function I setting (I3)
- 3 Rated current of current transformers
- 4 15 V d.c. input for release functioning check
- 5 Function L trip time setting dip switch (T1)

15

Rated and setting currents

Circuit-breaker	Current transformer In-A	Functions	
		L (I1) A (0.4 - 1 x In)	I (I3) A (1.5 - 12 x In)
S6	600/800	240 - 600	900 - 7200
		320 - 800	1200 - 9600
S7	1200	400 - 1000	1000 - 12,000
		480 - 1200	1800 - 14,400

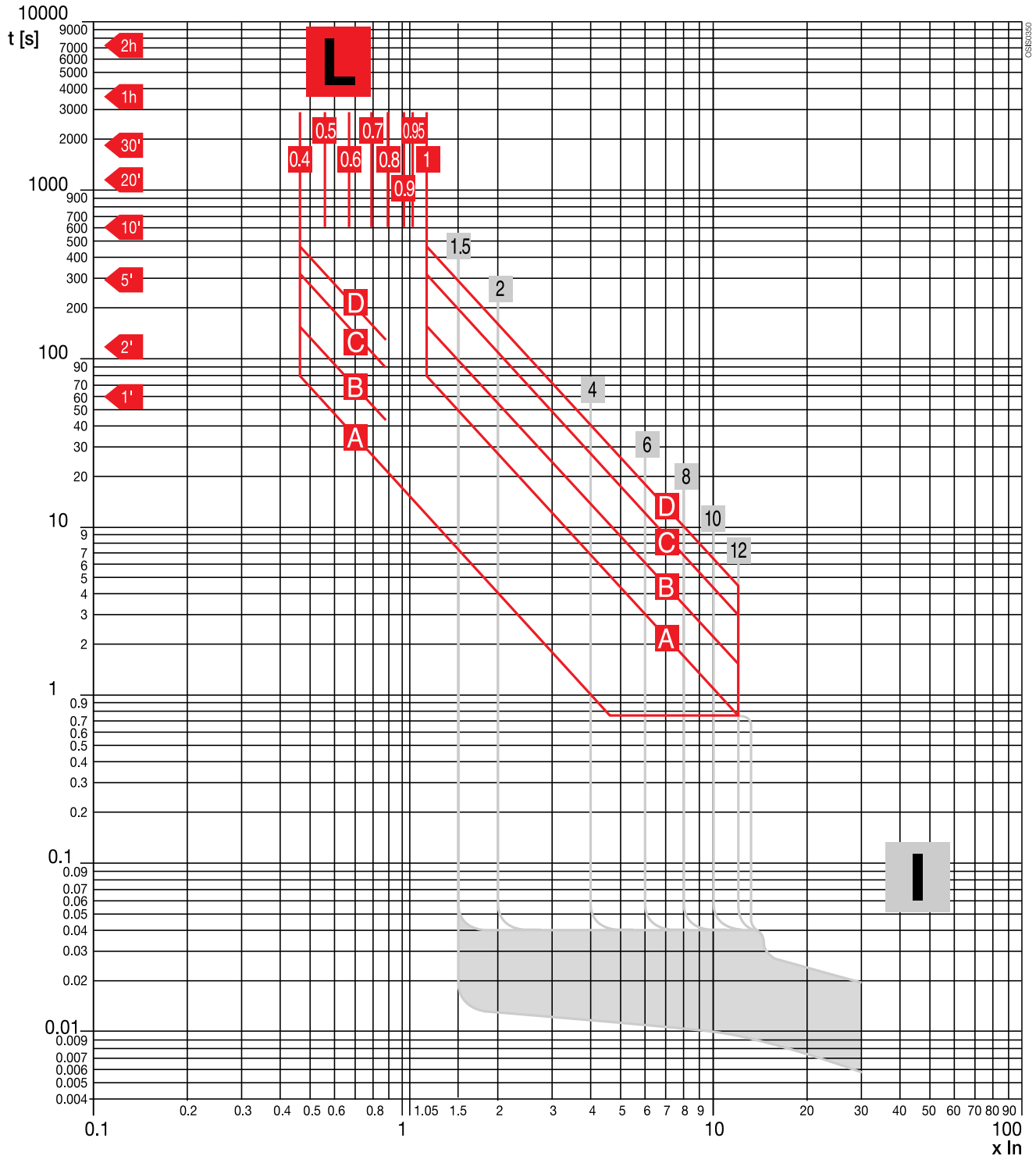
Protective releases

Microprocessor based overcurrent relays, PR211

Time-current curves, S6 – S7



Function L - I



Key

I_n = Rated current of current transformers
 t = Tripping time

Protective releases

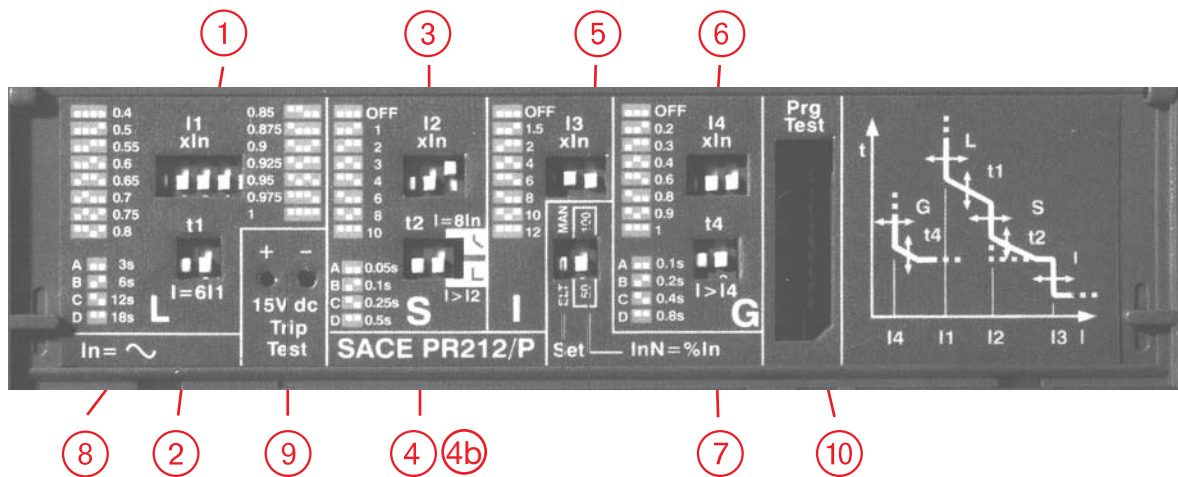
Microprocessor based overcurrent relays, PR212

Protection functions and set values, S6 – 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)	$I1 = 0.4-0.5-0.55-0.6-0.65-0.7-0.75$ $0.8-0.85-0.875-0.9-0.925-0.95-0.975-1 \times I_n$ $t1 = 4 \text{ curves A - D}$	$I2 = 1-2-3-4-6-8-10$ OFF $\times I_n$ $t2 = 4 \text{ curves A - D}$	$I3 = 1.5-2-4-6-8-10-12$	$I4 = 0.2-0.3-0.4-0.7-0.8-0.9-1$ $t4 = 4 \text{ curves A - D}$
Set values (electronic adjustment)	$I1 = 0.4 - 1 \times I_n$ $t1 = 3 - 18s$	$I2 = 1 \dots 10 \text{ OFF} \times I_n$ $t2 = 0.05 - 0.5$	$I3 = 1.5-12 \text{ OFF} \times I_n$	$I4 = 0.2 - 1 \text{ OFF} \times I_n$ $t4 = 0.1 - 0.8s$

PR212



Key

- 1 Function L setting dip-switch (I1)
- 2 Function L trip time setting dip-switch (t1)
- 3 Function S setting dip-switch (I2)
- 4 Function S trip time setting dip-switch (t2)
- 4b Fixed/variable trip time selection dip-switch
- 5 Function I setting dip-switch (I3)
- 6 Function G setting dip-switch (I4)
- 7 Function G trip time setting dip-switch (t4)
- 8 Rated current of current transformers
- 9 15 V d.c. input for release functioning check
- 10 Socket for connecting SACE PR10/T test unit

① S8 it = 0.2 - 0.4

Protective releases

Rated and setting currents, PR212

S6 – S8



Rated and setting currents

Circuit breaker	Current transformer	Functions			
		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)
S6	600	240 – 600	600 – .6000	900 – 7200	120 – 600
	800	320 – 800	800 – .8000	1200 – 9600	160 – 800
S7	1000	400 – 1000	1000 – .10,000	1500 – 12,000	200 – 1000
	1200	480 – 1200	1200 – .12,000	1800 – 14,400	240 – 1200
S8	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

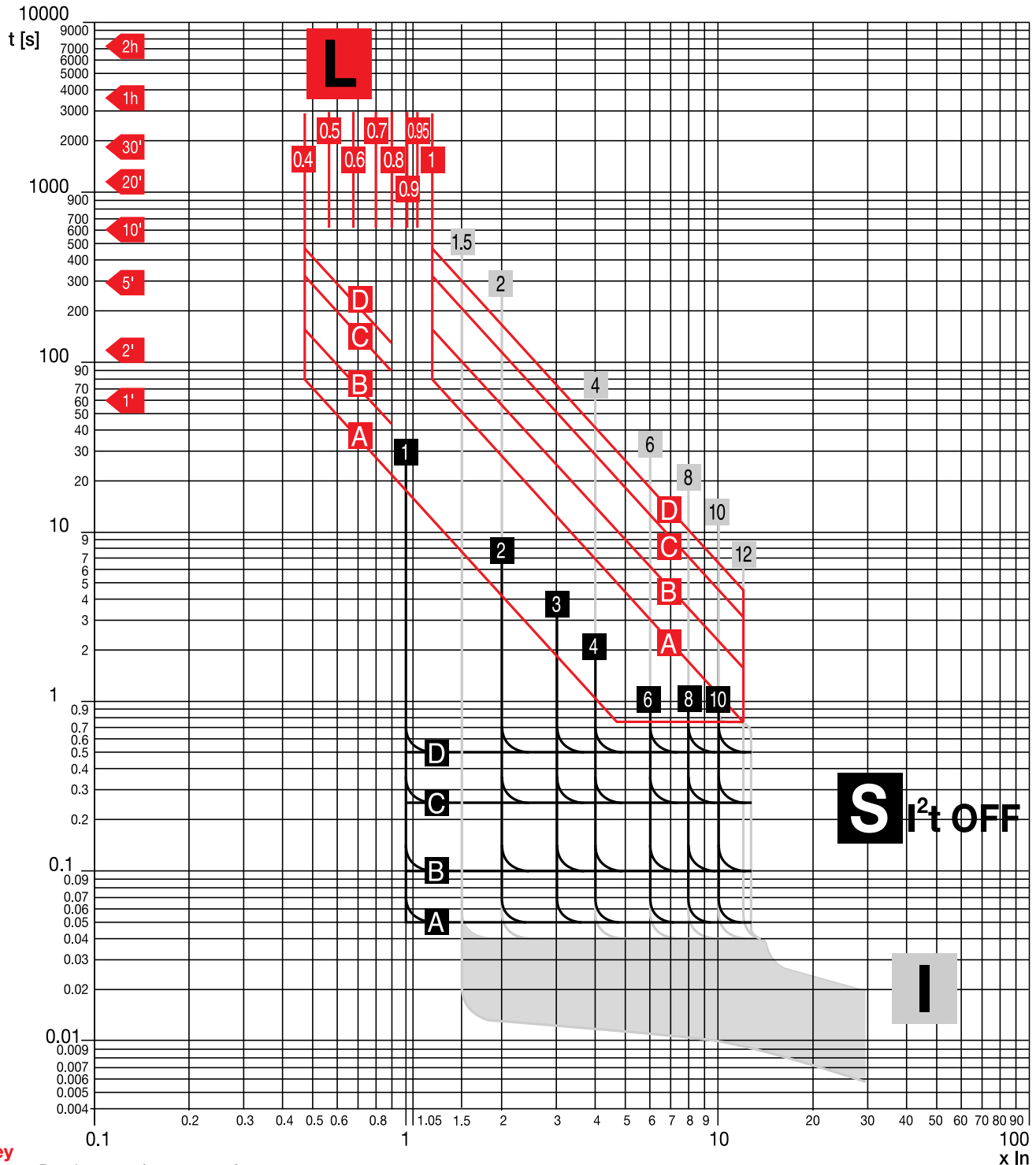
- Iu** = Rated uninterrupted current of circuit-breaker
- In** = Rated current of current transformers
- I1** = Current setting value for relay overload protection
- I2** = Current setting value for relay short-circuit selective protection
- I3** = Current setting value for relay instantaneous short-circuit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

Protective releases

Microprocessor based overcurrent relays, PR212

Time-current curves, S6 – S8

Function L - S - I



15

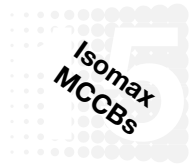
Key

- I_n = Rated current of current transformers
- t = Tripping time

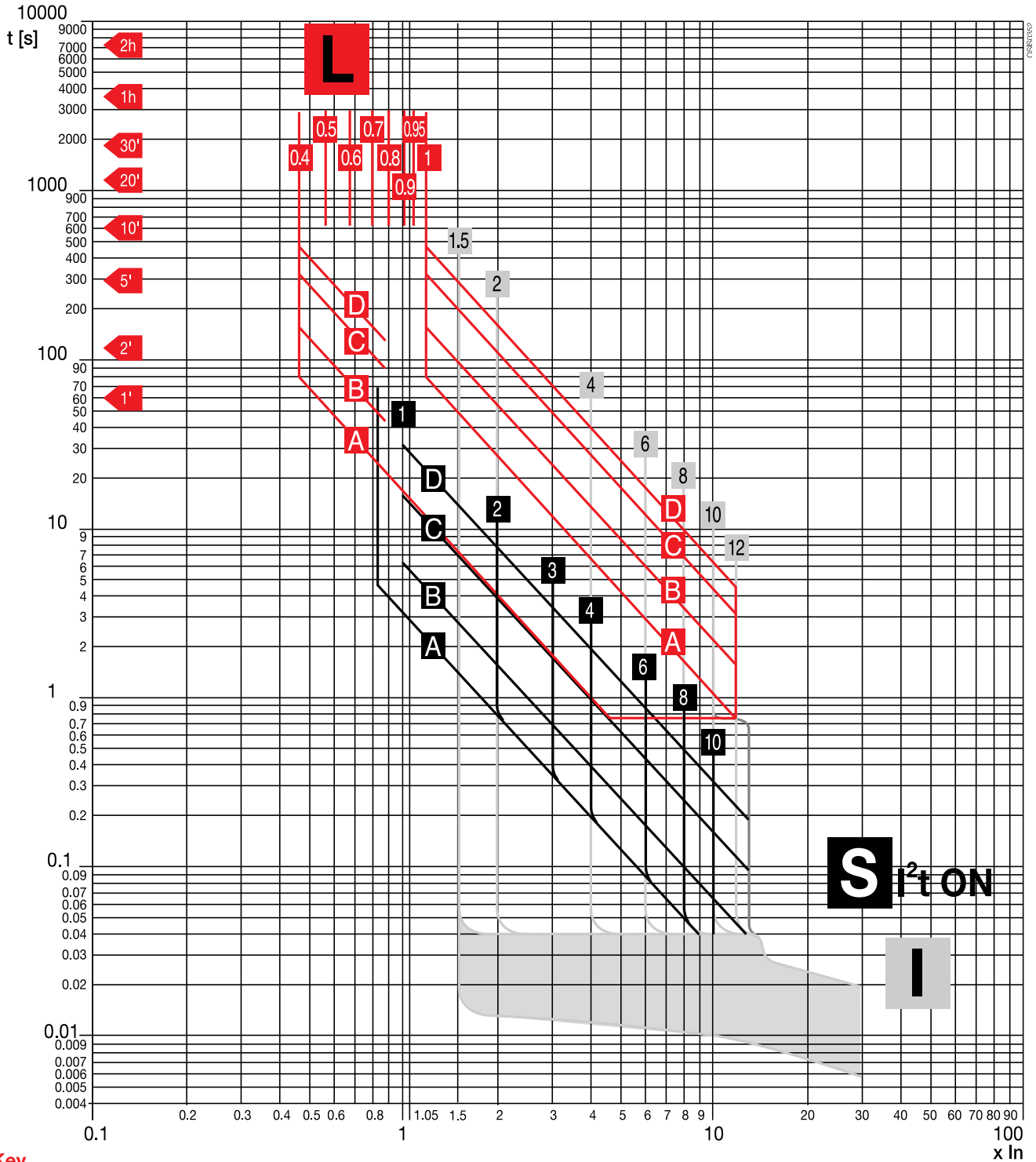
Protective releases

Microprocessor based overcurrent relays, PR212

Time-current curves, S6 – S8



Function L - S - I



Key

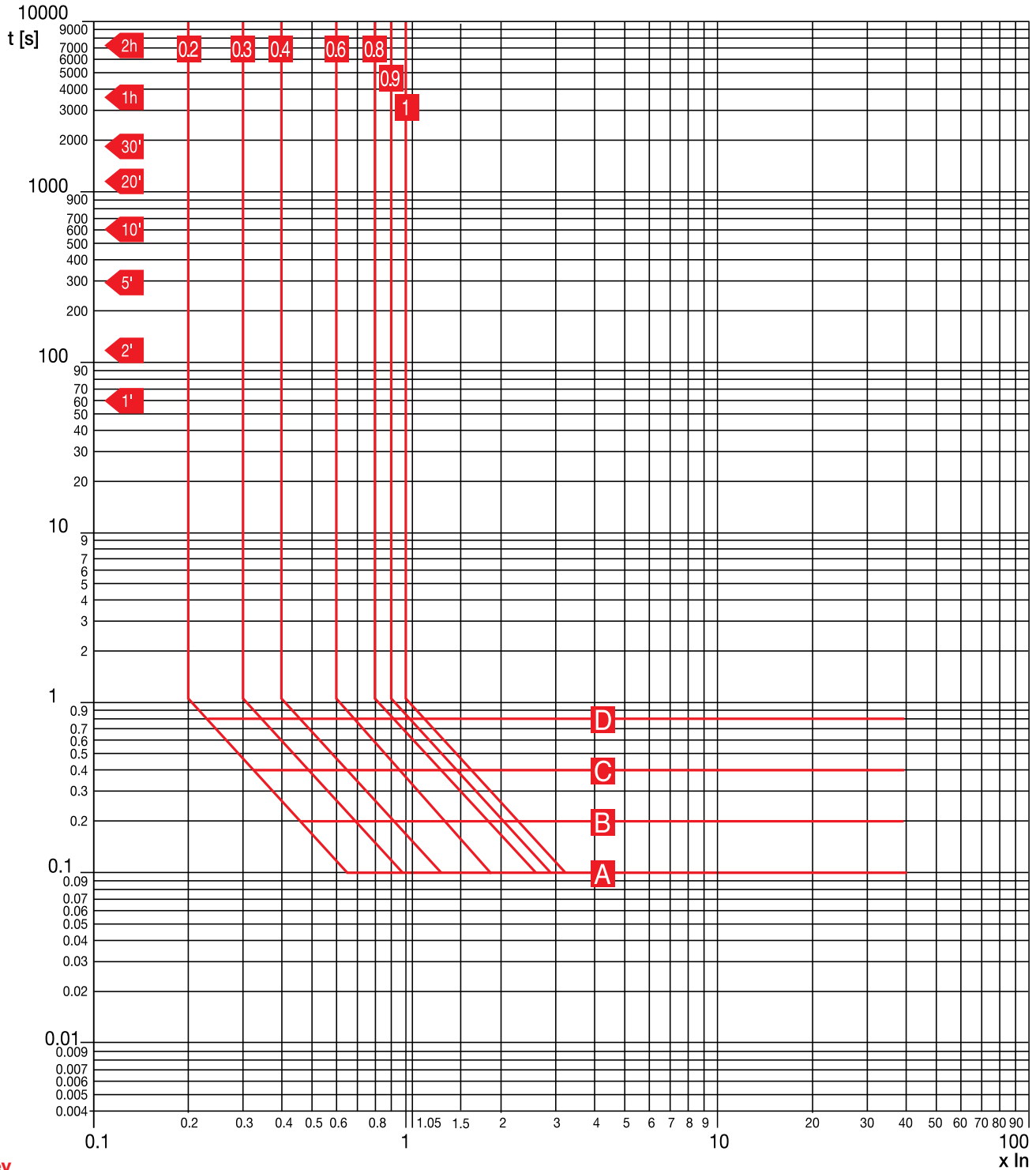
- In = Rated current of current transformers
- t = Tripping time

Protective releases

Microprocessor based overcurrent relays, PR212

Time-current curves, S6 – S8

Function G[®]



Key

- I_n = 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

208V	Horsepower per NEC 430-50			Motor full Load amps	Isomax Type	MCP Rating	Approximate trip setting % of MFLA						
	230V	460V	575V				1.5X	2X	4X	6X	8X	10X	12X
					Electronic trip		%	%	%	%	%	%	%
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
125			350	336	S6	600	250	350	700	1100	1400	1800	2100
		150		343	S6	600	250	350	700	1100	1400	1700	2100
		300		360	S6	600	250	350	700	1000	1300	1700	2000
		400		361	S6	600	250	350	700	1000	1300	1700	2000
150			400	362	S6	600	250	300	600	900	1300	1600	1900
			450	396	S6	600	250	300	600	900	1200	1500	1800
		350		412	S6	800	300	400	800	1200	1600	1900	2300
		500		414	S6	800	300	400	800	1200	1600	1900	2300
200			400	472	S6	800	250	350	700	1000	1400	1700	2000
		200		477	S6	800	250	350	700	1000	1300	1700	2000
		450		480	S6	800	250	350	700	1000	1300	1700	2000
		500		480	S6	800	250	350	700	1000	1300	1700	2000
200			450	515	S6	800	250	300	600	900	1200	1600	1900
			500	528	S6	800	250	300	600	900	1200	1500	1800
		500		590	S7	1000	250	350	700	1000	1400	1700	2000