

# Molded Case Circuit Breakers

## Magnetic Trip Only — ETI Motor Circuit Protector

*Selection*

Breaker Type	Ampere Rating	Instantaneous Trip Range <sup>②</sup>		Complete Circuit Breaker Without Lugs <sup>③</sup>		
		Minimum <sup>③</sup>	Maximum <sup>③</sup>	Catalog Number 2-Pole	Catalog Number 3-Pole	
HEM	3	9	33	—	HEM3M003L	
	7	21	77	—	HEM3M007L	
	15	45	165	—	HEM3M015L	
	30	90	330	—	HEM3M030L	
	50	150	550	—	HEM3M050L	
	70	210	770	—	HEM3M070L	
	100	300	1100	—	HEM3M100L	
SHIPPING:					3.7 lbs. each	
ED6-A 600V AC 250V DC	1	2.6	9	—	ED63A001	
	2	7	22	—	ED63A002	
	3	10	35	—	ED63A003	
	5	16	54	—	ED63A005	
	10	30	100	—	ED63A010	
	25	55	180	—	ED63A025	
	30	80	270	—	ED63A030	
	40	115	375	—	ED63A040	
	50	180	600	—	ED63A050	
	100	315	1000	—	ED63A100	
	125	500	1250	—	ED63A125	
	SHIPPING:					3.8 lbs. each
	CED6-A 600V AC 250V DC	1	2.6	9	—	CED63A001■
2		7	22	—	CED63A002■	
3		10	35	—	CED63A003■	
5		16	54	—	CED63A005■	
10		30	100	—	CED63A010■	
25		55	180	—	CED63A025■	
30		80	270	—	CED63A030■	
40		115	375	—	CED63A040■	
50		180	600	—	CED63A050■	
100		315	1000	—	CED63A100■	
125		500	1250	—	CED63A125■	
SHIPPING:					6 lbs. each	
FXD6 <sup>④</sup> 600V AC 250V DC		150	400	800	—	FXD63L150■
	150	800	1500	—	FXD63A150	
	150	1100	2500	—	FXD63H150	
	250	1100	2500	—	FXD63A250	
	SHIPPING:					9 lbs. each
CFD6 <sup>④</sup> 600V AC 250V DC	150	400	800	—	CFD63L150■	
	150	800	1500	—	CFD63A150■	
	150	1100	2500	—	CFD63H150■	
	250	1100	2500	—	CFD63A250■	
	SHIPPING:				12 lbs. each	12 lbs. each
JXD6(A) <sup>①</sup> 600V AC 250V DC	400	1250	2500	—	JXD63L400	
	400	2000	4000	JXD62H400■	JXD63H400	
SHIPPING:					16 lbs. each	20 lbs. each
CJD6 <sup>①</sup> 600V AC 250V DC	400	1250	2500	—	CJD63L400■	
	400	2000	4000	—	CJD63H400■	
SHIPPING:					29.5 lbs. each	31.5 lbs. each
LXD6(A) <sup>①</sup> 600V AC 250V DC	600	2000	4000	LXD62L600■	LXD63L600■	
	600	3000	6000	—	LXD63H600	
SHIPPING:					16 lbs. each	20 lbs. each
CLD6 <sup>①</sup> 600V AC 250V DC	600	2000	4000	—	CLD63L600■	
	600	3000	6000	—	CLD63H600■	
SHIPPING:					31.5 lbs. each	
LMXD6 <sup>④</sup> 600V AC 250V DC	800	2800	6000	—	LMXD63L800■	
	800	3200	8000	—	LMXD63A800	
SHIPPING:					35 lbs. each	
MXD6 <sup>④</sup> 600V AC 250V DC	800	3000	6000	—	MXD63L800■	
	800	4000	8000	—	MXD63A800■	
	800	5000	10000	—	MXD63H800	
SHIPPING:					33 lbs. each	
CMD6 <sup>④</sup> 600V AC 250V DC	800	3000	6000	—	CMD63L800■	
	800	4000	8000	—	CMD63A800■	
	800	5000	10000	—	CMD63H800■	
SHIPPING:					80 lbs. each	

### Important Information

ETI interrupting ratings are determined through combination tests with properly sized overload relays and contactors.

③ Connectors included when ordering by circuit breaker catalog number for HEM, ED and CED6 ETIs. Order ETI circuit breaker and lugs (2 per pole) separately for the FXD6, CFD6, MXD6, CMD6, JXD6, CJD6, LXD6 and CLD6 ETI's.

■ Built to order. Allow 2-3 weeks for delivery.

④ 2-pole available in 3-pole width only.

② When applied on DC Circuits — Trip levels will increase approximately +15 to 20%.

③ Tolerance -20%/+30% for lowest setting. All other set-

tings are -20%/+20%

④ For 2-pole application use outside poles of 3-pole circuit breaker.

Lug Information pages 7-88 to 7-90  
Enclosures Section 6  
Accessories pages 7-95 to 7-100  
Application data pages 7-75 to 7-76

# Molded Case Circuit Breakers

## Motor Circuits

## Application

### General

#### Protection of Motor Circuits

Molded case circuit breakers are used in motor circuits as a disconnecting means and for short-circuit protection. They should be used in conjunction with motor-running, over-current-protection devices, and should permit the motor to start without nuisance tripping from motor-inrush current. The circuit breaker should have a continuous-current rating of not less than 115% of the motor full-load current.

The recommended motor circuit protectors (Siemens ETI instantaneous only circuit breakers) listed have

continuous-current ratings of at least 115% of motor full-load currents. The trip-setting positions are approximately 11 times motor full-load currents. The suggested trip settings may have to be adjusted upward to no higher than 1300% of full-load current for non-design E type motors, and no greater than 1700% of full load current for design E motors, to allow for motor start-up due to inrush currents.

#### Breaker Mounted Immediately Ahead of Motor Starter

Siemens ETI motor circuit protectors are recommended for use in combination motor starters to provide selective short-circuit protection for the motor

branch circuit. The adjustable instantaneous-trip feature of the Siemens ETI motor circuit protector provides for a trip setting slightly above the peak motor-inrush current. With this setting, no delay is introduced in opening the circuit when a fault occurs. This circuit breaker has no time-delay trip element. Therefore it must be used in conjunction with, and immediately ahead of, the motor-running overcurrent protective device.

Important: The information below does not apply to all motor applications: it is recommended that the user refer to the National Electrical Code (NEC) for specific needs.

**Table 1 (When Breaker is Mounted Immediately Ahead of Motor Starter)**

3-Phase Induction Type Motors (Siemens ETI motor circuit protectors for branch circuit use with alternating-current combination, full voltage motor starters).

Motor Full Load Amperes	Catalog Number	ETI Trip Setting		Motor Full Load Amperes	Catalog Number	ETI Trip Setting		Motor Full Load Amperes	Catalog Number	ETI Trip Setting	
		Adjustment	Amperes			Adjustment	Amperes			Adjustment	Amperes
0.69 – 0.91	HEM3M003L	A (min)	9	1.23 – 1.99	ED63A005 CED63A005	Low	16	95.00 – 110.00	JXD63L400 CJD63L400	Low	1250
1.1 – 1.3		B	15	2.00 – 2.75		2	26	110.00 – 124.00		2	1430
1.6 – 1.7		C	21	2.76 – 3.52		3	36	138.00 – 151.00		4	1790
2.0 – 2.2		D	27	3.53 – 4.14		4	46	165.00 – 178.00		6	2140
2.3 – 2.5		E	30	4.15 – 4.90		High	54	178.00 – 192.00		7	2320
2.6 – 2.8		F (max)	33					192.00 – 227.00		High	2500
1.5 – 2.0	HEM3M007L	A (min)	21	2.30 – 3.83	ED63A010 CED63A010	Low	30	154.00 – 176.00	JXD63H400 CJD63H400	Low	2000
2.6 – 3.1		B	35	3.84 – 5.37		2	50	176.00 – 198.00		2	2290
3.7 – 3.9		C	49	5.38 – 6.52		3	70	220.00 – 242.00		4	2860
4.8 – 5.2		D	63	6.53 – 7.68		4	85	264.00 – 285.00		6	3430
5.3 – 5.7		E	70	7.69 – 9.10		High	100	285.00 – 308.00		7	3710
5.8 – 6.1		F (max)	77					308.00 – 326.00		High	4000
3.4 – 4.5	HEM3M015L	A (min)	45	4.23 – 6.91	ED63A025 CED63A025	Low	55	155.00 – 176.00	LXD63L600 CLD63L600	Low	2000
5.7 – 6.8		B	75	6.92 – 9.61		2	90	176.00 – 198.00		2	2290
8.0 – 9.1		C	100	9.62 – 11.91		3	125	220.00 – 242.00		4	2860
10.4 – 11.4		D	135	11.92 – 13.83		4	155	264.00 – 285.00		6	3430
11.5 – 12.6		E	150	13.84 – 16.40		High	180	285.00 – 308.00		7	3710
12.7 – 13.0		F (max)	165					308.00 – 326.00		High	4000
3.9 – 9.1	HEM3M030L	A (min)	90	6.15 – 10.37	ED63A030 CED63A030	Low	80	231.00 – 264.00	LXD63H600 CLD63H600	Low	3000
11.5 – 13.7		B	150	10.38 – 14.22		2	135	264.00 – 292.00		2	3430
16.1 – 18.3		C	210	14.23 – 18.06		3	185	330.00 – 362.00		4	4290
20.7 – 22.9		D	270	18.07 – 20.75		4	235	395.00 – 428.00		6	5140
23.0 – 25.2		E	300	20.76 – 24.50		High	270	428.99 – 462.00		7	5570
25.3 – 26.1		F (max)	330					462.00 – 490.00		High	6000
11.5 – 15.2	HEM3M050L	A (min)	150	8.84 – 14.22	ED63A040 CED63A040	Low	115	215.00 – 238.00	LMXD63L800	Low	2800
19.2 – 22.9		B	250	14.23 – 19.60		2	185	238.00 – 261.00		2	3100
26.9 – 30.6		C	350	19.61 – 24.99		3	255	261.00 – 284.00		3	3400
34.6 – 38.3		D	450	25.00 – 28.83		4	325	308.00 – 369.00		5	4000
38.4 – 42.1		E	500	28.84 – 34.00		High	375	369.00 – 423.00		6	4800
42.2 – 43.5		F (max)	550					423.00 – 462.00		7	5500
16.1 – 30.6	HEM3M070L	A (min)	210	13.84 – 23.06	ED63A050 CED63A050	Low	180	246.00 – 269.00	LMXD63A800	Low	3200
26.9 – 32.2		B	350	23.07 – 31.52		2	300	269.00 – 284.00		2	3500
37.6 – 42.9		C	490	31.53 – 39.99		3	410	284.00 – 323.00		3	3700
48.4 – 53.7		D	630	40.00 – 46.14		4	520	362.00 – 492.00		5	4700
53.8 – 59.1		E	700	46.15 – 54.50		High	600	492.00 – 562.00		6	6400
59.2 – 60.9		F (max)	770					562.00 – 616.00		7	7300
23.0 – 30.9	HEM3M100L	A (min)	300	24.23 – 41.52	ED63A100 CED63A100	Low	315	284.00 – 323.00	MXD63L800 CMD63L800	Low	3000
38.4 – 46.0		B	500	41.53 – 56.91		2	540	323.00 – 362.00		2	3430
53.8 – 61.4		C	700	56.92 – 68.45		3	740	362.00 – 395.00		3	3800
69.2 – 76.8		D	900	68.46 – 76.91		4	890	395.00 – 428.00		5	4710
76.9 – 84.5		E	1000	76.92 – 90.90		High	1000	428.00 – 462.00		7	5570
84.6 – 87.0		F (max)	1100					462.00 – 490.00		High	6000
.20 – .33	ED63A001 CED63A001	Low	2.6	30.76 – 35.37	ED63A125 CED63A125	Low	500	308.00 – 352.00	MXD63A800 CMD63A800	Low	4000
.34 – .45		2	4.5	35.38 – 39.99		2	720	352.00 – 442.00		2	4570
.46 – .56		3	6	44.51 – 49.23		3	920	442.00 – 447.00		3	5740
.57 – .68		4	7.5	53.84 – 58.45		4	1100	483.00 – 527.00		5	6280
.69 – .81		High	9	58.46 – 63.06		High	1250	571.00 – 616.00		7	7240
.53 – .83	ED63A002 CED63A002	Low	7	61.53 – 69.22	FXD63L150 CFD63L150	Low	800	616.00 – 660.00	MXD63H800 CMD63H800	Low	5000
.84 – 1.14		2	11	69.23 – 76.91		2	900	385.00 – 440.00		3	6430
1.15 – 1.45		3	15	84.61 – 92.29		4	1100	495.00 – 550.00		5	7860
1.46 – 1.68		4	19	100.00 – 108.00		6	1300	605.00 – 660.00		6	8575
1.69 – 2.00		High	22	108.00 – 115.00		High	1500	660.00 – 695.00			
.76 – 1.29	ED63A003 CED63A003	Low	10	85.00 – 100.00	FXD63A250 CFD63A250	Low	1100				
1.30 – 1.75		2	17	100.00 – 115.00		2	1300				
1.76 – 2.29		3	23	131.00 – 146.00		4	1700				
2.30 – 2.68		4	30	162.00 – 177.00		6	2100				
2.69 – 3.18		High	35	177.00 – 192.00		High	2500				
				192.00 – 227.00							

Note: Lowest instantaneous settings have a -20%/+30% tolerance and all other settings have a -20%/+20% tolerance.

# Molded Case Circuit Breakers

## Motor Circuits

## Application

### Breaker Mounted at a Distance From Motor Starter

ET thermal-magnetic circuit breakers conform to the National Electrical Code table 430-152 requirements for motor branch and feeder circuit protection when properly applied in conjunction with motor-running overcurrent protective devices. The recommended

circuit-breaker ratings in Table 2 provide adequate time delay for starting the majority of three phase induction motors.

To determine the ampere ratings of the ET breaker to protect a motor feeder, add the rating of the ET breaker used to protect the largest motor branch circuit in the group to the full-load currents of the remaining motors in the group.

### Interrupt Ratings

For normal commercial purposes, available fault current can conveniently be obtained in the Interrupting Selector Tables.

**Table 2 (When Breaker is Mounted at a Distance From Motor Starter)**

3-Phase Induction Type Motors (EQ and ET circuit breakers (thermal-magnetic trip) for branch breaker use with alternating-current combination motor starters).

Motor Horsepower Rating	200 and 208V Motors			230V Motors			460V Motors			575V Motors		
	240V Circuit Breaker Data <sup>①</sup>			240V Circuit Breaker Data <sup>①</sup>			480V Circuit Breaker Data <sup>①</sup>			600V Circuit Breaker Data <sup>①</sup>		
	Breaker Type	Catalog Number	Ampere Rating	Breaker Type	Catalog Number	Ampere Rating	Breaker Type	Catalog Number	Ampere Rating	Breaker Type	Catalog Number	Ampere Rating
½	BQ <sup>®</sup>	BQ3B015	15	BQ <sup>®</sup>	BQ3B015	15	ED4	ED43B015	15	ED6	ED63B015	15
¾		BQ3B015	15		BQ3B015	15		ED43B015	15		ED63B015	15
1		BQ3B015	15		BQ3B015	15		ED43B015	15		ED63B015	15
1½		BQ3B015	15		BQ3B015	15		ED43B015	15		ED63B015	15
2		BQ3B020	20		BQ3B015	15		ED43B015	15		ED63B015	15
3		BQ3B030	30		BQ3B020	20		ED43B015	15		ED63B015	15
5	BQ <sup>®</sup>	BQ3B040	40	BQ <sup>®</sup>	BQ3B030	30	ED4	ED43B015	15	ED6	ED63B015	15
7½		BQ3B060	60		BQ3B050	50		ED43B030	30		ED63B020	20
10		BQ3B070	70		BQ3B070	70		ED43B030	30		ED63B030	30
15		BQ3B100	100		BQ3B090	90		ED43B040	40		ED63B035	35
20					BQ3B100	100		ED43B050	50		ED63B050	50
25	FXD6	FXD63B125	125	FXD6	FXD63B125	125	FXD6	FXD63B090	90	FXD6	FXD63B060	60
30		FXD63B150	150		FXD63B150	150		FXD63B100	100		FXD63B070	70
40		FXD63B175	175		FXD63B175	175		FXD63B125	125		FXD63B090	90
50		FXD63B200	200		FXD63B200	200		FXD63B150	150		FXD63B100	100
		FXD63B225	225									
60	JXD2	JXD23B300	300	—	—	—	FXD6, FD6	FXD63B150	150	FXD6	FXD63B100	100
75	JXD2	JXD23B400	400	JXD2	JXD23B350	350	FXD6, FD6	FXD63B200	200	FXD6, FD6	FXD63B125	125
100	JXD2	JXD23B400	400	JXD2	JXD23B400	400	FD6 <sup>®</sup> JD6 <sup>®</sup>	FD63B250 JD63B250	250 250	FXD6, FD6	FD63B175	175
125	LD6 <sup>®</sup> or LMD6	LD63B600 LMD63B600	600	LD6 <sup>®</sup> or LMD6	LD63B500 or LMD63B500	500	JD6 <sup>®</sup>	JD63B300	300	FXD6, FD6 OR JD6 <sup>®</sup>	FXD63B200 JD63B200	200 200
150	LD6 <sup>®</sup> or LMD6	LD63B600 or LMD63B600	600	LMD6	LD63B600 or LMD63B600	600	JD6 <sup>®</sup>	JD63B300	300	FXD6 or JD6 <sup>®</sup>	FXD63B225 JD63B225	225 225
200	LMD6	LMD63B800	800	LMD6	LMD63B800	800	JD6 <sup>®</sup>	JD63B350	350	JD6 <sup>®</sup>	JD63B300	300
250	—	—	—	—	—	—	JD6 <sup>®</sup>	JD63B400	400	JD6 <sup>®</sup>	JD63B400	400
300	—	—	—	—	—	—	LD6 <sup>®</sup> or LMD6	LD63B600 or LMD63B600	600	JD6 <sup>®</sup>	JD63B400	400
350	—	—	—	—	—	—	LMD6	LMD63B700	700	LD6 <sup>®</sup> or LMD6	LD63B500 or LMD63B500	500
400	—	—	—	—	—	—	LMD6	LMD63B800	800	LD6 <sup>®</sup> or LMD6	LD63B600 or LMD63B600	600
500	—	—	—	—	—	—	—	—	—	LMD6	LMD63B800	800

①The selection of breakers for this table is in accordance with Article 430, 2005 National Electric Code. Recommended circuit breakers are for full voltage starting, special consideration is necessary for reduced voltage starting.

②For panelboard applications, substitute the BL breaker for the BQ, ED2 circuit breakers may also be used.

③For non-interchangeable trip applications, substitute the FXD6 for the FD6, the JXD6 for the JD6, or the LXD6 for the LD6.

# Molded Case Circuit Breakers

## Adjustable Installments Magnetic Trip Settings

## Application

Breaker Type	Maximum Continuous Amperes	Nominal AC Adjustable Trip Range								ETI Motor Circuit Protector Catalog Number	Thermal Magnetic Catalog Number		
		Low	2	3	4	5	6	7	High		3-Pole	2-Pole	3-Pole
HEM	3	9	15	21	27	30	—	—	33	HEM3M003L	—	—	
	7	21	35	49	63	70	—	—	77	HEM3M007L	—	—	
	15	45	75	100	135	150	—	—	165	HEM3M015L	—	—	
	30	90	150	210	270	300	—	—	330	HEM3M030L	—	—	
	50	150	250	350	450	500	—	—	550	HEM3M050L	—	—	
	70	210	350	490	630	700	—	—	770	HEM3M070L	—	—	
	100	300	500	700	900	1000	—	—	1100	HEM3M100L	—	—	
ED6	1	2.6	4.5	6	7.5	—	—	—	9	ED63A001	—	—	
	2	7	11	15	19	—	—	—	22	ED63A002	—	—	
	3	10	17	23	30	—	—	—	35	ED63A003	—	—	
	5	16	26	36	46	—	—	—	54	ED63A005	—	—	
	10	30	50	70	85	—	—	—	100	ED63A010	—	—	
	25	55	90	125	155	—	—	—	180	ED63A025	—	—	
	30	80	135	185	235	—	—	—	270	ED63A030	—	—	
	40	115	185	255	325	—	—	—	375	ED63A040	—	—	
	50	180	300	410	520	—	—	—	600	ED63A050	—	—	
	100	315	540	740	890	—	—	—	1000	ED63A100	—	—	
	125	500	720	920	1100	—	—	—	1250	ED63A125	—	—	
	CED6	1	2.6	4.5	6	7.5	—	—	—	9	CED63A001■	—	—
2		7	11	15	19	—	—	—	22	CED63A002■	—	—	
3		10	17	23	30	—	—	—	35	CED63A003■	—	—	
5		16	26	36	46	—	—	—	54	CED63A005■	—	—	
10		30	50	70	85	—	—	—	100	CED63A010■	—	—	
25		55	90	125	155	—	—	—	180	CED63A025■	—	—	
30		80	135	185	235	—	—	—	270	CED63A030■	—	—	
40		115	185	255	325	—	—	—	375	CED63A040■	—	—	
50		180	300	410	520	—	—	—	600	CED63A050	—	—	
100		315	540	740	890	—	—	—	1000	CED63A100	—	—	
125		500	720	920	1100	—	—	—	1250	CED63A125	—	—	
FXD6-A		70	600	640	690	730	770	810	850	900	—	FXD62B070	FXD63B070
	80	600	640	690	730	770	810	850	900	—	FXD62B080	FXD63B080	
	90	600	640	690	730	770	810	850	900	—	FXD62B090	FXD63B090	
	100	700	770	840	920	990	1060	1140	1200	—	FXD62B100	FXD63B100	
	110	700	770	840	920	990	1060	1140	1200	—	FXD62B110	FXD63B110	
	125	800	900	1000	1100	1200	1300	1400	1500	—	FXD62B125	FXD63B125	
	150	400	460	520	580	640	700	760	820	FXD63L150	—	—	
	150	800	900	1000	1100	1200	1300	1400	1500	FXD63A150	FXD62B150	FXD63B150	
	150	1100	1300	1500	1700	1900	2100	2300	2500	FXD63H150	—	—	
	175	900	1060	1210	1370	1520	1780	1930	2000	—	FXD62B175	FXD63B175	
	200	900	1060	1210	1370	1520	1780	1930	2000	—	FXD62B200	FXD63B200	
	225	1100	1300	1500	1700	1900	2100	2300	2500	—	FXD62B225	FXD63B225	
250	1100	1300	1500	1700	1900	2100	2300	2500	FXD63A250	FXD62B250	FXD63B250		
FD6-A	70	600	640	690	730	770	810	850	900	—	FD62B070	FD63B070	
	80	600	640	690	730	770	810	850	900	—	FD62B080	FD63B080	
	90	600	640	690	730	770	810	850	900	—	FD62B090	FD63B090	
	100	700	770	840	920	990	1060	1140	1200	—	FD62B100	FD63B100	
	110	700	770	840	920	990	1060	1140	1200	—	FD62B110	FD63B110	
	125	800	900	1000	1100	1200	1300	1400	1500	—	FD62B125	FD63B125	
	150	800	900	1000	1100	1200	1300	1400	1500	—	FD62B150	FD63B150	
	175	900	1060	1210	1370	1520	1780	1930	2000	—	FD62B175	FD63B175	
	200	900	1060	1210	1370	1520	1780	1930	2000	—	FD62B200	FD63B200	
	225	1100	1300	1500	1700	1900	2100	2300	2500	—	FD62B225	FD63B225	
	250	1100	1300	1500	1700	1900	2100	2300	2500	—	FD62B250	FD63B250	
	HFD6	70	600	640	690	730	770	810	850	900	—	HFD62B070	HFD63B070
80		600	640	690	730	770	810	850	900	—	HFD62B080	HFD63B080	
90		600	640	690	730	770	810	850	900	—	HFD62B090	HFD63B090	
100		700	770	840	920	990	1060	1140	1200	—	HFD62B100	HFD63B100	
110		700	770	840	920	990	1060	1140	1200	—	HFD62B110	HFD63B110	
125		800	900	1000	1100	1200	1300	1400	1500	—	HFD62B125	HFD63B125	
150		800	900	1000	1100	1200	1300	1400	1500	—	HFD62B150	HFD63B150	
175		900	1060	1210	1370	1520	1780	1930	2000	—	HFD62B175	HFD63B175	
200		900	1060	1210	1370	1520	1780	1930	2000	—	HFD62B200	HFD63B200	
225		1100	1300	1500	1700	1900	2100	2300	2500	—	HFD62B225	HFD63B225	
250		1100	1300	1500	1700	1900	2100	2300	2500	—	HFD62B250	HFD63B250	
HHFD6		70	600	640	690	730	770	810	850	900	—	HHFD63B070	HHFD63B070
	80	600	640	690	730	770	810	850	900	—	HHFD63B080	HHFD63B080	
	90	600	640	690	730	770	810	850	900	—	HHFD63B090	HHFD63B090	
	100	700	770	840	920	990	1060	1140	1200	—	HHFD63B100	HHFD63B100	
	110	700	770	840	920	990	1060	1140	1200	—	HHFD63B110	HHFD63B110	
	125	800	900	1000	1100	1200	1300	1400	1500	—	HHFD63B125	HHFD63B125	
	150	800	900	1000	1100	1200	1300	1400	1500	—	HHFD63B150	HHFD63B150	
	175	900	1060	1210	1370	1520	1780	1930	2000	—	HHFD63B175	HHFD63B175	
	200	900	1060	1210	1370	1520	1780	1930	2000	—	HHFD63B200	HHFD63B200	
	225	1100	1300	1500	1700	1900	2100	2300	2500	—	HHFD63B225	HHFD63B225	
	250	1100	1300	1500	1700	1900	2100	2300	2500	—	HHFD63B250	HHFD63B250	
	CFD6	70	600	640	690	730	770	810	850	900	—	CFD62B070	CFD63B070
80		600	640	690	730	770	810	850	900	—	CFD62B080	CFD63B080	
90		600	640	690	730	770	810	850	900	—	CFD62B090	CFD63B090	
100		700	770	840	920	990	1060	1140	1200	—	CFD62B100	CFD63B100	
110		700	770	840	920	990	1060	1140	1200	—	CFD62B110	CFD63B110	
125		800	900	1000	1100	1200	1300	1400	1500	—	CFD62B125	CFD63B125	
150		400	460	520	580	640	700	760	820	CFD63L150	—	—	
150		800	900	1000	1100	1200	1300	1400	1500	CFD63A150	CFD62B150	CFD63B150	
150		1100	1300	1500	1700	1900	2100	2300	2500	CFD63H150	—	—	
175		900	1060	1210	1370	1520	1780	1930	2000	—	CFD62B175	CFD63B175	
200		900	1060	1210	1370	1520	1780	1930	2000	—	CFD62B200	CFD63B200	
225		1100	1300	1500	1700	1900	2100	2300	2500	—	CFD62B225	CFD63B225	
250	1100	1300	1500	1700	1900	2100	2300	2500	CFD63A250	CFD62B250	CFD63B250		

**Note:** Tolerances for instantaneous trip points meet UL 489 (7.3). Nominal AC instantaneous trip points are given in the tables. For DC instantaneous trip points, add 15% to nominal values.

Instantaneous trip adjustment is made through the breaker cover on all frame breakers. To change instantaneous trip point on circuit breaker, depress indicating knob, then rotate to desired position.

■ Built to order. Allow 2-3 weeks for delivery.

7 MOLDED CASE CIRCUIT BREAKERS

# Molded Case Circuit Breakers

## Adjustable Instantaneous Magnetic Trip Settings

## Application

Breaker Type	Maximum Continuous Amperes	Nominal AC Adjustable Trip Range								ETI Motor Circuit Protector Catalog Number		Thermal Magnetic Catalog Number		
		Low	2	3	4	5	6	7	High	3-Pole	2-Pole	3-Pole		
JXD2(A)	200	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD22B200	JXD23B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD22B225	JXD23B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD22B250	JXD23B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD22B300	JXD23B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	JXD22B350	JXD23B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	JXD22B400	JXD23B400		
JXD6(A)	200	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD62B200	JXD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD62B225	JXD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD62B250	JXD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	JXD62B300	JXD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	JXD62B350	JXD23B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	JXD62B400	JXD23B400		
JD6(A)	200	1250	1430	1610	1790	1960	2140	2320	2500	—	JD62B200	JD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	JD62B225	JD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	JD62B250	JD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	JD62B300	JD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	JD62B350	JD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	JD62B400	JD63B400		
HJD6(A)	200	1250	1430	1610	1790	1960	2140	2320	2500	—	HJD62B200	HJD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	HJD62B225	HJD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	HJD62B250	HJD63H250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	HJD62B300	HJD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	HJD62B350	HJD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	HJD62H400	HJD63B400		
HHJD6	200	1250	1430	1610	1790	1960	2140	2320	2500	—	HHJD62B200	HHJD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	HHJD62B225	HHJD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	HHJD62B250	HHJD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	HHJD62B300	HHJD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	HHJD62B350	HHJD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	HHJD62B400	HHJD63B400		
CJD6	200	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B200		
	225	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B225		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CJD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CJD63B400		
LXD6(A)	450	2000	2290	2570	2860	3140	3430	3710	4000	—	LXD62B450	LXD63B450		
	500	3000	3430	3860	4290	4710	5140	5570	6000	—	LXD62B500	LXD63B500		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	LXD62B600	LXD63B600		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	LD62B250	LD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	LD62B300	LD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	LD62B350	LD63B350		
LD6(A)	400	2000	2290	2570	2860	3140	3430	3710	4000	—	LD62B400	LD63B400		
	450	2000	2290	2570	2860	3140	3430	3710	4000	—	LD62B450	LD63B450		
	500	3000	3430	3800	4290	4710	5140	5570	6000	—	LD62B500	LD63B500		
	600	2000	2290	2570	2860	3140	3430	3710	4000	—	—	—		
	600	3000	3430	3800	4290	4710	5140	5570	6000	—	LXD63L600	—		
	600	3000	3430	3800	4290	4710	5140	5570	6000	—	LXD63H600	LD63B600		
HLD6(A)	250	1250	1430	1610	1790	1960	2140	2320	2500	—	HLD62B250	HLD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	HLD62B300	HLD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	HLD62B350	HLD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	HLD62B400	HLD63B400		
	450	2000	2290	2570	2860	3140	3430	3710	4000	—	HLD62B450	HLD63B450		
	500	3000	3430	3860	4290	4710	5140	5570	6000	—	HLD62B500	HLD63B500		
HHLD6	600	3000	3430	3860	4290	4710	5140	5570	6000	—	HLD62B600	HLD63B600		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	HHLD62B250	HHLD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	HHLD62B300	HHLD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	HHLD62B350	HHLD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	HHLD62B400	HHLD63B400		
	450	2000	2290	2570	2860	3140	3430	3710	4000	—	HHLD62B450	HHLD63B450		
CLD6	500	3000	3430	3860	4290	4710	5140	5570	6000	—	HHLD62B500	HHLD63B500		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	HHLD62B600	HHLD63B600		
	250	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B250		
	300	1250	1430	1610	1790	1960	2140	2320	2500	—	—	CJD63B300		
	350	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CJD63B350		
	400	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CLD63B400		
LMXD6	450	2000	2290	2570	2860	3140	3430	3710	4000	—	—	CLD63B450		
	500	3000	3430	3860	4290	4710	5140	5570	6000	—	—	CLD63B500		
	600	2000	2290	2570	2860	3140	3430	3710	4000	—	—	—		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	—		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	—		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	CLD63B600		
LMD6	500	3000	3430	3860	4290	4710	5140	5570	6000	—	—	LMXD63B500		
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	LMXD63B600		
	700	3200	3500	3700	4200	4700	6400	7300	8000	—	—	LMXD63B700		
	800	2800	3100	3400	3700	4000	4800	5500	6000	—	—	LMXD63B800		
	800	3200	3500	3700	4200	4700	6400	7300	8000	—	—	LMXD63B800		

MOLDED CASE  
CIRCUIT BREAKERS 7



# Molded Case Circuit Breakers

## Adjustable Instantaneous Magnetic Trip Settings

## Application

Breaker Type	Maximum Continuous Amperes	Nominal AC Adjustable Trip Range								ETI Motor Circuit Protector Catalog Number	Thermal Magnetic Catalog Number		
		Low	2	3	4	5	6	7	High		3-Pole	2-Pole	3-Pole
HLMXD6	500	3000	3430	3860	4290	4710	5140	5570	6000	—	—	HLMXD63B500	
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	HLMXD63B600	
	700	3200	3500	3700	4200	4700	6400	7300	8000	—	—	HLMXD63B700	
	800	3200	3500	3700	4200	4700	6400	7300	8000	—	—	HLMXD63B800	
HLMD6	500	3000	3430	3860	4290	4710	5140	5570	6000	—	HLMD62B500	HLMD63B500	
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	HLMD62B600	HLMD63B600	
	700	3200	3500	3700	4200	4700	6400	7300	8000	—	HLMD62B700	HLMD63B700	
	800	3200	3500	3700	4200	4700	6400	7300	8000	—	HLMD62B800	HLMD63B800	
MD6	500	3000	3430	3860	4290	4710	5140	5570	6000	—	—	MD63B500	
	600	3000	3430	3860	4290	4710	5140	5570	6000	—	—	MD63B600	
	700	4000	4570	5140	5710	6280	6850	7420	8000	—	—	MD63B700	
	800	3000	3430	3860	4280	4710	5140	5570	6000	MXD63L800	—	—	
	800	4000	4570	5140	5710	6280	6850	7420	8000	MXD63A800	—	MD63B800	
	800	5000	5715	6430	7145	7860	8575	9290	10000	MXD63H800	—	—	
MXD6	500	3000	3430	3860	4280	4710	5140	5570	6000	—	MXD62B500	MXD63B500	
	600	3000	3430	3860	4280	4710	5140	5570	6000	—	MXD62B600	MXD63B600	
	700	4000	4570	5140	5710	6280	6850	7420	8000	—	MXD62B700	MXD63B700	
	800	3000	3430	3860	4280	4710	5140	5570	6000	MXD63L800	—	—	
	800	4000	4570	5140	5710	6280	6850	7420	8000	MXD63A800	—	MXD63B800	
	800	5000	5715	6430	7145	7860	8575	9290	10000	MXD63H800	—	—	
HMD6	500	3000	3430	3860	4280	4710	5140	5570	6000	—	HMD62B500	HMD63B500	
	600	3000	3430	3860	4280	4710	5140	5570	6000	—	HMD62B600	HMD63B600	
	700	4000	4570	5140	5710	6280	6850	7420	8000	—	HMD62B700	HMD63B700	
	800	4000	4570	5140	5710	6280	6850	7420	8000	—	HMD62B800	HMD63B800	
HMXD6	500	3000	3430	3860	4280	4710	5140	5570	6000	—	—	HMXD63B500	
	600	3000	3430	3860	4280	4710	5140	5570	6000	—	—	HMXD63B600	
	700	4000	4570	5140	5710	6280	6850	7420	8000	—	—	HMXD63B700	
	800	4000	4570	5140	5710	6280	6850	7420	8000	—	—	HMXD63B800	
CMD6	400	3000	3430	3860	4280	4710	5140	5570	6000	—	—	—	
	500	3000	3430	3860	4280	4710	5140	5570	6000	—	—	—	
	600	3000	3430	3860	4280	4710	5140	5570	6000	—	—	—	
	700	4000	4570	5140	5710	6280	6850	7420	8000	—	—	CMD63B600	
	800	3000	3430	3860	4280	4710	5140	5570	6000	CMD63L800	—	CMD63B700	
	800	4000	4570	5140	5710	6280	6850	7420	8000	CMD63A800	—	CMD63B800	
ND6	800	4000	4570	5140	5710	6280	6850	7420	8000	—	ND62B800	ND63B800	
	900	5000	5715	6430	7145	7860	8575	9290	10000	—	ND62B900	ND63B900	
	1000	5000	5715	6430	7145	7860	8575	9290	10000	—	ND62B100	ND63B100	
	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	ND62B120	ND63B120	
	NXD6	900	5000	5715	6430	7145	7860	8575	9290	10000	—	NXD62B900	NXD63B900
		1000	5000	5715	6430	7145	7860	8575	9290	10000	—	NXD62B100	NXD63B100
1200		5000	5715	6430	7145	7860	8575	9290	10000	—	NXD62B120	NXD63B120	
HND6		800	4000	4570	5140	5710	6280	6850	7420	8000	—	HND62B800	HND63B800
		900	5000	5715	6430	7145	7860	8575	9290	10000	—	HND62B900	HND63B900
		1000	5000	5715	6430	7145	7860	8575	9290	10000	—	HND62B100	HND63B100
	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	HND62B120	HND63B120	
HNXD6	900	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HNXD63B900	
	1000	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HNXD63B100	
	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HNXD63B120	
CND6	800	4000	4570	5140	5710	6280	6850	7420	8000	—	—	CND63B800	
	900	5000	5715	6430	7145	7860	8575	9290	10000	—	—	CND63B900	
	1000	5000	5715	6430	7145	7860	8575	9290	10000	—	—	CND63B100	
	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	—	CND63B120	
PD6	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	—	PD63B120	
	1400	5000	5715	6430	7145	7860	8575	9290	10000	—	—	PD63B140	
	1600	5000	5715	6430	7145	7860	8575	9290	10000	—	—	PD63B160	
PXD6	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	—	PXD63B120	
	1400	5000	5715	6430	7145	7860	8575	9290	10000	—	—	PXD63B140	
	1600	5000	5715	6430	7145	7860	8575	9290	10000	—	—	PXD63B160	
HPD6	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HPD63B120	
	1400	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HPD63B140	
	1600	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HPD63B160	
HPXD6	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HPXD63B120	
	1400	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HPXD63B140	
	1600	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HPXD63B160	
CPD6	1200	5000	5715	6430	7145	7860	8575	9290	10000	—	—	CPD63B120	
	1400	5000	5715	6430	7145	7860	8575	9290	10000	—	—	CPD63B140	
	1600	5000	5715	6430	7145	7860	8575	9290	10000	—	—	CPD63B160	
RD6	1800	5000	5715	6430	7145	7860	8575	9290	10000	—	—	RD63B180	
	2000	5000	5715	6430	7145	7860	8575	9290	10000	—	—	RD63B200	
RXD6	1800	5000	5715	6430	7145	7860	8575	9290	10000	—	—	RXD63B180	
	2000	5000	5715	6430	7145	7860	8575	9290	10000	—	—	RXD63B200	
HRD6	1800	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HRD63B180	
	2000	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HRD63B200	
HRXD6	1800	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HRXD63B180	
	2000	5000	5715	6430	7145	7860	8575	9290	10000	—	—	HRXD63B200	

7 MOLDED CASE CIRCUIT BREAKERS

# Molded Case Circuit Breakers

## Molded Case Switch — Circuit Disconnect

*Selection*

Maximum Frame Amp Rating	2-Pole	3-Pole	Self-Protective Instantaneous Override $\pm 20\%$ <sup>③</sup>
	Catalog Number	Catalog Number	
100	BQ2S060■ BQ2S100■	BQ3S060■ BQ3S100■	1000 1000
125	ED22S100A■ ED42S100A■ ED42S125A■ ED62S100A■ — CED62S100A■ CED62S125A■ — —	ED23S100A ED43S100A ED43S125A ED63S100A ED63S125A CED63S100A■ CED63S125A■ HES3S100L HES3S125L	1000 1000 1000 1000 1000 1000 1000 1250 1250
225	QJ22S225A■	QJ23S225A	2000
250	FXD62S250A HFXD62S250A■ ①	FXD63S250A HFXD63S250A■ CFD63S250A■	3200 3200 3200
400	JXD22S400A■ — — ①	JXD23S400A JXD63S400A HJXD63S400A■ CJD63S400A■	6000 6000 6000 6000
600	— — ①	LXD63S600A HLXD63S600A■ CLD63S600A■	6000 6000 6000
800	— — ①	LMXD63S800A■ MXD63S800A CMD63S800A	8000 8000 8000
1200	— ①	NXD63S120A CND63S120A■	10000 10000
1600	①	PXD63S160A <sup>②</sup>	10000
2000	①	RXD63S200A■ <sup>③</sup>	10000

### Ordering Information

Order by catalog number. Switches include frame and self protective trip unit only. Order lugs separately from pages 7-88 to 7-90.

■ Built to order. Allow 2–3 weeks for delivery.

① For 2-pole application use outside poles of 3-pole circuit breaker.

② For additional lugs see pages 7-88 to 7-90.

③ Molded case switches up to R frame contain a self protecting instantaneous element, which may open circuit above their override set point.

④ UL file E57556 Volume 1, section 2 and CSA LR 42022-51.

⑤ Requires mounting block MB9301 or MBR9302.

Lugs pages 7-88 to 7-90  
Enclosures Section 6  
Accessories pages 7-95 to 7-100

# Molded Case Circuit Breakers

## Digital Solid State Sentron Sensitrip III Series

Technical

The Sentron Sensitrip III circuit breaker is a true RMS current sensing device. Digital microprocessor circuitry within the electronic trip unit provides more precise control over the circuit breaker functions. This control allows circuit coordination flexibility not available with thermal magnetic circuit breakers.

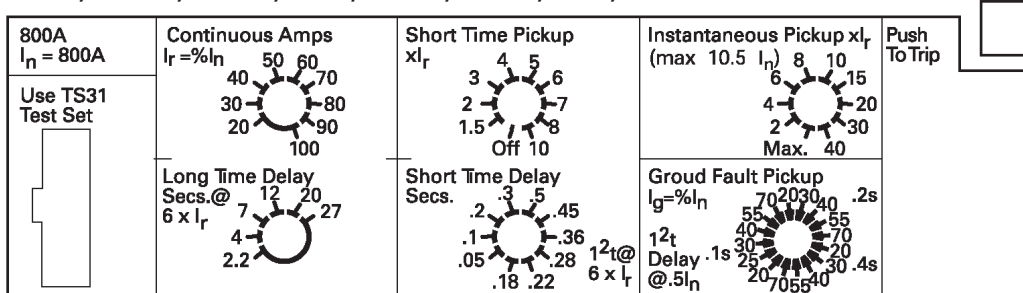
### Functions available in Sentron Sensitrip circuit breakers

Catalog Number (Description + Suffix)	Trip Type	Cont Current Setting	Long Time Delay	Instantaneous Setting	Short Time Pick Up	Short Time Delay	Short Time I <sup>2</sup> t Pick Up	Ground Fault Pick Up	Ground Fault Delay
Basic Unit + (A)	LI	✓	✓	✓					
Basic Unit + (A)G	LIG	✓	✓	✓				✓	✓
Basic Unit + (A)NT	LSI	✓	✓	✓	✓	✓	✓		
Basic Unit + (A)NGT	LSIG	✓	✓	✓	✓	✓	✓	✓	✓

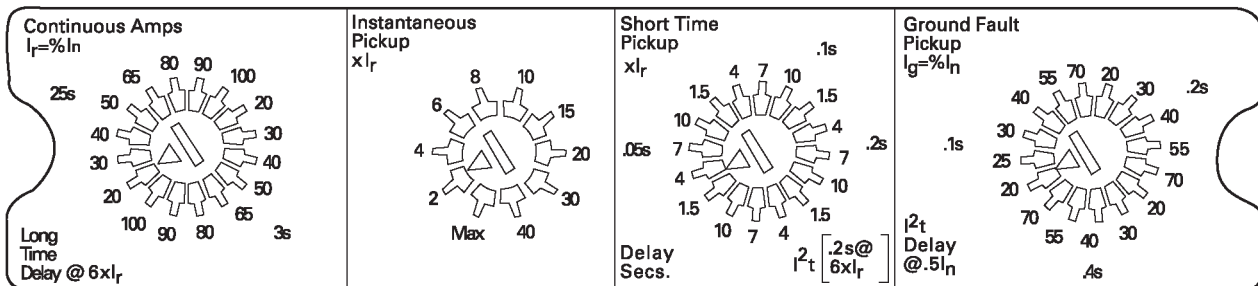
Letter "A" is used for MD and ND Solid State frame types only.

Typical Trip Unit Labeling and Adjustment Positions for the Sentron Sensitrip Circuit Breaker.

### SMD6, SHMD6, SCMD6, SND6, SHND6, SCND6, SPD6, SHPD6



### SJD6, SHJD6, SCJD6, SCD6, SHLD6, SCLD6



$I_n$  = Maximum circuit breaker ampere rating.

$I_r$  = Current Rating — a function of continuous ampere adjustment setting expressed in % of  $I_n$ .

$I_g$  = Ground Fault Pickup — a function of adjustment setting expressed in % of  $I_n$ .

7  
MOLDED CASE  
CIRCUIT BREAKERS



# Molded Case Circuit Breakers

## Digital Solid State Sentron Sensitrip III Series

Technical

**A. Adjustable "Continuous Amps" Rating Switch**  
All Sensitrip III solid state molded case circuit breakers have an adjustable ampere rating switch. Adjustments made to this switch change the continuous current rating of the breaker from 20% to 100% of its maximum trip unit rating depending on the circuit breaker frame.

**B. Adjustable "Long Time Delay" Switch**  
All Sensitrip III circuit breakers have an adjustable long time delay switch to allow for selection of long time delays of fixed time intervals at six times the setting of the adjustable "continuous amps" rating switch.

**C. Adjustable "Instantaneous Pick-Up" Switch**  
Sensitrip III circuit breakers with an adjustable instantaneous trip switch allow selection of a tripping point from related to the adjusted circuit breaker Rating (I).

**D. Adjustable "Short Time Pick-Up" Switch (Optional)**  
Sensitrip III circuit breakers with an adjustable short time pick-up switch allow for selection of short time pick-up in a range from 1.5 to 10 times the setting of the maximum current rating.

**E. Adjustable "Short Time Delay" Switch (Optional)**  
Sensitrip III circuit breakers with an adjustable short time pick-up switch also contain a switch for adjustment in time delay. The adjustable short time delay switch allows for either of two modes of short time delays. One range of settings enables the breaker to be set for fixed time delays and the other range of settings enables the breaker to be set for short time delays based on I<sup>2</sup>t curves.

**Adjustable "Ground Fault Pick-Up" Switch**  
Sensitrip III circuit breakers containing the optional equipment ground fault protection cover the ground fault pick-up range of 20% to 70% of the circuit breaker frame rating. The ground fault pick-up settings also allow for one of three time delays based on I<sup>2</sup>t curves.  
For 3-phase, 4-wire systems, an external neutral transformer is required with an ampere rating equal to the trip unit ampere rating.

Ground Fault Pick-up I<sub>g</sub> = % I<sub>n</sub>  
I<sup>2</sup>T @ .5 I<sub>n</sub>  
Ground Fault Delay  
400 ms .4  
200 ms .2  
100 ms .1

I<sub>n</sub> = Maximum circuit breaker ampere rating.

I<sub>r</sub> = Current Rating — a function of adjustment setting expressed in % of I<sub>n</sub>.

I<sub>g</sub> = Ground Fault Pick-up — a function of adjustment setting expressed in % of I<sub>n</sub>.

### Examples of Adjustment Settings

#### Catalog Number SMD69800A

I <sub>n</sub> = 800	Continuous Current Setting	Long Time Delay Setting	Instantaneous Setting
I <sub>n</sub> = 800 amperes Results	30 240 amperes I <sub>r</sub> = 30% of 800	12 12 seconds trip at 6 x 240 amps = 1440.	8 1920 amperes 8 x I <sub>r</sub> = 8 x 240

#### Catalog Number SMD69800ANGT

I <sub>n</sub>	I <sub>r</sub> Setting	Long Time Delay	Short Time Pick-Up Off	Instantaneous Setting	Short Time Pick-Up On	Short Time Delay	I <sup>2</sup> T Set	Ground Fault Pick-Up	Ground Fault Delay
800 amperes Results	70 560	20 20 sec.	—	10 I <sub>r</sub> 5600A	8 I <sub>r</sub> 4480A	.5 .5 secs	.28 .28 sec @ 4480A	40 320A	.2 .2 sec

Ⓐ I<sub>n</sub> = 800 amperes.

Ⓑ I<sub>r</sub> = 560 amperes (70% of 800).

Ⓒ Delay = 20 seconds at 3360 amps (6 x I<sub>r</sub>).  
Breaker will trip in 20 seconds with 3360 amperes.

Ⓓ Short Time Pick-Up Off — Instantaneous can be used.

Ⓔ Instantaneous set at 10 x I<sub>r</sub> = 10 x 560 = 5600 amperes.

Ⓕ Short Time Pick-Up On — Set at 8 x 560 = 4480 amperes.

Ⓖ Short Time Delay = .5 seconds. (Definite Time)

Note: Ⓒ & Ⓓ are mutually exclusive.

Ⓖ I<sup>2</sup>t switch on .28 seconds @ 6 x 560 = 3360 amperes. (Inverse time)

Ⓗ Ground Fault Pick-Up set at 40 = 40% of I<sub>n</sub> = 320 amperes. (Definite Time)

Ⓙ Ground Fault Delay set at .2 seconds. Breaker will trip in 200 milliseconds with a 400 ampere ground fault.