

EG Circuit Breakers Flexibility made simple

Product Guide



www.sea.siemens.com/power

Advantages to reduce your installed cost.

- Compact sizes
- Saves space
- Reduces overall panel size

Interchangeable lugs and nut keepers for ring terminal connections allow for last minute changes on site.

UL listed field installable accessories allow for last minute changes. Internal accessories are easily installed behind the front cover in the accessory pockets.

Complete offering of circuit protection devices available as breakers, molded case switches, and motor circuit protectors.

CE/CSA/NOM marked UL breakers let you serve all major markets with one design.





General information

The intelligent simplicity of the Siemens EG circuit breaker, with its modularity, ease of use, global ratings, compact size, and flexibility make it one of the most versatile circuit breakers available. The Siemens type EG circuit breaker is a compact, industrial design thermal magnetic breaker with valuable features for the global markets including a design that meets multi-national standards and UL listed field installable accessories.

The EB circuit breaker includes the same design features as the EG except the top of the breaker is configured for panelboard mounting applications.

Applications

- With their compact size, the EG circuit breakers are well suited for OEM designed equipment in both light commercial and industrial applications
- The EG family includes thermal-magnetic breakers, molded case switches, and motor circuit protectors
- The EG can be independently mounted on DIN rail with the adapter base or held in place by mounting screws
- The EB breaker is for panelboard mounted applications
- These circuit breakers may be used as incoming main and branch breakers in distribution systems

Operating Conditions

- For installation in dusty and damp rooms or outdoors, suitable enclosures must be used
- Standard EG breakers are factory calibrated for 40° C maximum ambient
- Units calibrated for 50° C maximum ambient (non-UL) and naval applications are available

125A Frame, Type EG

• Global rated (UL/CSA/IEC/NOM) UL489

CSA-C22.2 No. 5-02 IEC 60947-2

NMX-J-515-ANCE-2000

- HACR, SWD, and HID marked (at applicable ratings)
- UL Listed Field Installable Accessories
- Removable Lugs or Ring Terminal Connectors
- 35kA or 65kA @ 480VAC
- Compact Size 3.0"W x 5.5"H x 3.0"D (1.0" wide per pole)
- 1, 2, 3, 4 Pole Units
- Overcenter toggle and trip free mechanism
- Suitable for Reverse Feed Applications
- Common Trip
- Voltage ratings of 120V, 240V, 277V, 480V, 600Y/347V AC DC rated up to 250V DC

General information

Ratings and markings

Туре	Current range (A)	HACR rated	SWD marked	HID marked
1 pole	15 - 125	15 - 125	15 - 20	15 - 50
2, 3, 4 pole	15 - 125	15 - 125	_	15 - 50

Shipping weight

1.4 lbs. / 0.5 kgs.	1 Pole
2.4 lbs. / 0.9 kgs.	2 Poles
3.7 lbs. / 1.4 kgs.	3 Poles
4.8 lbs. / 1.8 kgs.	4 Poles

Interrupting ratings (max. RMS symmetrical amperes kA)

	Poles	UL489 Volts AC 120	240	277	347	480	600Y/347	Volts DC 125/250	IEC 60947 Volts AC 240	-2 (Ics = 50 ⁴ 415	% lcu) Volts DC 250
	1	100	85	35	22	—	_	35	85	—	35
NEG/NEB	2, 3, 4	_	85	_		35	22	35	85	40	35
	1	200	100	65	25	—	_	42	100	—	42
HEG/HEB	2, 3, 4	—	100	—		65	25	42	100	70	42

Ordering Information

Type EG 1, 2, 3 and 4-pole circuit breakers

Ampere rating ^I n	NEG catalog number (cable in - cable out)	NEB catalog number (panelboard mounting)
15	NEG B015L	NEB B015B
20	NEG <u>B020L</u>	NEB B020B
25	NEG <u>B025</u> L	NEB B025B
30	NEG <u>B030L</u>	NEB B030B
35	NEG B035L	NEB B035B
40	NEG B040L	NEB B040B
45	NEG B045L	NEB B045B
50	NEG <u>B050L</u>	NEB B050B
60	NEG B060L	NEB B060B
70	NEG <u>B070L</u>	NEB B070B
80	NEG <u>B080L</u>	NEB B080B
90	NEG <u>B090L</u>	NEB B090B
100	NEG B100L	NEB B100B
110	NEG <u>B110L</u>	NEB B110B
125	NEG B125L	NEB B125B
	1 = 1 pole - L = Line and L 2 = 2 pole - side lugs 3 = 3 pole - 4 = 4 pole - 1	oad $1 = 1 \text{ pole}$ $B = \text{Load}$ $2 = 2 \text{ pole}$ side lugs $3 = 3 \text{ pole}$

For 'H' (higher interrupting) rated breakers, replace 'N' with 'H'.

Ordering information

Motor circuit protectors

Ampere Rating (A)	Motor full load amps (A)	Cam setting	Instantaneous trip setting (A)	NEMA starter size	Catalog number	
	0.69 - 0.91	A (min)	9			
	1.1 - 1.3	В	15			
2	1.6 - 1.7	С	21	0		
3	2 - 2.2	D	27	0	HEM3M003L	
	2.3 - 2.5	E	30			
	2.6 - 2.8	F (max)	33			
	1.5 - 2	A (min)	21			
	2.6 - 3.1	В	35			
7	3.7 - 3.9	С	49	0		
/	4.8 - 5.2	D	63	0	HEMISMOUTL	
	5.3 - 5.7	E	70			
	5.8 - 6.1	F (max)	77			
	3.4 - 4.5	A (min)	45			
	5.7 - 6.8	В	75			
1 -	8 - 9.1	С	100	0		
15	10.4 - 11.4	D	135	0	HEM3M015L	
	11.5 - 12.6	E	150			
	12.7 - 13	F (max)	165			
	3.9 - 9.1	A (min)	90	1		
	11.5 - 13.7	В	150			
20	16.1 - 18.3	С	210			
30	20.7 - 22.9	D	270		HEM3M030L	
	23 - 25.2	E	300			
	25.3 - 26.1	F (max)	330			
	11.5 - 15.2	A (min)	150			
	19.2 - 22.9	В	250			
50	26.9 - 30.6	С	350	2		
50	34.6 - 38.3	D	450	2	HEM3M050L	
	38.4 - 42.1	E	500			
	42.2 - 43.5	F (max)	550			
	16.1 - 30.6	A (min)	210			
	26.9 - 32.2	В	350			
70	37.6 - 42.9	С	490	2		
70	48.4 - 53.7	D	630	Z	HEM3M070L	
	53.8 - 59.1	E	700			
	59.2 - 60.9	F (max)	770			
	23 - 30.6	A (min)	300			
	38.4 - 46	В	500			
100	53.8 - 61.4	С	700	2		
100	69.2 - 76.8	D	900	3 HEM3M	HEMI3MIUUL	
	76.9 - 84.5	E	1000			
	84.6 - 87	F (max)	1100			

Molded case switch (circuit disconnect)

Ampere rating (A)	Poles	Catalog number	Self-protection instantaneous override (A)
100	3	HES3S100L	1250
125	3	HES3S125L	1250

Includes standard (steel) terminal connectors, for use with Cu wire only.

Special Application Circuit Breakers

- 50°C Ambient Calibration (non-UL listed) Change the 5th character of the catalog number from 'B' to 'C' (Example: HEG3C125L). Not applicable to Motor Circuit Protectors or Molded Case Switches.
- Contact Siemens for information about additional fungus proofing
- Naval use, UL 489 Supplement SB Change the 3rd character of the catalog number from 'G' to 'N' (Example: HEN3B125L). Not applicable to Motor Circuit Protectors or Molded Case Switches.
- Extreme Ambient Temperatures UL listed breakers are calibrated for use at 40°C. Contact Siemens for information on derating these breakers based on other ambient temperature conditions
- 400 Hz UL listed breakers are calibrated for use at 50/60 Hz. Contact Siemens for information on derating these breakers for 400Hz applications

Internal accessories

Shunt Trip, Undervoltage Release, Auxiliary Switches, and Alarm Switches are operational devices that are contained within a field installable module for the EG/EB circuit breakers.

Shunt Trip – A shunt trip is used to trip the breaker remotely. It is operated by providing voltage to the shunt trip coil. The coil in this device is designed to be energized only momentarily, so included is a built-in limit switch which opens the coil circuit after the breaker trips. With the circuit breaker in the tripped position, voltage cannot be applied through the coil circuit due to the open contacts in the limit switch. The typical operational range of this device is (70 to 110%) of the marked voltage rating.

Under Voltage Release — An under voltage release (UVR) is used to trip the breaker remotely when supply voltage drops below 70% of the marked voltage rating. The UVR also prevents the circuit breaker from being reclosed until the supply voltage is restored to at least 85% of its marked rating.

Auxiliary Switches – Auxiliary switches are used for remote indication of breaker contact position (ON or OFF). Each switch consists of "A" (open when the breaker contacts are open) and "B" (closed when the breaker contacts are open) contacts with a common connection. These devices are typically used for signaling purposes.

Alarm Switch - The alarm switch provides indication of breaker tripping. Alarm contacts operate off of the tripping mechanism of the circuit breaker and only change state when the breaker is tripped. Each alarm switch consists of one "A" (open when the breaker contacts open) and one "B" (closed when the breaker contacts are open) contact, with a common connection. This device is also known as a Bell Alarm. A Shunt Trip or Undervoltage Release can only be installed in the left accessory pockets. The Auxiliary Switches and/or Alarm Switch can only be installed in the right accessory pocket.

Available accessory combinations

Left accessory pocket	Right access pocket	ory
Shunt trip or UVR	Auxiliary switch contacts	Alarm contacts
	1A - 1B	0
	2A - 2B	0
Max. 1 Shunt Trip or UVR	0	1A - 1B
	0	2A - 2B
	1A - 1B	1A - 1B

2-pole breakers can only accept right pocket accessories.

1-pole breakers cannot accept any internal accessories.



Shunt trip

Control voltage range		
AC	DC	Catalog number
24 - 60	24 - 60	STREM60D
110 - 240	—	STRER240
380 - 600	—	STREV600



Undervoltage release

Control voltage range		
AC	DC	Catalog number
24	—	UVREB24A
—	24	UVREB24D
48 - 60	—	UVREM60
110 - 127	—	UVREN120
208 - 240	—	UVRER240
380 - 500	—	UVREU480
525 - 600	—	UVREV600
—	48 - 60	UVREC48D
—	110 - 125	UVRED125D
—	220 - 250	UVREE250D



Undervoltage Release

Auxiliary switch

Description	Catalog number
Single auxiliary switch 1A - 1B contacts	ASKE2
Double auxiliary switch 2A - 2B contacts	ASKE3

Alarm switch

Description	Catalog number
Single alarm switch 1A - 1B contacts	ASKE1
Double alarm switch 2A - 2B contacts	ASKE5
Combination auxiliary switch and alarm switch (1A - 1B each)	ASKE6

Auxiliary / Alarm Switch Ratings			
AC	DC		
6A at 230VAC	6A at 24VDC		
3A at 400 VAC	0.5A at 125VDC		
0.25A at 600VAC	0.25A at 250VDC		





Alarm Switch

Terminal connectors

Breaker amp (A)	Wire size (AWG)	Torque (lb in.)	Connector material	Connector kit rating catalog number
	14 - 10	35		3TW1EG30 (kit of 3)
	8	40		
15 - 125	6 - 4	45	Steel (Cu wire only)	
	3 - 3/0	50		
	14 - 10	35		
	8	40	Aluminum	3TA1EG10 (kit of 3)
	6 - 4	45		
	3 - 1/0	50	(CulAl Wile)	
	6 - 2	80	Aluminum	3TA1EG30
	1 - 3/0	80	(Cu/Al wire)	(kit of 3)

Nut keeper plates (for connecting ring terminals)

Breaker amp rating (A)	Catalog number
15 125	TNKE3 (3-pole kit)
15-125	TNKE4 (4-pole kit)

Power distribution connectors

Breaker amp (A)	Wire size (AWG)	Torque (lb in.)	Connector material	Connector kit rating catalog number
15 - 125	3 holes, 14 - 2 AWG	70	Aluminum (Cu/Al wire)	3TA3EG02 (kit of 3)
	6 holes, 14 - 6 AWG	25	Aluminum (Cu/Al wire)	3TA6EG06 (kit of 3)

Connector accessories

Description	Quantity per kit	Accessory kit catalog number
Control wite terminals (for use with terminal connectors)	12	12CWTE
Interphase barriers	2	IPBE

Rear connecting studs

Breaker amp Rating (A)	Description	Extension behind the breaker	Catalog number (Quantity 1)
15 - 125	Long rear connecting stud (with spacer tube)	6 in.	RLTELR ¹
	Short rear connecting stud (with spacer tube)	3.6 in.	RTLESR ¹

¹ Consult Siemens for availability





3TW1EG30

3TA1EG30



3TA1EG10







3TA3EG02

3TA3EG06





12CWTE







RTLESR



External accessories

Locks and interlocks

Description	Quantity per kit	Accessory kit catalog number
Handle blocking device	1	HBDE
Handle padlocking device, 3- or 4-pole only (allows padlocking the handle in the OFF or ON position)	1	HPLE
Handle padlocking device for NEB/HEB breakers (1-3 pole)	1	HPLEB
Handle sliding bar interlock (3- or 4-pole only)	1	HSBE









Miscellaneous accessories

Breaker amp rating (A)	Description	Catalog number
	Mounting screw kit, 1-pole	MSKE1
	Mounting screw kit, 2-pole	MSKE2
	Mounting screw kit, 3- or 4-pole	MSKE4
	DIN rail adapter, 3- or 4-pole	DRAE3
15 - 125	Plug-in assembly kit, 3-pole (includes base, shields, connectors, and auto-trip interlock) ¹	PCBERC3
	Plug-in assembly kit, 4-pole (includes base, shields, connectors, and auto-trip interlock) ¹	PCBERC4
	Auto-trip interlock only (for use in breaker with plug-in assembly) ²	PCXET

 1 Auto-trip interlock trips the breaker as the breaker is removed from the plug-in mounting base. 2 Auto-trip interlock sold separately to equip additional breakers prior to change-out.



MSKE1







DRAE3

Plug-in Assembly Kit PCBERC3



PCXET

External accessories

Rotary handle operators

Description	NEMA type	Catalog number
Rotary Handle Operator (black handle, breaker mounted)	1	RHFESD
Rotary Handle Operator with Door Interlock (black handle, breaker mounted)	1	RHFESDL
Rotary Handle Operator (red handle, breaker mounted)	1	RHFESDEM
Variable Depth Rotary Operator Kit (Black handle, 6 inch shaft)	1, 12	RHVE6
Variable Depth Rotary Operator Kit (Black handle, 12 inch shaft)	1, 12	RHVE12
Variable Depth Rotary Operator Kit (Black handle, 24 inch shaft)	1, 12	RHVE24
Variable Depth Rotary Operator Kit (Red handle, 6 inch shaft)	1, 12	RHVEEM6
Variable Depth Rotary Operator Kit (Red handle, 12 inch shaft)	1, 12	RHVEEM12
Variable Depth Rotary Operator Kit (Red handle, 24 inch shaft)	1, 12	RHVEEM24
Variable Depth Rotary Operator Kit (black handle, 6 inch shaft)	1, 12, 3R, 4X	RHVE64X
Variable Depth Rotary Operator Kit (black handle, 12 inch shaft)	1, 12, 3R, 4X	RHVE124X
Variable Depth Rotary Operator Kit (black handle, 24 inch shaft)	1, 12, 3R, 4X	RHVE244X
Variable Depth Rotary Operator Kit (red handle, 6 inch shaft)	1, 12, 3R, 4X	RHVEEM64X
Variable Depth Rotary Operator Kit (red handle, 12 inch shaft)	1, 12, 3R, 4X	RHVEEM124X
Variable Depth Rotary Operator Kit (red handle, 24 inch shaft)	1, 12, 3R, 4X	RHVEEM244X



RHFESDEM



RHVE6



RHVE64X

All rotary operators are for use on 3-pole and 4-pole breakers.

External accessories

Flex operator kits

Description	NEMA type	Catalog number
Flex Operator Kit (Flange mounted variable depth, 24 in. cable)	1, 12	MFKE2
Flex Operator Kit (Flange mounted variable depth, 36 in. cable)	1, 12	MFKE3
Flex Operator Kit (Flange mounted variable depth 48 in. cable)	1, 12	MFKE4
Flex Operator Kit (Flange mounted variable depth, 60 in. cable)	1, 12	MFKE5
Flex Operator Kit (Flange mounted variable depth 72 in. cable)	1, 12	MFKE6
Flex Operator Kit (Flange mounted variable depth 84 in. cable)	1, 12	MFKE7
Flex Operator Kit (Flange mounted variable depth 96 in. cable)	1, 12	MFKE8
Flex Operator Kit (Flange mounted variable depth 108 in. cable)	1, 12	MFKE9
Flex Operator Kit (Flange mounted variable depth, 120 in. cable)	1, 12	MFKE10
Flex Operator Kit (Flange mounted variable depth 24 in. cable)	1, 12, 3R, 4X	MFKE4X2
Flex Operator Kit (Flange mounted variable depth 36 in. cable)	1, 12, 3R, 4X	MFKE4X3
Flex Operator Kit (Flange mounted variable depth 48 in. cable)	1, 12, 3R, 4X	MFKE4X4
Flex Operator Kit (Flange mounted variable depth, 60 in. cable)	1, 12, 3R, 4X	MFKE4X5
Flex Operator Kit (Flange mounted variable depth, 72 in. cable)	1, 12, 3R, 4X	MFKE4X6
Flex Operator Kit (Flange mounted variable depth 84 in. cable)	1, 12, 3R, 4X	MFKE4X7
Flex Operator Kit (Flangemounted variable depth 96 in. cable)	1, 12, 3R, 4X	MFKE4X8
Flex Operator Kit (Flange mounted variable depth 108 in. cable)	1, 12, 3R, 4X	MFKE4X9
Flex Operator Kit (Flange mounted variable depth, 120 in. cable)	1, 12, 3R, 4X	MFKE4X10

Flex Operator Kit

All flex operators are for use on 3-pole breakers only.

EG Frame Outline Drawing 1, 2 and 3 Pole (4 Pole not showing)



Breaker Characteristics

Breaker Frame			
Size	Height	Width	Depth
1 Polo	5.50	1.00	3.00
I POle	(139.70)	(25.40)	(76.20)
2 Pole	5.50	2.00	3.00
21010	(139.70)	(50.80)	(76.20)
2 Polo	5.50	3.00	3.00
3 FOIE	(139.70)	76.20	(76.20)
4 Pole	5.50	4.00	3.00
4 FUIE	(139.70)	(101.60)	(76.20)



EG125 Time Current Curve Example (Contact Siemens for specific curves)



Application data

General

In the application of circuit breakers, consideration should be given to the following factors:

- 1. Voltage of circuit
- 2. Ampacity of circuit
- 3. Frequency of power source
- 4. Operating conditions
- 5. Fault current available

Voltage of Circuit

The system voltage should not exceed the listed voltage rating of the circuit breaker, fuse or switch.

Ampacity of Circuit

The listed continuous current rating of the circuit breaker should not exceed the allowable ampacity of the conductors. Where the allowable ampacity of the conductor does not correspond to listed current ratings for fuses or circuit breakers, the next larger rating of fuses or circuit breakers is permitted providing it does not exceed the conductor ampacity by more than 25%. An exception to this rule is permitted for motor circuits or other circuits where high inrush currents may persist for an appreciable time.

Frequency of Power Source

Circuit breakers are calibrated for use on direct current or 48-60-Hertz alternating current.

For frequencies above 62-Hertz, some fuses, switches and circuit breakers must be derated. The derating varies with each type and size of protective device. Consult your local representative for specific information.

Operating Conditions

Molded case circuit breakers and fuses are calibrated without any enclosure as specified by the Underwriters' Laboratories, Inc. Sound engineering practice dictates that continuous loads should not exceed 80% of the breaker or fuse current rating for most applications.

Electrical Connections

Molded Case Circuit Breakers are to be connected with 60 or 75°C wire for breakers having a rated ampacity of 125 amperes or less. For circuit breakers having a rated ampacity greater than 125 amperes, only 75°C cable shall be used unless otherwise indicated on the circuit breaker label.

Note: Exceptions to this rule are outlined in Article 110-14-C(1) and C(2) of the 2005 National Electric Code.

Conductors should be derated in accordance with the National Electrical Code for both ambient temperature and continuous loading. Conductors which are loaded continuously should be derated to 80% of their allowable current-carrying capacity except when supplied by an assembly including its over-current device that is listed for continuous operation at 100% of its rating.

When the type of load is unusual, intermittent, or one which involves momentary peak currents such as motor loads, consideration should be given to the heating effect on the protective device over a period of time. The duty cycle of a motor which is started and stopped frequently may require a circuit breaker or fuse with a higher rating than an infrequently started motor.

The presence of excessive dust, moisture, corrosive fumes, or explosive atmosphere requires the use of enclosures suitable for such atmospheres. For application in regions where fungus growth may occur, some circuit breakers should be treated with a fungus and moisture resistant material.

Fault Current Available

The interrupting rating of the circuit breaker should be greater than the available short circuit current at the point of application. The short circuit current from some power sources, such as engine driven generators, is limited, and the protective device characteristics should be selected to clear such faults without delay.

Some systems require a study of protective device characteristics to assure proper protection and coordination for any possible value of fault current. Your representative is available to assist in making coordination studies.

Siemens Energy & Automation, Inc. 3333 Old Milton Parkway Alpharetta, GA 30005

1-800-964-4114 info.sea@siemens.com Order No.: CBBR-OEGPG-0808 5MCW0808 Printed in USA

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