# **Molded Case Circuit Breakers**

## Introduction

## What's New?

Siemens Energy & Automation is proud to announce several new products. These new concepts serve the OEM and power distribution markets.

#### WL Power Circuit Breakers



It's the Circuit Breaker that changes everything! And it's armed with a full array of competitive advantages:

- Reliable increased operations and better than 1% metering accuracy
- Compact smallest switchgear footprint in the industry
- Easy to Use straightforward catalog numbers & selection tools
- Modular drop-in, front-mounted accessories & field changeable main contacts
- System Solution Internet/Ethernet, Modbus and Profibus communications
- Safety customized interlocking and unique status indicators

# Specifications and Applications:

- Standards: UL489, UL1066 and ANSI C37
- Frame Ratings: 800A to 5000A
- Rated Nominal Voltages: 240, 480 and 600VAC
- Interrupting Ratings: from 50KA to 150KA un-fused and 200KA fused
- Assemblies: Fixed mounted, draw-out Circuit Breaker or Non-automatic Switch
- Applicable for all ICCB or RL Breaker applications

The WL Circuit Breaker may be new to North America, but it has already been proven in the field – with two years of flawless performance in Europe. No other product on the market today offers more flexibility or greater reliability.

#### Sentron Distribution Lug



Distribution lugs are now available for use with Siemens Sentron E, F, J and L-frame circuit breakers. These lugs are UL 486-B recognized and are ideal for UL 508 control panel applications to replace a distribution block. Using the Sentron distribution lugs can reduce the need for extra wire stripping. They also reduce the use of extra crimp connectors going between the circuit breaker and distribution block.

#### **CE Marking**

A wide range of Sentron® thermal magnetic circuit breakers has been fully tested for compliance with the European community's Low Voltage Directive, and carry the CE mark, indicating their compliance with that directive. These are noted in the Speedfax with the stylized CE in watermark behind the catalog numbers. Declarations of conformity are available for these products. A point of misunderstanding lies in the area of handle operators. A handle operator alone, such as that for the Max-flex, since there is no applicable European Directive, may not carry the CE mark. The mark is affixed to the finished equipment that incorporates the handle, but not to this component device.

#### PLC Level Auxiliary Switches

A new family of gold flashed auxiliary switches for the FD through ND breakers allows sensing at very low voltage and currents for interface directly to programmable logic controllers and other electronic devices. Standard contacts, built to switch 120 Volts and higher currents can be unreliable when the sensing current is in the milliamp range, and the sensing voltage is 12 Volts or lower. These very reliable low level switches overcome that limitation. Standard switch contacts should, of course, continue to be used in standard current and voltage applications.

### DIN Rail mounted 120/240 V Breaker



The Siemens BQ breakers are now available in 1- and 2-pole construction, from 15 to 60 Amps in lug in – lug out DIN rail mounted configuration. These breakers, rated 120/240 Volts, are ideal for applications in control panels and HVAC, and with their available finger safe terminal shields can qualify as service disconnects.

#### NGG Type 125A Frame Circuit Breaker



The new NGG Circuit Breaker is a compact, industrial design with true value-added features such as Global Ratings (UL/CSA/IEC/CE/NOM), flexible DIN or base mounting without the need for adapters and UL Listed for field install-able accessories. This NGG125 has a 25KAIC interrupting rating at 480VAC and features a Quick Make/Quick Break Trip-free Mechanism. All this in a 3.0W x 5.4H x 2.8D package. Please consult your sales office for availability.

#### **HID Lighting Breakers**

Siemens BQD and CQD circuit breakers have been tested and approved for use in switching HID lighting. One, two and three pole breakers from 15A to 50A are now approved and marked for use in these high energy lighting systems where the breakers is used to directly control the lighting in 120VAC, 240VAC, 277AC or 480/277VAC circuits.

# **Molded Case Circuit Breakers Reference Guide**

## **Selection/Application**

# Thermal-Magnetic Trip Breakers

5 1						General Purpose Breakers							
						NEG	HEG	ED2	ED4	ED6	HED4	CED6	
Page	1	1				17/18	17/18	17/20	17/20	17/20	17/21	17/21	
Poles						1, 2, 3, 4	1, 2, 3, 4	1, 2, 3	1, 2, 3	1®, 2, 3	1, 2, 3	2, 3	
		Amperes, Continuo	15-125	15–125	15–100	15–125	15–125	15–125	15–125				
		Volts 50/60HZ	1-Pole	347 <sup>®</sup>	347®	120	277	347	277				
					2-Pole 3-Pole	600/347	600/347	240	480	600	480	600	
					120V	—	—	10,000	—	—	100,000	—	
					240V	85,000	100,000	10,000	65,000	65,000	100,000 (5)	200,000	
	1				277V	—	—	_	22,000 <sup>①</sup>	—	65,000 <sup>2</sup>	—	
	AC		UL		347V	—	—	-	—	30,000	—	—	
					480V	35,000	65,000	-	18,000	25,000	42,000	200,000	
Ratings		Interrupt Rating			600V	22,0006	25,000 <sup>®</sup>	_	_	18,000	_	100,000	
		Symmetrical RMS		220/2401/	lcu	85,000	100,000	_		65,000	_	200,000 <sup>②</sup>	
		Amperes		220/240V	Ics	43,000	50,000	-	_	17,000	_	_	
			IEC 947-2		lcu	40,000	70,000	_		35,000	_	200,0002	
			50/60HZ	380/415V	Ics	20,000	35,000	_	_	9,000	_	_	
					lcu	_	_	-	_	18.000	_	_	
				500V	lcs	_	_	_	_	5.000	_	_	
	DC	2-Pole, 250V DC Int	_	_	5.000	30.000	30.000	30.000	30.000				
		3-Pole 500V DC Int	_				18,000		50,000				
		Height	on upting it	utiligs		5.5	5.5	6.34	6.34	6 34	634	0.26	
			1-Pr			1.00	1.00	1.00	1.00	1.00	1.00	7.20	
Dimensions in		Width				2.00	2.00	2.00	2.00	2.00	2.00	2.00	
inches		width	3-Pole	3.00	3.00	3.00	3.00	3.00	3.00	3.00			
			4.00	4.00	_	_	_	_	_				
		Depth				3.00	3.00	4.00	4.00	4.00	4.00	4.00	
		Thermal and Fixed Magnetic Trip				./	/		/	./	/	/	
0		Thermal and Adjustable Magnetic Trip								_			
Devices		Adjustable Magneti Motor Circuit Prote	~	$\checkmark$	-	_	√	_	√				
		Molded Case Switc	h			1	1	1	1	1	_	1	
		Undervoltage Trip						/					
		Shunt Trip						1		√	/		
		Auxiliary Switch				1	1	1	1	1	, ,	1	
		Alarm Switch						1					
Accessories &		Mechanical Interloc	:k			_	_	_	_	_	_	_	
Modifications		Rear Connection St	uds			./	/		./	./	./		
		Electric Motor Oper	ator			./	./	./	./	./	./	./	
		Plug-In Mounting A	./	./	./	./	./	./	./				
		Fungus Proofing (re	ef page 17/	70)		v ./	v			v ./	./		
		Type 1 — Indoor Si	urface	,			v _/			v ./			
		Type 1 — Indoor Fl	lish			/	/	/	V /	v /	/	/	
		Type 3R — Outdoor	r-Rainnroof			V /	V /	/	V /	V /	V /	V /	
Individual		Type 7 - Flammah	Le Gas Atm	osnhere		√ 	√ 	/	/	/	/	√ 	
Enclosures		Type 7 — Flattillab	ion Ducttic	bt				/	√ /	√ /	√ /		
		Type 7 — Compust	ion Dust C		ic.			/	/	/ /	/ /		
		Type 3, 12 — LINT, F		nis, cooidh	13	√ /	√ /	/ /	√ /	√ /	√ /	√ /	
		Type 12K - Semi-L	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	√	√				

For inches / millimeters conversion, see Application Data section.

O T-pole only.
 O T-pole only.</l

NEG and HEG breakers are rated at 600/347V.
 1-pole NEG breaker is rated 85K @ 240V, 35K @ 277V and 22K @ 347V.
 1-pole HEG breaker is rated 100K @ 240V, 65K @ 277V and 25K @ 347V.

# **Molded Case Circuit Breakers** NEG HEG 125A Frame

### Selection

# Type NEG (Cable In - Cable Out)

	1-Pole		2-Pole		3-Pole		4-Pole		
Continuous Ampere Rating @ 40°C	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
15 20 25 30	NEG1B015L <sup>0</sup> <sup>©</sup> NEG1B020L <sup>0</sup> <sup>©</sup> NEG1B025L <sup>©</sup> NEG1B030L <sup>©</sup>		NEG2B015L NEG2B020L NEG2B025L NEG2B030L		NEG3B015L NEG3B020L NEG3B025L NEG3B030L		NEG4B015L NEG4B020L NEG4B025L NEG4B030L		
35 40 45 50 60	NEG1B035L NEG1B040L NEG1B045L NEG1B050L NEG1B060L		NEG2B035L NEG2B040L NEG2B045L NEG2B050L NEG2B060L		NEG3B035L NEG3B040L NEG3B045L NEG3B050L NEG3B060L		NEG4B035L NEG4B040L NEG4B045L NEG4B050L NEG4B060L		
70 80 90 100	NEG1B070L NEG1B080L NEG1B090L NEG1B100L		NEG2B070L NEG2B080L NEG2B090L NEG2B100L		NEG3B070L NEG3B080L NEG3B090L NEG3B100L		NEG4B070L NEG4B080L NEG4B090L NEG4B100L		
110 125	NEG1B110L NEG1B125L		NEG2B110L NEG2B125L		NEG3B110L NEG3B125L		NEG4B110L NEG4B125L		

# Type HEG (Cable In - Cable Out)

	1-Pole		2-Pole		3-Pole		4-Pole		
Continuous Ampere Rating @ 40°C	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	Catalog Number	List Price \$	
15 20 25 30	HEG1B015L <sup>0</sup> <sup>@</sup> HEG1B020L <sup>0</sup> <sup>®</sup> HEG1B025L <sup>®</sup> HEG1B030L <sup>®</sup>		HEG2B015L HEG2B020L HEG2B025L HEG2B030L		HEG3B015L HEG3B020L HEG3B025L HEG3B030L		HEG4B015L HEG4B020L HEG4B025L HEG4B030L		
35 40 45 50 60	HEG1B035L HEG1B040L HEG1B045L HEG1B050L HEG1B060L		HEG2B035L HEG2B040L HEG2B045L HEG2B050L HEG2B060L		HEG3B035L HEG3B040L HEG3B045L HEG3B050L HEG3B060L		HEG4B035L HEG4B040L HEG4B045L HEG4B050L HEG4B060L		
70 80 90 100	HEG1B070L HEG1B080L HEG1B090L HEG1B100L		HEG2B070L HEG2B080L HEG2B090L HEG2B100L		HEG3B070L HEG3B080L HEG3B090L HEG3B100L		HEG4B070L HEG4B080L HEG4B090L HEG4B100L		
110 125	HEG1B110L HEG1B125L		HEG2B110L HEG2B125L		HEG3B110L HEG3B125L		HEG4B110L HEG4B125L		

Line and load lugs are included as standard. HACR rated. Suitable for screw mounting.

# Shipping Weights

Number of Poles	Number per Carton	Shipping Weight Ibs. (kg)				
1	1	1.1 (0.5)				
2	1	2.0 (0.9)				
3	1	3.1 (1.4)				
4	1	3.9 (1.8)				

# Lugs For 60/75°C Wire

NEG/HEG											
Ampere Rating	Wire Size	Catalog Number	List Price \$								
15–125A	#14 – 3/0 AWG Cu (steel lugs)	3TW1EG30 (qty. 3)									
15–125A <sup>@</sup>	#14 – 1/0 AWG Cu #14 – 1/0 AWG AI	3TA1EG10 (qty. 3)									
15–125A <sup>@</sup>	#6 - 3/0 AWG Cu #6 - 3/0 AWG AI	3TA1EG30 (qty. 3)									
15–125A	Nut Keeper plate w/ screw (for crimp terminals)	TNKE3 (qty. 3)									

# Interrupting Ratings

		UL 489	9 AIR							IEC 60947-2				
	RMS Symmetrical Amperes (KA)									Volts AC (50/60Hz)				
Breaker	of	Volts /	Volts AC(50/60Hz)						С	220/240	220/240 380/415 Volts D			Volts DC
Туре	Poles	120	240	277	347	480	600/347	125	125/250	lcu	lcs	lcu	lcs	125/250
NEC	1	_	85	35	22	—	22	35	_	85	43	_	_	—
NEG	2, 3, 4	_	85	—		35	223	—	35	85	43	40	20	35
	1	-	100	65	25	—	25	42	-	100	50	_	—	_
TEG	2, 3, 4	_	100	_	_	65	253	_	42	100	50	70	35	42

Optional lugs for NEG and HEG breakers.

For inches / millimeters conversion, see Application Data section.

① SWD rated.
② HID rated 277 VAC
③ Applies to 3 & 4 -pole breakers only

Accessories pages 17/19 and 17/71 to 17/77



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# Molded Case Circuit Breakers

# **SELECTION / APPLICATION**

#### **Catalog Numbering System** Interrupting Class N — Normal H — High - Very High — Trip Unit Only С Frame Family G — Type GG L — Type LG — Type EG M — Type MG F N — Type NG D — Type DG F - Type FG P — Type PG J — Type JG Breaker Type G — Global (UL, IEC, CE, CSA, NOM) T — Trip Unit Only (Global) M — Motor Circuit Protector S — Molded Case Switch H — 100% rated J - 240V only rated X — Non-Interchangeable Y — 100% rated, Non-interchangeable Number of Poles 1, 2, 3, 4, 5 (4P w/ neutral protection) Trip Unit B — Thermal Magnetic, standard 40° C ambient L — Magnetic Only, Motor Circuit Protector - Low C — Thermal Magnetic, calibrated for 50° C ambient (non-UL) instantaneous range D — Electronic w/ LCD, LSI, 3P or 4P (neutral protected) M — Magnetic Only, Motor Circuit Protector - Standard Electronic w/ LCD, LSIG, 3P/4W (selectable residual or instantaneous range Е return type ground fault protection) Ν Electronic LI, 3P or 4P (neutral protected) - Frame only, without trip unit Ρ - Electronic LSI, 3P or 4P (neutral protected) H — Magnetic only, Motor Circuit Protector - High S — Molded Case Switch - Electronic, LSIG, 3P/4W or 4P, residual ground fault protection instantaneous range U X — Electronic, LIG, 3P/4W or 4P, residual ground fault protection **Continuous Current Rating** For GG use 015, 020, 025, 030, 035, 040, 050, 060, 070, 080, 090, 100, 110, 125 For EG use 015, 020, 025, 030, 035, 040, 050, 060, 070, 080, 090, 100, 110, 125 For DG use 050, 060, 070, 080, 090, 100, 110, 125, 150 For FG use 100, 110, 125, 150, 175, 200, 225, 250 For JG use 250, 300, 350, 400 For LG use 400, 500, 600 For MG use 600, 700, 800 For NG use 800, 900, 100 (1000A), 120 (1200A) For PG use 120 (1200A), 140 (1400A), 160 (1600A) Terminations B — Load End Standard (cu/al) Lugs L — Line & Load Standard (co/al) Lugs X — No Lugs (use only if accessory suffixes are to follow) Accessories Auxiliary and Alarm Switch Combinations Suffix Description 1 Alarm (includes 1NO & 1NC switch with a 2 Aux./1 Alarm Base, for frames EG to JG) Note: A1 and A3 include 1NO and 1NC switch for A1 — 2 Aux (1NO & 1NC switch with a 3 Aux. Base, for frames EG to JG) alarm purposes, only one of these switches may A2 2 Aux + 1 Alarm (2NO & 2NC switches with a 2 Aux./1 Alarm Base, for frames EG to JG) be used as there is only one space for an alarm. A3 2 Aux + 2 Alarm (2NO & 2NC switches with a 2 Aux./2 Alarm Base, for frames LG to PG) A3 4 Aux (2NO & 2NC switches with a 4 Aux. Base, for frames LG to PG) A4 — Shunt Trips RB - 24 VDC RM - 48-60 VAC RC - 48-60 VDC RN - 110-127 VAC RD - 110-127 VDC RS - 208-277 VAC RE - 250 VDC RV - 380-600 VAC **Under Voltage Releases** UN - 110-127 VAC UA - 12 VDC LCD = Liquid Crystal Display UB - 24 VDC UP - 208 VAC LS = Long Delay & Short Delay trip functions UC - 48 VDC UR - 220-250 VAC LSI = Long Delay, Short Delay, & Instantaneous trip functions UD - 110-127 VDC US - 277 VAC LSIG = Long Delay, Short Delay, Instantaneous, & Ground Fault trip functions UE - 220-250 VDC UT - 380-415 VAC GF = Ground Fault UU - 440-480 VAC UG - 60 VDC 3P = 3-pole UV - 600 VAC 4W = 4 wire