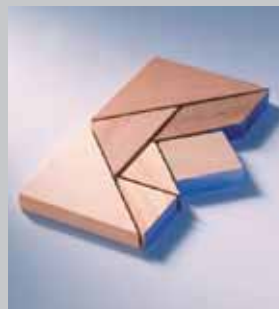


# VL Circuit Breaker Features & Benefits



powerful ideas  
RELIABLE SOLUTIONS



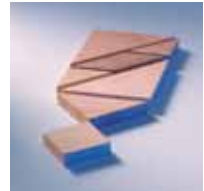
**SIEMENS**

# A Solutions Oriented Circuit Protection Family

## The Tangram



An ancient Chinese game in which a few simple components provide endless possibilities. You take this concept of Tangram-like modularity and apply it to a new breed of breakers. Suddenly you have countless possibilities with steadfast reliability.

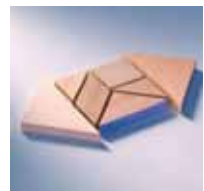
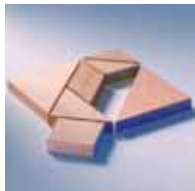


### Cost-Saving

Module by module, VL circuit breakers address the critical issue: Your costs for operational processes, space and energy. The advantages range from simple retrofitting right up to compact construction, benefiting all those who work with VL circuit breakers; whether planner, wholesaler, switchboard manufacturer or plant operator.

### Easy Planning

A few modular components open up the possibility of thousands of different combinations for all energy distribution applications. Saving costs, contributing to flexible planning and offering simple integration within overlapping system solutions by communication. Never before have circuit breakers been so versatile and so simple.



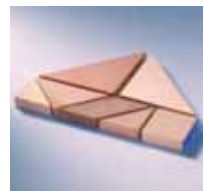
### Global



No matter what the electrical standard, no matter where on earth, VL circuit breakers are optimally designed for most applications. The uniform design for global applications provides a standard solution — a solution you can trust anywhere.

### System Solutions

Siemens, a name that stands for innovation, now brings a new set of advancements to circuit protection. With the ability to communicate over common protocols, the VL integrates with the broader system giving you the advantage of system monitoring capabilities along with cost effective installations. Built to today's needs, and as your plant capacity or markets expand, VL is the consistent solution.



### Fast Service



VL circuit breakers get by with just a few standard parts, making it easier to get devices and components. That means that you find what you are looking for quicker at your dealer or you can reduce your own inventory costs.

### Time Savings



If time is money, Siemens VL will save you a lot. One example is the quick installation by simple connection of the main line. Another is the simple maintenance. Internal accessories are accessible without special tools and, as far as the life expectancy is concerned, VL circuit breakers are designed to exceed market standards.

# Backed by Siemens Innovation and Technology

Siemens VL Circuit Breakers are designed on the principal of contact magnetic repulsion. This allows the current limiting effect of the breakers to help protect the system components from the thermal and dynamic magnetic effects of short circuit currents in the event of an electrical fault. VL Circuit Breakers feature N-Class (35kA), H-Class (65kA) and L-Class (100kA) interrupting ratings. They also feature both thermal magnetic and electronic trip units across the entire product line, assuring compatibility for virtually any application. All of the VL Trip Units are UL listed for field installation and measure true RMS current. This type of measurement ensures the most accurate means of measuring currents in today's harmonic filled electrical distribution systems. VL Trip Units are available for the following applications:

- Line Protection – overload and short-circuit curves are matched to protect cables, wiring and non-motorized loads.
- Motor Circuit Protection – equipped with adjustable instantaneous short circuit protection, trip characteristics are designed for optimum protection and isolation in combination starter applications (consisting of a motor circuit protector, contactor, and overload relay).
- Non-automatic Circuit Breaker (MCS) – can be used as supply, main or non-automatic switches without overload protection. They are fitted with fixed instantaneous settings.

## Siemens VL Trip Unit Technology



### N/H/L Class, Model 525 – Thermal Magnetic Trip Units:

- Ideal for line protection
- Fixed overload protection
- Adjustable short-circuit protection

### N/H/L Class, Model 545, Electronic Trip Units:

- Flashing green LED indicates proper operation
- Yellow LED for overload status
- Integrated self-test function
- Operates without the need for auxiliary voltage
- Plug-in socket for field testing device



### N/H/L Class, Model 576, Electronic LCD Trip Units:

- Integral LCD display
- User-friendly, menu-driven setting of protection parameters directly in absolute ampere values
- Integrated self-test function
- Operates without the need for auxiliary voltage when the breaker is under load
- Plug-in socket for field testing device
- Thermal memory function, selectable on/off
- Fully adjustable LSI and LSIG settings for flexible coordination
- Connects to communication modules



## Tool Set:

- Electronic catalog
  - Easy breaker selection
  - Bill of material generator
  - Technical documentation
- Automated breaker cross-reference
- PC-based time current curve software program
- Internet links with easy to use navigation
  - Technical database
- Multi-formatted breaker drawings (CAD or PDF)
- Product specifications in customizable formats for easy submittals
- Circuit breaker catalog
- Circuit breaker information guide (technical data)
- Product video
- PowerPoint presentations



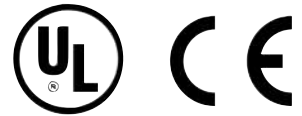
# Competitive Advantages To Reduce Your Installed Cost



The compact size saves real estate and its associated costs.



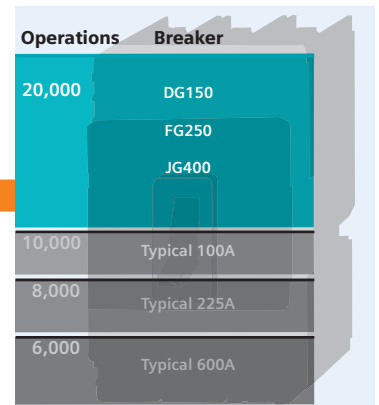
The modularity and flexibility reduce inventory, allow for last minute changes, support quick ship opportunities, and promote the most cost effective configuration.



Global ratings, accessories, and distribution allow you to efficiently serve virtually every market using breakers with just one design and footprint.



The intuitiveness and ease of use eliminate the need for special training and significantly reduce installation time.



For higher reliability, most VL components have twice the endurance specified by UL. Automated bar code tracking, testing, and calibration of every breaker saves money on confirmation tests and field service.

① Approval pending.

# Breaker Frame Family

DG

FG

JG



Continuous Amps $I_N$		50 – 150 A			70 – 250 A			250 – 400 A			
Current Rating $I_r$		30 – 150 A			40 – 250 A			70 – 400 A			
Poles		2, 3, 4			2,3,4			2, 3, 4			
Max. Volts AC		600 V			600 V			600 V			
Breaker Type		NDG	HDG	LDG	NFG	HFG	LFG	NJG	HJG	LJG	
Interrupting Class		N	H	L	N	H	L	N	H	L	
Interrupting Rating (kA) RMS	UL	240Vac	65	100	200	65	100	200	65	100	200
		480Vac	35	65	100	35	65	100	35	65	100
		600Vac	18	20	25	18	20	25	25	25	25
Symmetrical Amperes AC 50/60Hz	IEC ①	220/240Vac ( $I_{cu}/I_{cs}$ )	65/65	100/75	200/150	65/65	100/75	200/150	65/65	100/75	200/150
		380/415Vac ( $I_{cu}/I_{cs}$ )	40/40	70/70	100/75	40/40	70/70	100/75	45/45	70/70	100/75
		690Vac ( $I_{cu}/I_{cs}$ )	12/6	12/6	12/6	12/6	12/6	12/6	12/6	15/8	15/8
DC Interrupting Ratings (UL)	250Vdc (2-pole)		30	30	30	30	30	30	30	30	30
	500Vdc (3-pole)		18	18	18	18	25	18	25	35	35
	600Vdc (3-pole) ②		—	—	—	—	—	—	—	—	—
	750Vdc (4-pole) ②		—	—	—	—	—	—	—	—	—
Dimensions in inches	2-pole		6.9 H x 4.1 W x 3.4 D			6.9 H x 4.1 W x 3.4 D			11 H x 5.5 W x 4.2D		
	3-pole		6.9 H x 4.1 W x 3.4 D			6.9 H x 4.1 W x 3.4 D			11 H x 5.5 W x 4.2D		
	4-pole		6.9 H x 5.5 W x 3.4 D			6.9 H x 5.5 W x 3.4 D			11 H x 7.2 W x 4.2D		
Trip Unit Information		Thermal-Magnetic Electronic Electronic with LCD Interchangeable Trip Unit Communications Capability ③			Thermal-Magnetic Electronic Electronic with LCD Interchangeable Trip Unit Communications Capability ③			Thermal-Magnetic Electronic Electronic with LCD Interchangeable Trip Unit Communications Capability ③			
Specific Application Breakers		Molded Case Switch Motor Circuit Protector 100% Rated 50°C Calibrated ④			Molded Case Switch Motor Circuit Protector 100% Rated 50°C Calibrated ④			Molded Case Switch Motor Circuit Protector 100% Rated 50°C Calibrated ④			
Accessories & Modifications		Auxiliary Switch Alarm Switch Shunt Trip Undervoltage Release Mechanical Interlock Electric Motor Operator Rear Connecting Studs Plug-in Mounting Assy. w/Trip Interlock Draw-out Assembly Handle Mechanisms Fungus Proof ⑤			Auxiliary Switch Alarm Switch Shunt Trip Undervoltage Release Mechanical Interlock Electric Motor Operator Rear Connecting Studs Plug-in Mounting Assy. w/Trip Interlock Draw-out Assembly Handle Mechanisms Fungus Proof ⑤			Auxiliary Switch Alarm Switch Shunt Trip Undervoltage Release Mechanical Interlock Electric Motor Operator Rear Connecting Studs Plug-in Mounting Assy. w/Trip Interlock Draw-out Assembly Handle Mechanisms Fungus Proof ⑤			
Enclosures	NEMA 1 – Indoor, Surface Mount		•			•			•		
	NEMA 1 – Indoor, Flush Mount		•			•			•		
	NEMA 3R – Outdoor, Rain Proof		•			•			•		
	NEMA 4/4X – Stainless Steel		•			•			•		
	NEMA 7, 9 – Hazardous Locations		•			•			•		
NEMA 12 – Dust		•			•			•			
Thermal Shields		•			•			•			
Distribution Lugs		•			•			•			
Ground Sensor (Neut. Trans)		•			•			•			

① Approval pending.

② Consult Siemens.

③ Communications available via communications module.

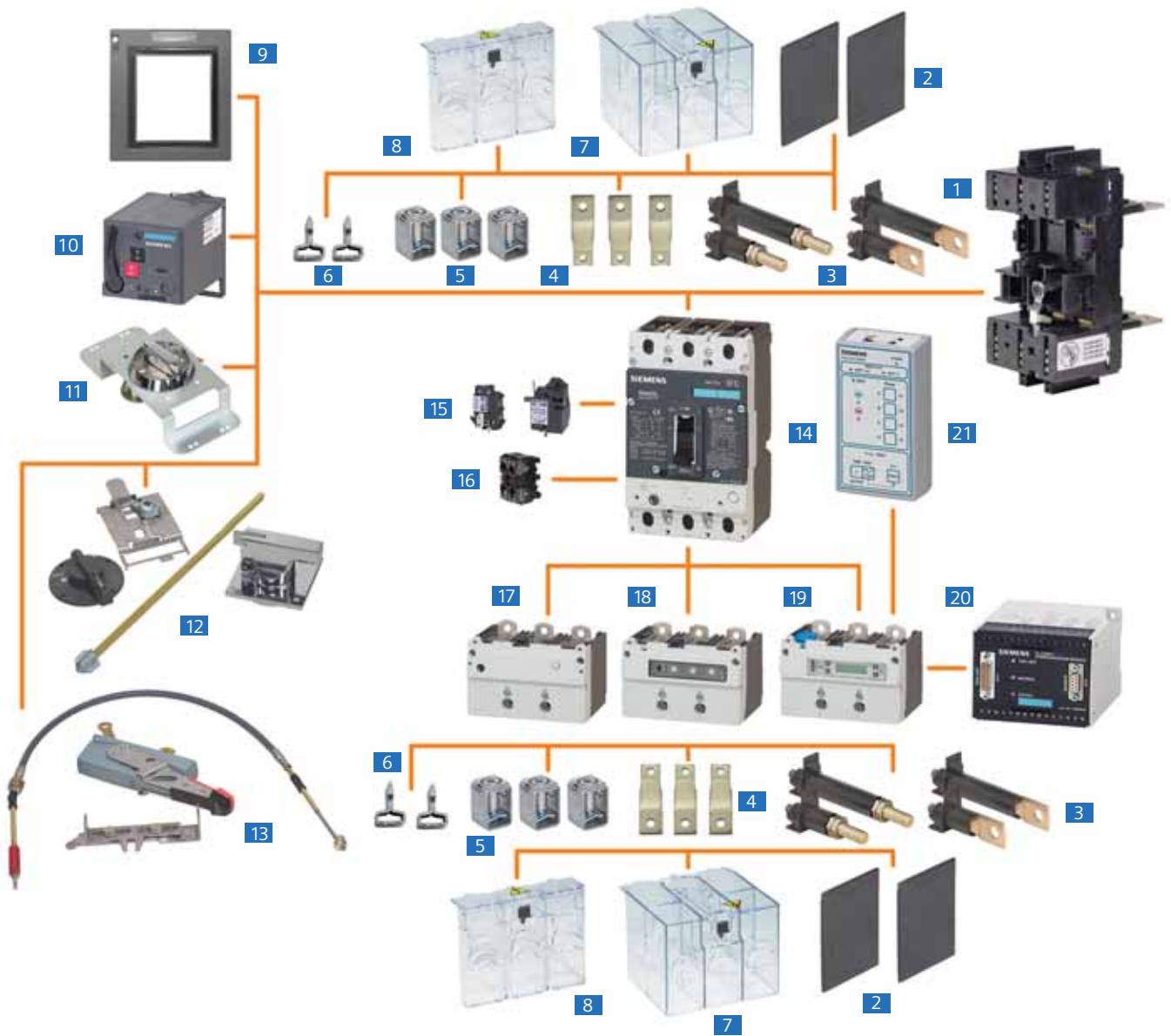
④ Not UL listed.

⑤ VL circuit breakers are inherently fungus resistant.



# Modularity To Support All Your Application Needs

## Modules and More: VL Circuit Breakers with Optional Accessories



- 1 Base for Plug-In or Draw-Out
- 2 Interphase Barriers
- 3 Rear Terminals – Flat and Round
- 4 Bus Extensions
- 5 Terminal Connectors
- 6 Plug-In Terminal Blades
- 7 Extended Terminal Shield
- 8 Standard Terminal Shield

- 9 Cover Frame for Door Cutout
- 10 Stored Energy Operator
- 11 Rotary Handle Operator
- 12 Variable Depth Rotary Operator
- 13 Max Flex Operator
- 14 Circuit Breaker
- 15 Shunt Trip or Undervoltage Releases
- 16 Auxiliary/Alarm Switches

- 17 Thermal-Magnetic Trip Unit (525)
- 18 Electronic Trip Unit (545)
- 19 Electronic Trip Unit with LCD (576)
- 20 Communication Module with ZSI
- 21 Electronic Trip Unit Test Kit

# Siemens VL Molded Case Circuit Breakers Guide Form Specifications

## General Specifications

Siemens molded case circuit breakers shall be provided for the protection of all electrical circuits. Other makes of molded circuit breakers will not be accepted unless approved by this office.

All circuit breakers shall be listed by Underwriter's Laboratories, as well as comply with International Electrotechnical Commission IEC 60 947-2, Canadian Standards Assoc. C22.2, applicable requirements of NEMA Standard publication AB-1.

All circuit breakers shall have a quick-make, quick-break over center toggle-type mechanism and the handle mechanism will be trip-free to prevent holding contacts closed against a short circuit or sustained overload. All circuit breaker handles shall assume a position between "ON" and "OFF" when tripped automatically. Breaker is suitable for isolation, and the handle will only remain in the "OFF" position if the contacts are actually separated.

All circuit breakers shall be of modular design and have available interchangeable trip units. The trip unit will define the nominal current rating of the complete breaker and no rating plugs will be required. For the protection and coordination for all circuits, 30A through 1600A, thermal-magnetic, electronic and electronic with integral LCD display type trip units must be available.

For all frame sizes, available mounting configurations shall include fixed, draw-out, and plug-in with trip interlock.

Choose either thermal-magnetic or electronic trip specifications

### Thermal Magnetic Trip Specification

Each circuit breaker shall operate automatically by means of a thermal-magnetic trip unit providing inverse time delay for overload protection and a magnetic instantaneous trip for short circuit protection. The instantaneous magnetic trip shall be adjustable and set from the front of the trip unit.

### Electronic Trip Specification

Each circuit breaker shall operate automatically by means of an electronic trip unit sensing true RMS current. Depending on the trip unit selected, adjustable Continuous Amps, Long Time Pick-up and Delay, Short Time Pick-Up and Delay, Instantaneous Trip and Ground Fault trip functions will be available. The settings shall be made from the front of the trip unit. A red LED will flash continuously to confirm operation of the microprocessor and a yellow LED will indicate overload status.

### Built-In LCD Type (Optional)

Electronic trip units shall also include an integral LCD that will continuously display the current in each phase. The display can show breaker set points, option menus and list the date, time and current of the latest trip event. In addition, the Ground Fault setting shall be programmable and a Ground Fault Time Delay function shall be included.

### Instantaneous Only Trip Specifications (Optional)

Where indicated on the drawings or the combination motor starter/motor control schedule, furnish instantaneous magnetic trip only circuit breakers for motor short circuit protection. The magnetic trip setting shall be adjustable from the front of the breakers.

### Internal Accessories

All internal accessories shall be field installable using a "snap-in-place" method and will be mounted in an isolated pocket inside the front cover of the breaker, away from the internal power conductors and operating mechanism. Auxiliary and Alarm switches shall be of one style that can be used across all frame sizes. Shunt trips and under voltage releases shall be available in two groupings by frame size, up to 600A and from 800A through 1600A.

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