

**SIEMENS**



VL circuit breakers

# Information guide

[www.usa.siemens.com/circuitbreakers](http://www.usa.siemens.com/circuitbreakers)



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# Technical data

## Introduction

The VL family of circuit breakers by Siemens utilizes a compact and modular design which can be configured to suit a wide range of ratings and applications. Designed for global requirements, these breakers include the following standards and markings:

- UL (UL 489)
- CSA (CSA-C22.2)
- NOM (NMX-J-266-ANCE-2002)<sup>①</sup>
- IEC (IEC-60947-2)
- CE (EN 60947-2)
- CCC<sup>①</sup>

The range of frames includes 150A to 1600A and each rating is available with interchangeable trip units. The frames are available in three (3) interrupting ratings classes:

- N – Normal
- H – High
- L – Very High

The assortment of trip units allows a choice of trip functions and each trip unit features adjustable settings. The interchangeable trip units are available in three (3) varieties as well:

- Model 525 – Thermal-magnetic
- Model 545 & 555 – Electronic
- Model 576 & 586 – Electronic with LCD display

The VL family also includes Molded Case Switches, Motor Circuit Protectors, special 600V DC breakers, and other complete breakers with non-interchangeable trip units.

Internal accessories are field installable and are conveniently located in pockets behind the front accessory cover. To simplify the selection of accessories, just two (2) groups of internal accessories cover the entire VL product family. To accommodate the wide variety of application requirements for connecting, mounting, and operating the breakers, a wide range of external accessories is also available. Some of these accessories are listed in this guide.

VL circuit breakers have been tested for series connected short circuit ratings. Refer to the website for more information.

UL File Numbers:

- E10848 – circuit breakers, motor circuit protectors
- E68312 – molded case switches

<sup>①</sup> Select frames.

## Catalog number information

	Primary catalog number								Lugs	Switch		Release		Other	
Position	1	2	3	4	5	6	7	8	P1	P1	P2	P1	P2	P1	P2
Breaker example	H	F	G	3	B	2	5	0	L						
Trip unit example	C	F	T	3	E	2	5	0	—	—	—	—	—	—	—
Character type	a	a	a	n	a	n	n	n	a	a	n	a	a/n	a	a

### Interrupting capacity

- N – Normal
- H – High
- L – Very high

### Frame size

{D, F, J, L, M, N, P}

### Breaker type

- G – Global (UL, IEC, CE, CSA, NOM)
- X – Global, non-interchangeable
- K – Non-interchangeable(DG,FG, LG)
- W – Global, 100% rated, non-interchangeable(DG,LG)
- Y – Global, 100% rated, non-interchangeable
- T – Trip unit only

### Number of poles {1, 2, 3}

### Trip unit type {F for frame only}

Current rating (I<sub>n</sub>) in amperes  
(Amperes/10 if > = 1000)

### Terminations

Two letter suffixes describing accessories and modifications

# Technical data

		DG	FG	JG	LG	MG	NG	PG
<b>Max rated continuous current</b>		150	250	400	600	800	1200	1600
Rated operational voltage								
NEMA	V AC	600Y/347	600Y/347	600	600	600	600	600
IEC	V AC	690	690	690	690	690	690	690
Rated impulse withstand voltage								
Main conducting paths	kV	8	8	8	8	8	8	8
Auxiliary circuits	kV	4	4	4	4	4	4	4
Ambient temperature range	°C	-25 to +75	-25 to +75	-25 to +75	-25 to +75	-25 to +75	-25 to +75	-25 to +75
High ambient derating (thermal-mag.)	50°C	93%	93%	93%	93%	95%	95%	95%
	60°C	86%	86%	86%	86%	86%	86%	80%
	70°C	80%	80%	80%	80%	80%	80%	74%
Operating cycles		20,000	20,000	20,000	10,000	5,000	3,000	3,000
Max switching rate (per hour)		120	120	120	60	60	30	30
Power loss (at max. rated current)								
Thermal-magnetic	W	15 – 48	32 – 80	60 – 175	85 – 230	170 – 250	150 – 220	200 – 260
Electronic trip unit	W	40	60	90	160	250	210	260
IEC <sup>①</sup>								
Time constant t = 10 ms								
1 current path	2 current paths	3 current paths						
	in series	in series						
Up to 250V DC	440V DC	600V DC	—	—	—	—	—	—
NEMA								
Time constant t = 8 ms								
2 poles switching	1 current path							
	250V DC max. <sup>②</sup>	30	30	30	30	42	42	42
3 poles switching	2 current paths in series							
	500V DC max. <sup>②</sup>	18	25	35	35	65	65	65
<b>Accessories</b>								
Auxiliary/Alarm switch								
Current rating (1 or 2 switches)		10	10	10	10	10	10	10
Current rating (3 or 4 same switch)	A	5	5	5	5	5	5	5
Shunt trip								
Pick-up voltage	V	0.7 – 1.1	0.7 – 1.1	0.7 – 1.1	0.7 – 1.1	0.7 – 1.1	0.7 – 1.1	0.7 – 1.1
Power consumption (short-time) at:								
48 – 60 V AC	VA	158 – 200	158 – 200	158 – 200	158 – 200	380 – 480	380 – 480	380 – 480
110 – 127 V AC	VA	136 – 158	136 – 158	136 – 158	136 – 158	302 – 353	302 – 353	302 – 353
208 – 277 V AC	VA	274 – 350	274 – 350	274 – 350	274 – 350	330 – 439	330 – 439	330 – 439
380 – 600 V AC	VA	158 – 237	158 – 237	158 – 237	158 – 237	243 – 384	243 – 384	243 – 384
24 V DC	W	110	110	110	110	360	360	360
48 – 60 V DC	W	110 – 172	110 – 172	110 – 172	110 – 172	512 – 820	512 – 820	512 – 820
110 – 127 V DC	W	220 – 254	220 – 254	220 – 254	220 – 254	302 – 353	302 – 353	302 – 353
220 – 250 V DC	W	97 – 110	97 – 110	97 – 110	97 – 110	348 – 397	348 – 397	348 – 397
Max. operating time	ms	50	50	50	50	50	50	50

① Consult Siemens for short circuit values.

② Review individual frame and type values.

# Technical data

		DG	FG	JG	LG	MG	NG	PG
<b>Undervoltage trip</b>								
Drop voltage (percentage)	V	35% – 70%	35% – 70%	35% – 70%	35% – 70%	35% – 70%	35% – 70%	35% – 70%
Pick-up voltage (percentage)	V	70% – 85%	70% – 85%	70% – 85%	70% – 85%	70% – 85%	70% – 85%	70% – 85%
Power consumption (continuous) at:								
110 – 127 V AC	VA	1.5	1.5	1.5	1.5	1.1	1.1	1.1
220 – 250 V AC	VA	1.5	1.5	1.5	1.5	2.1	2.1	2.1
208 V AC	VA	1.8	1.8	1.8	1.8	2.2	2.2	2.2
277 V AC	VA	2.1	2.1	2.1	2.1	1.6	1.6	1.6
380 – 415 V AC	VA	1.6	1.6	1.6	1.6	2.0	2.0	2.0
440 – 480 V AC	VA	1.8	1.8	1.8	1.8	2.3	2.3	2.3
500 – 525 V AC	VA	2.5	2.5	2.5	2.5	2.9	2.9	2.9
Max. opening time	ms	50	50	50	50	50	50	50
<b>Motorized operating mechanism</b>								
Motor with stored energy mechanism (synchronizable)		X	X	X	X	X	–	–
Motor Operator						–	X	X
Max. switching rate (per hour)		120	120	120	60	60	30	30
Command duration	ms	20 – 50	20 – 50	20 – 50	20 – 50	20 – 50	50	50
Closing time	ms	<100	<100	<100	<100	<100	<5,000	<5,000
Charging time	s	<5	<5	<5	<5	<5	<5	<5
Break time	s	<5	<5	<5	<5	<5	<5	<5
Power consumption	VA/W	<100	<100	<100	<100	<250	<250	<250
Control voltages 24 V DC								
42 – 48 V AC / DC								
60 V AC / DC								
110 - 127 V AC/ DC								
220 - 250 V AC/ DC								
Operating range: 85 – 110% of rated control voltage								

# Technical data

## DC switching

The DG through PG frame circuit breakers with thermal-magnetic trip units, as motor circuit protectors, or as molded case switches are suitable for switching and protecting DC circuits.

The DG through PG frame circuit breakers with electronic trip units are not suitable for DC currents.

For switching DC currents, the maximum allowable DC voltage per conducting path has to be considered.

For voltages greater than 250V, the series connection of 2 or 3 conducting paths is required. To maintain the thermal-tripping characteristics, the current needs to flow through all conducting paths. Recommended circuit arrangements are shown below.

With DC applications, the operating values of the instantaneous values are increased by 30 to 40%

Recommended Connection	Maximum Voltage	Comments
<p style="text-align: right;">2-Pole Breakers</p>	250 V DC	<p>Circuits shown for grounded systems may also be used as ungrounded.</p> <p>Circuits shown as ungrounded must not be grounded.</p>
	500 V DC	<p>Ungrounded 500 V DC systems only. Typical application in UPS systems.</p>
	600 V DC	<p>Grounded or ungrounded system. Three conducting paths in series. The grounded pole must be assigned to the non-switched conducting path.</p>

Polarity shown for all circuits may be reversed.

# Technical data

## Unusual Operating Conditions Reference

**Note:** The information provided on this and the next page is intended for reference and recommendation only. Because several variables can act on a circuit breaker's performance at the same time, the data below is based less on controlled testing, than on experience and engineering judgment. Contact Siemens for further information on special conditions and treatment.

## High Ambient Temperatures

Because thermal-magnetic trip breakers are temperature sensitive and calibrated for a specific ambient of 40° C (104° F) (average enclosure temperature), a higher ambient will cause the breaker to trip at lower current than its nameplate rating, in other words, causing the breaker to "derate" (see Table 1). Similarly, the current carrying capacity of a circuit conductor is based upon a certain ambient temperature, a higher ambient will reduce its current carrying capacity, causing it to "derate." Thus, with a fluctuating temperature, a thermal-magnetic breaker will derate nearly parallel with its connected circuit conductors and maintain close circuit protection. If the application temperature exceeds 40° C (104° F) and is known, either a breaker specially calibrated for the higher ambient or one oversized according to Table 1 may be selected. In a case such as this, the circuit conductors should be oversized as well.

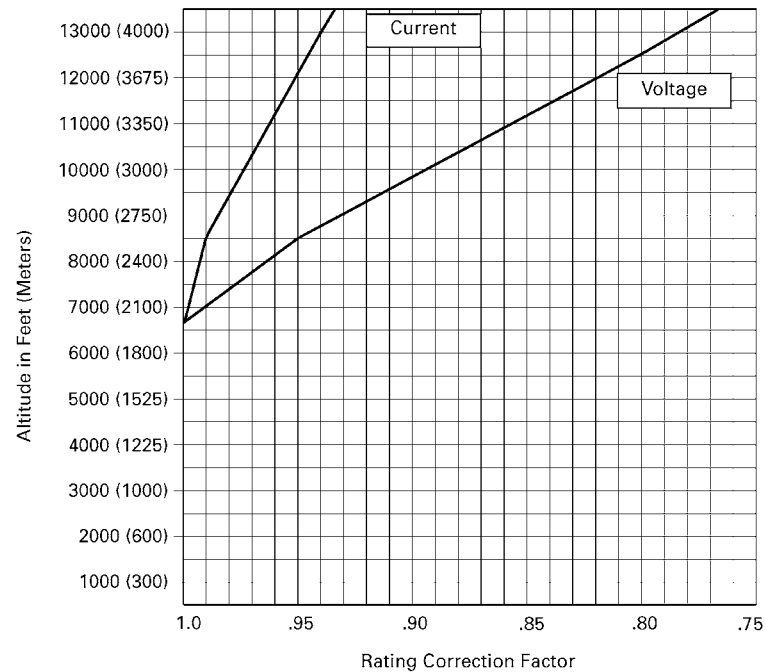
Siemens Electronic Trip Unit Breakers are insensitive to temperature changes. However, they do include circuitry to protect the components from abnormally high temperatures.

## Altitude

Reduced air density at altitudes greater than 6600 ft. (2000 meters) affects the ability of a molded case circuit breaker to transfer heat and interrupt faults. Therefore, circuit breakers applied at these altitudes should have interrupting, insulation and continuous currents derated as indicated in Figure 1.

**Table 1 – Temperature derating data for thermal-magnetic breakers**

Reference Ampere Rating at 40° C (104° F)	Ampere Rating at:			Siemens Breaker Frames	
	25° C (77° F)	50° C (122° F)	60° C (140° F)		
50	55	46	42	DG	
60	66	56	52		
70	77	65	60		
90	99	84	78		
100	110	94	87		
125	137	114	100		
150	165	136	120		
175	192	159	140		FG
200	220	182	160		
225	247	205	180		
250	275	235	220		
300	330	276	252		
350	385	325	301		
400	440	372	340		
500	550	468	435	JG	
600	660	564	525		
700	770	658	613		
800	880	754	704		
900	990	828	749		
1000	1100	900	825		
1200	1320	1090	1000		
1400	1540	1304	1148		LG
1600	1760	1500	1320		
				NG	
					PG



**Figure 1 – Altitude adjustment**

# Technical data

## Unusual Operating Conditions Reference 400 Hz Systems

### Circuit Breaker Derating Required

This table lists the maximum continuous current carrying capacity for Siemens breakers at 400Hz. Due to the increased resistance of the copper sections resulting from the skin effect produced by eddy currents at these frequencies, circuit breakers in many cases require derating. The thermal derating on these devices is based upon 100%, three phase application in open air in a maximum of 40°C (104° F) with 48 in. (1219 mm) of the specified cable or bus at the line and load side. Additional derating of not less than 20% will be required if the circuit breaker is to be utilized in an enclosure. Further derating may be required if the enclosure ambient temperature exceeds 40°C(104° F).

### Cable and Bus Sizing

The cable and bus sizes to be utilized at 400Hz are not based on standard National Electric Codes tables for 60Hz application. Larger cross sections are necessary at 400Hz. All bus bars specified are based upon mounting the bars in the vertical plane to allow maximum air flow. All bus bars are spaced at a minimum of 0.25 in. (6 mm) apart. Mounting of bus bars in the horizontal plane will necessitate additional drafting. Edgewise orientation of the bus may change the maximum ratings indicated. If additional information is required for other connections of cable or bus, contact Siemens for information.

### Application Recommendations

It is recommended that temperatures be measured on the line and load terminals or T-connectors of the center pole. These

are usually the hottest terminals with a balanced load. A maximum temperature of 75°C (35°C over a maximum ambient of 40° C) would verify the particular application. Temperature profiles taken on these breakers can be correlated to ensure that the hottest points within the breaker are within the required temperature limits.

### Interrupting Rating

Circuit breakers used in 400 Hz systems are limited to a 5000 A interrupting rating. If higher ratings are required, consult Siemens.

## 400Hz breakers

Breaker type	Maximum continuous ampere rating at 40 °C (104 °F) <sup>②</sup>			75 °C (167 °F) Copper cable per pole	
	60HZ	400HZ	Enclosed after derating	No. of pieces	Wire size
	Open air	Open air <sup>③</sup>			
DG	50	48	38	1	#8
	60	57	46	1	#6
	70	63	50	1	#4
	80	72	58	1	#4
	90	80	64	1	#3
	100	90	72	1	#3
	110	95	75	1	#2
	125	105	84	1	#1
FG	150	125	100	1	#1/0
	100	90	72	1	#3
	110	95	75	1	#2
	125	105	84	1	#1
	150	125	100	1	#1/0
	175	140	112	1	#2/0
	200	160	128	1	#3/0
	225	180	144	1	#4/0
JG	250	200	160	1	250 kcmil
	250	210	168	1	250 kcmil
	300	240	192	1	350 kcmil
	350	260	208	1	500 kcmil
JG 100% Rated	400	300	240	2	#2/0
	250	210	210	1	250 kcmil
	300	240	240	1	350 kcmil
	350	260	260	1	500 kcmil
LG	400	300	300	2	#3/0
	400	300	300	2	#3/0
	500	375	300	2	250 kcmil
	600	420	336	2	350 kcmil

Breaker type	Maximum continuous ampere rating at 40 °C (104 °F) <sup>②</sup>			75 °C (167 °F) Copper cable per pole	
	60HZ	400HZ	Enclosed after derating	No. of pieces	Wire size
	Open air	Open air <sup>③</sup>			
LG	400	300	240	2	#3/0
	500	375	300	2	250 kcmil
	600	420	336	2	350 kcmil
MG	600	430	360	2	350 kcmil
	700	500	400	3	250 kcmil
	800	560	448	3	300 kcmil
MG 100% Rated	600	430	430	2	350 kcmil
	700	500	500	3	250 kcmil
	800	560	560	3	300 kcmil
NG	800	560	448	3	300 kcmil
	900	600	480	3	350 kcmil
	1000	650	520	3	400 kcmil
	1200	780	624	4	350 kcmil
NG 100% Rated	900	600	600	3	350 kcmil
	1000	650	650	3	400 kcmil
	1200	780	780	4	350 kcmil
	1200	780	624	4	400 kcmil
PG	1400	850	680	4	500 kcmil
	1600	960	768	5	500 kcmil
	1200	780	780	4	400 kcmil
PG 100% Rated	1400	850	850	4	500 kcmil
	1600	960	960	5	500 kcmil

① The information provided on this page is intended for reference and recommendation only. Because several variables can act on a circuit breaker's performance at the same time, the data above is based less on controlled testing, than on

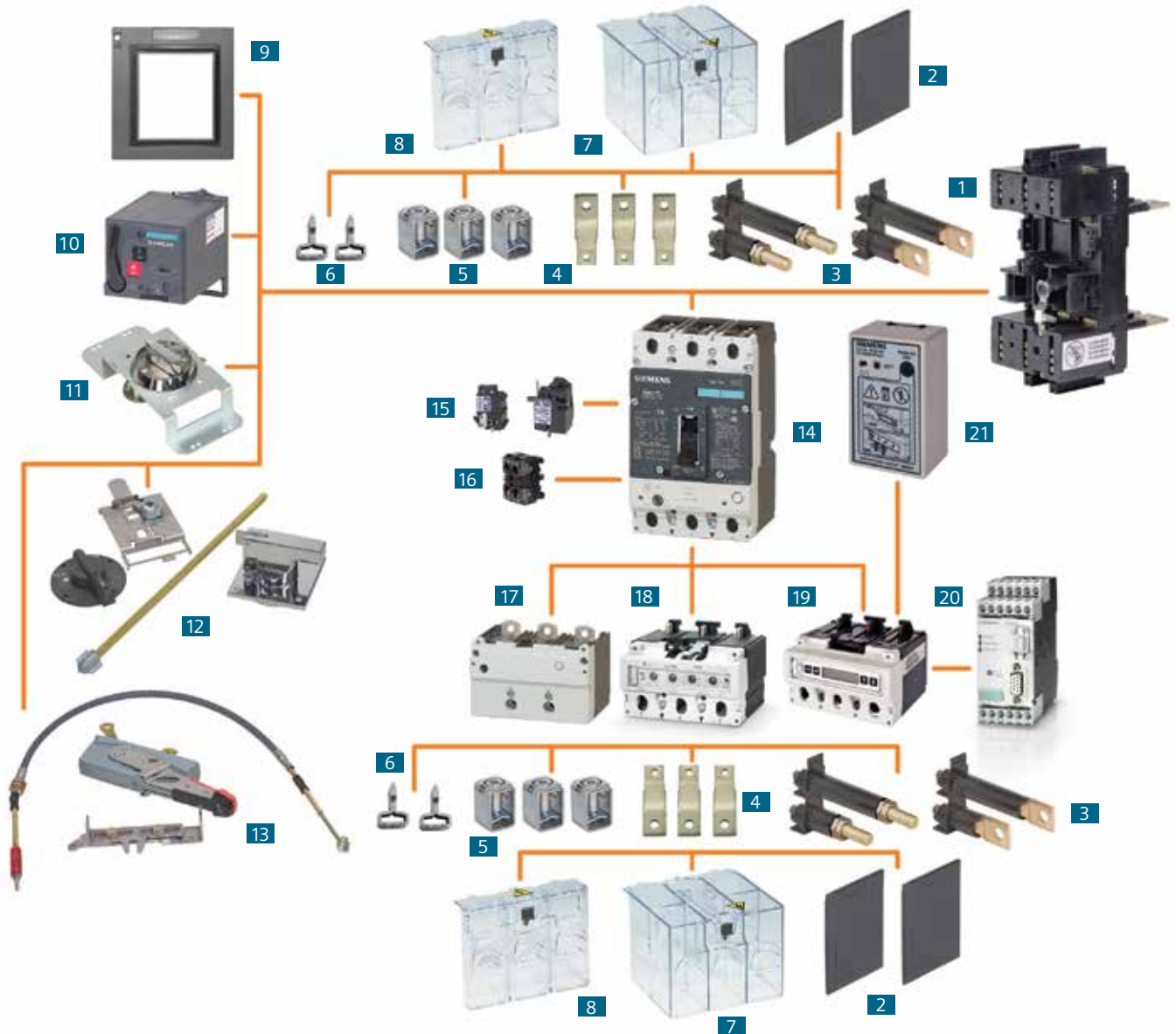
experience and engineering judgment. Contact Siemens for further information on special conditions and treatment.

② Additional derating may be required if the ambient temperature is greater than 40°C (104°F).

③ Calculated after derating to compensate for the heating of the copper conductor, caused by the skin effect generated by eddy currents produced at 400/415Hz.

# Technical data

Modularity to support all your application needs  
 Modules and more: VL Circuit Breakers with optional accessories



- |  |   |  |
|--|---|--|
| <b>1</b> Base for Plug-In or Draw-Out    | <b>9</b> Cover Frame for Door Cutout          | <b>17</b> Thermal-Magnetic Trip Unit (525)                 |
| <b>2</b> Interphase Barriers             | <b>10</b> Stored Energy Operator              | <b>18</b> Electronic Trip Unit (555)                       |
| <b>3</b> Rear Terminals – Flat and Round | <b>11</b> Rotary Handle Operator              | <b>19</b> Elec. Trip Unit with LCD (586)                   |
| <b>4</b> Bus Extensions                  | <b>12</b> Variable Depth Rotary Operator      | <b>20</b> Communication Module with ZSI                    |
| <b>5</b> Terminal Connectors             | <b>13</b> Max Flex Operator                   | <b>21</b> Electronic Trip Unit Tester and LCD Power Supply |
| <b>6</b> Plug-In Terminal Blades         | <b>14</b> Circuit Breaker                     |  |
| <b>7</b> Extended Terminal Shield        | <b>15</b> Shunt Trip or Undervoltage Releases |  |
| <b>8</b> Standard Terminal Shield        | <b>16</b> Auxiliary/Alarm Switches            |  |

# VL Circuit Breaker – DG 150A frame



## Breaker type

Defined by the 3rd character of the catalog number

- G – Global (UL, CSA, IEC, CE, CCC), interchangeable
- K – Global, non-interchangeable
- W – Global, 100% rated, non-interchangeable, electronic only

## Trip unit type

Defined by the 5th character of the catalog number

- B – Thermal-magnetic, model 525
- N – LI, electronic, model 545
- P – LSI, electronic, model 545
- X – LIG, electronic, model 545
- U – LSIG, electronic, model 545
- D – LSI, electronic with LCD, model 576
- E – LSIG, electronic with LCD, model 576
- R – LI, electronic, Model 555
- T – LSI, electronic, Model 555
- W – LIG, electronic, Model 555
- V – LSIG, electronic, Model 555
- A – LSI, electronic with LCD, Model 586
- G – LSIG, electronic with LCD, Model 586
- K – LSI + GF alarm, electronic with LCD, Model 586

For DC applications, use thermal magnetic trip unit only.

For reverse-feed applications, select non-interchangeable trip breakers only.

Due to the location of the magnetic tripping solenoid, the left accessory pocket of electronic breakers is not available for accessories.

HACR rated.

## Interrupting ratings

Interrupting Class	Breaker Type	RMS symmetrical amperes (kA)						UL or IEC		
		UL 489			IEC 60947-2			UL or IEC		
		Volts AC			Volts AC			Volts DC <sup>①</sup>		
		240	480	600Y/347	240	415	690	250	500	600 <sup>②</sup>
					$I_{cu}/I_{cs}$	$I_{cu}/I_{cs}$	$I_{cu}/I_{cs}$			
N	NDGB	65	35	18	65 / 65	40 / 40	12 / 6	30	18	–
H	HDGB	100	65	18	100 / 75	70 / 70	12 / 6	30	18	42
L	LDGB	200	100	18	200 / 150	100 / 75	12 / 6	30	18	–

UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

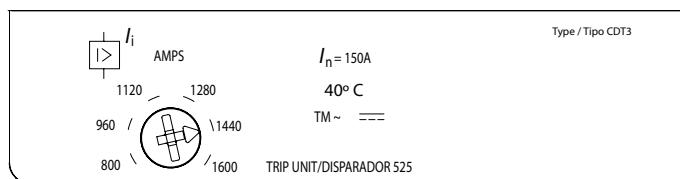
① For DC applications and wiring diagrams, see p. 5 of VL Information Guide.

② Special version, Type HDGD. See Speedfax catalog for more information.

## Trip Unit Model 525

### Thermal magnetic trip units, model 525

$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip adjustable range (amps)					
50	450	480	510	540	570	600
60	450	480	510	540	570	600
70	450	500	550	600	650	700
80	450	520	590	660	730	800
90	500	600	700	800	900	1000
100	500	600	700	800	900	1000
110	550	660	770	880	990	1100
125	625	750	875	1000	1125	1250
150	800	960	1120	1280	1440	1600



Trip unit model 525

## Trip Unit Model 545

### Electronic trip units, Model 545 with LI (Trip unit type N) or LIG (Trip unit type X) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
		60	30	30	30	32	35	40	45	50	60	
	100	40	40	45	50	60	63	70	80	90	100	
	150	60	60	63	70	80	90	100	110	125	150	
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) Pt @ 6 x $I_r$										
		60, 100, 150	2.5	4	6	8	10	14	17	20	25	30
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
		60	75	90	120	180	240	300	360	480	600	660
		100	125	150	200	300	400	500	600	800	1000	1100
		150	187	225	300	450	600	750	900	1200	1500	1650

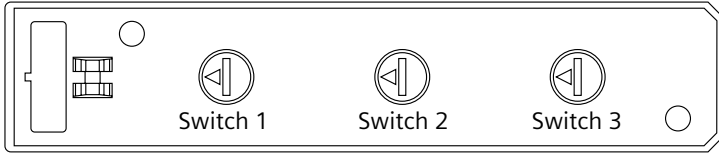
## Fixed settings (LIG only)

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pickup (amps)	$t_g$ – Ground fault delay
60	48	.07 sec
100	80	.07 sec
150	120	.07 sec



Trip unit model 545

## Trip Unit Model 545 (continued)



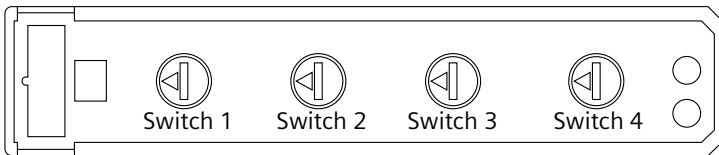
### Electronic trip units, Model 545 with LSI (Trip unit type P) or LSIG (Trip unit type U) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	60	30	30	30	30	32	35	40	45	50	60	
	100	40	40	45	50	60	63	70	80	90	100	
	150	60	60	63	70	80	90	100	110	125	150	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) x $I_r$										
	60, 100, 150	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds) @ $8xI_r$										
	60, 100, 150	0	0.1, I <sub>r</sub> t OFF	0.2, I <sub>r</sub> t OFF	0.3, I <sub>r</sub> t OFF	0.4, I <sub>r</sub> t OFF	0.5, I <sub>r</sub> t OFF	0.1, I <sub>r</sub> t ON	0.2, I <sub>r</sub> t ON	0.3, I <sub>r</sub> t ON	0.4, I <sub>r</sub> t ON	

### Fixed settings

$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay	$I_i$ – Nominal instantaneous trip	$I_g$ – Ground fault pick-up (LSIG only)	$t_g$ – Ground fault delay (LSIG only)
60		660A	48A	.07 sec.
100	10 sec. (I <sub>r</sub> t @ 6 x $I_r$ )	1100A	80A	.07 sec
150		1650A	120A	.07 sec

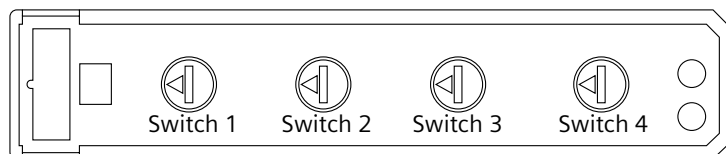
## Trip Unit Model 555



### Electronic trip units, Model 555 with LI (Trip unit type R) or LIG (Trip unit type W) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	60	30	30	30	30	32	35	40	45	50	60	
	100	40	45	50	55	60	63	70	80	90	100	
	150	60	63	70	75	80	90	100	110	125	150	
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) I <sub>r</sub> t @ 6 x $I_r$										
	60, 100, 150	2.5	4	6	8	10	14	17	20	25	30	
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
	60	75	90	120	180	240	300	360	480	600	660	
	100	125	150	200	300	400	500	600	800	1000	1100	
	150	187	225	300	450	600	750	900	1200	1500	1650	
Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)										
	60	48	24	24	24	36	36	36	60	60	60	
	100	80	40	40	40	60	60	60	100	100	100	
	150	120	60	60	60	90	90	90	150	150	150	
Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)										
	60, 100, 150	0.07	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	

## Trip Unit Model 555 (continued)



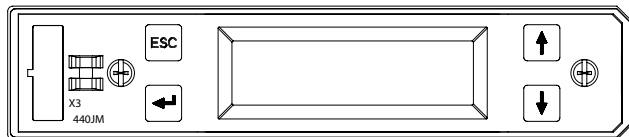
### Electronic trip unit, Model 555 with LSI (Trip unit type T) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	60	30	35	40	50	60	30	35	40	50	60	60
100	40	50	60	80	100	40	50	60	80	100	100	
150	70	80	100	125	150	70	80	100	125	150	150	
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I_{Pt}$ @ $6 \times I_r$										
	60, 100, 150	4	4	4	4	4	14	14	14	14	14	14
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	60, 100, 150	1.5	2	2.5	3	4	5	6	7	8	10	10
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	60, 100, 150	0	0.1, $I_{Pt}$ OFF	0.2, $I_{Pt}$ OFF	0.3, $I_{Pt}$ OFF	0.4, $I_{Pt}$ OFF	0.5, $I_{Pt}$ OFF	0.1, $I_{Pt}$ ON	0.2, $I_{Pt}$ ON	0.3, $I_{Pt}$ ON	0.4, $I_{Pt}$ ON	0.4, $I_{Pt}$ ON
Switch 4	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
	60	75	90	120	180	240	300	360	480	600	660	660
	100	125	150	200	300	400	500	600	800	1000	1100	1100
	150	187	225	300	450	600	750	900	1200	1500	1650	1650

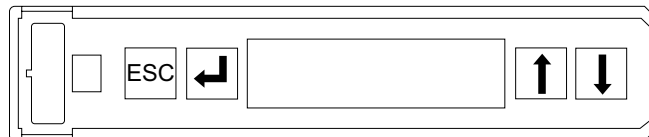
### Electronic trip unit, Model 555 with LSIG (Trip unit type V) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	60	30	35	40	50	60	30	35	40	50	60	60
100	40	50	60	80	100	40	50	60	80	100	100	
150	70	80	100	125	150	70	80	100	125	150	150	
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I_{Pt}$ @ $6 \times I_r$										
	60, 100, 150	4	4	4	4	4	14	14	14	14	14	14
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	60, 100, 150	1.5	2	2.5	3	4	5	6	7	8	10	10
Switch 2	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps) $\times I_n$										
	60, 100, 150	5	5	5	5	5	11	11	11	11	11	11
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	60, 100, 150	0	0.1, $I_{Pt}$ OFF	0.2, $I_{Pt}$ OFF	0.3, $I_{Pt}$ OFF	0.4, $I_{Pt}$ OFF	0.5, $I_{Pt}$ OFF	0.1, $I_{Pt}$ ON	0.2, $I_{Pt}$ ON	0.3, $I_{Pt}$ ON	0.4, $I_{Pt}$ ON	0.4, $I_{Pt}$ ON
Switch 4	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)										
	60	48	24	24	24	36	36	36	60	60	60	60
	100	80	40	40	40	60	60	60	100	100	100	100
	150	120	60	60	60	90	90	90	150	150	150	150
Switch 4	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)										
	60, 100, 150	0.07	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	0.30

## Trip Unit Model 576 and 586



Trip unit model 576



Trip unit model 586

### Electronic trip units with LCD Model 576 (Trip unit type D and E) or Model 586 (Trip unit type A, G and K)

$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amps range <sup>①</sup>	$t_r$ – Long time delay settings ( $I^2t @ 6 \times I_r$ )	$I_{sd}$ – Short time pick-up range	$t_{sd}$ – Short time delay settings	$I_i$ – Nominal instantaneous trip range <sup>①②</sup>
60	30 - 60	2.5, 4, 6, 8, 10, 14,	1.25 - 10 x $I_r$	0.1, 0.2, 0.3, 0.4, 0.5 sec. or $I^2t @ 8 \times I_r$	75 - 660A
100	40 - 100	17, 20, 25, 30 sec.			125 - 1100A
150	60 - 150				188 - 1650A
$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up range <sup>①③</sup>	$t_g$ – Ground fault delay	Pre-alarm indication		
60	24 - 60A	0.1, 0.2, 0.3, 0.4, 0.5 sec.	80 - 100% x $I_r$ (Amps)		
100	40 - 100A	$I^2t @ .5 \times I_n$			
150	60 - 150A				

① Current settings are adjustable in 1-amp increments.

② Model 586, can turn function OFF. Instantaneous trip override function will be enabled to ensure self protection of circuit breaker.

③ Model 586, trip unit type K = alarm only.

### Motor circuit protectors

Amp rating	$I_i$ – Nominal instantaneous trip adjustable range (amps)
150	450 - 900 <sup>①</sup>
150	750 - 1500 <sup>②</sup>
150	1250 - 2500 <sup>③</sup>

① Settings adjustable in increments of 90 amps.

② Settings adjustable in increments of 150 amps.

③ Settings adjustable in increments of 250 amps.

### Molded case switch

Amp rating	Self-protective instantaneous override	Short-circuit current rating 480 V AC <sup>①</sup>
150	2500A	65 kA

① Max. available current when protected by an appropriate overcurrent protective device.

### 600 V DC circuit breakers

Amp rating	Short-circuit rating 600 V DC
50, 60 70, 80, 90, 100, 110, 125, 150	42 kA

## Terminal Connectors

Wire range	Cables per connectors	Wire size	Torque lb-in. (Nm)	Catalog number
#8 – 1/0	1 (Cu only)	#8 #6 – #1/0	35 (3.95) 70 (7.91)	3TW1DG20 <sup>①</sup>
#6 – 3/0	1 (Cu / Al)	#6 – #1 1/0 – 3/0	50 (5.85) 120 (13.56)	3TA1DG30 <sup>②③</sup>
#6 – 3/0	1 (Cu only)	#6 – #1 1/0 – 3/0	50 (5.65) 120 (13.56)	3TC1DG30 <sup>④</sup>

## Compression connector kits

#14 – 2/0	1 (Cu / Al)			3CLD20 <sup>①</sup>
#14 – 2/0	1 (Cu / Al)			2CLD20 <sup>②</sup>

## Distribution connector kits

#14 – #2	3 (Cu / Al)	#14 – #8 #6 – #2	35 (3.95) 60 (6.78)	3TA3DG02 <sup>①</sup>
#14 – #4	6 (Cu / Al)	#14 – #4	35 (3.95)	3TA6DG04 <sup>①</sup>

① Packaged as 3 connectors.

② Standard connectors when an “L” suffix is used on an assembled breaker catalog number.

③ Packaged as 2 connectors.

④ Required for 100% rated DG breakers. Requires 90°C cable sized at 75°C ampacity.

## Internal accessories

### Auxiliary and alarm switch kits

Description	Mounting pocket	Catalog number
1 Alarm switch 1 A/B <sup>①</sup> bases AMBL2 and AMBL3	Left, right <sup>②</sup>	ASKL1
2 Aux. switches 1A + 1B base AMBL1	Left, right	ASKL2
2 Aux. + 1 Alarm switch 1A + 1B, 1A/B bases <sup>①</sup> AMBL2 and AMBL3	Left, right <sup>②</sup>	ASKL3

① Includes 1A and 1B contact for alarm purposes, only one of which may be installed at any time.

② Kit includes 2 bases - one for mounting switches in left pocket and another for mounting in right pocket.

### Auxiliary and alarm switch mounting base only

Description	Mounting pocket	Catalog number
For 2 Aux + 1 Alarm	Left	AMBL2
For 2 Aux + 1 Alarm	Right	AMBL3
For 3 Aux	Left, right	AMBL1

### Shunt trip

Control voltage	Catalog number
48 – 60 VAC	STRLM60
110 – 127 VAC	STRLN120
208 – 277 VAC	STRLS277
380 – 600 VAC	STRLV600
24 VDC	STRLB24DC
48 – 60 VDC	STRLC60DC
110 – 127 VDC	STRLD125DC
220 – 250 VDC	STRLE250DC

Shunt trips or UVR's may be mounted in the Right Pocket only.

### Internal accessory locations

Left accessory pocket	Right accessory pocket
Up to 3 auxiliary switches	Shunt trip or UVR or up to 3 auxiliary switches
Up to 2 auxiliary switches + 1 alarm switch	Shunt trip or UVR or up to 2 auxiliary switches + 1 alarm switch

Maximum of 6 switches total.

Maximum of 2 alarm switches, 1 Left + 1 Right Pocket.

### Auxiliary / Alarm switches only (requires a base)

Description	Catalog number
1 NO (normally open contact)	ASWPA
1 NC (normally closed contact)	ASWPB

(A) Normally open contacts are open when the breaker contacts are open.

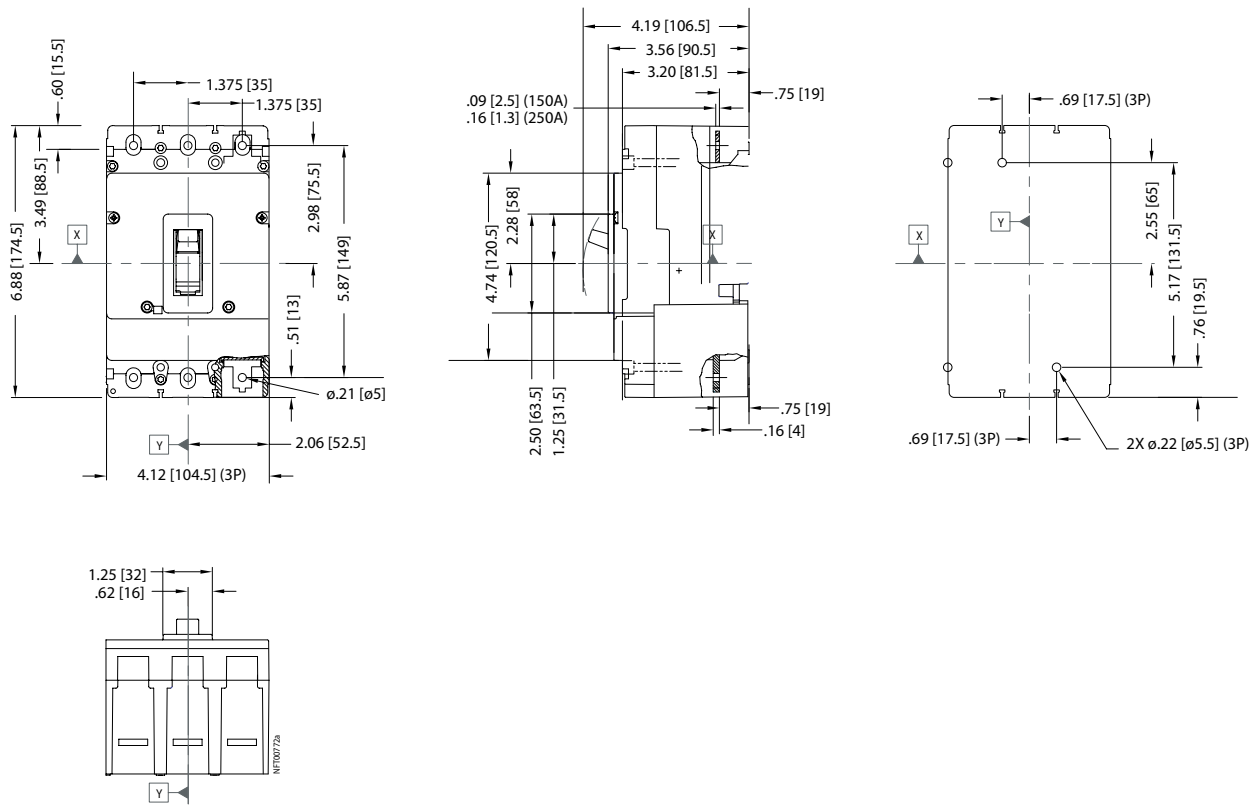
(B) Normally closed contacts are closed when the breaker contacts are open.

### Undervoltage release

Control voltage	Catalog number
110 – 127 VAC	UVRLN120
220 – 250 VAC	UVRLR240
208 VAC	UVRLP208
277 VAC	UVRLS277
380 – 425 VAC	UVRLT415
440 – 480 VAC	UVRLU480
12 VDC	UVRLA12DC
24 VDC	UVRLB24DC
48 VDC	UVRLC48DC
60 VDC	UVRLG60DC
110 – 127 VDC	UVRLD125DC
220 – 250 VDC	UVRLE250DC

## Dimensions

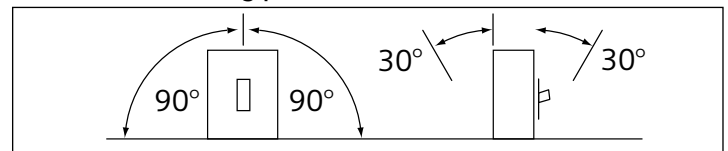
(complete breaker)



## Shipping weight, lbs. (kg)

Poles	Frame only	Trip unit		Complete breaker
		Thermal-mag	Electronic	
2,3	3.35 (1.52)	1.35 (.62)	1.60 (.72)	5.9 (2.7)

## Permissible mounting positions



# VL Circuit Breaker – FG 250A frame

## Breaker type

Defined by the 3rd character of the catalog number

K – Global, Non-interchangeable

## Trip unit type

Defined by the 5th character of the catalog number

B – Thermal-magnetic, model 525

N – LI, electronic, model 545

P – LSI, electronic, model 545

X – LIG, electronic, model 545

U – LSIG, electronic, model 545

D – LSI, electronic with LCD, model 576

E – LSIG, electronic with LCD, model 576

R – LI, electronic, Model 555

T – LSI, electronic, Model 555

W – LIG, electronic, Model 555

V – LSIG, electronic, Model 555

A – LSI, electronic with LCD, Model 586

G – LSIG, electronic with LCD, Model 586

K – LSI + GF alarm, electronic with LCD, Model 586



For DC applications, use thermal magnetic trip unit only.

For reverse-feed applications, select non-interchangeable trip breakers only.

Due to the location of the magnetic tripping solenoid, the left accessory pocket of electronic breakers is not available for accessories. HACR rated.

## Interrupting ratings

Interrupting Class	Breaker Type	RMS symmetrical amperes (kA)								
		UL 489			IEC 60947-2			UL or IEC		
		Volts AC			Volts AC			Volts DC <sup>①</sup>		
		240	480	600Y/347	240	415	690	250	500	600 <sup>②</sup>
N	NFGB	65	35	18	65 / 65	40 / 40	12 / 6	30	18	–
H	HFGB	100	65	18	100 / 75	70 / 70	12 / 6	30	18	42
L	LFGB	200	100	18	200 / 150	100 / 75	12 / 6	30	18	–

UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

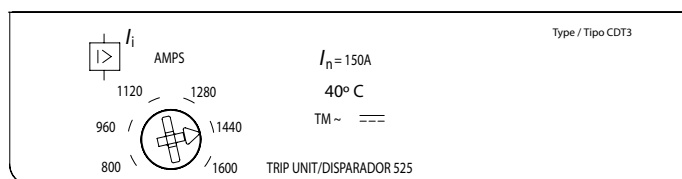
① For DC applications and wiring diagrams, see p. 5 of VL Information Guide.

② Special version, Type HFGB. See Speedfax catalog for more information.

## Trip Unit Model 525

### Thermal magnetic trip units, model 525

$I_n$ – Trip unit rating (amps)	$I_j$ – Nominal instantaneous trip adjustable range (amps)					
100	625	750	875	1000	1125	1250
110	800	960	1120	1280	1440	1600
125	800	960	1120	1280	1440	1600
150	800	960	1120	1280	1440	1600
175	1000	1200	1400	1600	1800	2000
200	1000	1200	1400	1600	1800	2000
225	1250	1500	1750	2000	2250	2500
250	1250	1500	1750	2000	2250	2500



Trip unit model 525

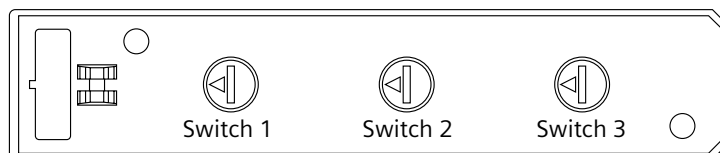
## Trip Unit Model 545

### Electronic trip units, Model 545 with LI (Trip unit type N) or LIG (Trip unit type X) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
		100	40	40	45	50	60	63	70	80	90	100
	150	60	60	63	70	80	90	100	110	125	150	
	250	70	80	100	125	150	160	175	200	225	250	
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) Pt @ 6 x $I_r$										
		100, 150, 200	2.5	4	6	8	10	14	17	20	25	30
Switch 3	$I_n$ – Trip unit rating (amps)	$I_j$ – Nominal instantaneous trip switch settings (amps)										
		100	125	150	200	300	400	500	600	800	1000	1100
		150	187	225	300	450	600	750	900	1200	1500	1650
		250	312	375	500	750	1000	1250	1500	2000	2500	2750

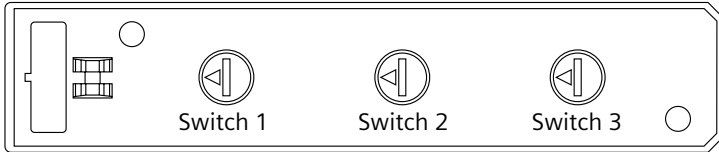
## Fixed settings (LIG only)

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pickup (amps)	$t_g$ – Ground fault delay
100	80	.07 sec
150	120	.07 sec
250	200	.07 sec



Trip unit model 545

## Trip Unit Model 545 (continued)



### Electronic trip units, Model 545 with LSI (Trip unit type P) or LSIG (Trip unit type U) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	100	40	40	45	50	60	63	70	80	90	100	100
150	60	60	63	70	80	90	100	110	125	150	150	
250	70	80	100	125	150	160	175	200	225	250	250	

Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) x $I_r$									
	100, 150, 250	1.5	2	2.5	3	4	5	6	7	8	10

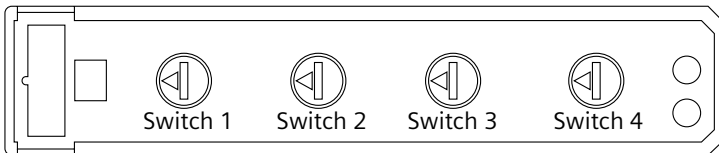
  

Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds) @ $8xI_r$										
	100, 150, 250	0	0.1, I <sub>r</sub> t OFF	0.2, I <sub>r</sub> t OFF	0.3, I <sub>r</sub> t OFF	0.4, I <sub>r</sub> t OFF	0.5, I <sub>r</sub> t OFF	0.1, I <sub>r</sub> t ON	0.2, I <sub>r</sub> t ON	0.3, I <sub>r</sub> t ON	0.4, I <sub>r</sub> t ON	

### Fixed settings

$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay	$I_i$ – Nominal instantaneous trip	$I_g$ – Ground fault pick-up (LSIG only)	$t_g$ – Ground fault delay (LSIG only)
100	10 sec. (I <sub>r</sub> t @ 6 x $I_r$ )	1100A	80A	.07 sec.
150		1650A	120A	.07 sec
250		2750A	200A	.07 sec

## Trip Unit Model 555



### Electronic trip units, Model 555 with LI (Trip unit type R) or LIG (Trip unit type W) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	100	40	45	50	55	60	63	70	80	90	100	100
150	60	63	70	75	80	90	100	110	125	150	150	
250	70	80	100	125	150	160	175	200	225	250	250	

Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) I <sub>r</sub> t @ 6 x $I_r$									
	100, 150, 250	2.5	4	6	8	10	14	17	20	25	30

Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
	100	125	150	200	300	400	500	600	800	1000	1100	
150	187	225	300	450	600	750	900	1200	1500	1650		
250	312	375	500	750	1000	1250	1500	2000	2500	2750		

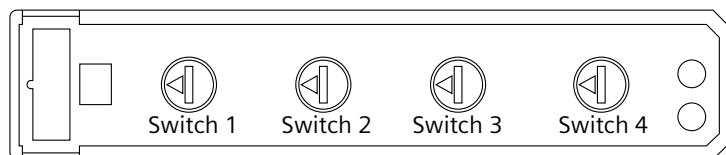
  

Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)										
	100	80	40	40	40	60	60	60	100	100	100	
150	120	60	60	60	90	90	90	150	150	150		
250	200	100	100	100	150	150	150	250	250	250		

Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)										
	100, 150, 250	0.07	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	

Trip Unit Model 555 (continued)



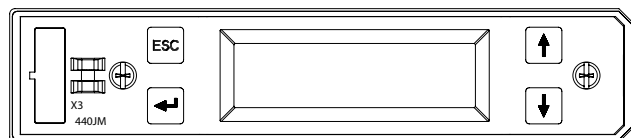
Electronic trip unit, Model 555 with LSI (Trip unit type T) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	100	40	50	60	80	100	40	50	60	80	100	
	150	70	80	100	125	150	70	80	100	125	150	
	250	125	150	200	225	250	125	150	200	225	250	
	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I_{Pt}$ @ $6 \times I_r$										
	100, 150, 250	4	4	4	4	4	14	14	14	14	14	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	100, 150, 250	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	100, 150, 250	0	0.1, $I_{Pt}$ OFF	0.2, $I_{Pt}$ OFF	0.3, $I_{Pt}$ OFF	0.4, $I_{Pt}$ OFF	0.5, $I_{Pt}$ OFF	0.1, $I_{Pt}$ ON	0.2, $I_{Pt}$ ON	0.3, $I_{Pt}$ ON	0.4, $I_{Pt}$ ON	
Switch 4	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
	100	125	150	200	300	400	500	600	800	1000	1100	
	150	187	225	300	450	600	750	900	1200	1500	1650	
	250	312	375	500	750	1000	1250	1500	2000	2500	2750	

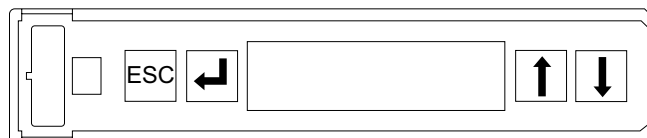
Electronic trip unit, Model 555 with LSIG (Trip unit type V) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	100	40	50	60	80	100	40	50	60	80	100	
	150	70	80	100	125	150	70	80	100	125	150	
	250	125	150	200	225	250	125	150	200	225	250	
	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I_{Pt}$ @ $6 \times I_r$										
	100, 150, 250	4	4	4	4	4	14	14	14	14	14	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	100, 150, 250	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps) $\times I_n$										
	100, 150, 250	5	5	5	5	5	11	11	11	11	11	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	60, 100, 150	0	0.1, $I_{Pt}$ OFF	0.2, $I_{Pt}$ OFF	0.3, $I_{Pt}$ OFF	0.4, $I_{Pt}$ OFF	0.5, $I_{Pt}$ OFF	0.1, $I_{Pt}$ ON	0.2, $I_{Pt}$ ON	0.3, $I_{Pt}$ ON	0.4, $I_{Pt}$ ON	
Switch 4	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)										
	100	80	40	40	40	60	60	60	100	100	100	
	150	120	60	60	60	90	90	90	150	150	150	
	250	200	100	100	100	150	150	150	250	250	250	
	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)										
	60, 100, 150	0.07	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	

## Trip Unit Model 576 and 586



Trip unit model 576



Trip unit model 586

### Electronic trip units with LCD Model 576 (Trip unit type D and E) or Model 586 (Trip unit type A, G and K)

$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amps range <sup>①</sup>	$t_r$ – Long time delay settings ( $I^2t @ 6 \times I_r$ )	$I_{sd}$ – Short time pick-up range	$t_{sd}$ – Short time delay settings	$I_i$ – Nominal instantaneous trip range <sup>②③</sup>
100	40 - 100	2.5, 4, 6, 8, 10, 14,	1.25 - 10 $\times I_r$	0.1, 0.2, 0.3, 0.4, 0.5 sec. or $I^2t @ 8 \times I_r$	125 - 1100A
150	60 - 150	17, 20, 25, 30 sec.			187 - 1650A
250	70 - 250				313 - 2750A

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up range <sup>①</sup>	$t_g$ – Ground fault delay	Pre-alarm indication
100	40 - 100A	0.1, 0.2, 0.3, 0.4, 0.5 sec. $I^2t @ .5 \times I_n$	80 - 100% $\times I_r$ (Amps)
150	60 - 150A		
250	100 - 250A		

① Current settings are adjustable in 1-amp increments.

② Model 586, can turn function OFF. Instantaneous trip override function will be enabled to ensure self protection of circuit breaker.

### Motor circuit protectors

Amp rating	$I_i$ – Nominal instantaneous trip adjustable range (amps)
250	60 - 1200 <sup>①</sup>
250	1000 - 2000 <sup>②</sup>
250	1750 - 3500 <sup>③</sup>

① Settings adjustable in increments of 120 amps.

② Settings adjustable in increments of 200 amps.

③ Settings adjustable in increments of 350 amps.

### Molded case switch

Amp rating	Self-protective instantaneous override	Short-circuit current rating 480 V AC <sup>①</sup>
250	3500A	65 kA
250	3500A	100 kA

① Max. available current when protected by an appropriate overcurrent protective device.

### 600 V DC circuit breakers

Amp rating	Short-circuit rating 600 V DC
100, 150, 250	42 kA

## Terminal Connectors

Wire range	Cables per connectors	Wire size	Torque lb-in. (Nm)	Catalog number
#3 – 350 kcmil	1 (Cu only)	#3 – 350	220 (25)	3TW1FG350
#4 – 350 kcmil	1 (Cu / Al)	#4 #3 – #1 1/0 – 350	150 (16.95) 200 (22.60) 275 (31.07)	3TAW1FG350 <sup>②</sup>
#4 – 350 kcmil	1 (Cu only)	#4 #3 – #1 1/0 – 350	150 (16.95) 200 (22.60) 275 (31.07)	3TCW1FG350

### Compression connector kits

#6 – 350	1 (Cu / Al)			3CLF350
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### Distribution connector kits

#14 – 2/0	3 (Cu only)	#14 – #8 #6 – 2/0	40 (4.52) 120 (13.5)	3TA3FG20
#14 – #4	6 (Cu only)	#14 – #4	35 (3.95)	3TA6FG04

① Packaged as 3 connectors.

② Standard connectors when an "L" suffix is used on an assembled breaker catalog number.

## Internal accessories

Auxiliary and alarm switch kits		
Description	Mounting pocket	Catalog number
1 Alarm switch 1 A/B <sup>①</sup> bases AMBL2 and AMBL3	Left, right <sup>②</sup>	ASKL1
2 Aux. switches 1A + 1B base AMBL1	Left, right	ASKL2
2 Aux. + 1 Alarm switch 1A + 1B, 1A/B bases <sup>①</sup> AMBL2 and AMBL3	Left, right <sup>②</sup>	ASKL3

① Includes 1A and 1B contact for alarm purposes, only one of which may be installed at any time.

② Kit includes 2 bases - one for mounting switches in left pocket and another for mounting in right pocket.

Auxiliary and alarm switch mounting base only		
Description	Mounting pocket	Catalog number
For 2 Aux + 1 Alarm	Left	AMBL2
For 2 Aux + 1 Alarm	Right	AMBL3
For 3 Aux	Left, right	AMBL1

Shunt trip	
Control voltage	Catalog number
48 – 60 VAC	STRLM60
110 – 127 VAC	STRLN120
208 – 277 VAC	STRLS277
380 – 600 VAC	STRLV600
24 VDC	STRLB24DC
48 – 60 VDC	STRLC60DC
110 – 127 VDC	STRLD125DC
220 – 250 VDC	STRLE250DC

Shunt trips or UVR's may be mounted in the Right Pocket only.

Internal accessory locations	
Left accessory pocket	Right accessory pocket
Up to 3 auxiliary switches	Shunt trip or UVR or up to 3 auxiliary switches
Up to 2 auxiliary switches + 1 alarm switch	Shunt trip or UVR or up to 2 auxiliary switches + 1 alarm switch

Maximum of 6 switches total.

Maximum of 2 alarm switches, 1 Left + 1 Right Pocket.

Auxiliary / Alarm switches only (requires a base)	
Description	Catalog number
1 NO (normally open contact)	ASWPA
1 NC (normally closed contact)	ASWPB

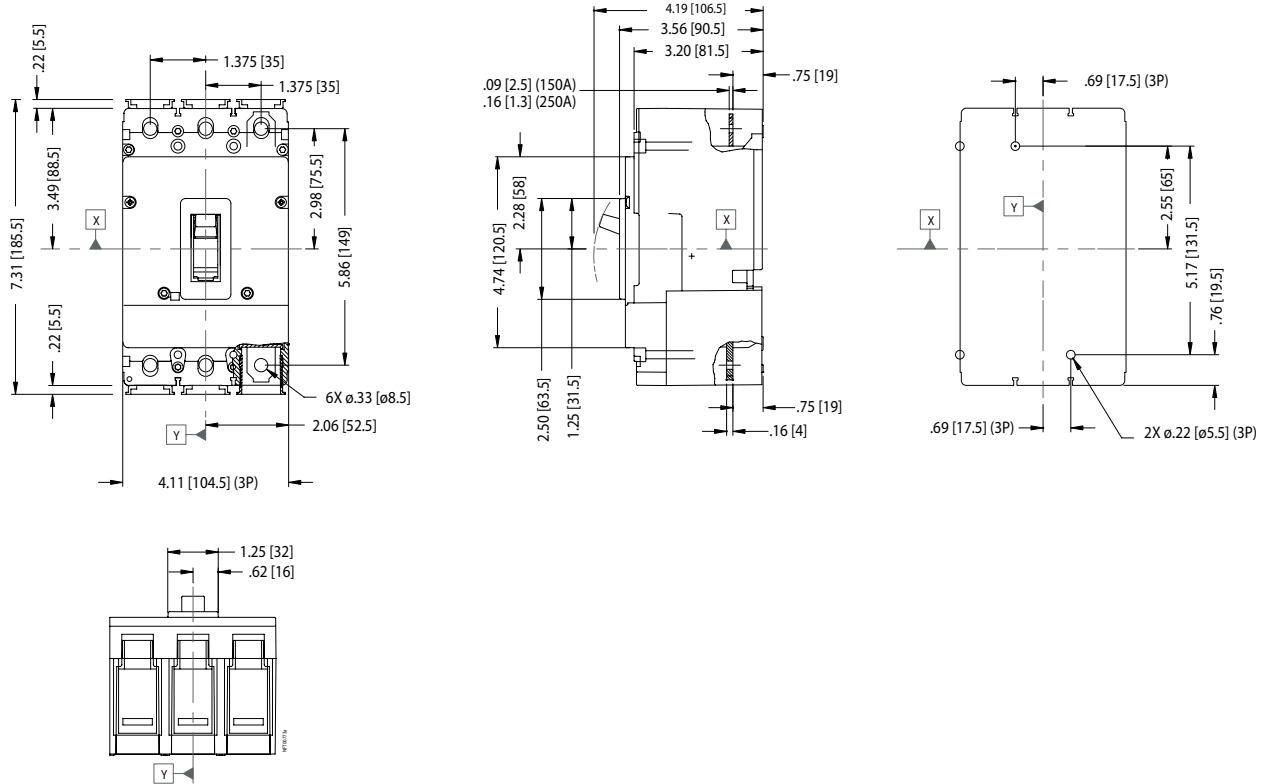
(A) Normally open contacts are open when the breaker contacts are open.

(B) Normally closed contacts are closed when the breaker contacts are open.

Undervoltage release	
Control voltage	Catalog number
110 – 127 VAC	UVRLN120
220 – 250 VAC	UVRLR240
208 VAC	UVRLP208
277 VAC	UVRLS277
380 – 425 VAC	UVRLT415
440 – 480 VAC	UVRLU480
12 VDC	UVRLA12DC
24 VDC	UVRLB24DC
48 VDC	UVRLC48DC
60 VDC	UVRLG60DC
110 – 127 VDC	UVRLD125DC
220 – 250 VDC	UVRLE250DC

## Dimensions

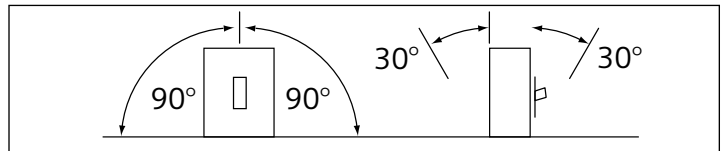
(complete breaker)



## Shipping weight, lbs. (kg)

Poles	Frame only	Trip unit		Complete breaker
		Thermal-mag	Electronic	
2,3	3.45 (1.56)	1.35 (.62)	1.60 (.72)	6.2 (2.8)

## Permissible mounting positions



# VL Circuit Breaker – JG 400A frame



## Breaker type

Defined by the 3rd character of the catalog number

- G – Global (UL, CSA, IEC, CE, CCC), interchangeable
- X – Global, Non-interchangeable
- Y – Global, 100% rated, Non-interchangeable

## Trip unit type

Defined by the 5th character of the catalog number

- B – Thermal-magnetic, model 525
- N – LI, electronic, model 545
- P – LSI, electronic, model 545
- X – LIG, electronic, model 545
- U – LSI, electronic, model 545
- D – LSI, electronic with LCD, model 576
- E – LSI, electronic with LCD, model 576
- R – LI, electronic, Model 555
- T – LSI, electronic, Model 555
- W – LIG, electronic, Model 555
- V – LSI, electronic, Model 555
- A – LSI, electronic with LCD, Model 586
- G – LSI, electronic with LCD, Model 586
- K – LSI + GF alarm, electronic with LCD, Model 586

For DC applications, use thermal magnetic trip unit only.

For reverse-feed applications, select non-interchangeable trip breakers only. HACR rated.

## Interrupting ratings

Interrupting Class	Breaker Type	RMS symmetrical amperes (kA)								
		UL 489			IEC 60947-2			UL or IEC		
		Volts AC			Volts AC			Volts DC <sup>①</sup>		
		240	480	600	240	415	690	250	500	600 <sup>②</sup>
					$I_{cu}/I_{cs}$	$I_{cu}/I_{cs}$	$I_{cu}/I_{cs}$			
N	NJGA	65	35	25	65 / 65	40 / 40	12 / 6	30	25	–
H	HJGA	100	65	25	100 / 75	70 / 70	15 / 8	30	35	65
L	LJGA	200	100	25	200 / 150	100 / 75	15 / 8	30	35	–

UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

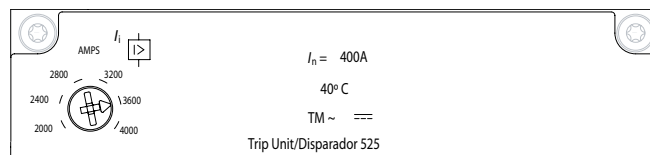
① For DC applications and wiring diagrams, see p. 5 of VL Information Guide.

② Special version, Type HFGD. See Speedfax catalog for more information.

## Trip Unit Model 525

### Thermal magnetic trip units, model 525

$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip adjustable range (amps)					
250	1250	1500	1750	2000	2250	2500
300	1500	1800	2100	2400	2700	3000
350	1750	2100	2450	2800	3150	3500
400	2000	2400	2800	3200	3600	4000



Trip unit model 525

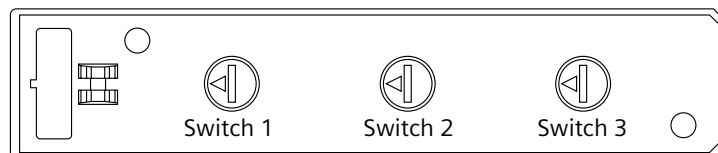
## Trip Unit Model 545

### Electronic trip units, Model 545 with LI (Trip unit type N) or LIG (Trip unit type X) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
		250	70	80	100	125	150	160	175	200	225
400	150	160	175	200	225	250	300	315	350	400	
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) Pt @ $6 \times I_r$									
		250, 400	2.5	4	6	8	10	14	17	20	25
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)									
		250	312	375	500	750	1000	1250	1500	2000	2500
400	500	600	800	1200	1600	2000	2400	3200	4000	4400	

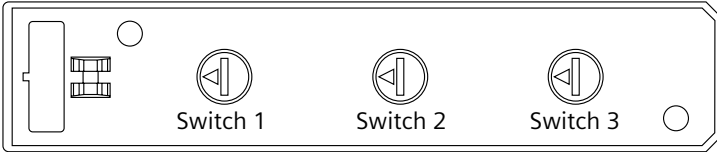
## Fixed settings (LIG only)

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pickup (amps)	$t_g$ – Ground fault delay
250	200	.07 sec
400	320	.07 sec



Trip unit model 545

### Trip Unit Model 545 (continued)



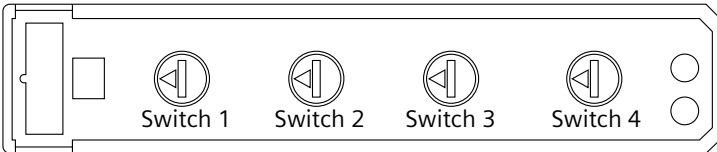
#### Electronic trip units, Model 545 with LSI (Trip unit type P) or LSIG (Trip unit type U) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)																			
	250	70	80	100	125	150	160	175	200	225	250	400	150	160	175	200	225	250	300	315	350
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) x $I_r$																			
	250, 400	1.5	2	2.5	3	4	5	6	7	8	10										
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds) @ $8xI_r$																			
	250, 400	0	0.1, I <sup>2</sup> t OFF	0.2, I <sup>2</sup> t OFF	0.3, I <sup>2</sup> t OFF	0.4, I <sup>2</sup> t OFF	0.5, I <sup>2</sup> t OFF	0.1, I <sup>2</sup> t ON	0.2, I <sup>2</sup> t ON	0.3, I <sup>2</sup> t ON	0.4, I <sup>2</sup> t ON										

#### Fixed settings

$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay	$I_i$ – Nominal instantaneous trip	$I_g$ – Ground fault pick-up (LSIG only)	$t_g$ – Ground fault delay (LSIG only)
250	10 sec. (I <sup>2</sup> t @ 6 x $I_r$ )	2750A	200A	.07 sec.
400		4400A	320A	.11 sec

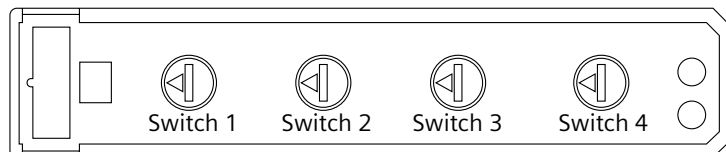
### Trip Unit Model 555



#### Electronic trip units, Model 555 with LI (Trip unit type R) or LIG (Trip unit type W) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)																			
	250	70	80	100	125	150	160	175	200	225	250	400	150	160	175	200	225	250	300	315	350
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) I <sup>2</sup> t @ 6 x $I_r$																			
	250, 400	2.5	4	6	8	10	14	17	20	25	30										
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)																			
	250	312	375	500	750	1000	1250	1500	2000	2500	2750	400	500	600	800	1200	1600	2000	2400	3200	4000
Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)																			
	250	200	100	100	100	150	150	150	250	250	250	400	320	160	160	160	240	240	240	400	400
Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)																			
	250	0.07	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	400	0.11	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20

## Trip Unit Model 555 (continued)



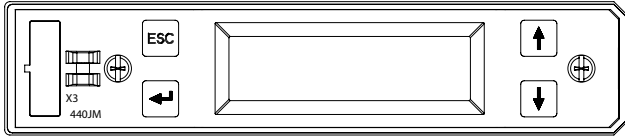
### Electronic trip unit, Model 555 with LSI (Trip unit type T) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	250	125	150	200	225	250	125	150	200	225	250	
	400	200	250	300	350	400	200	250	300	350	400	
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I^2t @ 6 \times I_r$										
	250	4	4	4	4	4	14	14	14	14	14	
	400	10	10	10	10	10	20	20	20	20	20	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	250, 400	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	250, 400	0	0.1, $I^2t$ OFF	0.2, $I^2t$ OFF	0.3, $I^2t$ OFF	0.4, $I^2t$ OFF	0.5, $I^2t$ OFF	0.1, $I^2t$ ON	0.2, $I^2t$ ON	0.3, $I^2t$ ON	0.4, $I^2t$ ON	
Switch 4	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
	250	312	375	500	750	1000	1250	1500	2000	2500	2750	
	400	500	600	800	1200	1600	2000	2400	3200	4000	4400	

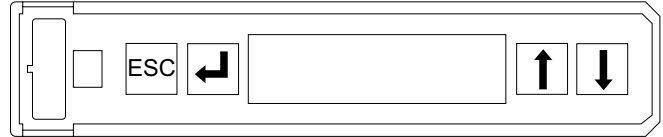
### Electronic trip unit, Model 555 with LSI (Trip unit type V) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	250	125	150	200	225	250	125	150	200	225	250	
	400	200	250	300	350	400	200	250	300	350	400	
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I^2t @ 6 \times I_r$										
	250	4	4	4	4	4	14	14	14	14	14	
	400	10	10	10	10	10	20	20	20	20	20	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	250, 400	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps) $\times I_n$										
	250, 400	5	5	5	5	5	11	11	11	11	11	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	250, 400	0	0.1, $I^2t$ OFF	0.2, $I^2t$ OFF	0.3, $I^2t$ OFF	0.4, $I^2t$ OFF	0.5, $I^2t$ OFF	0.1, $I^2t$ ON	0.2, $I^2t$ ON	0.3, $I^2t$ ON	0.4, $I^2t$ ON	
Switch 4	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)										
	250	200	100	100	100	150	150	150	250	250	250	
	400	320	160	160	160	240	240	240	400	400	400	
Switch 4	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)										
	250	0.07	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	
	400	0.11	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	

## Trip Unit Model 576 and 586



Trip unit model 576



Trip unit model 586

### Electronic trip units with LCD Model 576 (Trip unit type D and E) or Model 586 (Trip unit type A, G and K)

$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amps range <sup>①</sup>	$t_r$ – Long time delay settings ( $I^2t @ 6 \times I_r$ )	$I_{sd}$ – Short time pick-up range	$t_{sd}$ – Short time delay settings	$I_i$ – Nominal instantaneous trip range <sup>②</sup>
250	70 - 250	2.5, 4, 6, 8, 10, 14,	1.25 - 10 x $I_r$	0.1, 0.2, 0.3, 0.4, 0.5 sec. or $I^2t @ 8 \times I_r$	313 - 2750A 500 - 4400A
400	150 - 400	17, 20, 25, 30 sec.			
$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up range <sup>①</sup>	$t_g$ – Ground fault delay	Pre-alarm indication		
250	100 - 250A	0.1, 0.2, 0.3, 0.4, 0.5 sec.	80 - 100% x $I_r$ (Amps)		
400	160 - 400A	$I^2t @ .5 \times I_n$			

① Current settings are adjustable in 1-amp increments.

② Model 586, can turn function OFF. Instantaneous trip override function will be enabled to ensure self protection of circuit breaker.

### Motor circuit protectors

Amp rating	$I_i$ – Nominal instantaneous trip adjustable range (amps)
400	1200 – 2500 <sup>①</sup>
400	2000 – 4000 <sup>②</sup>

① Settings adjustable in increments of 250 amps.

② Settings adjustable in increments of 400 amps.

### Molded case switch

Amp rating	Self-protective instantaneous override	Short-circuit current rating 480 V AC <sup>①</sup>
400	4400A	65 kA
400	4400A	100 kA

① Max. available current when protected by an appropriate overcurrent protective device.

### 600 V DC circuit breakers

Amp rating	Short-circuit rating 600 V DC
250, 300, 350, 400	65 kA

## Terminal Connectors

Wire range	Cables per connectors	Wire range	Torque lb-in. (Nm)	Catalog number
1/0 – 600 kcmil	1 (Cu only)	#1/0–600	330 (24.86)	3TW1JG600 <sup>①</sup>
3/0 – 250 kcmil	2 (Cu / Al)	#3/0–250	275 (31.07)	3TA2JG250 <sup>②③</sup>
3/0 – 250 kcmil	2 (Cu only)	#3/0–250	275 (31.07)	TC2JG250 <sup>③</sup>
3/0 – 750 kcmil	1 (Cu only)	#3/0–250 300–750	275 (31.07) 500 (56.59)	TC1JG750 <sup>③</sup>
3/0 – 750 kcmil	1 (Cu / Al)	#3/0–250 300–750	275 (31.07) 500 (56.49)	3TA1JG750 <sup>①</sup>

### Compression connector kits

#6 – 350	1 (Cu / Al)			3CLJ350 <sup>①</sup>
250 – 600	1 (Cu / Al)			3CLJ600 <sup>①</sup>
250 – 750	1 (Cu / Al)			3CLJ750 <sup>①</sup>

### Distribution connector kits

#14 – 2/0	6 (Cu / Al)	#14 – #10 #8 #6 – 2/0	35 (3.95) 40 (4.52) 120 (13.56)	3TA6JG20 <sup>①</sup>
#14 – #4	6 (Cu only)	#14 – #4	35 (3.95)	3TA12JG04 <sup>①</sup>

① Packaged as 3 connectors.

② Standard connectors when an "L" suffix is used on an assembled breaker catalog number.

③ Required for 100% rated JG breakers. Requires 90°C cable sized at 75°C ampacity.

## Internal accessories

### Auxiliary and alarm switch kits

Description	Mounting pocket	Catalog number
1 Alarm switch 1 A/B <sup>①</sup> bases AMBL2 and AMBL3	Left, right <sup>②</sup>	ASKL1
2 Aux. switches 1A + 1B base AMBL1	Left, right	ASKL2
2 Aux. + 1 Alarm switch 1A + 1B, 1A/B bases <sup>①</sup> AMBL2 and AMBL3	Left, right <sup>②</sup>	ASKL3

① Includes 1A and 1B contact for alarm purposes, only one of which may be installed at any time.

② Kit includes 2 bases - one for mounting switches in left pocket and another for mounting in right pocket.

### Auxiliary and alarm switch mounting base only

Description	Mounting pocket	Catalog number
For 2 Aux + 1 Alarm	Left	AMBL2
For 2 Aux + 1 Alarm	Right	AMBL3
For 3 Aux	Left, right	AMBL1

### Shunt trip

Control voltage	Catalog number
48 – 60 VAC	STRLM60
110 – 127 VAC	STRLN120
208 – 277 VAC	STRLS277
380 – 600 VAC	STRLV600
24 VDC	STRLB24DC
48 – 60 VDC	STRLC60DC
110 – 127 VDC	STRLD125DC
220 – 250 VDC	STRLE250DC

Shunt trips or UVR's may be mounted in the Right Pocket only.

### Internal accessory locations

Left accessory pocket	Right accessory pocket
Up to 3 auxiliary switches	Shunt trip or UVR or up to 3 auxiliary switches
Up to 2 auxiliary switches + 1 alarm switch	Shunt trip or UVR or up to 2 auxiliary switches + 1 alarm switch

Maximum of 6 switches total.

Maximum of 2 alarm switches, 1 Left + 1 Right Pocket.

### Auxiliary / Alarm switches only (requires a base)

Description	Catalog number
1 NO (normally open contact)	ASWPA
1 NC (normally closed contact)	ASWPB

(A) Normally open contacts are open when the breaker contacts are open.

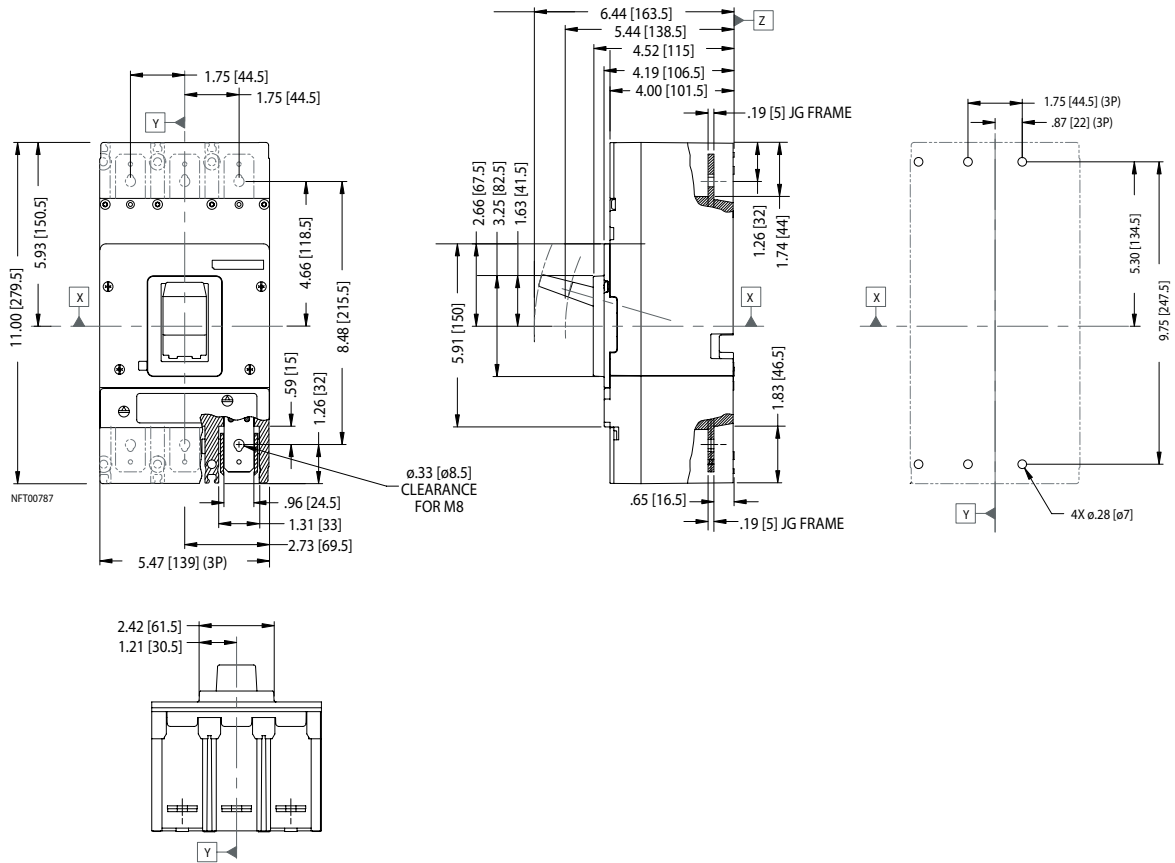
(B) Normally closed contacts are closed when the breaker contacts are open.

### Undervoltage release

Control voltage	Catalog number
110 – 127 VAC	UVRLN120
220 – 250 VAC	UVRLR240
208 VAC	UVRLP208
277 VAC	UVRLS277
380 – 425 VAC	UVRLT415
440 – 480 VAC	UVRLU480
12 VDC	UVRLA12DC
24 VDC	UVRLB24DC
48 VDC	UVRLC48DC
60 VDC	UVRLG60DC
110 – 127 VDC	UVRLD125DC
220 – 250 VDC	UVRLE250DC

## Dimensions

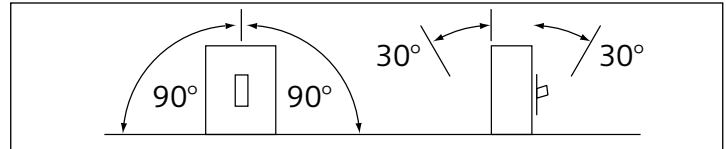
(complete breaker)



## Shipping weight, lbs. (kg)

Poles	Frame	Trip unit	Complete breaker
2,3	31.3 (14.2)	4.0 (1.8)	35.3 (16.0)

## Permissible mounting positions



# VL Circuit Breaker – LG 600A frame



## Breaker type

Defined by the 3rd character of the catalog number

- X – Global (UL, CSA, IEC, CE) non-interchangeable, thermal-magnetic
- Y – Global, 100% rated, non-interchangeable, thermal-magnetic (400/500A only)
- K – Global, non-interchangeable, electronic
- W – Global, 100% rated, non-interchangeable, electronic

For DC applications, use thermal magnetic trip unit only. HACR rated.

## Trip unit type

Defined by the 5th character of the catalog number

- B – Thermal-magnetic, model 525
- N – LI, electronic, model 545
- P – LSI, electronic, model 545
- X – LIG, electronic, model 545
- U – LSIG, electronic, model 545
- D – LSI, electronic with LCD, model 576
- E – LSIG, electronic with LCD, model 576
- R – LI, electronic, Model 555
- T – LSI, electronic, Model 555
- W – LIG, electronic, Model 555
- V – LSIG, electronic, Model 555
- A – LSI, electronic with LCD, Model 586
- G – LSIG, electronic with LCD, Model 586
- K – LSI + GF alarm, electronic with LCD, Model 586

## Interrupting ratings

Interrupting Class	Breaker Type	RMS symmetrical amperes (kA)								
		UL 489			IEC 60947-2			UL or IEC		
		Volts AC			Volts AC			Volts DC <sup>①</sup>		
N	NLGB	65	35	18	240	415	690	250	500	600 <sup>②</sup>
H	HLGB	100	65	18 <sup>③</sup>	240	415	690	30	25	–
L	LLGB	200	100	18	240	415	690	30	35	65

UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

① For DC applications and wiring diagrams, see p. 5 of VL Information Guide.

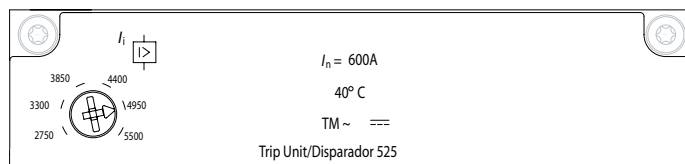
② Special version, Type HLGD. See Speedfax catalog for more information.

③ Special version, 600VDC 25kA available. See Speedfax catalog for more information.

## Trip Unit Model 525

### Thermal magnetic trip units, model 525

$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip adjustable range (amps)					
400	2000	2400	2800	3200	3600	4000
500	2500	3000	3500	4000	4500	5000
600	2750	3300	3850	4400	4950	5500



Trip unit model 525

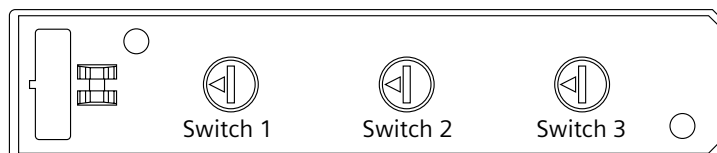
## Trip Unit Model 545

### Electronic trip units, Model 545 with LI (Trip unit type N) or LIG (Trip unit type X) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
Switch 1	400	150	160	175	200	225	250	300	315	350	400
	600	200	200	225	250	300	315	350	400	500	600
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) Pt @ 6 x $I_r$									
Switch 2	400, 600	2.5	4	6	8	10	14	17	20	25	30
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)									
Switch 3	400	500	600	800	1200	1600	2000	2400	3200	4000	4400
	600	750	900	1200	1800	2400	3000	3600	4800	5400	6000

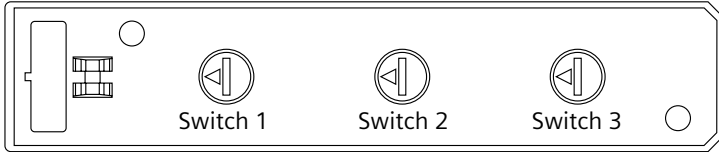
### Fixed settings (LIG only)

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pickup (amps)	$t_g$ – Ground fault delay
400	320	.11 sec
600	360	.18 sec



Trip unit model 545

### Trip Unit Model 545 (continued)



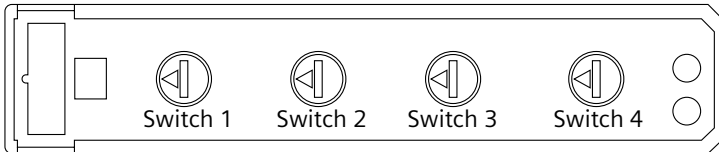
#### Electronic trip units, Model 545 with LSI (Trip unit type P) or LSIG (Trip unit type U) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	400	150	160	175	200	225	250	300	315	350	400	
600	200	200	225	250	300	315	350	400	500	600		
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	400, 600	1.5	2	2.5	3	4	5	6	7	8	9	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds) @ $8 \times I_r$										
	400, 600	0	0.1, I <sub>r</sub> t OFF	0.2, I <sub>r</sub> t OFF	0.3, I <sub>r</sub> t OFF	0.4, I <sub>r</sub> t OFF	0.5, I <sub>r</sub> t OFF	0.1, I <sub>r</sub> t ON	0.2, I <sub>r</sub> t ON	0.3, I <sub>r</sub> t ON	0.4, I <sub>r</sub> t ON	

#### Fixed settings

$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay	$I_i$ – Nominal instantaneous trip	$I_g$ – Ground fault pick-up (LSIG only)	$t_g$ – Ground fault delay (LSIG only)
400	10 sec. (I <sub>r</sub> t @ $6 \times I_r$ )	4000A	320A	.11 sec.
600		6000A	360A	.18 sec

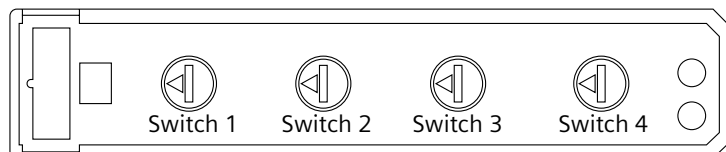
### Trip Unit Model 555



#### Electronic trip units, Model 555 with LI (Trip unit type R) or LIG (Trip unit type W) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)											
	400	150	160	175	200	225	250	300	315	350	400		
600	200	225	250	300	315	350	400	450	500	600			
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) I <sub>r</sub> t @ $6 \times I_r$											
	400, 600	2.5	4	6	8	10	14	17	20	25	30		
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)											
	400	500	600	800	1200	1600	2000	2400	3200	4000	4400		
600	750	900	1200	1800	2400	3000	3600	4800	5400	6000			
Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)											
		400	320	160	160	160	240	240	240	400	400	400	
	600	360	240	240	240	360	360	360	600	600	600		
	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)											
400		0.11	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30		
600	0.18	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30			

## Trip Unit Model 555 (continued)



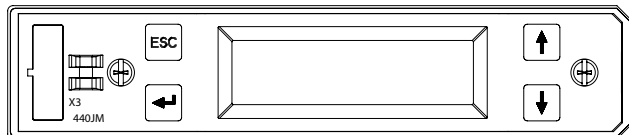
### Electronic trip unit, Model 555 with LSI (Trip unit type T) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	400 600	200 350	250 400	300 450	350 500	400 600	200 350	250 400	300 450	350 500	400 600	
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I^2t @ 6 \times I_r$										
	400, 600	10	10	10	10	10	20	20	20	20	20	
Switch 3	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	400, 600	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 4	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	400, 600	0	0.1, $I^2t$ OFF	0.2, $I^2t$ OFF	0.3, $I^2t$ OFF	0.4, $I^2t$ OFF	0.5, $I^2t$ OFF	0.1, $I^2t$ ON	0.2, $I^2t$ ON	0.3, $I^2t$ ON	0.4, $I^2t$ ON	
Switch 4	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
	400 600	500 750	600 900	800 1200	1200 1800	1600 2400	2000 3000	2400 3600	3200 4800	4000 5400	4400 6000	

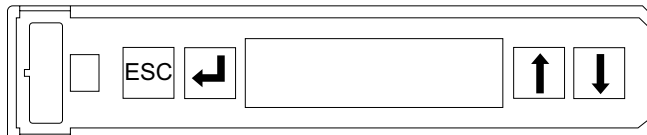
### Electronic trip unit, Model 555 with LSIG (Trip unit type V) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	400 600	200 350	250 400	300 450	350 500	400 600	200 350	250 400	300 450	350 500	400 600	
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I^2t @ 6 \times I_r$										
	400, 600	4	4	4	4	4	14	14	14	14	14	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	400, 600	1.5	2	2.5	3	4	5	6	7	8	10	
	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps) $\times I_n$										
250, 400 600	5 5	5 5	5 5	5 5	5 5	11 10	11 10	11 10	11 10	11 10		
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	400, 600	0	0.1, $I^2t$ OFF	0.2, $I^2t$ OFF	0.3, $I^2t$ OFF	0.4, $I^2t$ OFF	0.5, $I^2t$ OFF	0.1, $I^2t$ ON	0.2, $I^2t$ ON	0.3, $I^2t$ ON	0.4, $I^2t$ ON	
Switch 4	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)										
	400 600	320 360	160 240	160 240	160 240	240 360	240 360	240 360	400 600	400 600	400 600	
	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)										
400 600	0.11 0.18	0.10 0.10	0.20 0.20	0.30 0.30	0.10 0.10	0.20 0.20	0.30 0.30	0.10 0.10	0.20 0.20	0.30 0.30		

## Trip Unit Model 576 and 586



Trip unit model 576



Trip unit model 586

### Electronic trip units with LCD Model 576 (Trip unit type D and E) or Model 586 (Trip unit type A, G and K)

$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amps range <sup>①</sup>	$t_r$ – Long time delay settings ( $I^2t @ 6 \times I_r$ )	$I_{sd}$ – Short time pick-up range	$t_{sd}$ – Short time delay settings	$I_i$ – Nominal instantaneous trip range <sup>②②</sup>
400	150 - 400	2.5, 4, 6, 8, 10, 14,	1.25 - 10 x $I_r$	0.1, 0.2, 0.3, 0.4, 0.5 sec. or $I^2t @ 8 \times I_r$	500 - 4400A
600	200 - 600	17, 20, 25, 30 sec.			750 - 6000A
$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up range <sup>①</sup>	$t_g$ – Ground fault delay	Pre-alarm indication		
400	160 - 150A	0.1, 0.2, 0.3, 0.4, 0.5 sec.	80 - 100%		
600	240 - 600A	$I^2t @ .5 \times I_n$	$x I_r$ (Amps)		

① Current settings are adjustable in 1-amp increments.

② Model 586, can turn function OFF. Instantaneous trip override function will be enabled to ensure self protection of circuit breaker.

### Motor circuit protectors

Amp rating	$I_i$ – Nominal instantaneous trip adjustable range (amps)
600	2000 – 4000 <sup>①</sup>
600	2750 – 5500 <sup>②</sup>

① Settings adjustable in increments of 400 amps.

② Settings adjustable in increments of 550 amps.

### Molded case switch

Amp rating	Self-protective instantaneous override	Short-circuit current rating 480 V AC <sup>①</sup>
600	5500A	65 kA
600	5500A	100 kA

① Max. available current when protected by an appropriate overcurrent protective device.

### 600 V DC circuit breakers

Amp rating	Short-circuit rating 600 V DC
400, 600	65 kA

## Terminal Connectors

Wire range	Cables per connectors	Wire size	Torque lb-in. (Nm)	Catalog number
#2 – 600 kcmil	2 (Cu / Al)	#2 – 600	375 (42.37)	3TA2LG600LN (Line end only) <sup>①②④</sup>
#2 – 600 kcmil	2 (Cu / Au)	#2 – 600	375 (42.37)	3TA2LG600LD (Load end only) <sup>①②④</sup>
Cu: 3/0 – 600	2 (Cu only)	300 – 750	500 (56.69)	3TA1JG750 <sup>②③</sup>
Al: 250 – 750 kcmil	1 (Cu / Al)	250 300 – 750	275 (31.07) 500 (56.59)	
#2 – 600 kcmil	1 (Cu only)	#2 – 600	375 (42.37)	3TC2LG600LN (Line end only) <sup>②④⑥</sup>
#2 – 600 kcmil	2 (Cu only)	#2 – 600	375 (42.37)	3TC2LG600LN (Load end only) <sup>②④⑥</sup>

## Compression Lug kits

#6 – 350 kcmil	2 (Cu / Al)		6CLL350 <sup>③</sup>
250 – 750 kcmil	1 (Cu / Al)		3CLL750 <sup>②</sup>
250 – 600 kcmil	2 (Cu / Al)		6CLL600 <sup>③</sup>

① Standard connector when an “L” suffix is used on an assembled breaker catalog number.

② Packaged as 3 connectors.

③ Packaged as 6 connectors (2 connectors per phase).

④ Includes extended length terminal cover - see dimensions on drawing.

⑤ Up to 400A applications only.

⑥ Required for 100% rated LG breakers. Requires 90°C cable sized at 75°C ampacity.

## Internal accessories

Auxiliary and alarm switch kits		
Description	Mounting pocket	Catalog number
1 Alarm switch 1 A/B <sup>①</sup> bases AMBL2 and AMBL3	Left, right <sup>②</sup>	ASKL1
2 Aux. switches 1A + 1B base AMBL1	Left, right	ASKL2
2 Aux. + 1 Alarm switch 1A + 1B, 1A/B bases <sup>①</sup> AMBL2 and AMBL3	Left, right <sup>②</sup>	ASKL3

① Includes 1A and 1B contact for alarm purposes, only one of which may be installed at any time.

② Kit includes 2 bases - one for mounting switches in left pocket and another for mounting in right pocket.

Auxiliary and alarm switch mounting base only		
Description	Mounting pocket	Catalog number
For 2 Aux + 1 Alarm	Left	AMBL2
For 2 Aux + 1 Alarm	Right	AMBL3
For 3 Aux	Left, right	AMBL1

Shunt trip	
Control voltage	Catalog number
48 – 60 VAC	STRLM60
110 – 127 VAC	STRLN120
208 – 277 VAC	STRLS277
380 – 600 VAC	STRLV600
24 VDC	STRLB24DC
48 – 60 VDC	STRLC60DC
110 – 127 VDC	STRLD125DC
220 – 250 VDC	STRLE250DC

Shunt trips or UVR's may be mounted in the Right Pocket only.

Internal accessory locations	
Left accessory pocket	Right accessory pocket
Up to 3 auxiliary switches	Shunt trip or UVR or up to 3 auxiliary switches
Up to 2 auxiliary switches + 1 alarm switch	Shunt trip or UVR or up to 2 auxiliary switches + 1 alarm switch

Maximum of 6 switches total.

Maximum of 2 alarm switches, 1 Left + 1 Right Pocket.

Auxiliary / Alarm switches only (requires a base)	
Description	Catalog number
1 NO (normally open contact)	ASWPA
1 NC (normally closed contact)	ASWPB

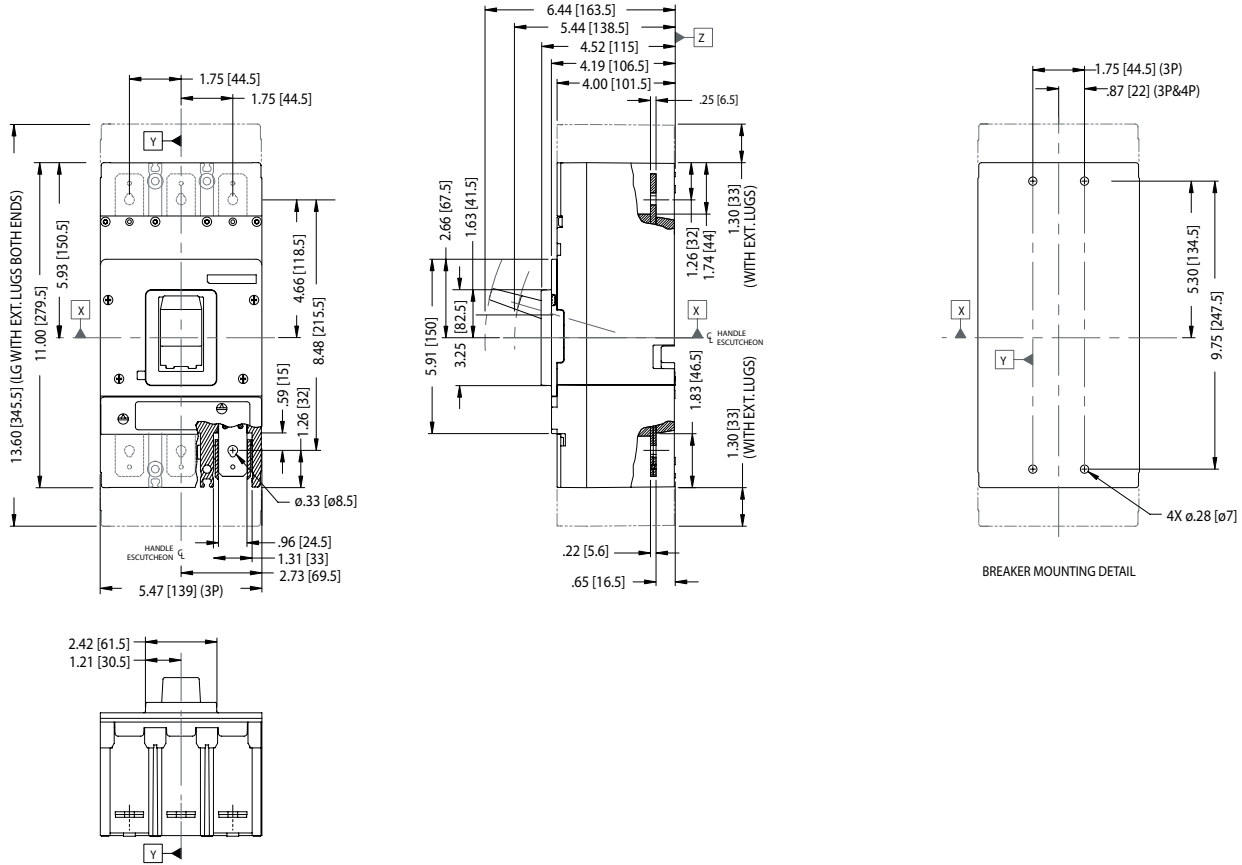
(A) Normally open contacts are open when the breaker contacts are open.

(B) Normally closed contacts are closed when the breaker contacts are open.

Undervoltage release	
Control voltage	Catalog number
110 – 127 VAC	UVRLN120
220 – 250 VAC	UVRLR240
208 VAC	UVRLP208
277 VAC	UVRLS277
380 – 425 VAC	UVRLT415
440 – 480 VAC	UVRLU480
12 VDC	UVRLA12DC
24 VDC	UVRLB24DC
48 VDC	UVRLC48DC
60 VDC	UVRLG60DC
110 – 127 VDC	UVRLD125DC
220 – 250 VDC	UVRLE250DC

## Dimensions

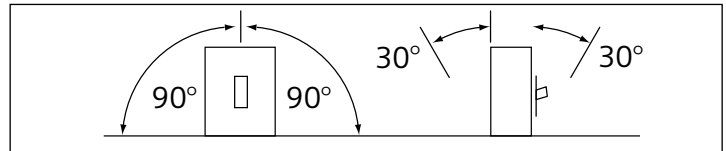
(complete breaker)



## Shipping weight, lbs. (kg)

Poles	Frame only	Trip unit		Complete T/M breaker
		Thermal-mag	Electronic	
2, 3	33 (15)	4.0 (1.8)	5 (2)	37 (17)

## Permissible mounting positions



# VL Circuit Breaker – MG 800A frame



## Breaker type

Defined by the 3rd character of the catalog number

- G – Global (UL, CSA, NOM, IEC, CE), interchangeable
- X – Global, non-interchangeable
- Y – Global, 100% Rated, non-interchangeable

## Trip unit type

Defined by the 5th character of the catalog number

- B – Thermal-magnetic, model 525
- N – LI, electronic, model 545
- P – LSI, electronic, model 545
- X – LIG, electronic, model 545
- U – LSIG, electronic, model 545
- D – LSI, electronic with LCD, model 576
- E – LSIG, electronic with LCD, model 576
- R – LI, electronic, Model 555
- T – LSI, electronic, Model 555
- W – LIG, electronic, Model 555
- V – LSIG, electronic, Model 555
- A – LSI, electronic with LCD, Model 586
- G – LSIG, electronic with LCD, Model 586
- K – LSI + GF alarm, electronic with LCD, Model 586

For DC applications, use thermal magnetic trip unit only.  
For reverse-feed applications, select non-interchangeable trip breakers only.  
HACR rated.

## Interrupting ratings

Interrupting Class	Breaker Type	RMS symmetrical amperes (kA)								
		UL 489			IEC 60947-2			UL or IEC		
		Volts AC			Volts AC			Volts DC <sup>①</sup>		
N	NMG	240	480	600	240	415	690	250	500	600 <sup>②</sup>
H	HMG	100	65	35	100 / 75	70 / 70	30 / 15	25	50	65
L	LMG	200	100	50	200 / 150	100 / 75	35 / 17	42	65	–

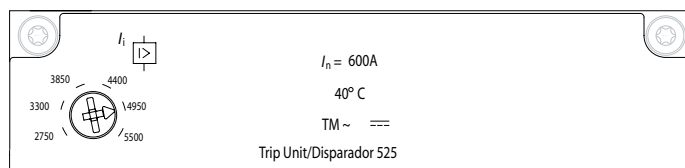
UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

① For DC applications and wiring diagrams, see p. 5 of VL Information Guide.  
② Special version, Type HMGD. See Speedfax catalog for more information.

## Trip Unit Model 525

### Thermal magnetic trip units, model 525

$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip adjustable range (amps)					
600	3000	3600	4200	4800	5400	6000
700	3250	3900	4550	5200	5850	6500
800	3250	3900	4550	5200	5850	6500



Trip unit model 525

## Trip Unit Model 545

### Electronic trip units, Model 545 with LI (Trip unit type N) or LIG (Trip unit type X) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
		600	200	200	225	250	300	315	350	400	500
800	300	300	315	350	400	500	600	630	700	800	

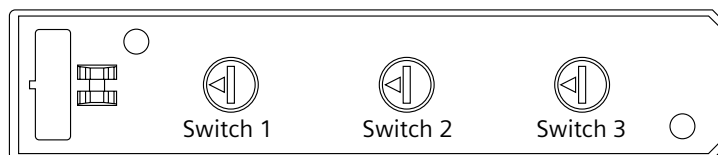
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) Pt @ 6 x $I_r$									
		600, 800	2.5	4	6	8	10	14	17	20	25

Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
		600	750	900	1200	1800	2400	3000	3600	4800	5400	6000
		800	1000	1000	1200	1600	2400	3200	4000	4800	5600	6000

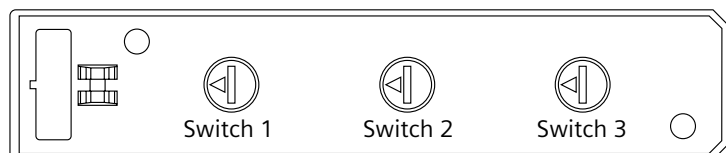
### Fixed settings (LIG only)

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pickup (amps)	$t_g$ – Ground fault delay
600	360	.18 sec
800	480	.25 sec



Trip unit model 545

## Trip Unit Model 545 (continued)



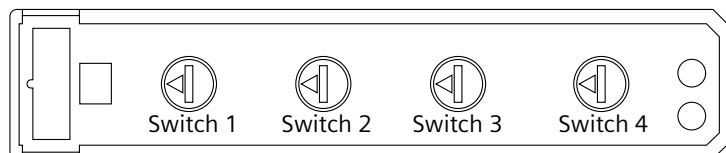
### Electronic trip units, Model 545 with LSI (Trip unit type P) or LSIG (Trip unit type U) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	600	200	200	225	250	300	315	350	400	500	600	
	800	300	300	315	350	400	500	600	630	700	800	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	600	1.5	2	2.5	3	4	5	6	7	8	9	
	400, 600	1.5	1.5	1.5	2	2.5	3	4	5	6	7	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds) @ $8 \times I_r$										
	600, 800	0	0.1, I <sup>2</sup> t OFF	0.2, I <sup>2</sup> t OFF	0.3, I <sup>2</sup> t OFF	0.4, I <sup>2</sup> t OFF	0.5, I <sup>2</sup> t OFF	0.1, I <sup>2</sup> t ON	0.2, I <sup>2</sup> t ON	0.3, I <sup>2</sup> t ON	0.4, I <sup>2</sup> t ON	

### Fixed settings

$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay	$I_i$ – Nominal instantaneous trip	$I_g$ – Ground fault pick-up (LSIG only)	$t_g$ – Ground fault delay (LSIG only)
600	10 sec. (I <sup>2</sup> t @ $6 \times I_r$ )	6000A	360A	.18 sec.
800		6000A	480A	.25 sec

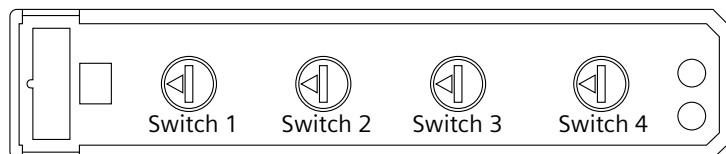
## Trip Unit Model 555



### Electronic trip units, Model 555 with LI (Trip unit type R) or LIG (Trip unit type W) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
	600	200	225	250	300	315	350	400	450	500	600
	800	300	315	350	400	450	500	600	630	700	800
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) I <sup>2</sup> t @ $6 \times I_r$									
	600, 800	2.5	4	6	8	10	14	17	20	25	30
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)									
	600	750	900	1200	1800	2400	3000	3600	4800	5400	6000
	800	1000	1000	1200	1600	2400	3200	4000	4800	5600	6000
Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)									
	600	360	240	240	240	360	360	360	600	600	600
	800	480	320	320	320	480	480	480	800	800	800
Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)									
	600	0.18	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30
	800	0.25	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30

## Trip Unit Model 555 (continued)



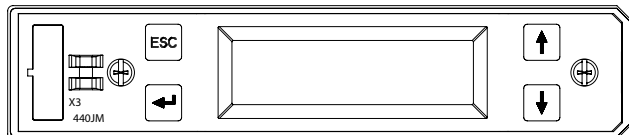
### Electronic trip unit, Model 555 with LSI (Trip unit type T) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
	600	350	400	450	500	600	350	400	450	500	600
800	400	500	600	700	800	400	500	600	700	800	
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I^2t @ 6 \times I_r$									
	600, 800	10	10	10	10	10	20	20	20	20	20
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$									
	600, 800	1.5	2	2.5	3	4	5	6	7	8	10
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)									
	600, 800	0	0.1, $I^2t$ OFF	0.2, $I^2t$ OFF	0.3, $I^2t$ OFF	0.4, $I^2t$ OFF	0.5, $I^2t$ OFF	0.1, $I^2t$ ON	0.2, $I^2t$ ON	0.3, $I^2t$ ON	0.4, $I^2t$ ON
Switch 4	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)									
	600	750	900	1200	1800	2400	3000	3600	4800	5400	6000
800	1000	1000	1200	1600	2400	3200	4000	4800	5600	6000	

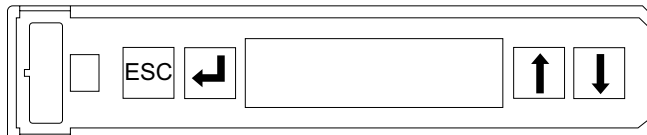
### Electronic trip unit, Model 555 with LSI (Trip unit type V) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
	600	350	400	450	500	600	350	400	450	500	600
800	400	500	600	700	800	400	500	600	700	800	
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I^2t @ 6 \times I_r$									
	600, 800	10	10	10	10	10	20	20	20	20	20
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$									
	600, 800	1.5	2	2.5	3	4	5	6	7	8	10
Switch 2	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps) $\times I_n$									
	600	5	5	5	5	5	10	10	10	10	10
800	5	5	5	5	5	7.5	7.5	7.5	7.5	7.5	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)									
	400, 600	0	0.1, $I^2t$ OFF	0.2, $I^2t$ OFF	0.3, $I^2t$ OFF	0.4, $I^2t$ OFF	0.5, $I^2t$ OFF	0.1, $I^2t$ ON	0.2, $I^2t$ ON	0.3, $I^2t$ ON	0.4, $I^2t$ ON
Switch 4	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)									
	600	360	240	240	240	360	360	360	600	600	600
800	480	320	320	320	480	480	480	800	800	800	
Switch 4	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)									
	600	0.18	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30
800	0.25	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	

## Trip Unit Model 576 and 586



Trip unit model 576



Trip unit model 586

### Electronic trip units with LCD Model 576 (Trip unit type D and E) or Model 586 (Trip unit type A, G and K)

$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amps range <sup>①</sup>	$t_r$ – Long time delay settings ( $I^2t @ 6 \times I_r$ )	$I_{sd}$ – Short time pick-up range	$t_{sd}$ – Short time delay settings	$I_i$ – Nominal instantaneous trip range <sup>②</sup>
600	200 - 600	2.5, 4, 6, 8, 10, 14,	1.25 - 10 x $I_r$ (5,400 A max.)	0.1, 0.2, 0.3, 0.4, 0.5 sec.	750 - 6000A
800	300 - 800	17, 20, 25, 30 sec.	1.25 - 10 x $I_r$ (5,600 A max.)	or $I^2t @ 8 \times I_r$	1000 - 6000A
$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up range <sup>①</sup>	$t_g$ – Ground fault delay	Pre-alarm indication		
600	240 - 600A	0.1, 0.2, 0.3, 0.4, 0.5 sec. ( $I^2t$ off) or	80 - 100%		
800	320 - 800A	$I^2t @ .5 \times I_n$ ( $I^2t$ on)	x $I_r$ (Amps)		

① Current settings are adjustable in 1-amp increments.

② Model 586, can turn function OFF. Instantaneous trip override function will be enabled to ensure self protection of circuit breaker.

### Motor circuit protectors

Amp rating	$I_i$ – Nominal instantaneous trip adjustable range (amps)
800	3250 – 6500

### 600 V DC circuit breakers

Amp rating	Short-circuit rating 600 V DC
600, 700, 800	65 kA

### Molded case switch

Amp rating	Self-protective instantaneous override	Short-circuit current rating 480 V AC <sup>①</sup>
800	6500A	65 kA
800	6500A	100 kA

① Max. available current when protected by an appropriate overcurrent protective device.

## Terminal Connectors

Wire range	Cables per connectors	Wire size	Torque lb-in. (Nm)	Catalog number
500 – 750 kcmil	2 (Cu / Al)	500 - 750	375 (42.37)	TA2MG750
1/0 – 500 kcmil	3 (Cu / Au)	1/0 - 500	375 (42.37)	TA3MG500 <sup>①</sup>
1/0 – 500 kcmil	3 (Cu)	1/0 - 500	375 (42.37)	TC3MG500 <sup>③</sup>
#2 – 600 kcmil	3 (Cu / Al)	#2 - 600	375 (42.37)	3TA3MG600 <sup>②</sup>

① Standard connector when an "L" suffix is used on an assembled breaker catalog number.

② Packaged as 3 connectors.

③ Required for 100% rated MG breakers. Requires 90°C cable sized at 75°C ampacity.

## Internal accessories

### Auxiliary and alarm switch kits

Description	Mounting pocket	Catalog number
2 Aux + 2 Alarm switches (2NO + 2NC + 1 base)	Left	ASKP3
4 Aux. switches (2NO + 2NC + 1 base)	Left, right	ASKP4

### Auxiliary and alarm switch mounting base only

Description	Mounting pocket	Catalog number
For 2 Aux + 2 Alarm	Left	AMBP2
For 4 Aux	Left, right	AMBP1

### Shunt trip

Control voltage	Catalog number
48 – 60 VAC	STRPM60
110 – 127 VAC	STRPN120
208 – 277 VAC	STRPS277
380 – 600 VAC	STRPV600
24 VDC	STRPB24DC
48 – 60 VDC	STRPC60DC
110 – 127 VDC	STRPD125DC
220 – 250 VDC	STRPE250DC

Shunt trips or UVR's may be mounted in the Right Pocket only.

### Internal accessory locations

Left accessory pocket	Right accessory pocket
Up to 4 auxiliary switches	Shunt trip or UVR or up to 4 auxiliary switches
Up to 2 auxiliary switches + 2 alarm switches	Shunt trip or UVR or up to 4 auxiliary switches

Maximum of 8 switches total.

Maximum of 2 alarm switches, Left Pocket only.

Maximum of 4 switches in Left Pocket.

### Auxiliary / Alarm switches only (requires a base)

Description	Catalog number
1 NO (normally open contact)	ASWPA
1 NC (normally closed contact)	ASWPB

(A) Normally open contacts are open when the breaker contacts are open.

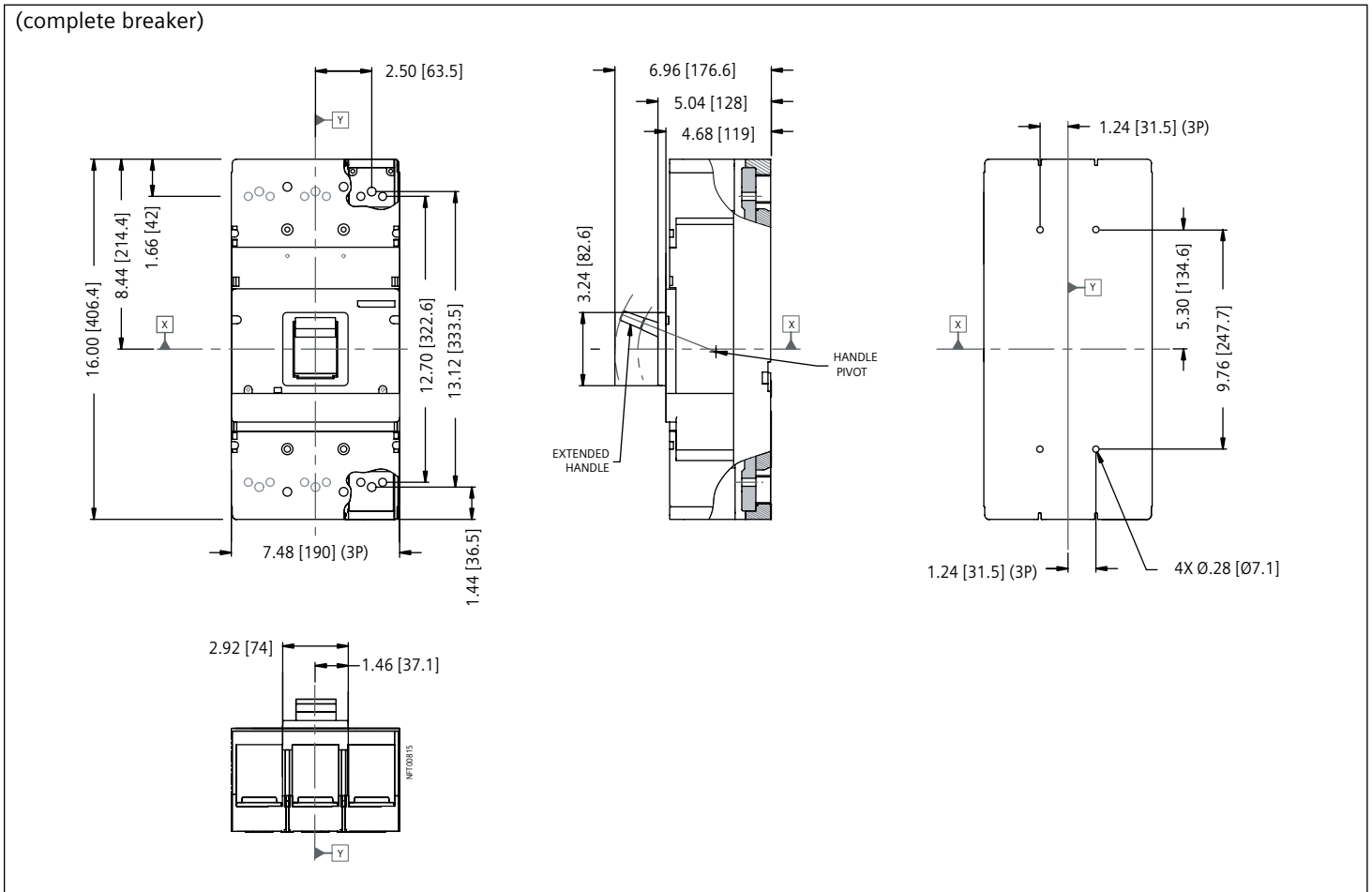
(B) Normally closed contacts are closed when the breaker contacts are open.

### Undervoltage release

Control voltage	Catalog number
110 – 127 VAC	UVRPN120
220 – 250 VAC	UVRPR240
208 VAC	UVRPP208
277 VAC	UVRPS277
380 – 425 VAC	UVRPT415
440 – 480 VAC	UVRPU480
12 VDC	UVRPA12DC
24 VDC	UVRPB24DC
48 VDC	UVRPC48DC
60 VDC	UVRPG60DC
110 – 127 VDC	UVRPD125DC
220 – 250 VDC	UVRPE250DC

## Dimensions

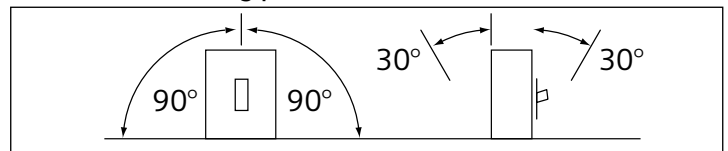
(complete breaker)



## Shipping weight, lbs. (kg)

Poles	Frame	Trip unit	Complete breaker
2,3	31.3 (14.2)	4.0 (1.8)	35.3 (16.0)

## Permissible mounting positions



# VL Circuit Breaker – NG 1200A frame



## Breaker type

Defined by the 3rd character of the catalog number

- G – Global (UL, CSA, NOM, IEC, CE), interchangeable
- X – Global, non-interchangeable
- Y – Global, 100% rated, non-interchangeable

## Trip unit type

Defined by the 5th character of the catalog number

- B – Thermal-magnetic, model 525
- N – LI, electronic, model 545
- P – LSI, electronic, model 545
- X – LIG, electronic, model 545
- U – LSIG, electronic, model 545
- D – LSI, electronic with LCD, model 576
- E – LSIG, electronic with LCD, model 576
- R – LI, electronic, Model 555
- T – LSI, electronic, Model 555
- W – LIG, electronic, Model 555
- V – LSIG, electronic, Model 555
- A – LSI, electronic with LCD, Model 586
- G – LSIG, electronic with LCD, Model 586
- K – LSI + GF alarm, electronic with LCD, Model 586

For DC applications, use thermal magnetic trip unit only.  
For reverse-feed applications, select non-interchangeable trip breakers only.  
HACR rated.

## Interrupting ratings

Interrupting Class	Breaker Type	RMS symmetrical amperes (kA)								
		UL 489			IEC 60947-2			UL or IEC		
		Volts AC			Volts AC			Volts DC <sup>①</sup>		
		240	480	600	240	415	690	250	500	600 <sup>②</sup>
					$I_{cu}/I_{cs}$					
N	NNG	65	35	25	65 / 35	50 / 25	20 / 10	22	35	–
H	HNG	100	65	35	100 / 50	70 / 35	30 / 15	25	50	65
L	LNG	200	100	65	200 / 100	100 / 50	35 / 17	42	65	–

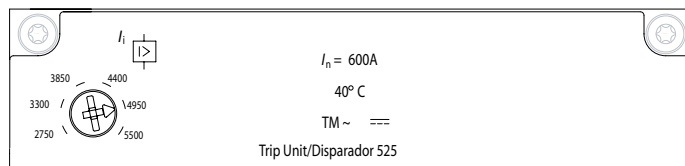
UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

① For DC applications and wiring diagrams, see p. 5 of VL Information Guide.  
② Special version, Type HNGD. See Speedfax catalog for more information.

## Trip Unit Model 525

### Thermal magnetic trip units, model 525

$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip adjustable range (amps)					
800	4000	4800	5600	6400	7200	8000
900	5000	6000	7000	8000	9000	10000
1000	5000	6000	7000	8000	9000	10000
1200	7000	8000	9000	10000	11000	12000



Trip unit model 525

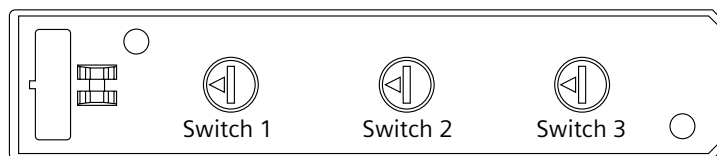
## Trip Unit Model 545

### Electronic trip units, Model 545 with LI (Trip unit type N) or LIG (Trip unit type X) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
		800	300	300	315	350	400	500	600	630	700	800
	1000	400	400	400	500	600	630	700	800	900	1000	
	1200	400	400	500	600	630	700	800	900	1000	1200	
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) Pt @ 6 x $I_r$										
		800, 1000, 1200	2.5	4	6	8	10	14	17	20	25	30
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
		800	1000	1200	1600	2400	3200	4000	4800	6400	8000	8800
		1000	1205	1500	2000	3000	4000	5000	6000	8000	10000	11000
		1200	1500	1800	2400	3600	4800	6000	7200	9600	12000	12000

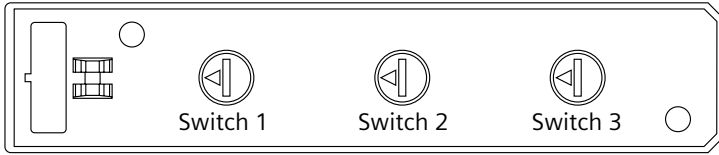
## Fixed settings (LIG only)

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pickup (amps)	$t_g$ – Ground fault delay
800	480	.25 sec
1000	600	.32 sec
1200	720	.32 sec



Trip unit model 545

**Trip Unit Model 545 (continued)**



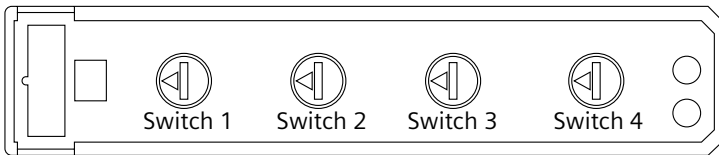
**Electronic trip units, Model 545 with LSI (Trip unit type P) or LSIG (Trip unit type U) Trip Functions**

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	800	300	300	315	350	400	500	600	630	700	800	
	1000	400	400	400	500	600	630	700	800	900	1000	
	1200	400	400	500	600	630	700	800	900	1000	1200	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) x $I_r$										
	800, 1000, 1200	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds) @ $8xI_r$										
	800, 1000, 1200	0	0.1, I <sup>2</sup> t OFF	0.2, I <sup>2</sup> t OFF	0.3, I <sup>2</sup> t OFF	0.4, I <sup>2</sup> t OFF	0.5, I <sup>2</sup> t OFF	0.1, I <sup>2</sup> t ON	0.2, I <sup>2</sup> t ON	0.3, I <sup>2</sup> t ON	0.4, I <sup>2</sup> t ON	

**Fixed settings**

$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay	$I_i$ – Nominal instantaneous trip	$I_g$ – Ground fault pick-up (LSIG only)	$t_g$ – Ground fault delay (LSIG only)
800		8000A	480A	.25 sec.
1000	10 sec. (I <sup>2</sup> t @ 6 x $I_r$ )	10000A	600A	.32 sec
1200		12000A	720A	.32 sec

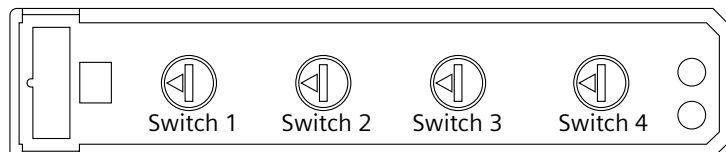
**Trip Unit Model 555**



**Electronic trip units, Model 555 with LI (Trip unit type R) or LIG (Trip unit type W) Trip Functions**

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
	800	300	315	350	400	450	500	600	630	700	800
	1000	400	450	500	550	600	630	700	800	900	1000
	1200	400	450	500	600	630	700	800	900	1000	1200
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) I <sup>2</sup> t @ 6 x $I_r$									
	800, 1000, 1200	2.5	4	6	8	10	14	17	20	25	30
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)									
	800	1000	1200	1600	2400	3200	4000	4800	6400	8000	8800
	1000	1250	1500	2000	3000	4000	5000	6000	8000	10000	11000
	1200	1500	1800	2400	3600	4800	6000	7200	9600	12000	12000
Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)									
	800	480	320	320	320	480	480	480	800	800	800
	1000	600	400	400	400	600	600	600	1000	1000	1000
	1200	720	480	480	480	720	720	720	1200	1200	1200
	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)									
	800	0.25	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30
1000, 1200	0.32	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	

## Trip Unit Model 555 (continued)



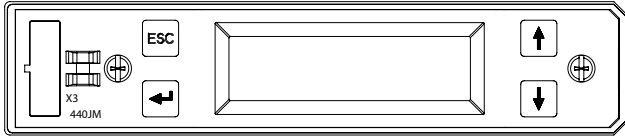
### Electronic trip unit, Model 555 with LSI (Trip unit type T) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	800	400	500	600	700	800	400	500	600	700	800	
1000	600	700	800	900	1000	600	700	800	900	1000		
1200	700	800	900	1000	1200	700	800	900	1000	1200		
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I_{Pt}$ @ $6 \times I_r$										
	800, 1000, 1200	10	10	10	10	10	20	20	20	20	20	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	800, 1000, 1200	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	800, 1000, 1200	0	0.1, $I_{Pt}$ OFF	0.2, $I_{Pt}$ OFF	0.3, $I_{Pt}$ OFF	0.4, $I_{Pt}$ OFF	0.5, $I_{Pt}$ OFF	0.1, $I_{Pt}$ ON	0.2, $I_{Pt}$ ON	0.3, $I_{Pt}$ ON	0.4, $I_{Pt}$ ON	
Switch 4	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
	800	1000	1200	1600	2400	3200	4000	4800	6400	8000	8800	
1000	1250	1500	2000	3000	4000	5000	6000	8000	10000	11000		
1200	1500	1800	2400	3600	4800	6000	7200	9600	12000	12000		

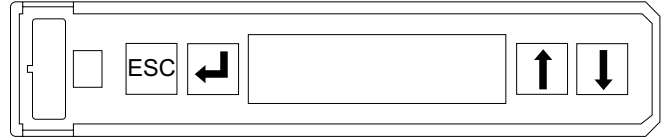
### Electronic trip unit, Model 555 with LSIG (Trip unit type V) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	800	400	500	600	700	800	400	500	600	700	800	
1000	600	700	800	900	1000	600	700	800	900	1000		
1200	700	800	900	1000	1200	700	800	900	1000	1200		
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I_{Pt}$ @ $6 \times I_r$										
	800, 1000, 1200	10	10	10	10	10	20	20	20	20	20	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$										
	800, 1000, 1200	1.5	2	2.5	3	4	5	6	7	8	10	
Switch 2	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps) $\times I_n$										
	800, 1000	5	5	5	5	5	11	11	11	11	11	
1200	5	5	5	5	5	10	10	10	10	10		
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)										
	800, 1000, 1200	0	0.1, $I_{Pt}$ OFF	0.2, $I_{Pt}$ OFF	0.3, $I_{Pt}$ OFF	0.4, $I_{Pt}$ OFF	0.5, $I_{Pt}$ OFF	0.1, $I_{Pt}$ ON	0.2, $I_{Pt}$ ON	0.3, $I_{Pt}$ ON	0.4, $I_{Pt}$ ON	
Switch 4	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)										
	800	480	320	320	320	480	480	480	800	800	800	
1000	600	400	400	400	600	600	600	1000	1000	1000		
1200	720	480	480	480	720	720	720	1200	1200	1200		
Switch 4	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)										
	800	0.25	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	
1000, 1200	0.32	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30		

## Trip Unit Model 576 and 586



Trip unit model 576



Trip unit model 586

### Electronic trip units with LCD Model 576 (Trip unit type D and E) or Model 586 (Trip unit type A, G and K)

$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amps range <sup>①</sup>	$t_r$ – Long time delay settings ( $I^2t @ 6 \times I_r$ )	$I_{sd}$ – Short time pick-up range	$t_{sd}$ – Short time delay settings	$I_i$ – Nominal instantaneous trip range <sup>②</sup>
800	300 - 800	2.5, 4, 6, 8, 10, 14,	1.25 - $10 \times I_r$ (8,000 A max.)	0.1, 0.2, 0.3, 0.4, 0.5 sec.	1000 - 8800A
1000	400 - 1000	17, 20, 25, 30 sec.	1.25 - $10 \times I_r$ (10,000 A max.)	( $I^2t$ off) or $I^2t @ 8 \times I_r$ ( $I^2t$ on)	1250 - 11000A
1200	400 - 1200		1.25 - $10 \times I_r$ (10,800 A max.)		1500 - 12000A

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up range <sup>①</sup>	$t_g$ – Ground fault delay	Pre-alarm indication
800	320 - 800A	0.1, 0.2, 0.3, 0.4, 0.5 sec. ( $I^2t$ off) or $I^2t @ .5 \times I_n$ ( $I^2t$ on)	80 - 100% $\times I_r$ (Amps)
1000	400 - 1000A		
1200	480 - 1200A		

① Current settings are adjustable in 1-amp increments.

② Model 586, can turn function OFF. Instantaneous trip override function will be enabled to ensure self protection of circuit breaker.

### Motor circuit protectors

Amp rating	$I_i$ – Nominal instantaneous trip adjustable range (amps) <sup>①</sup>
1200	7000 – 12000

① Settings adjustable in increments of 1000 amps.

### Molded case switch

Amp rating	Self-protective instantaneous override	Short-circuit current rating 480 V AC <sup>①</sup>
1200	12000A	65 kA
1200	12000A	100 kA

① Max. available current when protected by an appropriate overcurrent protective device.

### 600 V DC circuit breakers

Amp rating	Short-circuit rating 600 V DC
800, 900, 1000, 1200	65 kA

## Terminal Connectors

Wire range	Cables per connectors	Wire size	Torque lb-in. (Nm)	Catalog number
1/0 – 500 kcmil	4 (Cu / Al)	1/0 - 500	375 (42.37)	<b>3TA4NG500</b> ①②
500 – 750 kcmil	3 (Cu / Au)	500 - 750	375 (42.37)	<b>3TA3NG750</b> ②
1/0 – 500 kcmil	4 (Cu / Al)	1/0 - 500	375 (42.37)	<b>3TA4NG500H</b> ②③
1/0 – 500 kcmil	4 (Cu / Al)	1/0 - 500	375 (42.37)	<b>3TC4NG500</b> ②③

## Compression connector kits

1/0 - 500 kcmil	4 (Cu / Al)		<b>12CLN500</b> ④
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① Standard connector when an “L” suffix is used on an assembled breaker catalog number.

② Packaged as 3 connectors.

③ For 100% rated NG applications. Requires 90°C cable sized at 75°C ampacity.

④ Packaged as 12 connectors (4 connectors per phrase).

## Internal accessories

Auxiliary and alarm switch kits		
Description	Mounting pocket	Catalog number
2 Aux + 2 Alarm switches (2NO + 2NC + 1 base)	Left	<b>ASKP3</b>
4 Aux. switches (2NO + 2NC + 1 base)	Left, right	<b>ASKP4</b>

Auxiliary and alarm switch mounting base only		
Description	Mounting pocket	Catalog number
For 2 Aux + 2 Alarm	Left	<b>AMBP2</b>
For 4 Aux	Left, right	<b>AMBP1</b>

Shunt trip	
Control voltage	Catalog number
48 – 60 VAC	<b>STRPM60</b>
110 – 127 VAC	<b>STRPN120</b>
208 – 277 VAC	<b>STRPS277</b>
380 – 600 VAC	<b>STRPV600</b>
24 VDC	<b>STRPB24DC</b>
48 – 60 VDC	<b>STRPC60DC</b>
110 – 127 VDC	<b>STRPD125DC</b>
220 – 250 VDC	<b>STRPE250DC</b>

Shunt trips or UVR's may be mounted in the Right Pocket only.

Internal accessory locations	
Left accessory pocket	Right accessory pocket
Up to 4 auxiliary switches ①	Shunt trip or UVR or up to 4 auxiliary switches ①
Up to 2 auxiliary switches ② + 2 alarm switches	Shunt trip or UVR or up to 4 auxiliary switches ①

Maximum of 8 switches total.

Maximum of 2 alarm switches, Left Pocket only.

Maximum of 4 switches in Left Pocket.

① Max load is 5A per switch when 4 switches are mounted.

② Max load is 10A per switch.

Auxiliary / Alarm switches only (requires a base)	
Description	Catalog number
1 NO (normally open contact)	<b>ASWPA</b>
1 NC (normally closed contact)	<b>ASWPB</b>

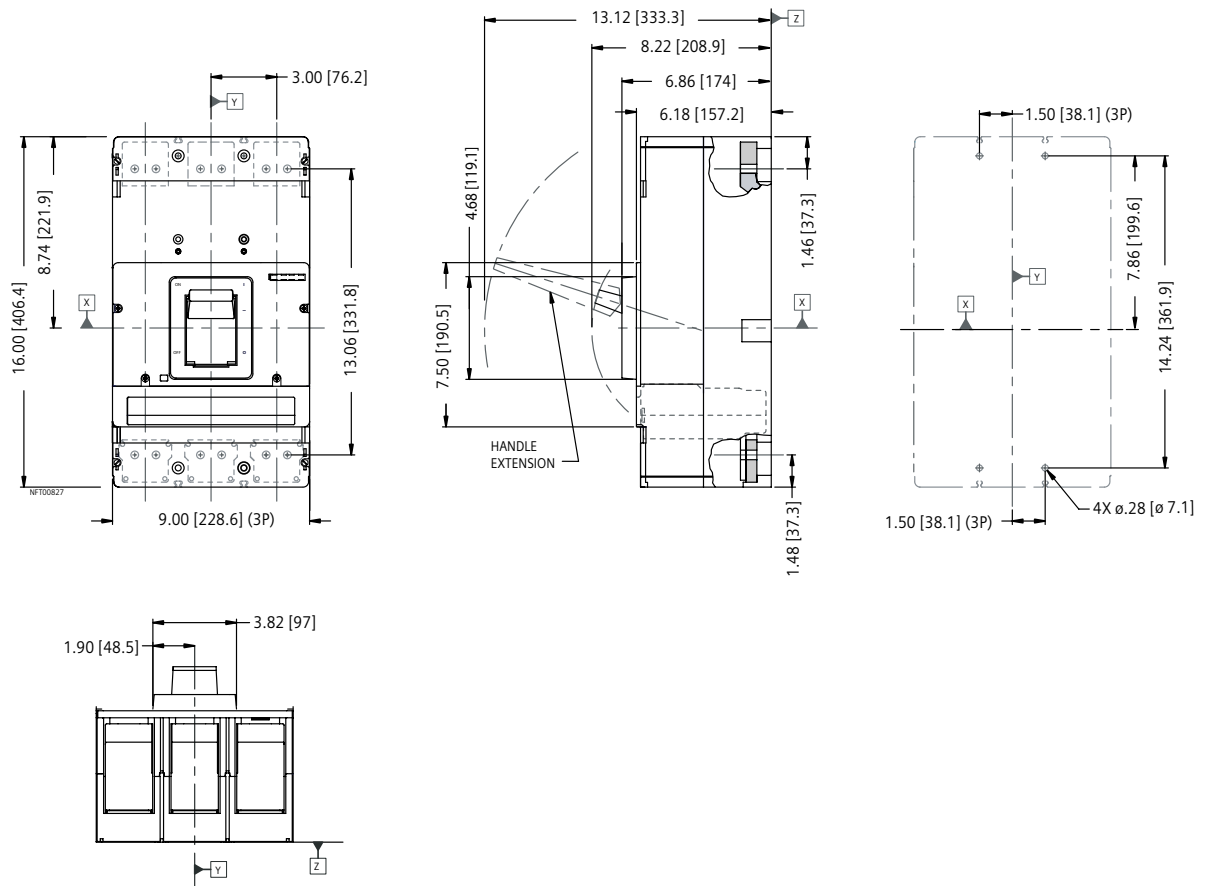
(A) Normally open contacts are open when the breaker contacts are open.

(B) Normally closed contacts are closed when the breaker contacts are open.

Undervoltage release	
Control voltage	Catalog number
110 – 127 VAC	<b>UVRPN120</b>
220 – 250 VAC	<b>UVRPR240</b>
208 VAC	<b>UVRPP208</b>
277 VAC	<b>UVRPS277</b>
380 – 425 VAC	<b>UVRPT415</b>
440 – 480 VAC	<b>UVRPU480</b>
12 VDC	<b>UVRPA12DC</b>
24 VDC	<b>UVRPB24DC</b>
48 VDC	<b>UVRPC48DC</b>
60 VDC	<b>UVRPG60DC</b>
110 – 127 VDC	<b>UVRPD125DC</b>
220 – 250 VDC	<b>UVRPE250DC</b>

## Dimensions

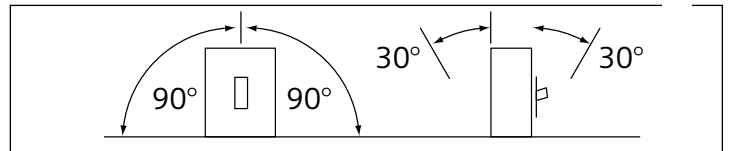
(complete breaker)



## Shipping weight, lbs. (kg)

Poles	Frame	Trip unit	Complete breaker
2,3	46.3 (21.0)	8.8 (4.0)	55.1 (25.0)

## Permissible mounting positions



# VL Circuit Breaker – PG 1600A frame



## Breaker type

Defined by the 3rd character of the catalog number

- G – Global (UL, CSA, NOM, IEC, CE),
- X – Global, non-interchangeable
- Y – Global, 100% rated, non-interchangeable

## Trip unit type

Defined by the 5th character of the catalog number

- B – Thermal-magnetic, model 525
- N – LI, electronic, model 545
- P – LSI, electronic, model 545
- X – LIG, electronic, model 545
- U – LSIG, electronic, model 545
- D – LSI, electronic with LCD, model 576
- E – LSIG, electronic with LCD, model 576

- R – LI, electronic, Model 555
- T – LSI, electronic, Model 555
- W – LIG, electronic, Model 555
- V – LSIG, electronic, Model 555
- A – LSI, electronic with LCD, Model 586
- G – LSIG, electronic with LCD, Model 586
- K – LSI + GF alarm, electronic with LCD, Model 586

For DC applications, use thermal magnetic trip unit only.  
For reverse-feed applications, select non-interchangeable trip breakers only.  
HACR rated.

## Interrupting ratings

Interrupting Class	Breaker Type	RMS symmetrical amperes (kA)								
		UL 489			IEC 60947-2			UL or IEC		
		Volts AC			Volts AC			Volts DC <sup>①</sup>		
		240	480	600	240	415	690	250	500	600 <sup>②</sup>
N	NPG	65	35	25	$I_{cu}/I_{cs}$ 65 / 35	$I_{cu}/I_{cs}$ 50 / 25	$I_{cu}/I_{cs}$ 20 / 10	22	35	–
H	HPG	100	65	35	100 / 50	70 / 35	30 / 15	25	50	65
L	LPG	200	100	65	200 / 100	100 / 50	35 / 17	42	65	–

UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

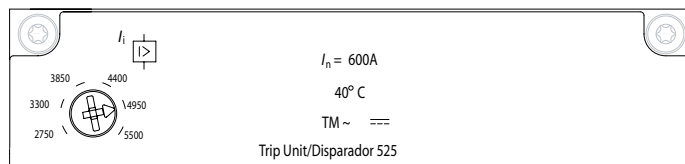
① For DC applications and wiring diagrams, see p. 5 of VL Information Guide.

② Special version, Type HPGD. See Speedfax catalog for more information.

## Trip Unit Model 525

### Thermal magnetic trip units, model 525

$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip adjustable range (amps)					
1200	7000	8000	9000	10000	11000	12000
1400	7000	8000	9000	10000	11000	12000
1600	7000	8000	9000	10000	11000	12000



Trip unit model 525

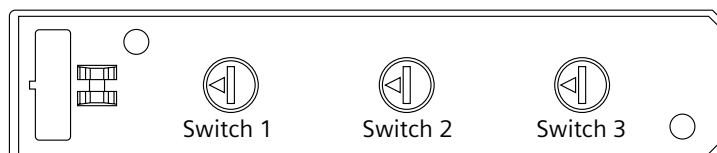
## Trip Unit Model 545

### Electronic trip units, Model 545 with LI (Trip unit type N) or LIG (Trip unit type X) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
		1200	400	400	500	600	630	700	800	900	1000
	1600	700	700	700	800	900	1000	1200	1250	1400	1600
Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) Pt @ 6 x $I_r$									
		1200, 1600	2.5	4	6	8	10	14	17	20	25
Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)									
		1200	1500	1800	2400	3600	4800	6000	7200	9600	12000
	1600	2000	2400	3200	4800	6400	8000	9600	9600	9600	9600

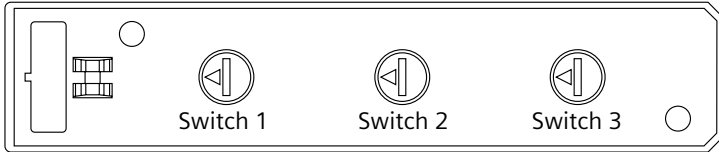
### Fixed settings (LIG only)

$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pickup (amps)	$t_g$ – Ground fault delay
1200	720	.32 sec
1600	960	.40 sec



Trip unit model 545

### Trip Unit Model 545 (continued)



#### Electronic trip units, Model 545 with LSI (Trip unit type P) or LSIG (Trip unit type U) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	1200	400	400	500	600	630	700	800	900	1000	1200	
1600	700	700	700	800	900	1000	1200	1250	1400	1600		

Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) x $I_r$										
	1200	1.5	2	2.5	3	4	5	6	7	8	10	
1600	1.5	1.5	2	2.5	3	4	5	6	7	8		

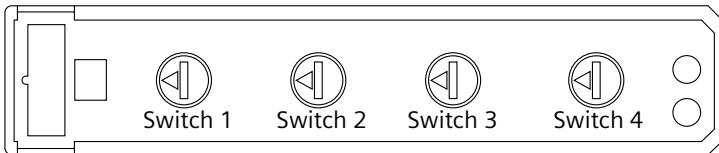
  

Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds) @ $8xI_r$										
	1200, 1600	0	0.1, I <sub>t</sub> OFF	0.2, I <sub>t</sub> OFF	0.3, I <sub>t</sub> OFF	0.4, I <sub>t</sub> OFF	0.5, I <sub>t</sub> OFF	0.1, I <sub>t</sub> ON	0.2, I <sub>t</sub> ON	0.3, I <sub>t</sub> ON	0.4, I <sub>t</sub> ON	

#### Fixed settings

$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay	$I_i$ – Nominal instantaneous trip	$I_g$ – Ground fault pick-up (LSIG only)	$t_g$ – Ground fault delay (LSIG only)
1200	10 sec. (I <sub>t</sub> @ 6 x $I_r$ )	12000A	720A	.32 sec.
1600		9600A	960A	.40 sec

### Trip Unit Model 555



#### Electronic trip units, Model 555 with LI (Trip unit type R) or LIG (Trip unit type W) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)										
	1200	400	450	500	600	630	700	800	900	1000	1200	
1600	700	800	900	1000	1100	1200	1250	1400	1500	1600		

Switch 2	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) I <sub>t</sub> @ 6 x $I_r$										
	1200, 1600	2.5	4	6	8	10	14	17	20	25	30	

Switch 3	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)										
	1200	1500	1800	2400	3600	4800	6000	7200	9600	12000	12000	
1600	2000	2400	3200	4800	6400	8000	9600	9600	9600	9600		

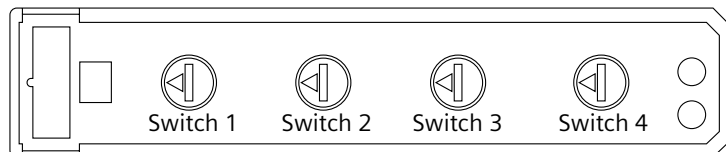
  

Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)										
	1200	720	480	480	480	720	720	720	1200	1200	1200	
1600	960	640	640	640	960	960	960	1200	1200	1200		

Switch 4 (LIG Only)	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)										
	1200	0.32	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	
1600	0.4	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30		

## Trip Unit Model 555 (continued)



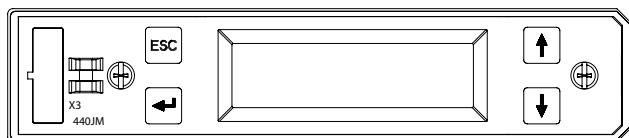
### Electronic trip unit, Model 555 with LSI (Trip unit type T) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
	1200	700	800	900	1000	1200	700	800	900	1000	1200
1600	1000	1200	1400	1500	1600	1000	1200	1400	1500	1600	
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I^2t @ 6 \times I_r$									
	1200, 1600	10	10	10	10	10	20	20	20	20	20
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$									
	1200, 1600	1.5	2	2.5	3	4	5	6	7	8	10
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)									
	1200, 1600	0	0.1, $I^2t$ OFF	0.2, $I^2t$ OFF	0.3, $I^2t$ OFF	0.4, $I^2t$ OFF	0.5, $I^2t$ OFF	0.1, $I^2t$ ON	0.2, $I^2t$ ON	0.3, $I^2t$ ON	0.4, $I^2t$ ON
Switch 4	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps)									
	1200	1500	1800	2400	3600	4800	6000	7200	9600	12000	12000
1600	2000	2400	3200	4800	6400	8000	9600	9600	9600	9600	

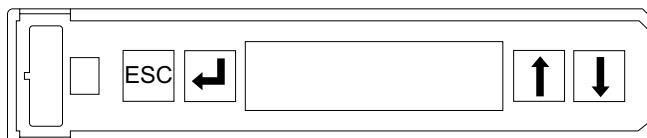
### Electronic trip unit, Model 555 with LSIG (Trip unit type V) Trip Functions

Switch 1	$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amp switch settings (amps)									
	1200	700	800	900	1000	1200	700	800	900	1000	1200
1600	1000	1200	1400	1500	1600	1000	1200	1400	1500	1600	
Switch 1	$I_n$ – Trip unit rating (amps)	$t_r$ – Long time delay switch settings (seconds) $I^2t @ 6 \times I_r$									
	1200, 1600	10	10	10	10	10	20	20	20	20	20
Switch 2	$I_n$ – Trip unit rating (amps)	$I_{sd}$ – Short time pick-up switch settings (amps) $\times I_r$									
	1200, 1600	1.5	2	2.5	3	4	5	6	7	8	10
Switch 2	$I_n$ – Trip unit rating (amps)	$I_i$ – Nominal instantaneous trip switch settings (amps) $\times I_n$									
	1200	5	5	5	5	5	10	10	10	10	10
1600	5	5	5	5	5	6	6	6	6	6	
Switch 3	$I_n$ – Trip unit rating (amps)	$t_{sd}$ – Short time delay switch settings (seconds)									
	1200, 1600	0	0.1, $I^2t$ OFF	0.2, $I^2t$ OFF	0.3, $I^2t$ OFF	0.4, $I^2t$ OFF	0.5, $I^2t$ OFF	0.1, $I^2t$ ON	0.2, $I^2t$ ON	0.3, $I^2t$ ON	0.4, $I^2t$ ON
Switch 4	$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up switch settings (amps)									
	1200	720	480	480	480	720	720	720	1200	1200	1200
1600	960	640	640	640	960	960	960	1200	1200	1200	
Switch 4	$I_n$ – Trip unit rating (amps)	$t_g$ – Ground fault delay switch settings (seconds)									
	1200	0.32	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30
1600	0.4	0.10	0.20	0.30	0.10	0.20	0.30	0.10	0.20	0.30	

## Trip Unit Model 576 and 586



Trip unit model 576



Trip unit model 586

### Electronic trip units with LCD Model 576 (Trip unit type D and E) or Model 586 (Trip unit type A, G and K)

$I_n$ – Trip unit rating (amps)	$I_r$ – Continuous amps range <sup>①</sup>	$t_r$ – Long time delay settings ( $I^2t @ 6 \times I_r$ )	$I_{sd}$ – Short time pick-up range	$t_{sd}$ – Short time delay settings	$I_i$ – Nominal instantaneous trip range <sup>②</sup>
1200	400 - 1200	2.5, 4, 6, 8, 10, 14,	1.2 - 10 x $I_r$ (10,800 A max.)	0.1, 0.2, 0.3, 0.4, 0.5 sec.	1500 - 12000A
1600	700 - 1600	17, 20, 25, 30 sec.	1.25 - 10 x $I_r$ (8,000 A max.)	( $I^2t$ off) or $I^2t @ 8 \times I_r$ ( $I^2t$ on)	2000 - 9600A
$I_n$ – Trip unit rating (amps)	$I_g$ – Ground fault pick-up range <sup>①</sup>	$t_g$ – Ground fault delay	Pre-alarm indication		
1200	400 - 1200A	0.1, 0.2, 0.3, 0.4, 0.5 sec. ( $I^2t$ off) or $I^2t @ .5 \times I_n$ ( $I^2t$ on)	80 - 100% x $I_r$ (Amps)		
1600	700 - 1200A				

① Current settings are adjustable in 1-amp increments.

② Model 586, can turn function OFF. Instantaneous trip override function will be enabled to ensure self protection of circuit breaker.

### 600 V DC circuit breakers

Amp rating	Short-circuit rating 600 V DC
1200, 1400, 1600	65 kA

### Molded case switch

Amp rating	Self-protective instantaneous override	Short-circuit current rating 480 V AC <sup>①</sup>
1600	14000A	65 kA
1600	14000A	100 kA

① Max. available current when protected by an appropriate overcurrent protective device.

## Terminal Connectors

Wire range	Cables per connectors	Wire size	Torque lb-in. (Nm)	Catalog number
1/0 – 750 kcmil	6 (Cu / Al)	1/0 - 750	375 (42.4)	<b>3TA6PG750</b> ①②
300 – 600 kcmil	5 (Cu / Au)	300 - 400 500 - 600	600 (67.79) 780 (88.13)	<b>TA5P600</b> ③
600 – 750 kcmil	4 (Cu / Al)	600 - 750	480 (54.23)	<b>TA4P750</b> ③
300 – 600 kcmil	6 (Cu / Al)	300 - 600	600 (67.79)	<b>TA6R600</b> ③
300 – 600 kcmil	5 (Cu)	300 - 600	600 (67.79)	<b>TC5R600</b> ③④

① Package of 3 connectors.

② Requires lug mounting assembly LMAP1600.

③ Requires breaker mounting base MBPG1600 or MBPG1601.

④ Required for 100% rated PG breakers. Requires 90°C cable sized at 75°C ampacity.

## Internal accessories

Auxiliary and alarm switch kits		
Description	Mounting pocket	Catalog number
2 Aux + 2 Alarm switches (2NO + 2NC + 1 base)	Left	<b>ASKP3</b>
4 Aux. switches (2NO + 2NC + 1 base)	Left, right	<b>ASKP4</b>

Auxiliary and alarm switch mounting base only		
Description	Mounting pocket	Catalog number
For 2 Aux + 2 Alarm	Left	<b>AMBP2</b>
For 4 Aux	Left, right	<b>AMBP1</b>

Shunt trip	
Control voltage	Catalog number
48 – 60 VAC	<b>STRPM60</b>
110 – 127 VAC	<b>STRPN120</b>
208 – 277 VAC	<b>STRPS277</b>
380 – 600 VAC	<b>STRPV600</b>
24 VDC	<b>STRPB24DC</b>
48 – 60 VDC	<b>STRPC60DC</b>
110 – 127 VDC	<b>STRPD125DC</b>
220 – 250 VDC	<b>STRPE250DC</b>

Shunt trips or UVR's may be mounted in the Right Pocket only.

Internal accessory locations	
Left accessory pocket	Right accessory pocket
Up to 4 auxiliary switches <sup>①</sup>	Shunt trip or UVR or up to 4 auxiliary switches <sup>①</sup>
Up to 2 auxiliary switches <sup>②</sup> + 2 alarm switches	Shunt trip or UVR or up to 4 auxiliary switches <sup>①</sup>

Maximum of 8 switches total.

Maximum of 2 alarm switches, Left Pocket only.

Maximum of 4 switches in Left Pocket.

① Max load is 5A per switch when 4 switches are mounted.

② Max load is 10A per switch.

Auxiliary / Alarm switches only (requires a base)	
Description	Catalog number
1 NO (normally open contact)	<b>ASWPA</b>
1 NC (normally closed contact)	<b>ASWPB</b>

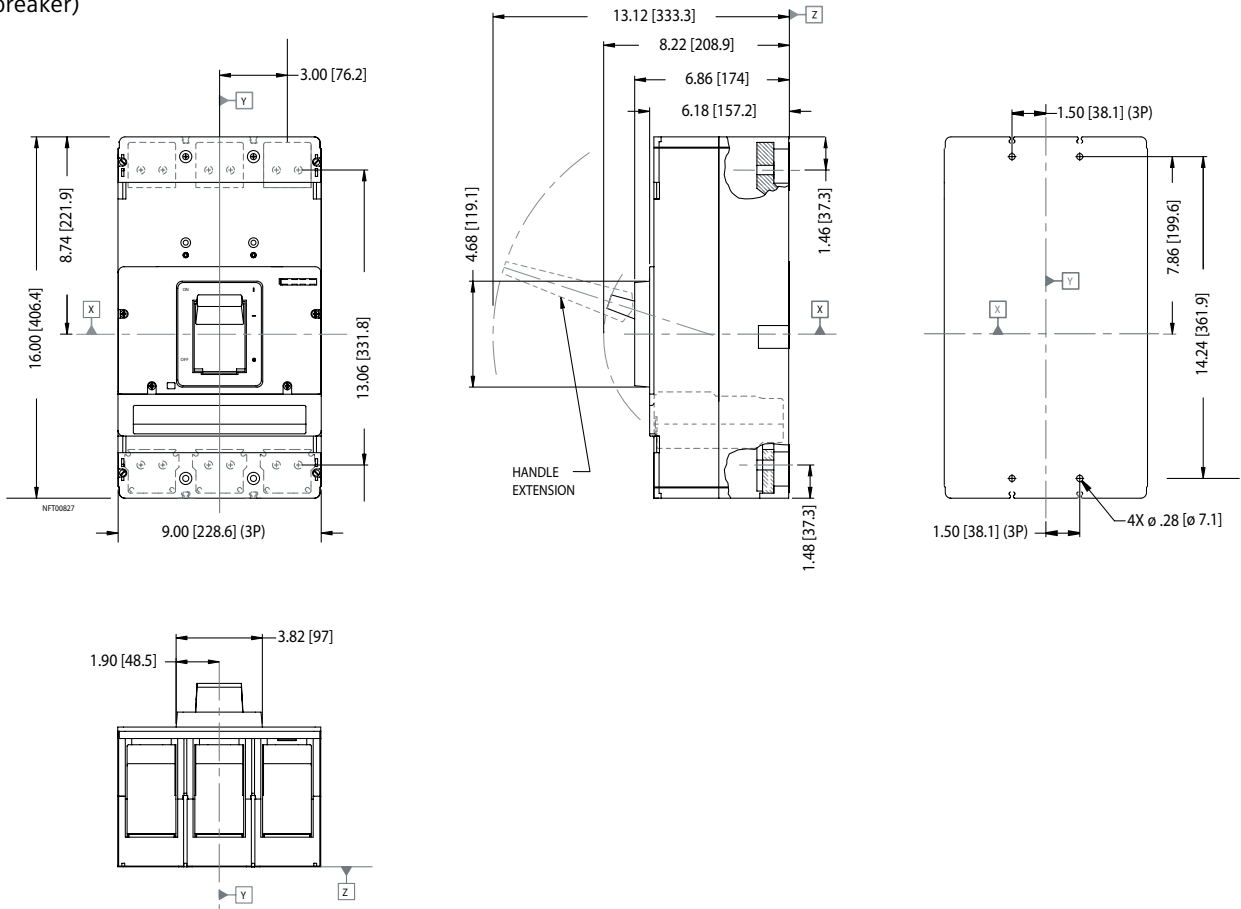
(A) Normally open contacts are open when the breaker contacts are open.

(B) Normally closed contacts are closed when the breaker contacts are open.

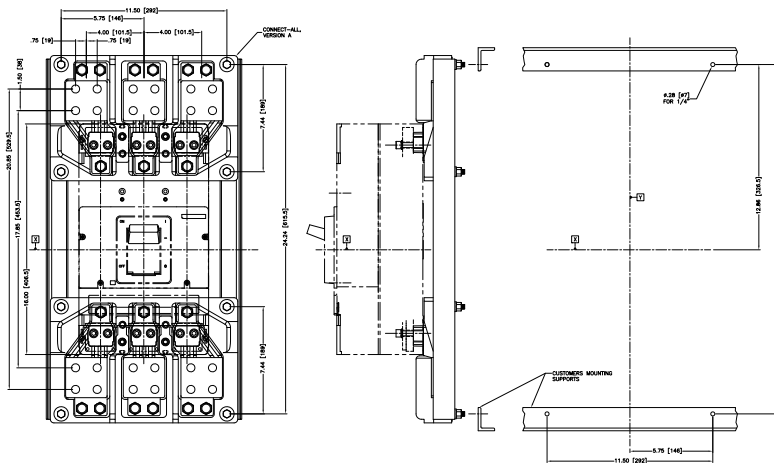
Undervoltage release	
Control voltage	Catalog number
110 – 127 VAC	<b>UVRPN120</b>
220 – 250 VAC	<b>UVRPR240</b>
208 VAC	<b>UVRPP208</b>
277 VAC	<b>UVRPS277</b>
380 – 425 VAC	<b>UVRPT415</b>
440 – 480 VAC	<b>UVRPU480</b>
12 VDC	<b>UVRPA12DC</b>
24 VDC	<b>UVRPB24DC</b>
48 VDC	<b>UVRPC48DC</b>
60 VDC	<b>UVRPG60DC</b>
110 – 127 VDC	<b>UVRPD125DC</b>
220 – 250 VDC	<b>UVRPE250DC</b>

## Dimensions

(complete breaker)



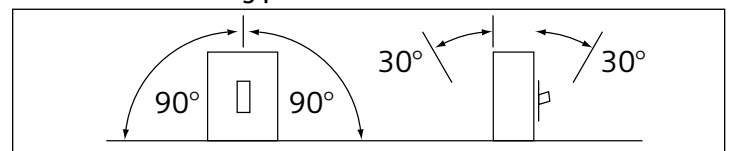
(breaker with mounting base)



Shipping weight, lbs. (kg)

Poles	Frame	Trip unit	Complete breaker
2,3	60.2 (27.3)	8.8 (4.0)	69.0 (31.3)

Permissible mounting positions



# VL Circuit Breaker – Molded Case Switch

## General

Typically a molded case switch is used when a compact load-break switch is needed for disconnect purposes. The VL line of molded case switches from Siemens is made of the same materials and components as the VL circuit breakers but do not provide overcurrent protection. Each molded

case switch has a fixed instantaneous selfprotecting trip element which may open the switch under high fault conditions.

## Application Note

Overcurrent protection must be provided by an appropriate overcurrent protective device located upstream from the molded case switch.

Also, the short-circuit current rating of the switch is limited to the interrupting rating of the upstream protective device or the ratings in the table below, **whichever is less**.

## Ordering Information

Each type VL molded case switch accepts the same terminals and accessories as the equivalent VL circuit breakers.

All type VL molded case switches are suitable for reverse feed applications.

Mounting hardware and standard line and load terminals are included on ratings through 250A. For 400 – 1600A ratings, order the lugs separately.

All ratings are UL listed and CSA certified.

## Molded Case Switch

Maximum Ampere Rating / Frame	Catalog Number		Short-Circuit Current Rating <sup>①</sup>			Self Protective Instantaneous Override
	2-Pole	3-Pole	240V	480V	600V	
150A / DG 250A / FG	HDS2S150L HFS2S250L	HDS3S150L HFS3S250L	100k 100k	65k 65k	20k 20k	2,500A 3,500A
400A / JG 600A / LG	HJS2S400 HLR2S600	HJS3S400 HLR3S600	100k 100k	65k 65k	25k 18k	4,400A 5,500A
800A / MG 1200A / NG	HMS2S800 HNS2S120	HMS3S800 HNS3S120	100k 100k	65k 65k	35k 35k	6,500A 12,000A
1600A / PG	—	HPS3S160	100k	65k	35k	14,000A

Maximum Ampere Rating / Frame	Catalog Number	Short-Circuit Current Rating <sup>①</sup>			Self Protective Instantaneous Override
	3-Pole	240V	480V	600V	
250A / FG	LFS3S250L	200k	100k	25k	3,500A
400A / JG 600A / LG	LJS3S400 LLR3S600	200k 200k	100k 100k	25k 18k	4,400A 5,500A
800A / MG 1200A / NG	LMS3S800 LNS3S120	200k 200k	100k 100k	65k 65k	6,500A 12,000A
1600A / PG	LPS3S160	200k	100k	65k	14,000A

① The Short-Circuit Current Rating is the maximum available current of the circuit where the switch is used, when protected by an appropriate overcurrent protective device.

# VL Circuit Breaker – Motor Circuit Protectors

## 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 fullload current.

The recommended motor circuit protectors 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 current. The suggested trip settings may need 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 startup due to in-rush current.

### Breaker Mounted Immediately Ahead of Motor Starter

Siemens 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 motor circuit protector provides for a trip setting slightly above the peak motor in-rush 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 protection 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 motor circuit protectors for branch circuit use with alternating-current combination, full voltage motor starters)

Motor Full Load Amperes	Trip Setting (A)	Catalog Number <sup>①</sup>	Motor Full Load Amperes	Trip Setting (A)	Catalog Number <sup>①</sup>
35-50	450	HDM3L150L	96-139	X	HJM3L400
42-60	540		115-167	X	
48-70	630		135-194	X	
55-80	720		154-222	X	
62-90	810		173-250	X	
69-100	900		192-278	X	
58-83	750	HDM3M150L	154-222	X	HJM3M400
69-100	900		185-267	X	
81-117	1050		215-311	X	
92-133	1200		246-356	X	
104-150	1350		277-400	X	
115-150 <sup>②</sup>	1500		308-400 <sup>②</sup>	X	
96-139	1250	HDM3H150L	154-222	X	HLM3J600
115-150 <sup>②</sup>	1500		185-267	X	
135-150 <sup>②</sup>	1750		215-311	X	
135-150 <sup>②</sup>	2000		246-356	X	
135-150 <sup>②</sup>	2250		277-400	X	
135-150 <sup>②</sup>	2500		308-444	X	
46-67	600	HFM3L250L	212-306	X	HLM3Y600
55-80	720		254-367	X	
65-93	840		296-428	X	
74-107	960		338-489	X	
83-120	1080		381-550	X	
92-133	1200		423-600	X	
77-111	1000	HFM3M250L	250-361	X	HMM3M800
92-133	1200		292-422	X	
108-156	1400		335-483	X	
123-178	1600		385-556	X	
138-200	1800		442-638	X	
154-222	2000		500-722	X	
135-194	1750	HFM3H250L	385-556	X	HNM3M120
162-210	2100		462-667	X	
188-220	2450		538-778	X	
215-241	2800		615-889	X	
242-250 <sup>②</sup>	3150		692-1000	X	
242-250 <sup>②</sup>	3500		769-1111	10,000	

① Motor circuit protectors rated 150A and 250A are supplied with line and load lugs installed. If lugs are required on 400A to 1200A motor circuit breakers, order required lugs separately.

② These settings are provided for starting currents greater than 11X but not to exceed 17X. Full Load Amps (FLA) not to exceed ampere rating of MCP.

# VL Circuit Breaker – 600 Volt DC Circuit Breakers

## General

Siemens UL Listed non-interchangeable trip DC Thermal/magnetic Molded Case Circuit Breakers shown below are for use in grounded & ungrounded general DC circuits and ungrounded battery supply circuits of UPS systems. These breakers are rated at 600Vdc closed circuit and feature rated interruption levels from 42,000 to 65,000 amperes as indicated in the table. This family of circuit breakers is rated from 50 to 1600 Amperes.

Types HDGD through HPGD circuit breakers are provided with an adjustable magnetic over-current function located on the face of the circuit breaker. Contact Siemens for specific magnetic over-current values.

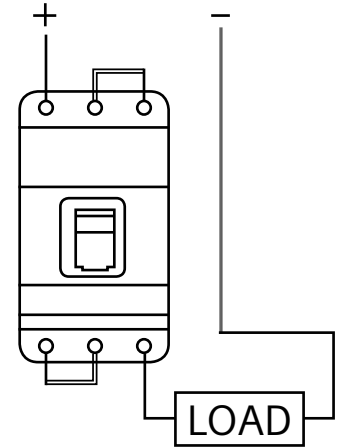
To properly use these UL Listed circuit breakers at 600Vdc and the indicated interruption level, it is necessary to connect the terminals of the 3 pole circuit breaker in a series configuration as shown in the diagram below.

Types HDGD through HPGD use the same internal and external accessories as the standard DG through PG frames and associated types. Consult the individual frame section for accessory information.

Frame	Type	Continuous Ampere Rating	Catalog Number (3-pole) <sup>①</sup>	Short-Circuit Current Rating 600VDC <sup>②</sup>
DG	HDGD	50	HDC3B050	42K
		60	HDC3B060	42K
		70	HDC3B070	42K
		80	HDC3B080	42K
		90	HDC3B090	42K
		100	HDC3B100	42K
		110	HDC3B110	42K
		125	HDC3B125	42K
FG	HFGD	150	HDC3B150	42K
		100	HFC3B100	42K
		250	HFC3B250	42K
JG	HJGD	250	HJC3B250	65K
		300	HJC3B300	65K
		350	HJC3B350	65K
		400	HJC3B400	65K
LG	HLGD	400	HLC3B400	65K
		600	HLC3B600	65K
MG	HMGD	600	HMC3B600	65K
		700	HMC3B700	65K
		800	HMC3B800	65K
NG	HNGD	800	HNC3B800	65K
		900	HNC3B900	65K
		1000	HNC3B1000	65K
		1200	HNC3B1200	65K
PG	HPGD	1200	HPC3B1200	65K
		1400	HPC3B1400	65K
		1600	HPC3B1600	65K

① Terminal connectors must be ordered separately.

② Standard VL breakers DG - PG feature DC ratings up to 500V for ungrounded UPS applications. Consult the individual frame section for more information.



# External accessories

Description		Catalog Number
<b>Handle padlocking devices</b>		
DG, FG	Handle pad-locking device (Lock off or lock on)	HPLF
JG, LG	Handle pad-locking device (Lock off or lock on)	HPLL
MG	Handle pad-locking device (Lock off or lock on)	HPLM
NG, PG	Handle pad-locking device (Lock off or lock on)	HPLP
<b>Handle blocking device</b>		
DG, FG	Handle blocking device	HBDF
JG, LG	Handle blocking device	HBDL
MG	Handle blocking device	HBDM
NG, PG	Handle blocking device	HBDP
<b>Other terminals and connection accessories</b>		
DG, FG	Inter-phase barriers, set of 2	IPBF
JG, LG, MG	Inter-phase barriers, set of 2	IPBM
NG, PG	Inter-phase barriers, set of 2	IPBP
DG, FG	Standard terminal shield, 3 pole	TSSF3
JG	Standard terminal shield, 3 pole	TSSL3
MG	Standard terminal shield, 3 pole	TSSM3
NG, PG	Standard terminal shield, 3 pole	TSSP3
DG, FG	Extended terminal shield, 3 pole	TSLF3
JG	Extended terminal shield, 3 pole	TSLL3
MG	Extended terminal shield, 3 pole	TSLM3
NG, PG	Extended terminal shield, 3 pole	TSLP3
MG	Modified terminal shield for switchboards, 3 pole	TSLM3M
NG	Modified terminal shield for switchboards, 3 pole	TSLN3M
PG	Modified terminal shield for switchboards, 3 pole	TSLP3M
DG	Nut keeper plate, kit of 3 pieces, (imperial thread)	TNKD3
FG	Nut keeper plate, kit of 3 pieces, (imperial thread)	TNKF3
JG	Nut keeper plate, kit of 3 pieces, (metric thread)	TNKJ3
LG	Nut keeper plate, kit of 3 pieces, (imperial thread)	TNKL3
MG	Nut keeper plate, kit of 3 pieces, (imperial thread)	TNKM3
NG, PG	Nut keeper plate, kit of 3 pieces, (imperial thread)	TNKP3
<b>Communications and electronic accessories</b>		
COM20 Profibus Communications Module with ZSI for electronic trip units (order cable separately)		COMPRO20
COM21 Modbus Communications Module with ZSI for electronic trip units (order cable separately)		COMMOD21
Power Stick - Hand held, battery operated power supply for LCD trip units & trip testing for all electronic trip units		EPSP18V
Spare flat cable for Power Stick		COMPCA
Cable for COM20/21, 1.5 m (4.9 ft) for DG, FG frames		COMKIT3
Cable for COM20/21, 1.5 m (4.9 ft) for JG, LG frames		COMKIT4
Cable for COM20/21, 1.5 m (4.9 ft) for MG, NG, PG frames		COMKIT5
Cable for COM20/21, 3.0 m (9.8 ft) for DG, FG frames		COMKIT6
Cable for COM20/21, 3.0 m (9.8 ft) for JG, LG frames		COMKIT7
Cable for COM20/21, 3.0 m (9.8 ft) for MG, NG, PG frames		COMKIT8
Addressing Plug - assigns a field bus address without a PC by plugging into COM20/21		3UF79100AA000

# Notes

# Notes



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