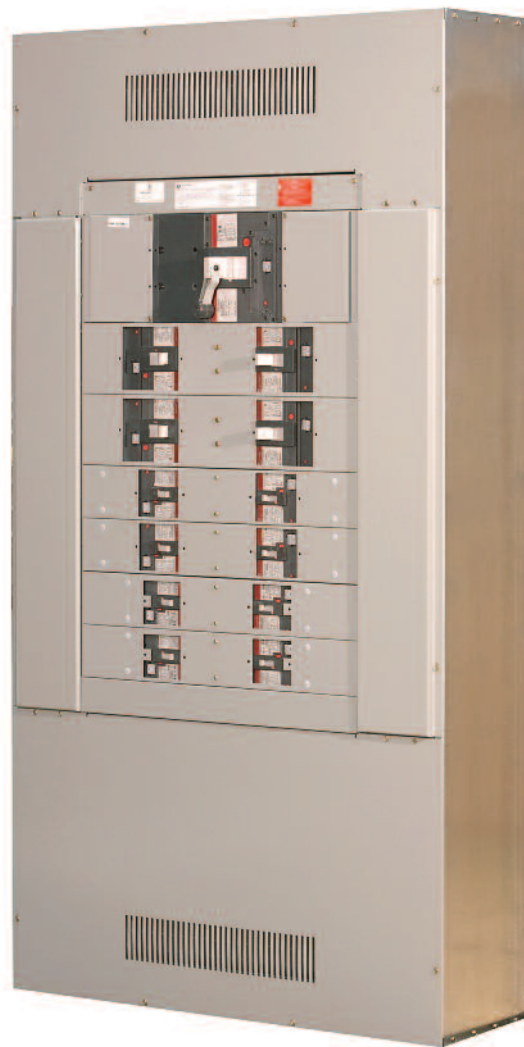


GE Energy
Industrial Solutions

Spectra Series® Power Panelboards



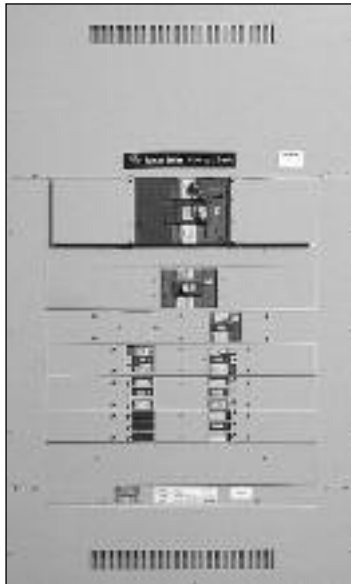
imagination at work

Spectra Series® Power Panelboards

Features

2 Types of Power Panelboards Available for Any Unique Application

- Spectra Plug-In — Modular design utilizes plug-In modules for circuit breakers and fusible switches.
- Spectra Bolt-On — Circuit Breakers attached through bolted copper connections



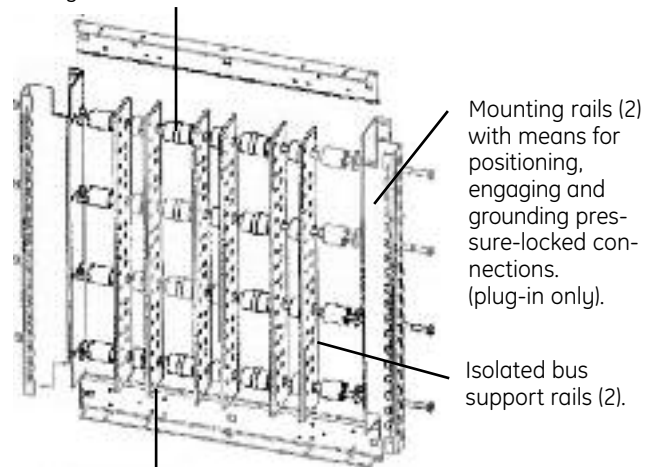
Maximum Voltage	600Vac 250Vdc
Maximum Main Rating - Amperes	
- Lug Only	1200A
- Fusible Switch	1200A
- Breaker	1200A
Branch Rating Amperes	
- Fusible Switch	30A - 1200A
- Breakers	15A - 1200A
Enclosures	NEMA 1 NEMA 3R/12 NEMA 4X

Spectra Series Power Panel Interiors

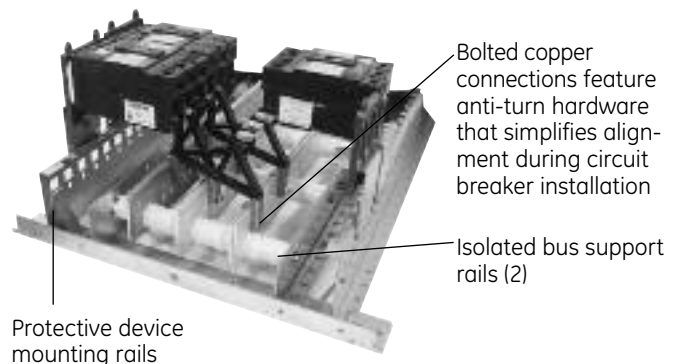
General Electric has designed plug-in and bolt-on style interiors for use in all Spectra Series® Power Panelboard applications. Spectra Plug-In interiors are designed for use with either fusible switches or molded case circuit breakers or both. Spectra Bolt-On interiors are designed for use with circuit breakers only. Main or branch devices (fusible switch or circuit breaker), as well as lugs only, can be installed in the factory or at the construction site, providing for application flexibility.

Spectra Series Plug-In Interior

Double-insulated system consisting of bus support assemblies of molded, glass-filled polyester insulation and insulating tubes over high-strength steel bolts spaced on 7" centers that prevent bus bars from distorting during short-circuit conditions.



Standard bus is aluminum, heat rated per UL. Optional ratings include 750A psi or 600A psi aluminum and heat rated per UL, 1000A psi or 800A psi copper. All vertical bus bars are silver plated.



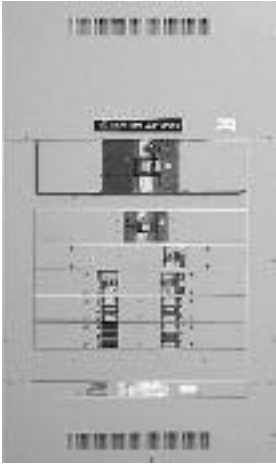
Double-insulated system consisting of bus support assemblies of molded, glass-filled polyester insulation and heat shrink tubing over high-strength steel bolts spaced on seven-inch centers prevent bus bars from distorting during short-circuit conditions.

Standard bus is tin-plated aluminum, density rated at 750 amps per square inch. Optional ratings include 1000A psi silver plated copper and reduced density 600A psi aluminum or 800A psi copper.

Spectra Series® Power Panelboards

Features

Flexibility for Multiple Applications



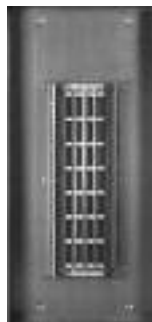
Spectra Bolt-On Power Panel:

- Circuit Breakers attached through bolted copper connections
- TVSS Unit
- Main Lugs
- Metering Modules

Spectra Plug-In Power Panel:

- Circuit Breaker Modules
- Fusible Switch Modules
- Intermix of Circuit Breaker and Fusible Switch Modules
- TVSS Unit
- PCU Modules
- Main Lug Modules
- Metering Modules

Each interior is fully rated; therefore large amperage devices can be installed at either the top or bottom of the interior. The vertical design of the bus maximizes convective heat transfer. The bus bar insulator system provides short-circuit protection, 600-volt spacing (without having to add baffles). There is no need for any additional insulation.



GE Tranquell TVSS (*Transient Voltage Surge Suppressor*) provides outstanding protection from internally and externally generated transients.



Spectra Bolt-On Power Panel

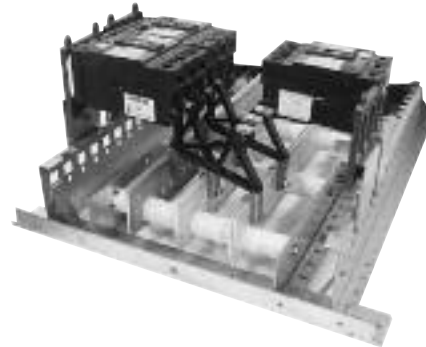
The Spectra Bolt-On Power Panel provides economical solutions for your application needs. The design features main lugs or main and branch circuit breakers bolted to the bus bars. The factory-installed main lugs are bolted directly to the bus bars; circuit breakers are bolted with mounting straps. The Spectra Bolt-On power panelboard is rated for 100,000 AIC. Fusible switches are not available in the bolt-on design.

Main lug assembly



Aluminum mechanical lugs are standard, copper and compression lugs are optional. The lugs are rated from 250 to 1200 amps, and offer front accessible set screws.

Circuit breaker assembly



Circuit breakers are bolted to the bus bars with copper mounting straps utilizing anti-turn clips that simplify alignment when field-installing breakers. The mounting straps are sized according to the breaker frame, not the trip amperage, and are rated for 100,000 AIC.

Spectra Series® Power Panelboards Features

Spectra Plug-In Power Panel

Spectra Plug-In offers modular flexibility featuring integral spring reinforced pressure locked module connections. Rated for 200,000 AIC, Spectra Plug-In panelboards feature main lugs or main circuit breakers. Branch and other devices available include molded case circuit breakers, fusible switches, TVSS units and PCUs

Factory-installed MLO



250-1200A mechanical lugs are standard, copper compression lugs are optional. Factory-installed lugs are bolted to the bus bars, and offer front accessible set screws. Lug kits also available for feed-thru applications.

Main lug module

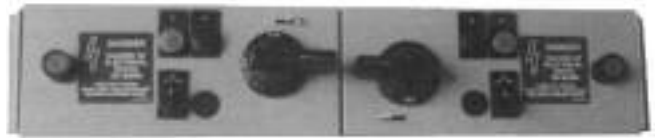
Main lug modules include mechanical or compression lugs. Main lug modules are available for field installation only.

Circuit breaker module



Circuit breaker modules feature integral spring reinforced pressure locked connections and accept standard off-the-shelf GE molded case circuit breakers for single- or double-branch mounting.

Double branch PCU



The Spectra Series Process Control Unit (PCU) provides reliable motor control technology in applications where space and maintenance considerations are critical. Available from 1/4 to 15 hp. PCUs are available in Plug-In panels only.

Fusible switch modules



Fusible switch modules from 30-1200 amps are available for Plug-In panels only.

Field Changes Are Quick and Easy

This feature is possible because the interior is designed to accept the spring-reinforced pressure-locked connectors. The connectors are an integral part of the main and branch modules.



After de-energizing the panel, a molded case circuit breaker or a fusible module can be quickly removed from the panel. The panel can be re-energized (after filling the space with proper filler plate) while the module and its devices are maintained.

Combining modular assembly and pressure locked connections to the interior, maintenance and testing are easier and faster.

- Main lug panels can be converted to a main breaker panel easily.
- Branch fusible units can be removed and circuit breaker units substituted quickly.

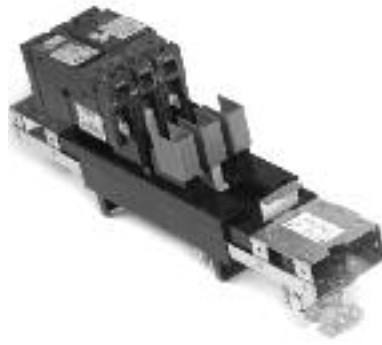
Spectra Series® Power Panelboards

Features

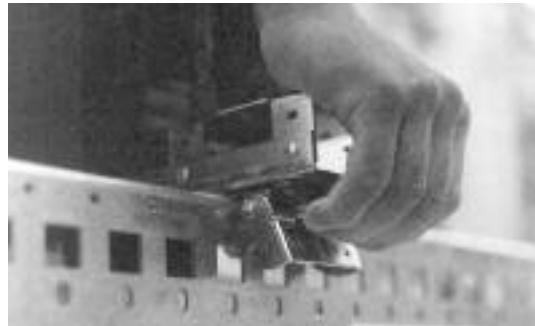
Module Features

Fusible switch and circuit breaker modules each consist of two assemblies: the protective device (fusible switch unit or molded case circuit breaker) and a connecting mechanism.

The connecting mechanisms are the intermediate electrical/mechanical connections between the protective device and the bus structure in the interior. There are two distinct designs. The fusible connecting mechanism is in the same housing as the fusible switch unit. The molded case circuit breaker connecting mechanism is separate from the breakers and is designed to accept standard GE circuit breakers. Both designs are UL listed and CSA certified.



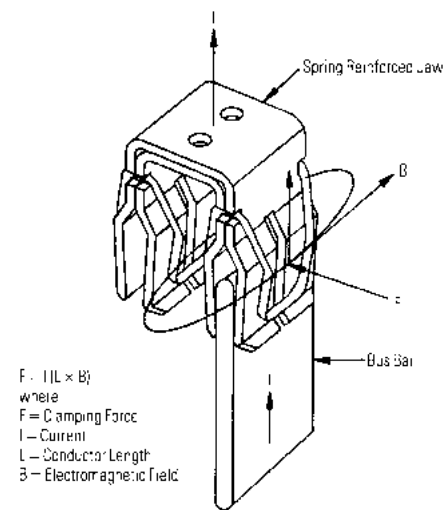
Plug-in circuit breaker module



Circuit Breaker Module Mounted on Interior

The circuit breaker module has a positive, self-aligning, spring-loaded locking device bolted to each side of the mounting module. This mechanism springs in to place, and the locking latches are thus positively engaged in the interior mounting rails.

To prevent unauthorized personnel from accidentally releasing the locked pressure connections, the handles are bolted to each side of the module.



Both module designs contain spring-reinforced pressure-locked connectors for engaging the bus bars. The connectors are bolted to copper bars within the mechanism. The fusible switch unit (or the breaker) is, in turn, bolted to these bars. Modules are rated for 200,000 AIC.



Spring-reinforced pressure-locked connectors provide reliable connection to the panel bus.



Fusible switch module



Fusible Switch Module Mounted on Interior

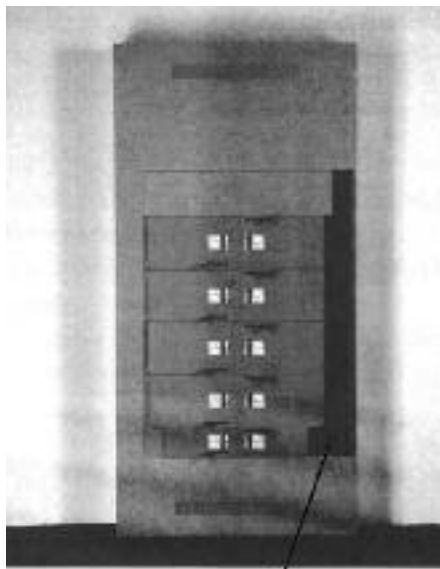
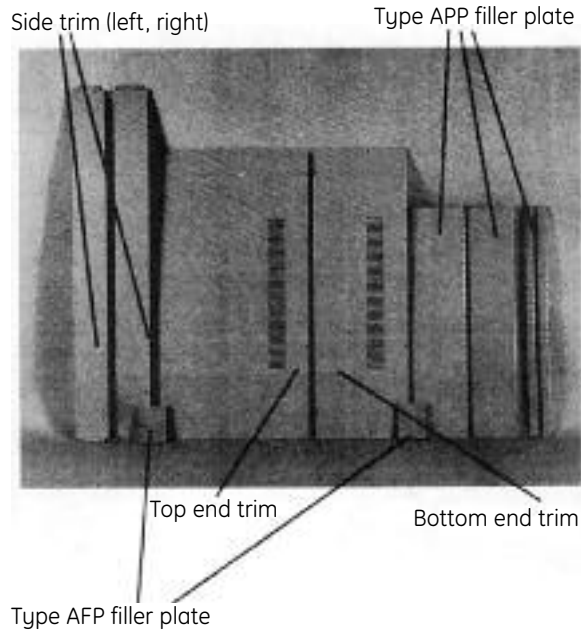
The fusible switch module has a self-aligning bracket screwed to the interior mounting rails.

Spectra Series® Power Panelboards

Features

Enclosures

Spectra Series panelboards are available in 27, 31, 36, 40 and 44 inch box widths, providing space-efficient enclosures. The standard NEMA 1 enclosure features a galvanized steel box and a four piece ASA61 acrylic enamel powder coat front.



Removable trim allows quick access to wiring, without exposing bus bar interior to inadvertent contact.

Device filler plates enable the different devices of different widths to align with the side trim. The side trim can be quickly removed to check wiring. Full width filler plates enable devices of differing heights to be installed in the future. All accessories are available in kit form.



Snap-on filler plates make installation and maintenance quick and easy, providing a durable attachment with no loose hardware.



Mounting bracket for door-in-door front adjusting to panel with the quarter-turn latch.

Optional Door-in-Door Front



Optional surface mount door-in-door front available for all width enclosures. Regular door front, surface mount available for the 27" wide enclosure.

Spectra Series® Power Panelboards

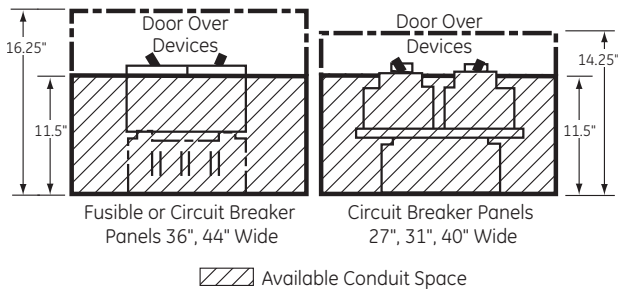
Features



Mounting bracket for door-in-door front adjusting to panel with the quarter-turn latch.

Enclosure Depth

All circuit breaker panel enclosures are 11.5" deep. When door over devices is required, a 14.25" deep box is provided for the 27", 31", and 40" wide enclosures and a 16.25" deep for the 36" and 44" wide enclosures.



Enclosure Locks



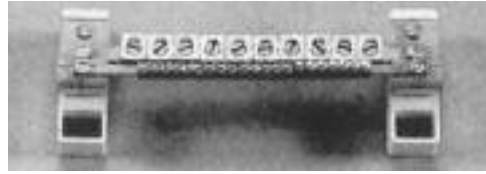
Available door locks include an optional Corbin lock (far left), standard GE lock, optional T-handle and optional Yale lock.

Neutral and Equipment Grounding Assemblies

Neutral bar assemblies are available in ratings from 250 amps to 1200 amps. These neutrals have provisions for bonding and grounding when required. The number of circuits has been pre-engineered, depending on the amp rating. They can be mounted in either corner of the enclosure in the same end where the main device is installed. Each neutral is fully rated.



Equipment ground assembly



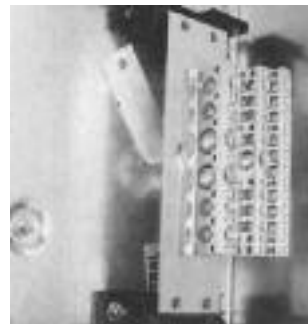
Isolated ground assembly



Isolated ground kit when required is field installed on either side

Power panel neutrals

Mechanical lugs are copper/aluminum as standard. Compression and oversized lugs are optional. Equipment-grounding modules are available either as bonded or isolated (refer to the National Electrical Code Article 250-74, Exception 4). In special applications where non-linear loads are a concern, a 200% rated neutral can be installed.



600A maximum



1200A maximum

Series-Connected Ratings

UL permits assigning a short circuit rating to a combination of molded case circuit breakers or fuses and molded case circuit breakers connected in series that is higher than the lowest rated protective device of the combination. This is defined as series connected ratings. The combination rating cannot exceed the rating of the protective device furthest upstream, although it will exceed the rating of the downstream protector.

The upstream protector can be a molded case breaker or fuse. Device combinations are not limited to those in the same equipment. They can be in different equipments such as a switchboard feeder or a panelboard main versus panelboard

Spectra Series® Power Panelboards Electrical Data

branches. Any distance between devices in different equipment is permitted. Total fault current magnitude must flow through both protectors. Thus, fault current contribution from motors, as well as power source fault current, must flow through upstream and downstream protectors.

It appears NEMA's position will allow motor full load currents not exceeding 1% of the downstream device interrupting rating to be ignored.

Molded case circuit breakers may be applied as fully rated or series rated. In a fully rated system, the short circuit ratings of all protective devices are equal to, or exceed, the available short circuit current. If mounted in equipment, the bus short circuit withstand rating and equipment short circuit rating must equal or exceed the available short circuit current.

In a series connected system, the short circuit rating of the upstream protector is fully rated but the downstream protector is not fully rated.

Selectivity between overcurrent devices is always desirable but, in some cases, it difficult to achieve without over-sizing devices or using Low Voltage Power Circuit Breakers in switchgear. However, the National Electrical Code requires complete selectivity in some types of circuits. As of the 2008 NEC, these include Elevator Control Circuits (article 620.62), Emergency Systems (Article 700.27), Legally Required Standby Systems (Article 701.18) and Critical Operations Power Systems (Article 708.54).

Complete selectivity is usually interpreted as meaning selectivity for ground faults and all magnitude of phase faults up to maximum theoretical bolted fault current level. Some jurisdictions enforce the pertinent articles of the code only as far as short time and long time selectivity, usually using the 0.1-second rule. Other jurisdictions enforce the requirement for complete selectivity. It is advisable that the local Jurisdiction Having Authority (JHA) be consulted to understand the interpretation of the pertinent code articles for the application being considered.

Full selectivity may be achieved in various ways. Traditionally, it is achieved by ensuring that the instantaneous characteristic of circuit breakers in series does not overlap up to available fault current at the load side device. However, it is now possible to achieve instantaneous selectivity of molded case circuit breakers even when their instantaneous time curves overlap. The selectivity available varies significantly by circuit breaker model and size. To see available selectivity with GE circuit breakers, please use GE publication DET-537. Before selecting circuit breakers for a panel or switchboard in circuits or applications that may be regulated by the aforementioned code articles, it is advisable that the interpretation enforced by the local JHA be understood and that circuit breaker selection be undertaken with a full understanding on how to achieve the selectivity required.

Refer to GE publication DET-008A (in the latest edition) for complete series rating listings.

Interrupting Ratings

Panelboards have integrated short-circuit ratings. When fully rated, the rating is that of the lowest-rated device in the panelboard. When series-connected rated, the rating is that of the main and branch-tested/UL Listed combination.

Short-Circuit Ratings - Fusible Switch Units

The short-circuit or interrupting rating of the fusible switch is the lower of the fuse or the switch rating. Spectra Series switches have a 200,000 amp short-circuit rating.

Table 1. Fuse Classification

UL Class	Available Amp Rating	Maximum Short-Circuit Rating in Sym. RMS Amps	Maximum Voltage	Application
H	30-600	10,000	250/600	One-time general purpose
J	30-600	200,000	600	Fast-acting rejection sizing mains & feeders, current limiting
K	30-600	50,000 100,000 200,000	250/600	Dual element no rejection means, motor starting current limiting
L	800-1200	200,000	600	Rejection means available in two forms <ul style="list-style-type: none"> • Fast-acting mains & feeders • Time-delay motor starting current limiting
R	30-600	100,000 200,000	250/600	Dual element rejection means, motor starting current limiting
T	100-600	200,000	250/600	Fast-acting small physical size mains & feeders, current limiting

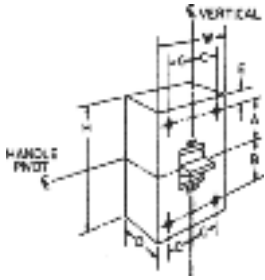
Table 2. Maximum Horsepower^① Fusible Switch

Rating in Amps ^①	Volts, ac						Volts, dc		
	2-Pole			3-Pole			2-Pole	3-Pole	
	120	240	480	600	240	480	600	125	250
With Standard Fuses									
30	1/2	1 1/2	3	3	3	5	7 1/2	2	5
60	1/2	3	5	10	7 1/2	15	15	5	10
100	-	7 1/2	10	15	15	25	30	-	20
200	-	15	25	30	25	50	60	-	40
400	-	-	-	-	50	100	125	-	50
600	-	-	-	-	75	150	200	-	50
With "Time-delay" Fuses									
30	2	3	7 1/2	10	7 1/2	15	20	3	-
60	3	10	20	25	15	30	50	-	-
100	-	15	30	40	30	60	75	-	-
200	-	15	50	50	60	125	150	-	-
400	-	-	-	-	125	250	350	-	-
600	-	-	-	-	200	400	500	-	-

^① Ratings are based on latest revision of the National Electrical Code Article 430. Horsepower ratings for switches with Standard Class H fuses are based on one-time fuses having minimum time-delay. When time-delay fuses are used, the horsepower ratings are maximum for the switches.

Spectra Series® Power Panelboards
Electrical Data

Q-Line (UL file E-11592; Fixed Thermal Magnetic Trip Unit)



THQL 32015

Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating		UL Listed Interrupting Ratings—rms Symmetrical kA								Dimensions (in.)							Std. Pack		
					Vac						Vdc		H	W	D	A	B	C	E			
					ac	dc	120	120/240	240	277	480	600									125	250
TQL/TQB/ TQC	10	1	120/240	—	—	5 ²	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	—	50	
		2					5 ²							2								25
		3					—							3								15
THQL ¹ THQB ¹ THQC ¹	15-70	1	120/240	—	—	10	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	—	50	
	15-125	2					10							2								25
	15-100	3					—							3								15
THHQB ¹ THHQC ¹	15-70	1	120/240	—	—	22	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	—	50	
	15-100	2					22							2								25
	3	—					3							15								
THHQL ¹	15-70	1	120/240	—	—	22	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	—	50	
	15-125	2					22							2								25
	15-100	3					—							3								15
TXQL ¹ TXQB ¹ TXQC ¹	15-30	1	120/240	—	—	65	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	—	50	
		2					65							2								25
		3					—							3								15
TQDL	125-200	2	120/240	—	—	10	—	—	—	—	—	—	6 1/16	2	2 3/8	—	—	—	—	—	12	
THQDL	125-200	2	120/240	—	—	22	—	—	—	—	—	—	6 1/16	2	2 3/8	—	—	—	—	—	12	
TQD ¹	100-225	2	240	—	—	10	10	—	—	—	—	—	6 9/16	2 3/4	2 5/8	2 7/16	2 7/16	—	27/32	—	1	
	100-225	3	240			—	10							4 1/8								11/16
THQD ¹	100-225	2	240	—	—	22	22	—	—	—	—	—	6 9/16	2 3/4	2 5/8	2 7/16	2 7/16	—	27/32	—	1	
	100-225	3	240			—	22							4 1/8								11/16
TJD	250-400	2	240	—	—	22	22	—	—	—	—	10	10 1/8	8 1/4	3 13/16	3 15/16	3 13/16	1 3/8	1 3/16	—	1	
		3	240			—	22															
CB3 Ground Fault, Equipment Ground Fault and Arc Fault (UL File E-51075; Fixed Thermal Magnetic Trip Unit)																						
THQB THQC THQL ...GF, GFEP, AF	15-30	1	120	—	—	10	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	—	10	
		2	120/240			—	1							2								10
THHQL ...GF THHQB ...GF AF	15-30	1	120	—	—	22	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	—	10	

¹ UL listed as HACR (heating, air conditioning and refrigeration).

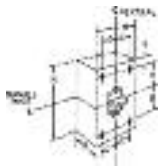
² Not UL listed.

Spectra Series® Power Panelboards

Electrical Data

10-1200A Circuit Breakers

Thermal Magnetic Trip



TJJ, TJK, THJK

TFJ, TFK, THFK

TEY and TEYF (UL File E-11592; Fixed Thermal Magnetic Trip Unit; CUL LR 57114)

Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating		UL Listed Interrupting Ratings— kA									Dimensions (In.)						Approx. Ship Wt./Std. Pack	
					Vac						Vdc										
					ac	dc	120	120/240	240	277	480	600	125	250	500 ¹	H	W	D	A		B
TEY ²	15-100	1	277	125	65	—	14	14	—	—	10	—	—	5 1/4	1	3 1/16	—	—	—	—	—
		2	480/277	250	—	—	65	14	14 ⁵	—	—	10	—		—		2				
		3		—	—	—	—	—	—	—	—	—	—		3						
TEYF ²	15-100	1	277	125	65	—	14	14	—	—	10	—	—	5 1/4	1	3 1/16	—	—	—	—	—
		2	480/277	250	—	—	65	14	14 ⁵	—	—	10	—		—		2				
		3		—	—	—	—	—	—	—	—	—	—		3						

E150 (UL File E-11592; Fixed Thermal Magnetic Trip Unit; CUL LR 57114)

TEB ²	10-100 ³	1	120	125	10	—	—	—	—	5	—	—	6 5/16	1 3/8	3 3/8	2 41/64	2 15/64	—	23/32	26 lb/24
		2	240	250	—	—	10	—	—	—	—	5		—				2 3/4		24 lb/12
		3		—	—	—	—	—	—	—	—	—		—				4 1/8		28 lb/8
TED ²	10-100 ³	1	277,347 ⁴	125	—	—	—	14	10	—	10	—	—	1 3/8	3 3/8	2 41/64	2 15/64	—	23/32	26 lb/24
	10-150 ³	2	480	250	—	—	18	—	18	—	—	10	—	2 3/4				24 lb/12		
		3	480, 600	500	—	—	—	—	—	14	—	—	10	4 1/8				28 lb/8		
THED ²	15-30	1	277,347 ⁴	125	—	—	—	65	—	—	20 ⁶	—	—	1 3/8	3 3/8	2 41/64	2 15/64	—	23/32	26 lb/24
	15-100	2	480	250	—	—	65	—	25	—	—	20 ⁶	—	4 1/8				24 lb/12		
		3	600	500	—	—	65	—	25	18	—	—	10	11/16				28 lb/8		

F225 (UL File E-11592; TFJ, Fixed Thermal Magnetic Trip Unit; TFK, THFK: Interchangeable Thermal Mag. Trip Unit; CUL LR 40350)

TFJ ²	70-225	2	480	250	—	—	25	—	22	—	10	—	10 1/8	4 1/8	3 13/16	3 7/8	3 7/8	11/16	1 3/16	10 lb/1
	70-250	3	600	500	—	—	—	—	18	—	—	10								12 lb/1
TFK ²	70-225	2	480	250	—	—	25	—	22	—	10	—	10 1/8	4 1/8	3 13/16	3 7/8	3 7/8	11/16	1 3/16	10 lb/1
		3	600	500	—	—	—	—	18	—	—	10								12 lb/1
THFK ²	70-225	2	480	250	—	—	65	—	25	—	10	—	10 1/8	4 1/8	3 13/16	3 7/8	3 7/8	11/16	1 3/16	10 lb/1
		3	600	500	—	—	—	—	18	—	—	10								12 lb/1

J600 (UL File E-11592; TJJ, Fixed Thermal Magnetic Trip Unit; TJK, THJK: Interchangeable Thermal Mag. Trip Unit; CUL LR 40350)

TJJ, TJK4	125-400	2	600	250	—	—	42	—	30	22	—	10	—	10 1/8	8 1/4	3 13/16	3 15/16	3 13/16	1 3/8	1 3/16	16 lb/1
		3		500	—	—	—	—	—	20	17 1/2 lb/1										
TJK6	250-600	2	600	250	—	—	42	—	30	22	—	10	—	10 1/8	8 1/4	3 13/16	3 15/16	3 13/16	1 3/8	1 3/16	18 lb/1
		3		500	—	—	—	—	—	20	20 lb/1										
THJK4	125-400	2	600	250	—	—	65	—	35	25	—	40	—	10 1/8	8 1/4	3 13/16	3 15/16	3 13/16	1 3/8	1 3/16	16 lb/1
		3		—	—	—	—	—	—	20	17 1/2 lb/1										
THJK6	250-600	2	600	250	—	—	65	—	35	25	—	40	—	10 1/8	8 1/4	3 13/16	3 15/16	3 13/16	1 3/8	1 3/16	18 lb/1
		3		—	—	—	—	—	—	20	20 lb/1										

K1200 (UL File E-11592; Interchangeable Thermal Magnetic Trip Unit; CUL LR 40350)

TKM8	300-800	2	600	250	—	—	42	—	30	22	—	10	—	15 1/2	8 1/4	5 1/2	8 9/16	5 11/16	1 3/8	5/8	33 lb/1
		3		500	—	—	—	—	—	22	39 lb/1										
TKM12	600-1200	2	600	—	—	—	42	—	30	22	—	—	—	15 1/2	8 1/4	5 1/2	8 9/16	5 11/16	1 3/8	5/8	38 lb/1
		3		—	—	—	—	—	—	—	41 1/2 lb/1										
THKM8	300-800	2	600	250	—	—	65	—	35	25	—	40	—	15 1/2	8 1/4	5 1/2	8 9/16	5 11/16	1 3/8	5/8	33 lb/1
		3		—	—	—	—	—	—	22	39 lb/1										
THKM12	600-1200	2	600	—	—	—	65	—	35	25	—	—	—	15 1/2	8 1/4	5 1/2	8 9/16	5 11/16	1 3/8	5/8	38 lb/1
		3		—	—	—	—	—	—	—	41 1/2 lb/1										

¹UL listed with poles in series for 500 Vdc ungrounded battery applications.

²UL listed as HACR (heating, air conditioning, and refrigeration).

³10 amp not UL listed.

⁴UL listed/CUL Certified for 10kA @ 347 Vac (TED) and 18kA @ 347V (THED). Also rated 10kA @ 480V but not UL listed.

⁵480V/277 Vac.

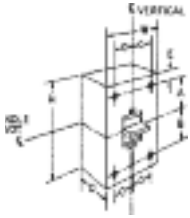
⁶UL listed at 10,000 amps

Spectra Series® Power Panelboards

Electrical Data

15-1200A Circuit Breakers

Electric Trip Spectra® RMS Breakers



SE 150

Spectra® RMS Circuit Breakers UL/CUL Ratings

Solid-State with Interchangeable Trip Unit (Rating Plug)															Approx. Ship Wt./Std. Pack							
Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Vac	UL Listed Interrupting Rating—kA			Dimensions Inches (mm)															
				240 Vac	480 Vac	600 Vac	H	W	D	A	B	C	E									
SE150 Current Limiting (UL File No. E-11592; CUL LR 40350)¹															5.65 lb/1							
SED ²	15-150	2	480	18	18	—	6.31 (160)	4.12 (105)	3.38 (86)	2.41 (61)	2.47 (63)	.69 (18)	.72 (18)									
		3	600			14																
SEH ²	15-150	2	480	65	25	—																
		3	600			18																
SEL	15-150	2	480	100	65	—																
		3	600			25																
SEP	15-150	2	480	200	100	—																
		3	600			25																
SF-250 Current Limiting (UL File No. E-11592; CUL LR 40350)¹																					9.15 lb/1	
SFH ²	70-250	2	480	65	35	—								10.12 (257)	4.12 (105)	3.81 (97)	3.87 (98)	3.87 (98)	.69 (18)	1.19 (30)		
		3	600			22																
SFL	70-250	2	480	100	65	—																
		3	600			25																
SFP	70-250	2	480	200	100	—																
		3	600			25																
SG600 Current Limiting (UL File No. E-11592; CUL LR 40350)^{1, 3}															15.85 lb/1							
SGH1 ^{2,4}	60-150	3	600	65	35	25	10.09 (256) 5	5.50 (140)	3.81 (97)	4.45 (113)	3.30 (84)	.91 (23)	1.18 (30) 5									
SGD ²	125-400	2	240	65	—	—																
		3	600	65	35	25																
SGH4 ²	125-400	2	600	65	35	25																
		3	600																			
SGH6 ²	250-600	2	600	65	35	25																
		3	600																			
SGL1 ⁴	60-150	3	600	100	65	65																
SGP1 ⁴		3	600	200	100	65																
SGL4	125-400	2	600	100	65	65																
		3	600																			
SGP4	125-400	2	600	200	100	65																
		3	600																			
SGL6	250-600	2	600	100	65	65																
		3	600																			
SGP6	250-600	2	600	200	100	65																
		3	600																			
SK1200 (UL File No. E-11592; CUL LR 40350)^{1, 3}															47.6 lb/1							
SKH8	300-800	2	600	65	50	25	15.50 (394) 6	8.25 (210)	5.50 (140)	8.56 (217)	5.69 (145)	1.38 (35)	.62 (16) 6									
		3												42								
SKL8		300-800	2	600	100	65								42								
			3													65						
SKP8		300-800	2	600	200	100								65								
			3													65						
SKH12	600-1200	2	600	65	50	25																
		3												42								
SKL12		600-1200	2	600	100	65								42								
			3													65						
SKP12		600-1200	2	600	200	100								65								
			3												65							

¹ UL listed as HACR (heating, air conditioning and refrigeration).

² Not current-limiting circuit breaker.

³ Includes microEntelliGuard™ Trip Units.

⁴ microEntelliGuard™ Trip Units only.

⁵ Add 1.76 inches (45 mm) to each end with lugs and lug cover installed.

⁶ Add 4.00 inches (101 mm) to upper end for SKP (100 KAIC-480V) lug cover.

Spectra Series® Power Panelboards

Electrical Data

15-1200A Circuit Breakers

Electric Trip Spectra® RMS Breakers

IEC/JIS Ratings

Solid-State with Interchangeable Trip Unit (Rating Plug)														
Circuit Breaker Type	Ampere Rating	No. Poles	IEC 947-2 Interruption Capacity — kA								Japanese Industry Standard Interruption Capacity kA			
			220-240 Vac		380-415 Vac		500 Vac		690 Vac		Vac			
			I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	220-240	380-415	500	690
SE150 Current Limiting, 15-32A														
SED	15-32	2	18	9	10	5	—	—	—	—	18	10	—	—
		3					4	4					4	
SEH		2	65	33	15	10	—	—	—	—	65	15	—	—
		3					6	6					6	
SEL		2	100	50	20	15	—	—	—	—	100	20	—	—
		3					8	8					3	
SEP	2	200	100	20	20	—	—	—	—	200	20	—	—	
	3					10	10					5		5
SE150 Current Limiting, 40-160A														
SED	40-160	2	18	9	14	7	—	—	—	—	18	14	—	—
		3					14	7					14	
SEH		2	65	33	35	17	—	—	—	—	65	25	—	—
		3					25	12					18	
SEL		2	100	50	65	33	—	—	—	—	100	65	—	—
		3					40	20					5	
SEP	2	200	100	100	50	—	—	—	—	200	100	—	—	
	3					50	25					10		5
SF250 Current Limiting														
SFH	70-250	2	65	33	35	17	—	—	—	—	65	25	—	—
		3					25	12					18	
SFL		2	100	50	65	33	—	—	—	—	100	65	—	—
		3					40	20					14	
SFP		2	200	100	100	50	—	—	—	—	200	100	—	—
		3					65	33					18	
SG600 Current Limiting														
SGH1 ¹	60-150	3	65	33	25	13	18	9	—	—	65	25	18	—
SGL1 ¹			100	50	65	33	35	18	14	7	100	65	35	22
SGP1 ¹			200	100	100	50	50	25	18	9	200	100	65	35
SGH4	125-400	2	65	33	25	13	—	—	—	—	65	25	—	—
		3					18	9					18	
SGL4		2	100	50	65	33	—	—	—	—	100	65	—	—
		3					35	18					14	
SGP4		2	200	100	100	50	—	—	—	—	200	100	—	—
		3					50	25					18	
SGH6	250-600	2	65	33	25	13	—	—	—	—	65	25	—	—
		3					18	9					18	
SGL6		2	100	50	65	33	—	—	—	—	100	65	—	—
		3					35	18					14	
SGP6		2	200	100	100	50	—	—	—	—	200	100	—	—
		3					50	25					18	
SK1200														
SKH8	300-800	2	65	16	50	13	25	13	—	—	65	50	25	—
		3												
SKL8		2	100	25	65	16	42	21	14	14	100	65	42	14
		3												
SKP8		2	140	35	85	25	50	25	18	18	140	85	50	18
		3												
SKH12	600-1250	2	65	16	50	13	25	13	—	—	65	50	25	—
		3												
SKL12		2	100	25	65	21	42	16	14	14	100	65	42	14
		3												
SKP12		2	140	35	70	25	50	25	18	18	140	85	50	18
		3												



SE



SF



SG

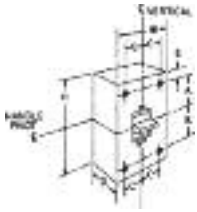


SK

¹microEntelliGuard™ trip system only.

Spectra Series® Power Panelboards

Electrical Data



TJC



TJL6S

Tri-Break (UL File E-42263; Integrally Fused, Thermal Magnetic Trip Unit)																					
Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating		UL Listed Interrupting Ratings—rms Symmetrical Amps (In Thousands)								Dimensions (In.)							Approx. Ship Wt./Std. Pack	
			ac	dc	Vac					Vdc			H	W	D	A	B	C	E		
					120	120/240	240	277	480	600	125	250									
TB1 ^{1,2}	15-100	3	600	—	—	—	200	—	200	200	—	—	10 5/16	4 1/8	3 5/8	2 21/32	6 9/32	11/16	23/32	8 lb/1	
TB4 ^{1,3,9}	125-400	3	600	—	—	—	200	—	200	200	—	—	16 1/8	8 1/4	4 1/2	3 15/16	9 13/16	1 3/8	1 3/16	31 lb/1 33 lb/1	
TB6 ^{1,3}	300-600	3	600	—	—	—	200	—	200	200	—	—	21 7/8	8 1/4	5 7/8	8 9/16	12 1/16	1 3/8	5/8	53 lb/1 55 lb/1	
TB8 ^{1,3}	600-800	3	600	—	—	—	200	—	200	100	—	—	21 7/8	8 1/4	5 7/8	8 9/16	12 1/16	1 3/8	5/8	53 lb/1 55 lb/1	
Mag-Break (UL Files E-11592, E-66390; Magnetic Trip Unit) ⁴																					
TEC	3-150	2	480	250	—	—	10	—	10	10	—	10	6 5/16	4 1/8	3 3/8	2 41/64	2 15/64	11/16	23/32	21 lb/6	
		3	600	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
TEML ^{5,9}	3-150	3	600	250	—	—	100	—	65	25	—	—	6 5/16	4 1/8	3 7/8	2 41/64	2 15/64	11/16	23/32	3 1/2 lb/1	
TEC & TECL ⁶	3-150	3	600	—	—	—	100	—	100	100	—	—	8 3/16	4 1/8	3 3/8	2 41/64	2 15/64	11/16	23/32	1.2 lb/1 TECL Only	
TFC	225	3	600	—	—	—	25	—	22	18	—	—	10 1/8	4 1/8	3 13/16	3 7/8	3 7/8	11/16	1 3/16	10 lb/1	
																				12 lb/1	
TBC4 ⁹	225-400	3	600	—	—	—	100	—	100	100	—	—	16 1/8	8 1/4	4 1/2	3 15/16	9 13/16	1 3/8	1 3/16	31 lb/1 33 lb/1	
TJC	400-600	3	600	—	—	—	42	—	30	22	—	—	10 1/8	8 1/4	3 13/16	3 13/16	3 13/16	1 3/8	1 3/16	16 lb/1	
																				17 1/2/1	
TBC6	600	3	600	—	—	—	100	—	100	100	—	—	21 7/8	8 1/4	5 7/8	8 9/16	12 1/16	1 3/8	5/8	53 lb/1	
																				55 lb/1	
TKC	800-1200	3	600	—	—	—	42	—	30	22	—	—	15 1/2	8 1/4	5 1/2	8 9/16	5 11/16	1 3/8	5/8	38 lb/1	
																				41 1/2/1	
TBC8	800	3	600	—	—	—	100	—	100	100	—	—	21 7/8	8 1/4	5 7/8	8 9/16	12 1/16	1 3/8	5/8	53 lb/1	
																				55 lb/1	
MicroVersaTrip (UL File E-11592; Solid-State Trip Units) ¹⁰																					
TJ4V ^{7,8,9}	150-600	3	600	—	—	—	42	42	—	30	22	—	—	10 1/8	8 1/4	3 13/16	3 15/16	3 13/16	1 3/8	1 3/16	—
THJ4V ^{7,8,9}							65	65	—	35	25	—	—								
TJL4V ^{7,9}							100	100	—	65	30	—	—								
TK4V ^{7,9}	800-1200	3	600	—	—	—	42	42	—	30	22	—	—	15 1/2	8 1/4	5 1/2	8 9/16	5 11/16	1 3/8	5/8	—
TKL4V ^{7,9}	800-1200	3	600	—	—	—	100	100	—	65	42	—	—	15 1/2	8 1/4	5 1/2	8 9/16	5 11/16	1 3/8	5/8	—
TJH1S-6S ⁹	60-600	3	600	—	—	—	65	65	—	35	25	—	—	16 1/8	8 1/4	3 13/16	3 15/16	9 13/16	1 3/8	1 3/16	—
TJL1S-6S ⁹	60-600	3	600	—	—	—	100	100	—	65	30	—	—	16 1/8	8 1/4	3 13/16	3 15/16	9 13/16	1 3/8	1 3/16	—
TKH8S, 12S ⁹	300-1200	3	600	—	—	—	65	65	—	50	25	—	—	21 7/8	8 1/4	5 1/2	8 9/16	12 11/16	1 3/8	5/8	—
TKL8S, 12S ⁹	300-1200	3	600	—	—	—	100	100	—	65	42	—	—	21 7/8	8 1/4	5 1/2	8 9/16	12 11/16	1 3/8	5/8	—

¹UL listed with internally mounted accessories at 100,000 amps IC. Contact GE Sales Office for availability of 200 kAIC ratings with internal accessories.

²CUL LR 57114.

³CUL LR 40350.

⁴Per UL 489, interrupting capacities are not shown on product label.

⁵Discontinued.

⁶Ratings shown for TEC in combination with TECL.

⁷With Power+ 4 trip unit.

⁸Suitable for single-phase, use outer two poles.

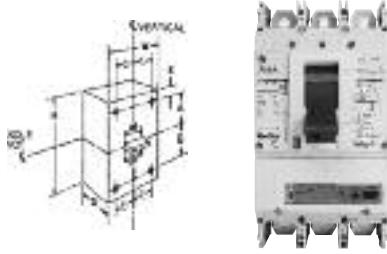
⁹No longer available.

¹⁰Limited availability through Parts Super Center.

Spectra Series® Power Panelboards

Electrical Data

15-600A Record Plus® Circuit Breakers



FG 600

FC 100 Amp Frame; Current Limiting (UL File No. E-11592)																		
Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating		UL Listed Interrupting Ratings - rms Symmetrical Amperes (in Thousands)					IEC Listed Interrupting Ratings, Icu, Amperes (in Thousands)					Dimensions in. (mm.)			Approx. Ship Wt./Std. Pack
					Vac		Vdc			Vac		Vdc						
			AC	DC	240	480	600/347	250 (2p)	500 (3p)	220-240	400-415	500	250 (2p)	500 (3p)	H	W	D	
FCS	15-100	2, 3	600	500	42	25	18	22	30	36	22	14	22	30	6.4 (162.6)	3.0 (76.2)	3.2 (81.3)	2.5 lb/1
FCV	15-100	2, 3	600	500	65	35	22	25	35	50	30	18	25	35	6.4 (162.6)	3.0 (76.2)	3.2 (81.3)	2.5 lb/1
FCN	15-100	2, 3	600	500	150	65	25	30	42	85	50	22	30	42	6.4 (162.6)	3.0 (76.2)	3.2 (81.3)	2.5 lb/1
FCH	15-100	2, 3	600	500	200	100	35	42	65	100	80	36	42	65	6.4 (162.6)	3.0 (76.2)	3.2 (81.3)	2.5 lb/1
FCL	15-100	2, 3	600	500	200	150	42	65	80	200	150	50	65	80	6.4 (162.6)	3.0 (76.2)	3.2 (81.3)	2.5 lb/1

FB 100 Amp Frame; Current Limiting (UL File No. E-11592)																	
Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating		UL Listed Interrupting Ratings - rms Symmetrical Amperes (in Thousands)					Dimensions in. (mm.)			Approx. Ship Wt./Std. Pack				
					Vac												
			AC	DC	240	277	347	480	600/347	H	W	D					
FBV	15-100	1	600/347	—	35	—	22	—	—	6.45 (163.8)	1.36 (34.5)	3.28 (83.3)	1.1 lb/1				
		2	600/347	—	65	—	—	35	22	6.45 (163.8)	2.74 (69.6)	3.28 (83.3)	2.6 lb/1				
		3	600/347	—	65	—	—	35	22	6.45 (163.8)	4.11 (104.4)	3.28 (83.3)	3.3 lb/1				
FBN	15-100	1	600/347	—	65	65	25	—	—	6.45 (163.8)	1.36 (34.5)	3.28 (83.3)	1.1 lb/1				
		2	600/347	—	150	—	—	65	25	6.45 (163.8)	2.74 (69.6)	3.28 (83.3)	2.6 lb/1				
		3	600/347	—	150	—	—	65	25	6.45 (163.8)	4.11 (104.4)	3.28 (83.3)	3.3 lb/1				
FBH	15-100	1	600/347	—	100	100	35	—	—	6.45 (163.8)	1.36 (34.5)	3.28 (83.3)	1.1 lb/1				
		2	600/347	—	200	—	—	100	35	6.45 (163.8)	2.74 (69.6)	3.28 (83.3)	2.6 lb/1				
		3	600/347	—	200	—	—	100	35	6.45 (163.8)	4.11 (104.4)	3.28 (83.3)	3.3 lb/1				
FBL	15-100	1	600/347	—	100	100	42	—	—	6.45 (163.8)	1.36 (34.5)	3.28 (83.3)	1.1 lb/1				
		2	600/347	—	200	—	—	150	42	6.45 (163.8)	2.74 (69.6)	3.28 (83.3)	2.6 lb/1				
		3	600/347	—	200	—	—	150	42	6.45 (163.8)	4.11 (104.4)	3.28 (83.3)	3.3 lb/1				

FE 250 Amp Frame; Current Limiting (UL File No. E-11592)																	
Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating		UL Listed Interrupting Ratings - rms Symmetrical Amperes (in Thousands)					Dimensions in. (mm.)			Approx. Ship Wt./Std. Pack				
					Vac												
			AC	DC	240	480	600	H	W	D							
FEN	250	2	480	-	150	—	65	—	—	6.70 (170.1)	4.11 (104.4)	3.52 (89.5)	4.5 lb/1				
FEN	250	3	480	-	150	—	65	—	—	6.70 (170.1)	4.11 (104.4)	3.52 (89.5)	4.5 lb/1				
FEH	250	2	480	-	200	—	100	—	—	6.70 (170.1)	4.11 (104.4)	3.52 (89.5)	4.5 lb/1				
FEH	250	3	480	-	200	—	100	—	—	6.70 (170.1)	4.11 (104.4)	3.52 (89.5)	4.5 lb/1				

FG 600 Amp Frame; Current Limiting (UL File No. E-11592)																	
Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating		UL Listed Interrupting Ratings - rms Symmetrical Amperes (in Thousands)			EN 60947-2 Interrupting Ratings, Icu, Amperes (in Thousands)			Dimensions in. (mm.)			Approx. Ship Wt./Std. Pack			
					Vac			Vac									
			AC	DC	240	480	600	240	400-415	690	H	W	D				
FGN	250-600	2	600	—	150	65	25	—	—	—	10.31 (262.0)	5.46 (138.7)	4.53 (115.0)	22 lb/1			
		3	600	—	150	65	25	85	50	10	10.31 (262.0)	5.46 (138.7)	4.53 (115.0)	22 lb/1			
FGH	250-600	2	600	—	200	100	35	—	—	—	10.31 (262.0)	5.46 (138.7)	4.53 (115.0)	22 lb/1			
		3	600	—	200	100	35	100	80	22	10.31 (262.0)	5.46 (138.7)	4.53 (115.0)	22 lb/1			
FGL	250-600	2	600	—	200	150	42	—	—	—	10.31 (262.0)	5.46 (138.7)	4.53 (115.0)	22 lb/1			
		3	600	—	200	150	42	200	150	40	10.31 (262.0)	5.46 (138.7)	4.53 (115.0)	22 lb/1			
FGP	250-600	2	600	—	200	200	65	—	—	—	10.31 (262.0)	5.46 (138.7)	4.53 (115.0)	22 lb/1			
		3	600	—	200	200	65	—	—	—	10.31 (262.0)	5.46 (138.7)	4.53 (115.0)	22 lb/1			

Spectra Series® Power Panelboards

Physical Data

Spectra Series Power Panel Main Devices

Spectra Series Standard Main Lugs

(Applicable for Spectra Plug-In and Bolt-On Panels)

Table 4. Factory Installed MLO (Lugs bolted to the bus bars)

Max. Amp Rating	With Dimension-Inches				
	Lug Type	Box Widths	Dual Lug Type	Box Widths	X- Height
250	Mech. Compression Lug Provision	27"- 44"	Mech. Compression Lug Provision	27"- 44"	4X
		36"- 44"		36"- 44"	6X
400	Mech. Compression	27"- 44"	Mech. Compression	27"- 44"	4X
		Mech. 750 Kcmil Lug Provision		Mech. 750 Kcmil Lug Provision	36"- 44"
600	Mech. Compression	27"- 44"	Mech. Compression	27"- 44"	4X
		Mech. 750 Kcmil Lug Provision		Mech. 750 Kcmil Lug Provision	36"- 44"
800	Mech. Compression	31"- 44"	Mech. Compression	36"- 44"	4X
		Mech. 750 Kcmil Lug Provision		Mech. 750 Kcmil Lug Provision	36"- 44"
1200	Mech. Compression	31"- 44"	Mech. Compression	36"- 44"	4X
		Mech. 750 Kcmil Lug Provision		Mech. 750 Kcmil Lug Provision	36"- 44"

Table 5. Main Circuit Breakers (Spectra Bolt-On panels only)

Maximum Amp Rating	Main Breaker Type	Poles	X- Height	Minimum Enclosure Height	Accessories ^③
250	SFH, SFL, SFP	2,3	3X	27"	SHT, UVR, BL, AS, KL, KLP
400	SGD	2,3	4X	27"	SHT, UVR, BL, AS, KL, KLP
600	SGH	3	4X	27"	SHT, UVR, BL, AS, KL, KLP
600	SGL ^① , SGP ^①	3	4X	27"	SHT, UVR, BL, AS, KL, KLP
600	FGN, FGH, FGL, FGP	2,3	4X	27"	SHT, UVR, BL, AS, KL, KLP
1200	SKH ^② , SKL ^②	3	6X	40"	SHT, UVR, BL, AS, KL, KLP
1200	SKP ^②	3	6X	44"	SHT, UVR, BL, AS, KL, KLP
1200	S7H	3	7X	44"	SHT, UVR, BL, AS, KL

① Available at 400 amps, 100% rated.

② Available at 1000 amps, 100% rated.

③ SHT - Shunt trip; UVR - Undervoltage Ref; BL - Bell Alarm; AS - Auxiliary Switch; KL - Kirk Lock; KLP - Kirk Lock Provision

Table 6. Main Circuit Breakers (Spectra Plug-In panels)

Maximum Amp Rating	Main Breaker Type	Poles	X- Height	Minimum Enclosure Height	Accessories ^③
225	THJK	2,3	3X	27"	SHT, UVR, BL, AS, KL, KLP
225	TFJ	2,3	3X	27"	SHT, UVR, BL, AS, KL, KLP
250	SFH, SFL, SFP	2,3	3X	27"	SHT, UVR, BL, AS, KL, KLP
400	SGD	2,3	4X	27"	SHT, UVR, BL, AS, KL, KLP
600	SGH	3	4X	27"	SHT, UVR, BL, AS, KL, KLP
600	SGL ^① , SGP ^①	3	4X	27"	SHT, UVR, BL, AS, KL, KLP
600	FGN, FGH, FGL, FGP	2,3	4X	27"	SHT, UVR, BL, AS, KL, KLP
1200	SKH ^② , SKL ^②	3	6X	40"	SHT, UVR, BL, AS, KL, KLP
1200	SKP ^②	3	6X	44"	SHT, UVR, BL, AS, KL, KLP

① Available at 600 amps, 100% rated.

② Available at 1200 amps, 100% rated.

③ SHT - Shunt trip; UVR - Undervoltage Ref; BL - Bell Alarm; AS - Auxiliary Switch; KL - Kirk Lock; KLP - Kirk Lock Provision

Table 7. Main Fusible Switches (Spectra Plug-In panels)

Main Rating Amps	Poles	Available Fuse Class							X-Height	Enclosure Width
		Max. Voltage	H	J	K	L	R	T		
200	2/3	240	✓	-	✓	-	✓	-	7	36", 44"
	2/3	600	✓	✓	✓	-	✓	-	7	36", 44"
400	2/3	240	✓	-	✓	-	✓	✓	10	36" wide with Class J or T fuses. All others are 44" wide
	2/3	600	✓	✓	✓	-	✓	✓	10	
600	2/3	240	✓	-	✓	-	✓	✓	10	36" wide with Class J or T fuses. All others are 44" wide
	2/3	600	✓	✓	✓	-	✓	✓	10	
800	2/3	600	-	-	-	✓	-	-	19	44"
1200	2/3	600	-	-	-	✓	-	-	19	44"

Table 8. Main Lug Modules (Field installed only - Plug-In panels)

Maximum Amp Rating	Width Dimension-Inches				
	Main Lug	Enclosure	Dual Main	Enclosure	X-Height
250	19	27-36	19	27-36	4 ^①
400	19	27-44	19	27-44	4 ^①
600					
250	21	36-44	21	36-44	6
400	21	31-44	21	31-44	6
600					
800					
1200					

① Mechanical lugs only.

Spectra Series® Power Panelboards
Physical Data

Spectra Series Power Panel Branch Devices

Table 9. Branch Circuit Breakers (Spectra Bolt-on Panel)

Mounting Type	Max Amps	Frames	X-Height		Fits Box Width
			3P	2P	
Double Branch	100	TEY	3X	2X	27, 31, 36, 40, 44
		FC	3X	2X	27, 31, 36, 40, 44
		FB	3X	2X	27, 31, 36, 40, 44
		TEB,TED,THED	3X	2X	27, 31, 36, 40, 44
	150	SED,SEH, SEL,SEP	3X	3X	27, 31, 36, 40, 44
		TQD, THQD,THFK	3X	2X	27, 31, 36, 40, 44
	225	FEN, FEH	3X	2X	31, 30, 36, 44
		SFH,SFL,SFP	3X	3X	31, 36, 40, 44
	400	SGD	4X	4X	40, 44
	600	SGH,SGL,SGP ^①	4X	4X	40, 44
600	FGN,FGH,FGL,FGP	4X	4X	40, 44	
Single	250	SFH,SFL,SFP	3X	3X	27, 31, 36, 40, 44
	400	SGD	4X	4X	27, 31, 36
	600	SGH,SGL,SGP ^①	4X	4X	27, 31, 36
	600	FGN,FGH,FGL,FGP	4X	4X	27, 31, 36
	1200	SKH,SKL ^①	6X	6X	40, 44
SKP ^①		6X	6X	44	

① Available at 100% rating.

Table 10. Branch Circuit Breakers (Spectra Plug-In Panel)

Mounting Type	Max Amps	Frames	X-Height		Fits Box Width
			3P	2P	
Double Branch	100	THQB, THHQB	3X	3X	27, 31, 36, 40, 44
		TEY	3X	2X	27, 31, 36, 40, 44
		FC	3X	2X	27, 31, 36, 40, 44
		FB	3X	2X	27, 31, 36, 40, 44
	150	TEB,TED,THED	3X	2X	27, 31, 36, 40, 44
		SED,SEH, SEL,SEP	3X	3X	27, 31, 36, 40, 44
	225	TQD, THQD	3X	2X	27, 31, 36, 40, 44
		FEN, FEH	3X	2X	31, 30, 36, 44
	250	SFH,SFL,SFP	3X	3X	31, 36, 40, 44
	400	SGD	4X	4X	40, 44
	600	SGH,SGL,SGP ^①	4X	4X	40, 44
	600	TJJ,TJD	6X	6X	44
	600	FGN,FGH,FGL,FGP	4X	4X	40, 44
	Single	250	SFH,SFL,SFP	3X	3X
400		SGD	4X	4X	27, 31, 36
600		SGH,SGL,SGP ^①	4X	4X	27, 31, 36
600		FGN,FGH,FGL,FGP	4X	4X	27, 31, 36
1200		SKH,SKL (1)	6X	6X	40, 44
		SKP (1)	6X	6X	44
Double Branch Adjacent to Switch	100	FB	4X	4X	27, 31, 36, 40, 44
		FC	4X	4X	27, 31, 36, 40, 44
	150	SED,SEH, SEL,SEP	4X	4X	27, 31, 36, 40, 44
250	SFH,SFL,SFP	4X	4X	27, 31, 36, 40, 44	
Single Adjacent to Switch	250	SFH,SFL,SFP	4X	4X	27, 31, 36, 40, 44

① Available at 100% rating.

Note : Breaker accessories wiring requires "1X" additional unit height.

Spectra Series® Power Panelboards

Physical Data

Table 11. Branch Fusible Switch Units (Spectra Plug-In™ Panels only)

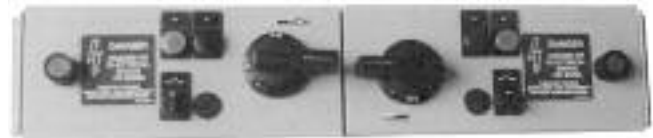
Amps	Poles	Voltage	Fuse Type						Mounting			
			H	J	K	L	R	T	Module Config.	Blank Option	X-Height	Minimum Enclosure Width (Min.)
30	2/3	240	✓	-	✓	-	✓	-	Double	Yes	4	36"
	2/3	600	✓	✓	✓	-	✓	-	Double	Yes	4	36"
60	2/3	240	✓	-	✓	-	✓	-	Double	Yes	4	36"
	2/3	600	✓	✓	✓	-	✓	-	Double	Yes	5	36"
100	2/3	240	✓	-	✓	-	✓	-	Double	Yes	5	36"
	2/3	600	✓	✓	✓	-	✓	-	Double	Yes	5	36"
	2/3	240/600	-	-	-	-	-	✓	Double	Yes	7	36"
200	2/3	240/600	✓	-	✓	-	✓	-	Double	No	7	44"
	2/3	240/600	✓	-	✓	-	✓	-	Single	No	7	36"
	2/3	240	-	-	-	-	-	✓	Double	Yes	7	36"
	2/3	600	-	✓	-	-	-	✓	Double	Yes	7	36"
400/600	2/3	240/600	✓	-	✓	-	✓	-	Single	No	10	44"
	2/3	240	-	-	-	-	-	✓	Single	No	10	36"
	2/3	600	-	✓	-	-	-	✓	Single	No	10	36"
800/1200	2/3	600	-	-	-	✓	-	Single	No	19	44"	

Table 12. Spectra Series PCUs (15 hp max, 22A, 600V max, 3PH, 3W & ground. All units are 4X height, 120V control.)

Pilot Device	Mount	Catalog Number ^①
Yes	Double	APCU151FNDPD**
Yes	Single	APCU151FNDPSX*
No	Double	APCU151FNDND**
No	Single	APCU151FNDNSX*

① Replace asterisk (*) with required overload range from Table XX.

Double Branch PCU (process control unit)



Available in Spectra Plug-In for motor starter applications through 15hp FVNR.

Table 13. PCU Overload Selections

*	Overload Range (Amps)
B	0.16-0.26
C	0.25-0.41
D	0.40-0.65
F	0.65-1.1
G	1.0-1.5
H	1.3-1.9
J	1.8-2.7
K	2.5-4.1
L	4.0-6.3
M	5.5-8.5
N	8.0-12.0
P	10.0-16.0
S	14.5-18.0
T	17.5-22.0
X	Blank

Table 14. Spectra Series PCU Control Power Transformer Kits

(One kit per panel required unless an external 120VAC is brought into the panel.)

Continuous kVA	Primary Voltage ^①	Capacity	Catalog Number
.200	600	Standard	APCUCKA200
.300	600	Extra	APCUCKA300
.200	480/240	Standard	APCUCKB200
.300	480/340	Extra	APCUCKB300
.200	208	Standard	APCUCKC200
.300	208	Extra	APCUCKC300

① Secondary voltage is 120Vac.

Spectra Series® Power Panelboards
Physical Data

Main Lug Terminations

Table 15. Molded Case Circuit Breakers

Standard	Circuit Breaker Frame					No. Per Pole	Terminal Lugs (Cu-Al) Product Number	Wire—Cu-Al (Unless otherwise noted)	
	Hi-Break	Tri-Break®	Current Limiting	High Interrupting	Poles			Per Lug	Range
THQL	TXQL, THHQL	—	—	—	1,2,3	1	Fixed to Breaker Terminal	1	(15-30A) #14-4 Cu or #12-4 Al (35-100A) #14-1/0 Cu or #12-1/0 Al
THQB	TXQB, THHQB	—	—	—	1,2,3				
TEY	—	—	—	—	1,2,3	1	—	1	(15-25A) #14-#12 Cu or #12-#10 Al (30-60A) #10-#6 Cu or #8-#4 Al (70-100A) #4-#1 Cu or #2-1/0 Al
TEB	—	—	—	—	1,2,3	1	TCAL14	1	(15-30A, TCAL14)-#14-8
TED	THED ¹	—	—	—	1		TCAL12		(30-60A, TCAL12)-#14-3 Cu, #12-1 Al
TED4	—	—	—	—	2-3		TCAL12A		(70-90A, TCAL12A)-#6-2/0 Cu, #4-2/0 Al
TED6	THED	—	—	—	2-3		TCAL15		(100-150A, TCAL15)-#3-3/0
—	—	—	FBV FBN FBH FBL	—	1,2,3	1	FCAL12 FCAL13 FCAL14	1	(15-20A) #14-#12 Cu or #10-#12 Al (35-60A) #10-#6 Cu or #8-#4 Al (70-100A) #4-#1 Cu or #2-1/0 Al
—	—	—	FCS FCV FCN FCH FCL	—	2,3	1	FCALK12 FCALK13 FCALK14	1	(15-20A) #14-#12 Cu or #10-#12 Al (35-60A) #10-#6 Cu or #8-#4 Al (70-100A) #4-#1 Cu or #2-1/0 Al
SEDA	SEHA	—	SELA SEPA	—	2-3	1	TCAL18	1	#12-3/0 Cu, #12-3/0 Al
—	—	—	FES1T FEV1T FEN1T FEH1T FEL1T	—	2-3	1	FCALK15	1	#12-3/0 Cu, #14-1/0 Al
—	—	—	FES1E FEV1E FEN1E FEH1E FEL1E	—	2-3	1	FCALK15	1	#12-3/0 Cu, #14-1/0 Al
TQD	THQD	—	—	—	2-3	1	TCAL25	1	#1-300kcmil
SFHA	—	—	SFLA SFPA	—	2-3	1	TCAL29	1	#8-350kcmil
TFJ, TFK	THFK	—	—	—	2-3	1	TCAL24, 26	1	#4-300kcmil
—	—	—	FES2T FEV2T FEN2T FEH2T FEL2T	—	2-3	1	FCALK16	1	#8-250kcmil Cu, #8-250kcmil
—	—	—	FES2E FEV2E FEN2E FEH2E FEL2E	—	2-3	1	FCALK16	1	#8-250kcmil Cu, #8-250kcmil
SGDA	—	—	SGL	—	2	1	TCLK265 ²	—	2/2/0-400kcmil Cu) or 2/2/0-500kcmil Al) or #6-600kcmil
SGHA	—	—	SGP	—	3	1	TCLK365 ²	—	2/2/0-400kcmil Cu) or 2/2/0-500kcmil Al) or #6-600kcmil
—	—	—	FGV2	—	2-3	1	FCALK318H	—	Top hole #8-400kcmil Cu or #6-500kcmil Al Bottom hole #2/0-600kcmil Cu & Al
—	—	—	FGN2 FGH2 FGL2 FGP2 FGV4	—	2-3	1	FCALK318H	—	Top hole #8-400kcmil Cu or #6-500kcmil Al Bottom hole #2/0-600kcmil Cu & Al
—	—	—	FGN4 FGH4 FGL4 FGP4 FGV6	—	2-3	1	FCALK318H	—	Top hole #8-400kcmil Cu or #6-500kcmil Al Bottom hole #2/0-600kcmil Cu & Al
—	—	—	FGN6 FGH6 FGL6 FGP6	—	2-3	1	FCALK318H	—	Top hole #8-400kcmil Cu or #6-500kcmil Al Bottom hole #2/0-600kcmil Cu & Al
TJJ, TJK4	THJK4	TB4	—	—	2-3	1	TCAL43	1	#6-600kcmil or 2-1/2/0-250kcmil
TJD	—	—	—	—	2-3	1	TCAL43	1	#6-600kcmil or 2-1/2/0-250kcmil
TJK6	THJK6, THJ4V	—	—	—	2-3	1	TCAL43	1	#6-600kcmil or 2-1/2/0-250kcmil
—	—	TB6	—	—	3	1	TCAL63	2	250-350kcmil, Cu, or 350-500kcmil, Al
—	—	—	—	—	3	1	TCAL61	2	2/0-500kcmil
SKHA8	—	—	—	SKLA8	—	1	TCAL41	1	#4-600kcmil or 2-1/0-250kcmil
TKM8 ⁴	THKM8	—	—	SKPA8	2-3	1	TCAL61	2	2/0-500kcmil
—	—	—	—	—	3	1	TCAL81	3	3/0-500kcmil
—	—	—	—	Load End	—	1	TCAL91	3	3/0-500kcmil
—	—	TB8	—	—	3	1	TCAL81	3	3/0-500kcmil
SKHA12,	THKM12	—	—	SKLA12,	2-3	1	TCAL81	3	3/0-500kcmil
TKM12 ⁴	—	—	—	SKPA12	2-3	1	TCAL121	4	250-350kcmil Cu or 350-500kcmil Al
—	—	—	—	Load End	2-3	1	TCAL131	4	250-350kcmil Cu or 350-500kcmil Al
—	—	TB1	THLC1	—	3	1	TCAL12 TCAL12A TCAL15	1	(15-60A, TCAL12)#14-#3 Cu or #12-#1 Al (70-100A, TCAL12A)#6-2/0 Cu or #4-2/0 Al (100-150A, TCAL15)#3-3/0 Cu or #1-3/0 Al
—	—	—	THLC2	—	3	1	TCAL27	1	(125-225A, TCAL27)#4-300kcmil
—	—	—	THLC4	TLB4 ⁴	3	1	TCLK43 ³	—	3/0-500kcmil or 2-1/2/0-250kcmil

¹One-pole THED frame available only in 15-30 amp trip.

²Lug kit—includes line or load end cover.

³Three-pole lug assembly suitable for line or load end.

⁴For replacement use only.

Spectra Series® Power Panelboards
Physical Data

Load Side Terminations

Table 16. Fusible Switch Module Feeders (Cu/Al Mechanical)

Amp Rating	Voltage	Wire Size (Cu/Al)	#Wires Per Pole
30	240/600	#14-#2	1
60	240	#14-#2	1
60	600	#14-1/0	1
100	240/600	#14-1/0	1
200	240/600	#6-250 Kcmil	1
400	240/600	1/0-250 Kcmil or #2-600 Kcmil	2 or 1
600	240/600	1/0-250 Kcmil or #2-600 Kcmil	4 or 2
800	600	1/0-250 Kcmil or #2-600 Kcmil	6 or 3
1200	600	1/0-250 Kcmil or #2-600 Kcmil	8 or 4

Table 17. Optional Fusible Switch Module Terminations

	Max # Wires Per Pole								
	30A	60A 240V	60A 600V	100A	200A	400A	600A	800A	1200A
Cu/Al Mechanical									
#6-350Kcmil									
3/0-800 Kcmil Cu					1	2	2	4	4
250-800 Kcmil Al									
Cu Mechanical									
#4-#14	1	1							
#6-#14			1						
#6-1/0			1	1					
#6-250 Kcmil					1				
1/0-600 Kcmil						2	2	4	4
1/0-4/0						4	4	8	8
Cu/Al Compression									
#8-1/0	1	1	1	1					
#4-300 Kcmil					1				
2/0-500 Kcmil						2	2	4	4
400-500 Kcmil Cu						2	2	4	4
400-600 Kcmil Al						2	2	4	4
750 Kcmil Cu						2	2	4	4
500-750 Kcmil Al						2	2	4	4
Cu Compression									
#6-1/0	1	1	1	1					
2/0-300 Kcmil					1				
250-500 Kcmil						2	2	4	4
400-750 Kcmil						2	2	4	4

Table 18. Ground and Neutral Terminations

Number Of Wires	Wire Range	Bonded Or Insulated	Provision For Service Wire	Catalog Number	
10	#6 - 1/0 AMG CU/AL	Bonded	Yes	AEG10	
12	#14 - #8 AWG CU Solid	Bonded	No	AEG21	
	#12 - #8 AWG AL Solid				
	#12 - #8 AWG CU/AL Stranded				
9	#14 - #8 AWG CU Solid	Insulated/Isolated	No	AEG21S	
	#12 - #8 AWG AL Solid				
	#10 - #4 AWG CU/AL Stranded				
10	#6 - 2/0 AWG CU/AL	Insulated/Isolated	Yes	AEG31S	
12	#14 - #8 AWG CU Solid				
	#12 - #8 AWG AL Solid				
9	#12 - #8 AWG CU/AL Stranded	Bonded	No	AEG47	
	#14 - #8 AWG CU Solid				
	#12 - #8 AWG AL Solid				
2	#2-#600 MCM CU/AL	Bonded	No	AEG47	
5	#6-#250 MCM CU				
	#6-300 MCM AL				
16	#14-#2/0 CU	Bonded	No	AEG47	
	#14-#2/0 AL				
	#8-#4 CU-AL				
24	#12-#10 AL	Bonded	No	AEG47	
	#14-#10 CU				
	#2-#600 MCM CU/AL				
2	#2-#600 MCM CU/AL	Insulated/Bonded	No	AEG47S	
	5				#6-#250 MCM CU
					#6-300 MCM AL
16	#14-#2/0 CU	Insulated/Bonded	No	AEG47S	
	#14-#2/0 AL				
	#8-#4 CU-AL				
24	#12-#10 AL	Bonded	No	AEG47	
	#14-#10 CU				
	#2-#600 MCM CU				
2	#2-#600 MCM CU	Bonded	No	AEG47	
	5				#6-#250 MCM CU
					#6-300 MCM AL
16	#14-#2/0 CU	Bonded	No	AEG47	
	#8-#4 CU				
	#14-#10 CU				
2	#2-#600 MCM CU	Insulated/Bonded	No	AEG47S	
	5				#6-#250 MCM CU
					#6-300 MCM AL
16	#14-#2/0 CU	Insulated/Bonded	No	AEG47S	
	#8-#4 CU				
	#14-#10 CU				

Table 19. Compression Lug Terminations

Amp Rating	Lugs/Phase	Wires per Lug	Wire Range (kcmil)
250	Single/1	1	350
	Dual/2	1	350
400	Single/2	1	500
	Dual/4	1	500
600	Single/2	1	500
	Dual/4	1	500
800	Single/3	1	500
	Dual/6	1	500
1200	Single/4	1	500
	Dual/8	1	500

Spectra Series® Power Panelboards
Physical Data

Spectra Bolt-On Mounting Hardware and Spare Parts

Table 20. Spectra Bolt-On Panel Device Mounting Hardware

Type	X-Height	Minimum Box Width	Mounting Kit With Filler Plate ^①	Filler Plate ^②
Twin Mounted Devices				
FB (3-pole)	2X	27	AMCB4FBFP	AFP3FBD
FB (2-pole)	3X	27	AMCB6FBFP	AFP2FBD
FC (3-pole)	3X	27	AMCB4FDBFP	AFP3FDD
FC (2-pole)	3X	27	AMCB6FDBFP	AFP3FDD
FE (3-pole)	3X	31	AMCB4FEBFP	AFP3FED
FE (2-pole)	3X	31	AMCB6FEBFP	AFP3FED
FG (3-pole)	4X	40	AMCB4FGBFP	AFP4FGD
FG (2-pole)	4X	40	AMCB6FGBFP	AFP4FGD
TQD, THQD (3-pole)	3X	27	AMCB6QDFP	AFP3QDD
TQD, THQD (2-pole)	2X	27	AMCB4QDFP	AFP2QDD
TEB, TED, THED, SED, SEH, SEL, SEP (3-pole)	3X	27	AMCB6EBFP	AFP3SED
THED, SED, SEH, SEL, SEP (2-pole)	3X	27	AMCB4SEFP	AFP3SED
TEB, TED (2-pole)	2X	27	AMCB4EBFP	AFP2TED
SFH, SFL, SFP (3-pole)	3X	31	AMCB6FJFP	AFP3SFD
SFH, SFL, SFP (2-pole)	3X	31	AMCB4FJFP	AFP3SFD
TFJ, TFK, THFK (3-pole)	3X	36	AMCB6FJFPTF	AFP3TFD
TFJ, TFK, THFK (2-pole)	2X	36	AMCB4FJFPTF	AFP3TFD
SGH, SGL, SGP (3-pole)	4X	40	AMCB6GBFP	AFP4SGD
SGH, SGL, SGP (2-pole)	4X	40	AMCB4GBFP	AFP4SGD
TEY (3-pole)	3X	27	AMCB6EVFP	AFP3EYD
TEY (2-pole)	3X	27	AMCB4EVFP	AFP3EYD
Single Mounted Devices				
FG (3-pole)	4X	27	AMCB3FGMFP	AFP4FGS
FG (2-pole)	4X	27	AMCB2FGMFP	AFP4FGS
SFH, SFL, SFP (3-pole)	3X	27	AMCB3FJFP	AFP3SFS
SFH, SFL, SFP (2-pole)	3X	27	AMCB2FJFP	AFP3SFS
TFJ	3X	27	AMCB3FJFPTF	AFP3TFS
TFJ	3X	27	AMCB2FJFPTF	AFP3TFS
SGH, SGL, SGP (3-pole)	4X	27	AMCB3GMFP	AFP4SGS
SGH, SGL, SGP (2-pole)	4X	27	AMCB2GMFP	AFP4SGS
SKH, SKL, SKP, TKM, THKM (3-pole)	6X	40	AMCB3KMFP	AFP6SKS
SKP (3-pole)	6X	44	AMCB3KMFP	AFP6SKS
SKH, SKL, SKP, TKM, THKM (2-pole)	6X	40	AMCB2KMFP	AFP6SKS
SKP (2-pole)	6X	44	AMCB2KMFP	AFP6SKS

① Mounting kit with filler plate includes hardware, straps, brackets and filler plate.
 ② Filler plate kit includes filler plate and associated hardware only.
 Note: X=1.375"

Table 21. Spectra Bolt-On Hardware Kits
 (Hardware only; no brackets or straps)

Circuit Breaker Type	Catalog Number
FB	AHKBFB1
FC	AHKBFD1
FE	AHKBFE1
FG	AHKBFG1
S7H	AHKBS71
SE/THLC1	AHKBE1
SF	AHKBF1
SG	AHKBG1
THQD	AHKBQ1
THLC2,4	AHKBLB1

Table 22. Full Filler Plates (To cover unused spaces)

"X" Height of Space	Catalog Number		
	27"/31" Wide Box	36"/40" Wide Box	44" Wide Box
1X	APP1S	APP1	APP1W
2X	APP2S	APP2	APP2W
3X	APP3S	APP3	APP3W
4X	APP4S	APP4	APP4W
5X	APP5S	APP5	APP5W
6X	APP6S	APP6	APP6W

Enclosure Dimensions

Estimating Enclosure Dimensions

Spectra Series panelboard enclosures are provided in four box heights and five box widths. Enclosure sizes are determined by ampere rating and installed device sizes.

- A. Determine applicable main x-height and minimum enclosure width from tables 12.1 - 12.5.
 Enter: X-Height _____
 Minimum Width _____
- B. Determine total branch x-height and minimum enclosure width (switches and breakers may be mixed) from tables 13.1, 13.2 or 14.1.
 Enter: X-Height _____
 Minimum Width _____
- C. Total up x-heights and review table 20.1 to determine box height. If total X-height exceeds tabulated values, multiple panel sections are required.
 Enter: Total X-Height _____
 Box Height _____
 Box Width _____
 (Highest number from steps A or B)
- D. Multiple Section Panels: Include main lug x-height for each additional section. For 800 and 1200A ratings review note ① below table 20.1. When first section includes a main device, feed thru lugs are required – add MLO x-height to first section.
- E. See page 21 for box depth.

F. NEMA 3R/12 Enclosure size can be developed by following steps A thru C and using Table 21.1 to determine NEMA 3R/12 size.

Spectra Series® Power Panelboards

Physical Data

Spectra Series Power Panels

NEMA 1 Enclosure Dimensions

Enclosure boxes are constructed of code gauge galvanized sheet steel and meet UL 50. 27" thru 40" wide enclosure box steel is 0.069" thick, and 44" wide box steel is 0.108" thick.

All circuit breaker panel enclosures are 11.5" deep. When door over devices is required, a 14.25" deep box is provided for the 27", 31", and 40" wide enclosures and a 16.25" deep for the 36" and 44" wide enclosures.

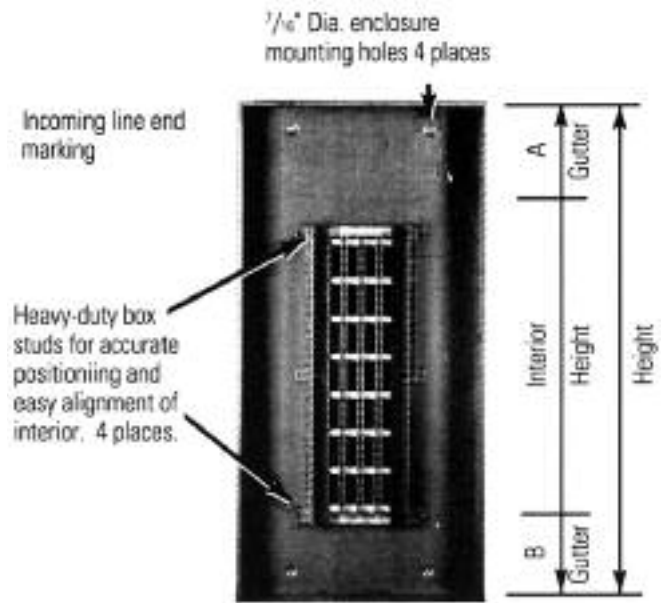


Table 23. Spectra Series Enclosures (Note: X value is 1.375")

Main Amp Rating	Interior Height		Gutter Inches		Enclosure Dimensions					
	X-Height	Inches	A	B	Height Inches	27" Wide	31" Wide	36" Wide	40" Wide	44" Wide
250	18X	24.75	19.94	19.94	64.63	APB2765	APB3165	APB3665	-	-
	23X	31.63	19.94	13.13	64.63	APB2765	APB3165	APB3665	-	-
	28X	38.50	19.94	6.25	64.63	APB2765	APB3165	APB3665	-	-
	38X	52.25	22.75	14.25	89.25	APB2789	APB3189	APB3689	-	-
	48X	66.00	19.94	10.25	96.13	-	APB3196	APB3696	-	-
400	18X	24.75	19.94	19.94	64.63	APB2765	APB3165	APB3665	APB4065	APB4465
	23X	31.63	19.94	13.13	64.63	APB2765	APB3165	APB3665	APB4065	APB4465
	28X	38.50	22.75	14.25	75.50	APB2775	APB3175	APB3675	APB4075	APB4475
	33X	45.38	22.75	21.25	89.25	APB2789	APB3189	APB3689	APB4089	APB4489
	38X	52.25	22.75	14.25	89.25	APB2789	APB3189	APB3689	APB4089	APB4489
	48X	66.00	19.94	10.25	96.13	-	APB3196	APB3696	APB4096	APB4496
600	23X	31.63	19.94 ^①	13.13 ^①	64.63 ^①	APB2765	APB3165	APB3665	APB4065	APB4465
	28X	38.50	22.75	14.25	75.50	APB2775	APB3175	APB3675	APB4075	APB4475
	33X	45.38	22.75	21.25	89.25	APB2789	APB3189	APB3689	APB4089	APB4489
	38X	52.25	22.75	14.25	89.25	APB2789	APB3189	APB3689	APB4089	APB4489
	43X	59.13	22.75	14.25	96.13	-	APB3196	APB3696	APB4096	APB4496
	48X ^③	66.00	19.94	10.25	96.13	-	APB3196	APB3696	APB4096	APB4496
800	23X	31.63	22.75 ^①	21.25 ^①	75.50	-	APB3175	APB3675	APB4075	APB4475
	28X ^②	38.50	22.75	14.25	75.50	-	APB3175	APB3675	APB4075	APB4475
	33X ^②	45.38	22.75	21.25	89.25	-	APB3189	APB3689	APB4089	APB4489
	38X	52.25	22.75 ^①	14.25	89.25 ^①	-	APB3189	APB3689	APB4089	APB4489
	43X ^②	59.13	22.75	14.25	96.13	-	APB3196	APB3696	APB4096	APB4496
	48X ^③	66.00	19.94	10.25	96.13	-	APB3196	APB3696	APB4096	APB4496
1200	23X	31.63	22.75 ^①	21.25 ^①	75.50	-	APB3175	APB3675	APB4075	APB4475
	28X ^②	38.50	22.75	14.25	75.50	-	APB3175	APB3675	APB4075	APB4475
	33X ^②	45.38	22.75	21.25	89.25	-	APB3189	APB3689	APB4089	APB4489
	38X	52.25	22.75 ^①	14.25	89.25 ^①	-	APB3189	APB3689	APB4089	APB4489
	43X ^②	59.13	22.75	14.25	96.13	-	APB3196	APB3696	APB4096	APB4496
	48X ^③	66.00	19.94	10.25	96.13	-	APB3196	APB3696	APB4096	APB4496

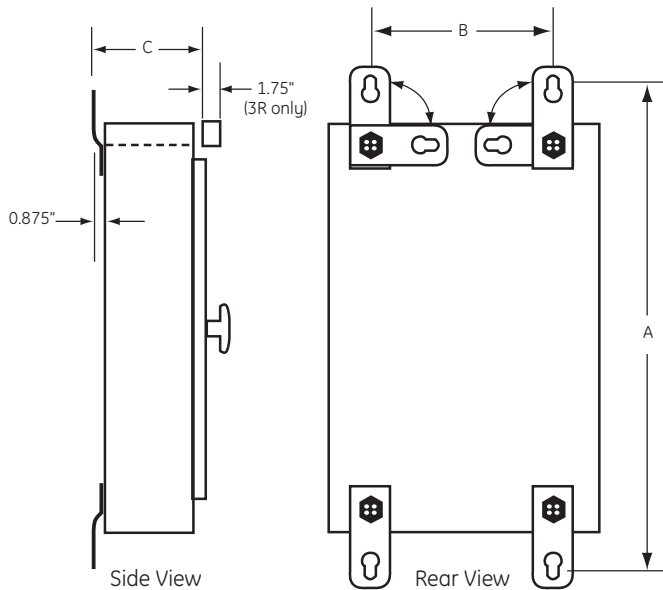
① This dimension may change if dual main or feed through and neutral are provided.

② This enclosure is available for use with a single main and single neutral only.

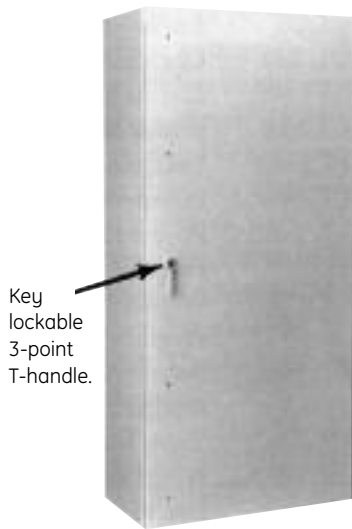
③ This enclosure is not available for use with 200% neutrals.

Spectra Series® Power Panelboards
Physical Data

NEMA 3R/12 and NEMA 4X Enclosure Dimensions



NEMA 3R/12 enclosures are UL 50 listed and constructed of galvanized steel and painted ANSI-61 gray. NEMA 4X enclosures are available in AISI-316 stainless steel grade.



Key lockable 3-point T-handle.

Table 24. NEMA 3R/12 and NEMA 4X Enclosure Dimensions (inches)

Exterior Box		A	B	C
Width	Height			
27.19	64.82	69.98	22.44	16.38
27.19	75.70	80.88	22.44	16.38
27.19	89.45	94.61	22.44	16.38
31.19	64.82	69.98	22.44	16.38
31.19	75.70	80.88	22.44	16.38
31.19	89.45	94.61	22.44	16.38
36.19	64.82	69.98	21.44	18.38
36.19	75.70	80.88	21.44	18.38
36.19	89.45	94.61	21.44	18.38
40.19	64.82	69.98	22.44	16.38
40.19	75.70	80.88	22.44	16.38
44.19	64.82	69.98	22.44	18.38
44.19	75.70	80.88	22.44	18.38

Table 25. Conduit Hubs (require field cut openings)
 Select the necessary hub from chart below and order from your GE distributor.

Nominal Conduit Diameter in Inches	Zinc Hub GE Catalog Number	Chrome Plated Zinc Hub GE Catalog Number
1/2	343L647G3	343L647G17
3/4	343L647G4	343L647G18
1	343L647G5	343L647G19
1 1/4	343L647G6	343L647G20
1 1/2	343L647G7	343L647G21
2	343L647G8	343L647G22
2 1/2	343L647G9	343L647G23
3	343L647G10	343L647G24
3 1/2	343L647G11	343L647G25
4	343L647G12	343L647G26

Spectra Series® Power Panelboards

Application Data

All GE panelboards meet the latest revision of the following standards except where otherwise noted:

- UL 50 Cabinets and Boxes, Electrical
- UL 50E Enclosure for Electrical Equipment, Environmental Considerations
- UL 67 Panelboards
- UL 98 Enclosed and Dead Front Switches
- UL 489 Circuit Breakers, Molded Case, and Circuit Breaker Enclosures
- UL 512 Fuseholders
- UL1446 Insulating Material
- UL 746D Polymeric Materials-Fabricated Parts
- UL 746B Polymeric Materials - Long-Term Property Evaluations
- UL 746A Polymeric Materials - Short-Term Property Evaluations
- UL 746C Polymeric Materials - Use in Electrical Equipment Evaluations
- UL 510 Tape, Insulating
- UL 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors
- UL 486B Wire Connectors for Use with Aluminum Conductors
- UL 891 Dead Front Switchboards
- UL 969 Marking and Labeling
- Article 384 National Electrical Code
- NEMA PB1 Panelboards; NEMA KS1, Switches
- Federal Panelboards, W-P-115a. Specifications Molded Case Circuit Breakers, WC-357B/GEN. Fusible switches, W-S-865c.
- CSA Certified Distribution Panelboards.

Note: Only panelboards containing all UL Listed devices can be UL labeled.

In addition to meeting or exceeding all applicable standards shown above, Spectra Series Power Panels meet GE's more stringent internal requirements, offering a greater margin of performance and protection.

The following classifications and limitations of panelboards have been established by the Underwriters' Laboratories and the National Electrical Code.

Note: An overcurrent protective device is a circuit breaker pole or single fuse.

Lighting Panelboards as per NEC 2005

- More than 10 percent of panelboard circuits are rated 30 amps or less, for which neutral connections are provided.
- Maximum 42 overcurrent protective devices per panel (including subfeeds but not main overcurrent protective devices). If more than 42 are required, two or more separate panelboards must be used. Example: A two-pole device is considered as two overcurrent devices.

- When two or more separate panelboards are used, subfeed lugs or thru-feed lugs (of same capacity as incoming mains) must be included in all sections except the last one. Cables or bus bars for interconnection are not included.

Power (or Distribution) Panelboards as per NEC 2005

There is no limitation as to the number and rating of branch circuits, except as determined by available enclosures.

Note: NEC 2008 no longer distinguishes lighting and appliance panelboards from distribution panelboards.

Service Entrance Equipment

- Must be located near the point of entrance of building supply conductors.
- Lighting and appliance panels must have one, but not more than two, main disconnections with a current rating equal to or less than panelboard rating.
- Power panelboards may have up to six operating handles to entirely disconnect panelboard from the source.
- Main disconnect must include ground fault protection if it provides more than 150 volts to ground, and a maximum current rating of 1,000 amps or more.
- Must include connector for bonding and grounding neutral conductor.
- A service entrance-type UL label must be factory-installed and will be provided on the equipment (when specified).

Service Conditions Equipment is rated for operation under the following usual service conditions, unless limited by the devices contained in the equipment. Unusual service conditions should be referred to the factory. These included requirements such as seismic, corrosive or explosive atmospheres, vibration, shock and unusual operating duties, and temperature.

Altitudes Equipment is rated for use up to a certain altitude. Above these altitude values, which vary dependent on the type of equipment being considered, the continuous current and voltage rating may require modification to account for increased temperature and lower dielectric strength. Standard ratings may be applied up to the following altitudes:

Table 26. Altitude Derating

Equipment	Rating Correction Required Above (Feet)
Low Voltage Panelboards	6600
Low Voltage Switchboards	6600
Low Voltage Switchgear	6600
Low Voltage Motor Control Centers	3300
Medium Voltage Motor Control	3300
Medium Voltage Switchgear	3300

Spectra Series® Power Panelboards

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For derating correction factors to be applied when the altitude exceeds the above, refer to the equipment application bulletins or factory.

Ambient Temperature Equipment is rated for use in a given ambient, and if exceeded, the continuous current rating requires derating. Rating correction is required if applied in an ambient exceeding the following:

Table 27. Ambient Derating

Equipment	Ambient
Low Voltage Panelboards	40°C
Low Voltage Switchboards	25°C
Low Voltage Switchgear	40°C
Low Voltage Motor Control Centers	40°C
Medium Voltage Motor Control	40°C
Medium Voltage Switchgear	40°C

For derating correction factors to be applied when the ambient exceeds the above, refer to the equipment application bulletins or factory.

Current. The continuous current carried by a protective device should not exceed 80% of the device rating unless the equipment or assembly, including the protective device, is listed for continuous operation at 100% of its rating. A continuous load current is one that continues for three hours or more. A noncontinuous load current may be 100% of the device rating.

Low-voltage fusible switches are standard-rated 80% except high pressure contact and bolted pressure switches, which are 100% rated. Molded case circuit breakers equipped with thermal magnetic trips are standard-rated (80%). When equipped with electronic trips, they can be standard (80%) or 100% rated.

When mounted in equipment, MCCB and fusible switches in group-mounted configuration are all standard (80%) rated. In individual mounted configuration, MCCB with electronic trip can be standard (80%) or 100% rated. Insulated case circuit breakers are standard (80%) or 100% rated. Low-voltage power circuit breakers, type AKR, medium-voltage fuses, and medium-voltage breaker PowerVac are all 100% rated. Low-voltage protective devices are fast operating and their short-circuit rating is based on the maximum current during the first half cycle of fault current flow. The total fault current at initiation of fault consists of two components: the ac and dc components. The ac component is defined as the symmetrical rms current, and ac plus dc, the asymmetrical rms current. The magnitude and rate of decay of the dc component is a function of the reactance to the resistance (X/R) ratio. Low-voltage protective devices are rated on the basis of

symmetrical rms amps, but tested at known X/R ratios to assure capability of interrupting the total fault current asymmetrical fault. The X/R ratios at which they are tested are as follows:

Table 28

Low Voltage Protective Device		X/R
Power Circuit Breaker (AKR)		6.6
Insulated Case Circuit Breaker (ICCB)		4.9
Molded Case Circuit Breaker		
Interrupting Rating	20KA	4.9
	10 20KA	3.2
	10KA	1.7
Current Limiting Fuses		4.9

Thus, the low-voltage protective device interrupting rating symmetrical rms must be equal to, or greater than, the circuit symmetrical rms fault current and test X/R equal to, or greater than, circuit X/R at point of application. If the circuit asymmetrical current should be greater than the protective device will withstand, then the protective devices interrupting rating must be derated. Derating factors are identified in the applicable application bulletins and standards.

Medium-and high-voltage fuses are rated in terms of symmetrical current, but can withstand the total asymmetrical current provided the X/R ratio does not exceed 15. If the circuit where applied exceeds an X/R of 15, then it is necessary to derate the symmetrical current rating in accordance with the applicable standard. Proper application of medium- and high-voltage breakers requires that the circuit-short-circuit duties during the first cycle (momentary), and at contact parting time (interrupting), be compared with the circuit breaker's short-circuit capability to close and latch during the first cycle, and to interrupt at some time later. Refer to GET 3550 to determine methods of calculating short-circuit currents for proper application.

Spectra Series® Power Panelboards
Application Data

NEC References

Conductors for General Wiring

Table 29. Ampacities of insulated conductors rated 0-2000 Volts, 60°C to 90°C.

Not more than three conductors in raceway or cable or earth (directly buried), based on ambient temperature of 30°C (86°F).

Size AWG Kcmil	Temperature Rating of Conductor								Size AWG Kcmil
	Copper				Aluminum or Copper-Clad Aluminum				
	60°C (140°F)	75°C (167°F)	85°C (185°F)	90°C (194°F)	60°C (140°F)	75°C (167°F)	85°C (185°F)	90°C (194°F)	
	Types TW [Ⓛ] , UF [Ⓛ]	Types FEPW [Ⓛ] , RH [Ⓛ] , RHW [Ⓛ] , THW [Ⓛ] , THHW [Ⓛ] , THWN [Ⓛ] , XHHW [Ⓛ] , USE [Ⓛ] , ZW [Ⓛ]	Type V	Types TA, TBS, SA, SIS, FEP [Ⓛ] , FEPB [Ⓛ] , RHH [Ⓛ] , THHN [Ⓛ] , THHW [Ⓛ] , XHHW [Ⓛ]	Types TW [Ⓛ] , UF [Ⓛ]	Types RH [Ⓛ] , RHW [Ⓛ] , THW [Ⓛ] , THHW, THWN [Ⓛ] , XHHW [Ⓛ] , USE [Ⓛ]	Type V	Types TA, TBS, SA, SIS, RHH [Ⓛ] , THHN [Ⓛ] , THHW [Ⓛ] , XHHW [Ⓛ]	
18				14					
16			18	18					
14	20 [Ⓛ]	20 [Ⓛ]	25	25 [Ⓛ]					
12	25 [Ⓛ]	25 [Ⓛ]	30	30 [Ⓛ]	20 [Ⓛ]	20 [Ⓛ]	25	25 [Ⓛ]	12
10	30	35 [Ⓛ]	40	40 [Ⓛ]	25	30 [Ⓛ]	30	35 [Ⓛ]	10
8	40	50	55	55	30	40	40	45	8
6	55	65	70	75	40	50	55	60	6
4	70	85	95	95	55	65	75	75	4
3	85	100	110	110	65	75	85	85	3
2	95	115	125	130	75	90	100	100	2
1	110	130	145	150	85	100	110	115	1
1/0	125	150	165	170	100	120	130	135	1/0
2/0	145	175	190	195	115	135	145	150	2/0
3/0	165	200	215	225	130	155	170	175	3/0
4/0	195	230	250	260	150	180	195	205	4/0
250	215	255	275	290	170	205	220	230	250
300	240	285	310	320	190	230	250	255	300
350	260	310	340	350	210	250	270	280	350
400	280	335	365	380	225	270	295	305	400
500	320	380	415	430	260	310	335	350	500
600	355	420	460	475	285	340	370	385	600
700	385	460	500	520	310	375	405	420	700
750	400	475	515	535	320	385	420	435	750
800	410	490	535	555	330	395	430	450	800
900	435	520	565	585	355	425	465	480	900
1000	455	545	590	615	375	445	485	500	1000
1250	495	590	640	665	405	485	525	545	1250
1500	520	625	680	705	435	520	565	585	1500
1750	545	650	705	735	455	545	595	615	1750
2000	560	665	725	750	470	560	610	630	2000
Ambient Temp.°C	AMPACITY CORRECTION FACTORS For ambient temperatures other than 30°C, multiply the ampacities shown by the appropriate factor shown below.								Ambient Temp.°F
31-35	.91	.94	.95	.96	.91	.94	.95	.96	88-95
36-40	.82	.88	.90	.91	.82	.88	.90	.91	97-104
41-45	.71	.82	.85	.87	.71	.82	.85	.87	106-113
46-50	.58	.75	.80	.82	.58	.75	.80	.82	115-122
51-55	.41	.67	.74	.76	.41	.67	.74	.76	124-131
56-60		.58	.67	.71		.58	.67	.71	133-140
61-70		.33	.52	.58		.33	.52	.58	142-158
71-80			.30	.41			.30	.41	160-176

Ⓛ The overcurrent protection for these conductor types shall not exceed 15 amps for 14 AWG, 20 amps for 10 AWG copper, or 15 amps for 12 AWG and 25 amps for 10 AWG aluminum and copper-clad aluminum after any correction. Factors for ambient temperature and number of conductors have been applied.

Spectra Series® Power Panelboards

Application Data

Conductors for General Wiring

Table 30. Ampacities of insulated conductors rated 0-2000 Volts, 60°C to 90°C.

Single conductors in free air, based on ambient temperature of 30°C (86°F).

Size AWG Kcmil	Temperature Rating of Conductor								Size AWG Kcmil
	Copper				Aluminum or Copper-Clad Aluminum				
	60°C (140°F)	75°C (167°F)	85°C (185°F)	90°C (194°F)	60°C (140°F)	75°C (167°F)	85°C (185°F)	90°C (194°F)	
	Types TW ^① , UF ^①	Types FEPW ^① , RH ^① , RHW ^① , THW ^① , THHW, THWN ^① , XHHW ^① , ZW ^①	Type V	Types TA, TBS, SA, TW ^① , SIS, FEP ^① , FEPB ^① , RHH ^① , THHN ^① , XHHW ^① , MI	Types TW ^① , UF ^①	Types RH ^① , RHW ^① , THW ^① , THHW, THWN ^① , XHHW ^①	Type V	Types TA, TBS, SA, SIS, RHH ^① , THHN ^① , THHW ^① , XHHW ^① , MI	
18				18					
16			23	24					
14	25 ^①	30 ^①	30	35 ^①					
12	30 ^①	35 ^①	40	40 ^①	25 ^①	30 ^①	30	35 ^①	12
10	40	50 ^①	55	55 ^①	35 ^①	40 ^①	40	40 ^①	10
8	60	70	75	80	45	55	60	60	8
6	80	95	100	105	60	75	80		6
4	105	125	135	140	80	100	105		4
3	120	145	160	165	95	115	125		3
2	140	170	185	190	110	135	145		2
1	165	195	215	220	130	155	165		1
1/0	195	230	250	260	150	180	195	205	1/0
2/0	225	265	290	300	175	210	225	235	2/0
3/0	260	310	335	350	200	240	265	275	3/0
4/0	300	360	390	405	235	280	305	315	4/0
250	340	405	440	455	265	315	345	355	250
300	375	445	825	505	290	350	380	395	300
350	420	505	855	570	330	395	430	445	350
400	455	545	885	615	355	425	465	480	400
500	515	620	950	700	405	485	525	545	500
600	575	690	750	780	455	540	595	615	600
700	630	755	500	855	500	595	650	675	700
750	655	785	515	885	515	620	675	700	750
800	680	815	535	920	535	645	700	725	800
900	730	870	565	985	580	700	760	785	900
1000	780	935	1020	1055	625	750	815	845	1000
1250	890	1065	1160	1200	710	855	930	960	1250
1500	980	1175	1275	1325	795	950	1035	1075	1500
1750	1070	1280	1395	1445	875	1050	1145	1185	1750
2000	1155	1385	1505	1560	960	1150	1250	1335	2000
Ambient Temp.°C	AMPACITY CORRECTION FACTORS For ambient temperatures other than 30°C, multiply the ampacities shown by the appropriate factor shown below.								Ambient Temp.°F
31-35	.91	.94	.95	.96	.91	.94	.95	.96	88-95
36-40	.82	.88	.90	.91	.82	.88	.90	.91	97-104
41-45	.71	.82	.85	.87	.71	.82	.85	.87	106-113
46-50	.58	.75	.80	.82	.58	.75	.80	.82	115-122
51-55	.41	.67	.74	.76	.41	.67	.74	.76	124-131
56-60		.58	.67	.71		.58	.67	.71	133-140
61-70		.33	.52	.58		.33	.52	.58	142-158
71-80			.30	.41			.30	.41	160-176

① The overcurrent protection for these conductor types shall not exceed 20 amps for 14 AWG, 25 amps for 12 AWG, 40 amps for 10 AWG copper, or 20 amps for 12 AWG and 30 amps for 10 AWG aluminum and copper-clad aluminum after any correction. Factor for ambient temperature has been applied.

* For dry locations only. See 75°C column for wet locations.

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Terminology

Ambient Temperature is the temperature of the surrounding medium that comes in contact with a fuse or breaker.

Ampacity is the amount of current a fuse will carry continuously without deterioration, or a circuit breaker without tripping and without exceeding temperature rise limits specified for a particular fuse or circuit breaker by NEC requirements and UL standards.

Amp Setting, Adjustable varies the continuous current-carrying ability of a breaker through a predetermined range.

Arcing Fault is a high-impedance connection, such as an arc through air or across insulation, between two conductors.

Arcing Time, in a fuse, is the amount of time that elapses between the melting of the current-responsive element, such as a link, to the final circuit interruption. Arcing time is dependent upon such factors as circuit voltage and impedance.

Available Short-Circuit Current is the maximum rms (root-mean-square) symmetrical current at a given point in a power system.

Branch Circuit is the circuit conductor between the final overcurrent device protection and the outlets or point of use.

Bus Bar is a solid aluminum or copper alloy bar that carries current to the branch or feeder devices in a power panelboard or switchboard. There is at least one bus bar for each phase of the incoming electrical service.

Compression Lug, also called a crimp lug, is a lug that is crimped to hold cable.

Continuous Load is when the maximum current is expected to continue for three hours or more. (NEC Article 100)

Current Density is the amount of current traveling through a member (cable, bus bar, etc.). It is a cross-section measurement of the member in amps per square inch.

Current Sensors monitor and measure line-to-load and return line-to-line current. An imbalance causes a relay to signal the breaker to trip at a preset time and current level if ground fault function is present.

Dead Front construction is where energized parts are not exposed to a person on the operating side of the equipment.

Double-Branch A mounting module that contains two fusible switch units or circuit breakers installed side by side.

Electrical Service or System is the conductors and equipment which delivers energy from the electrical supply system to the wiring system of the premises served. The service or system consists of the number of phases, number of wires, voltages

and amps. Type of service determines the number of poles on the main device, the numbers of poles valid for feeder or branch devices, and the minimum voltages for 1-, 2-, or 3-pole breakers and fusible switches.

Enclosure is a constructed case to protect personnel against contact with the enclosed equipment and to protect the enclosed equipment against environmental conditions.

Equipment Grounding is the interconnection and grounding of electrical material that either encloses or is adjacent to power conducting components. (NEC 250-91(b))

Expansion Kit An assembled kit that can be installed in an empty side of a double-branch fusible switch unit to create a new fusible switch unit. It includes the handle, base plate, cover plate, load base and switch.

Feeder Circuit is all circuit conductors between the service equipment or the source of a separately derived system and the final branch-circuit overcurrent device.

Filler Mounts on side of fusible switch module, circuit breaker module, or between side trims to cover the front of the enclosure. The fillers plus trim comprise the enclosure front around the installed devices.

Frame Size is a specific size of breaker with a specific range of amp ratings. For example, an F-frame breaker is available in ratings of 70 amps to 225 amps in a 225 amp frame.

Front is the part of the panelboard that protects the interior of the panelboard from environmental elements and prevents accidental contact with the panel's interior live conductors.

Fuseholder or Fuse Block is an assembly of fuse clips and insulation for mounting and connecting a fuse into the circuit.

Fusible Switch is a device that can switch off current flow and to which a fuse(s) is added to protect conductors.

I^2t is the measure of heat energy developed within a circuit, in which I^2 stands for effective let-through current squared, and t is time in seconds.

Interior The side rails, bus bars and insulation system that mounts in the enclosure. It is energized through the main device (lugs, fusible switch or circuit breaker) and in turn energizes the installed circuit protective devices (fusible switch or circuit breaker).

Interrupting Rating is the highest rms-rated current a fuse or breaker is intended to interrupt under specified conditions.

Jaw Metal parts that grip the interior bus bar and conduct electricity to the module bus bars. The jaws are spring-reinforced to provide a highly reliable electrical connection.

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Line refers to the incoming (live) side of equipment or device.

Load is the outgoing (switched) side of equipment or device.

Lug is a device to terminate cables.

Magnetic Trip is synonymous with instantaneous trip and describes a tripping acting with no intentional time delay. Current exceeding the magnetic trip level will actuate the trip mechanism and open the breaker contacts immediately.

Main Device is a fusible switch or circuit breaker that can isolate the panelboard from incoming power.

Main Lug is the connecting means between the incoming service cable and the bus bar.

Mechanical Lug is a terminal with one or more wire binding screws that are tightened to hold the conductor or cable.

Overcurrent is any current in excess of the rated current of equipment or the ampacity of a conductor that can result from an overload, a short circuit or a ground fault.

Pole The number of output terminals on a fusible switch or breaker that must be insulated and separated from each other.

Power Panelboard is any panelboard that is not a lighting or appliance panelboard as specified by UL and NEC and is not limited as to the number and rating of branch circuits, except for available spacing and physical size. The dead-front panelboard is accessible from the front only.

Quick-make, Quick-break The action of a mechanism where the speed of the contacts in opening and closing a breaker or fusible switch is not controlled by the operator.

Rejection Fuse and Clip is a combination of Class R fuses and clips that will not accept fuses with a lower short-circuit rating. This type of fuse and clip has a mechanism that rejects standard NEMA Class H fuses.

Rotor Mechanism in fusible switch unit that mechanically ensures all switch blades open/close simultaneously.

Selective Tripping is the application of circuit breakers or fuses in series, so that, of the breakers or fuses carrying fault current, only the one nearest the fault opens and isolates the faulted circuit from the system.

Series-Connected Rated Panel means the UL Listed short-circuit rating of the panel is equal to the IC rating of the main protective device when properly applied with its branch circuit protective devices.

Service Disconnect is a device or group of devices that disconnects all ungrounded conductors.

Service Entrance Equipment, such as power panelboard, consists of a fusible switch or breaker located near the point of entrance of supply conductors to a building and serves as the main control and disconnect of electrical power. Service entrance equipment must include a connector for bonding and grounding the neutral conductor at the entrance point of the supply conductors and bear a UL service entrance label.

Shunt Trip opens a fusible switch breaker by remote control.

Single-Branch A mounting module that is sized to accept one fusible switch unit or circuit breaker. A single-branch fusible switch module may have one fusible switch unit factory-installed on one side, and the other side specified empty (blank) to facilitate installing future expansion kits.

Thermal Trip protects against sustained overloads. A bimetallic element reacts time-wise in inverse proportion to the current. If a circuit is overloaded, heat from excessive current flow causes the bimetal to bend, actuating the trip mechanism to open the breaker.

Time Delay is a term used by NEMA, ANSI and UL to denote a minimum opening time of 10 seconds on an overload current five times the amp rating of a circuit breaker or Class H, K, J and R fuses. Time delay is useful to let through momentary current inrushes, such as in motor startups, without interrupting the circuit.

Trim The four pieces of painted steel (top, bottom and each side) that cover the front of the enclosure. The trim plus fillers comprise the enclosure front.

Trip Function is that portion of the breaker that senses fault conditions, controls the associated logic functions and initiates and powers the breaker trip device.

Trip Mechanisms are independent of manual control handles. The breaker will trip when a fault occurs, even if the handle is held in the "ON" position.

Undervoltage release instantaneously trips the breaker when voltage (control or line) drops to 30%-70% of nominal rating.

Voltage is electrical pressure that moves electrons through a conductor and is measured in volts.

Voltage Rating is the rms alternating current voltage at which a fuse or circuit breaker is designed to operate.

X Value is a vertical measurement of the usable mounting space on a panelboard for a fusible switch or breaker. X is equal to 1 3/8 inches (1.375"). Height of the interior is the sum of the horizontally mounted, panel-mounted components.

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Publications

Spectra Series Power Panels Plug-In and Bolt-On

Installing AMB Main Lug Kits

Mechanical Lugs Only	DEH-070
Compression Lugs Only	DEH-071

Installing Circuit Breaker Fillers/Covers

FB	DEH-41125
FC	DEH-40536
FE	DEH-41271
SE, SF, TF, TE, TQ, TEL	DEH-042
TEY, THQB, THHQB	DEH-044
SGDA, SGHA, SGLA, SGPA	DEH-045
SKHA, SKLA, SKPA	GEH-5629
APP Filler Plates	GEH-5583
AFP Filler Plates	GEH-5590

Installing Interiors

Installing APN and APNB Interiors into APB Enclosures	GEH-5589
Installing Dead Fronts and Fronts	GEH-5587
Installing Type APF Surface Front Trim	GEH-5930

Installing Boxes, Box Extensions & Endwalls

NEMA 3R, 12 & 4X Enclosures	GEH-6269
Box Extensions	GEH-5631
Endwall Kit	GEH-5925

Installing Lugs

Crimp Lug Kits (Main Lugs Only)	GEH-5595
Mechanical Lug Kits (Main Lugs Only)	GEH-5596

Installing Neutrals & Grounds

Type ANKN Neutrals	GEH-6289
Ground Fault Neutral 1200 Max. Amperes	GEH-5683
Type ANK Neutrals	GEH-5585
Type ANKT (200% Rated) Neutrals	GEH-6501
Equipment Ground	GEH-5586

Miscellaneous

Permanent Circuit Markers	GEH-5598
Installation of Drip Resistant Cover	GEH-5926
Typical - Circuit Breaker Mains and Feeders Spectra Series Panelboards	DE-208
Application Guide	GET-7006
Spectra Series Panelboards Q&A	DEQ-059
UL Component Recognized Series Connected Ratings	DET-008
NEMA Instructions for Installation, Operation and Maintenance	PB 1.1

Spectra Series Plug-In (only)

Circuit Breaker Mounting Instructions (Modules)

FB	DEH-41123
FC	DEH-40403
FE	DEH-40402
FG	DEH-40419
SKHA, SKLA, SKPA	GEH-5623
TJK, TJD, TJJ	GEH-5624
TEB, TED, THED, TEL, SEDA, SEHA, SELA, SEPA	GEH-5625
TFJ, TFK, THFK, TFL, SFHA, SFLA, SEPA	GEH-5626
TQD, THQD	GEH-5643
THLC1	GEH-5644
SGDA, SGHA, SGLA, SGPA (3 pole)	GEH-5673
SGDA, SGHA, SGLA, SGPA (2 pole)	GEH-5674
TEY, THQB, THHQB	GEH-5677

Circuit Breaker Mounting Hardware Kits

FB, FC, FE, FG, TQD, THQD, SE, TEB, TED, THED, THLC1, SF, TFJ, TFK, THFK, SG, TJD, TJJ	GEH-5913
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Installing Lugs

Type AML Main Lug Kits	GEH-5588
Type AML Feed Thru Main Lug Kits	GEH-5630

Installing Fusible Switches

Fuse Pullers	DEH-034
Class R Fuse Rejector Kit	GEH-4616
R Fuse Rejection Pin, 400-600 Ampere Switch Units	GEH-5577
Lugs Kits into GE Type ADS Switches	GEH-5944
Alternate Lugs, 30-1200 Ampere Fusible Switch Units	GEJ-3050

Installing Fusible Switch Expansion Kits

30/60 Ampere Expansion Kit	GEH-5547
60A, 100A Expansion Kits for Type ADS Fusible Switch Units	GEH-5581
200 Ampere Expansion Kit (J, T Fuses)	GEH-5582
200 Ampere Expansion Kit (H, K, R Fuses)	GEH-5889

Handle and Load Base Replacements on Fusible Switches

Handle Replacement: 400-1200 Ampere Switches	GEH-5553
Load Base Replacement for Type ADS 400-600 Ampere Switches	GEH-5576

Miscellaneous

Typical - Fusible Mains and Feeders	DE-166
Technical Data, Spectra Series Panelboards - Pressure Locked Connectors	DE-168
TVSS	DEH-40443

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Spectra Series Bolt-On (only)

Circuit Breaker Mounting Instructions (Straps)

FB	DEH-41124
FC	DEH-40424
FE	DEH-40425
FG	DEH-41047
TEB, TED, THED, SED, SEH, SEL, SEP	DEH-047
SGH, SFL, SFP	DEH-059
SGH, SGL, SGP	DEH-060
SKH, SKL, SKP, TKM, THKM	DEH-061
TEY	DEH-062
THLC1	DEH-063
THLC2, THLC4	DEH-064
TQD, THQD	DEH-065

Guideform Specifications – Spectra Series Bolt-On Panelboards

General

Furnish and install power panelboards molded case circuit breaker type with dead-front construction as shown on plans and described herein as General Electric Spectra Series™ panelboards. Panelboards shall be listed and labeled by Underwriters Laboratories, Inc. in accordance with UL Standard 67, and shall conform to the latest requirements of the National Electrical Code NEMA standard PB.1. The panelboard shall meet service entrance requirements when specified.

Enclosures

Panelboard enclosures shall be corrosion-resistant galvanized (zinc finished) sheet steel with removable end walls. Fronts shall be hot-rolled steel, coated with a phosphatized rust inhibitor and then finish coated with ASA61 acrylic enamel powder coat.

Fronts

A four-piece front shall be furnished as standard to provide ease of access to the wiring gutter.

When specified on the drawings, a front with a single door shall be provided for panel boxes less than 31" wide. For panel boxes 31" wide or wider, door-in-door type fronts shall be provided when fronts are indicated on the drawings. Door-in-door construction shall consist of a one-piece front with two lockable doors. The smaller door shall provide access to protective device handles and the larger door shall allow access to device load terminals and the wiring gutter.

When fronts with doors are specified, all doors shall be provided with locks. All doors shall be held in place by continuous piano hinges which are welded to the front.

Main and Branch Devices

Main and branch protective devices shall be of the circuit breaker type. The circuit breakers shall be quick-make, quick-break and shall be trip indicating. The circuit breakers shall be UL labeled for the application and shall be rated for the available short circuit current as shown on the plans.

Bolt-On Interiors

The panelboard symmetrical interior shall be designed and assembled so that the main and branch circuit breakers are connected to the interior bus bars with copper mounting straps. Anti-turn clips shall be used to prevent the straps from turning or twisting during installation. If anti-turn clips are not used, at least two bolts shall be used to prevent twisting or turning of the straps during installation. The interior shall have insulation barriers installed over unused spaces for extra protection when field service is required.

Bus Bars

Bus bars shall be current density rated and meet UL67 temperature rise limits through actual tests. Bus bar current density rating shall be 750 amps per square inch for aluminum or 1000 amps per square inch for copper as required by the contract documents. Reduced current density bus shall have ratings of 600 amps per square inch for aluminum or 800 amps per square inch for copper are also available.

Bus bars shall be sequenced-phased, and rigidly supported by high-impact resistant, insulated bus supporting assemblies to prevent vibration and resulting damage when subjected to stress, vibration or short circuits. All solderless terminations shall be suitable for either copper or aluminum UL Listed wire or cable and shall be tested and listed in conjunction with appropriate UL standards. Panelboards shall be so designed to permit the incoming line conductors to enter either the top or bottom of the enclosure.

The neutral bar shall be fully rated and capable of being relocated to either corner of the enclosure at the line end to facilitate conductor termination.

Ground wire terminations shall be provided as an option in kit form suitable for installation by the panelboard installer without voiding UL label.

Series Ratings

All panelboard series-connected ratings shall be prominently displayed, and all current ratings of protective devices shall be displayed on the device label.

Guideform Specifications – Spectra Series Plug-In Panelboards

General

Furnish and install power panelboards either fused-switch or molded case circuit breaker type with dead-front construction as shown on plans and described herein as General Electric Spectra Series™ panelboards. Panelboards shall be listed and labeled by Underwriters Laboratories, Inc. in accordance with UL Standard 67, and shall conform to the latest requirements of the National Electrical Code NEMA standard PB.1. The panelboard shall meet service entrance requirements when specified.

Enclosures

Panelboard enclosures shall be corrosion-resistant galvanized (zinc finished) sheet steel with removable end walls. Fronts shall be hot-rolled steel, coated with a phosphatized rust inhibitor and then finish coated with ASA acrylic enamel powder coat.

Fronts

A four-piece front shall be furnished as standard to provide ease of access to the wiring gutter.

When specified on the drawings, a front with a single door shall be provided for panel boxes less than 31" wide. For panel boxes 31" wide or wider, door-in-door type fronts shall be provided when fronts are indicated on the drawings. Door-in-door construction shall consist of a one-piece front with two lockable doors. The smaller door shall provide access to protective device handles and the larger door shall allow access to device load terminals and the wiring gutter.

When fronts with doors are specified, all doors shall be provided with locks. All doors shall be held in place by continuous piano hinges which are welded to the front.

All fronts shall be mounted to the box with zinc-coated screw fasteners to retard corrosion.

Main and Branch Devices

Main and branch-fusible switches shall be of the positive, quick-make, quick-break type with double-break, over-center mechanism. The external handle shall be suitable for padlocking in the "OFF" position and is interlocked with the switch cover to prevent access to the switch interior when the switch is in the "ON" position - an interlock override release is provided. Fusible switch units shall be fully interchangeable without disturbing the adjacent units and shall be capable of withstanding the available let-through short-circuit current as shown on the plans.

Main and branch circuit breakers shall be quick-make, quick-break, and trip-indicating. All two and three pole breakers shall have interchangeable trips. Interrupting rating of the

circuit breaker shall not be less than the maximum short-circuit currents available at the incoming line terminals as shown on the plans.

Interiors

Panelboard symmetrical interior shall be designed and assembled so that the circuit-protective modules (either fused switches less than 800A or circuit breakers) are mounted onto the bus bar with self-aligning spring reinforced pressure-locked connectors. The circuit-protective module can be removed or replaced without disturbing adjacent protective devices and without removing the main bus or branch circuit connections. The interiors shall be capable of supporting compatible fusible switches and molded case circuit breakers in the same panelboard. Insulation barriers are installed over vertical bus to provide protection when field service is required for changes.

Bus Bars

Bus bars shall be current density rated and meet UL67 temperature rise limits through actual tests. Bus bar current density rating shall be 750 amps per square inch for aluminum or 1000 amps per square inch for copper as required by the contract documents. Reduced current density bus shall have ratings of 600 amps per square inch for aluminum or 800 amps per square inch for copper are also available.

Bus bars shall be sequenced-phased, and rigidly supported by high-impact resistant, insulated bus supporting assemblies to prevent vibration and resulting damage when subjected to stress, vibration or short circuits. All solderless terminations shall be suitable for either copper or aluminum UL Listed wire or cable and shall be tested and listed in conjunction with appropriate UL standards.

Panelboards shall be so designed to permit the incoming line conductors to enter either the top or bottom of the enclosure.

The neutral bar shall be fully rated and capable of being relocated to either corner of the enclosure at the line end to facilitate conductor termination.

Ground wire terminations shall be provided as an option in kit form suitable for installation by the panelboard installer without voiding UL label.

Series Ratings

All panelboard series-connected ratings shall be prominently displayed, and all current ratings of protective devices shall be displayed on the device label.

Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, express or implied, that such performance will be obtained under end-use conditions.

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