



# AE/RE/AS/RS lighting panel

## Application guide

### Installation

Consult instructions NEMA PB-1.1 located in the circuit directory on the front door before installing this panelboard. If necessary, order replacement manual from supplier.

### Wiring guidelines (Cu or Al)

- Use 60°C or 75°C ampacity sized wire on line and neutral and equipment ground terminals.
- Standard wire sizes listed in this publication may be changed by using alternate terminal kits.
- Refer to circuit breakers for allowable wire temperature rating, wire size and tightening torque.
- Neutral rated for 200% panelboard phase current option.
  - Use copper wire only at neutral main lugs
    - 125A (1) neutral cables 250 mcm maximum
    - 225A (2) neutral cables 250 mcm maximum
    - 400A (2) neutral cables 600 mcm maximum
    - 600A (4) neutral cables 350 mcm maximum

Suitable for nonlinear loads, 200% rated neutral, additional “Y” lugs provided for 200% neutral.

### Short circuit current rating

The panelboard’s maximum short circuit interrupting rating in rms symmetrical amperes, is equal to the lowest interrupting rating of any device installed, except as noted in the series rating listed in 1TQC173100E0001, with integral or remote main circuit breaker or fusible switch installed upstream of the panelboard. Devices to be installed or replacement units shall be from the same manufacturer, of the same type, and have equal or greater interrupting capacity.

Maximum continuous loads on main or branch circuits shall not exceed 80% of the ratings of the listed circuit breakers. Branch breaker straps suitable for 180A maximum. This applies only to AE/RE where TEY or TEYF branches are applied. When TEYD/H/L branches are applied, the design is AS and the strap rating is 250A.

### Tripped breaker

If the breaker trips, handle will be in intermediate position.

### Instructions To Restore Power

1. Move handle to OFF position.
2. Then move handle to ON position.



### Seismic rating

Meets or exceeds the requirements according to

#### • IBC-2018

Sds = 2.0g, Ip = 1.5, for z/h = 1.0 in accordance with ICC-ES-AC156 2010

Sds = 2.5g, Ip = 1.5, for z/h = 0.0 in accordance with ICC-ES-AC156 2010

### Polybag contents

A polybag of goods supplied with every panelboard interior contains:

- Arc flash label
- 1TQC173100E0001 series ratings, wiring diagrams and circuit directory
- Series rating sticker
- Front installation instructions
- ANSI PB1 documentation
- Circuit numbering stickers (1-84)
- Front and shield mounting screws

## Torque

### Tightening torque

Applies to line, neutral and equipment ground terminal

Slotted Screw			Internal Hex		
AWG Wire	Lbs-Ins		Hex Size	Lbs-Ins	
	Min	Max		Min	Max
14-10	32	35	3/16	108	120
8	36	40	1/4	180	200
6-4	41	45	5/16	240	275
3-2/0	45	50	3/8	330	375
			1/2	450	500

### Torque values for hardware

Screw Size	Torque (In-Lbs)
#4 Steel	16
#10 Plastic	16
#8 Cu/Al/Steel	24
#10-32 Cu/Al/Steel	32
1/4-20 Al/<.150 Thick Cu	44
1/4-20 .150 Thick Cu	60
5/16-18 Cu/Al/Steel	110
3/8-16 Cu/Al/Steel	220
1/2-13 Cu/Al/Steel	220

## Lug kits

### Lug kits for panelboards

Rating	Pressure Lug Kit		Crimp Lug Kit		Pressure Lug Kit	
	Cat. No.	Wire Range Al/Cu	Cat. No.	Wire Range Al/Cu	Cat. No.	Wire Range Cu Only
125A	MLA1	6-350	MLT1	4-300	MLR1	4-350
225A	MLA2	1/0-250	MLT2	2/0-500	MLR2	1/0-600
400A	Standard - MLA41	4-600	MLT41	500-750 (Cu Only)	MLR41	1/0-600
	Oversize - MLA62	3/0-800 (Main) and 4-600 (Neutral)	-	-	-	-
600A	Standard -MLA61	4-500	-	-	MLR61	1/0-600

### Crimp tools

Wire	Crimp Tool
Up to #6-1000 MCM Cu and #5-750 kcmil Al	Burndy Tool Y644HS

### Neutral lug Z

Holes	Wire Size - Cu/Al
Large	2/0-14
Small	No. 4-14

## WARNING

ELECTRICAL ARC FLASH HAZARD  
PERSONAL PROTECTION  
EQUIPMENT REQUIRED  
FAILURE TO COMPLY CAN RESULT  
IN INJURY OR DEATH  
REFER TO NFPA 70E

10091352P1

Article 110.16 Flash Protection, NEC

Switchboards, panelboards, industrial control panels and motor control centers that are likely to require examination, adjustment, servicing, or maintenance while energized shall be field marked to warn qualified persons of potential electrical arc flash hazards. The marking shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

Labels available in groups of 10, order 10091352G1

Arc fault label included with all interiors to be applied by electrical contractor.

## Interrupting ratings - molded case circuit breakers

Molded Case Circuit Breakers						UL Listed Interrupting Ratings in kA					
Construction	Frame	Trip Range (Amps)	Pole	AC	DC	RMS Symmetrical AC Volts					
						240	277	480Y/277	480	600	
Standard Frames	TEY	15-100	1	480Y/277	250	65	14	-	-	-	
		15-100	2,3	480Y/277	250	65	-	14	-	-	
	TEYF	15-60	1	277	125	18	18	-	-	-	
		15-125	2	480/277	250	65	18	18	-	-	
	TEYD	15-125	3	480/277	-	65	18	18	-	-	
		15-70	1	277	-	-	25	-	-	-	
	TEYH	15-125	2,3	480/277	-	65	-	25	-	-	
		15-70	1	277	-	-	35	-	-	-	
	TEYL	15-125	2,3	480/277	-	65	-	35	-	-	
		15-70	1	277	125	-	65	-	-	-	
	SEH <sup>1</sup>	15-150	2	480	-	65	-	-	25	-	
			3	600	-	65	-	-	25	18	
	SEL	15-150	2	480	-	100	-	-	65	-	
			3	600	-	100	-	-	65	25	
SEP	15-150	2	480	-	200	-	-	100	-		
		3	600	-	200	-	-	100	25		
SFH	70-250	2	480	-	65	-	-	35	-		
		3	600	-	65	-	-	35	22		
SFL	70-250	2	480	-	100	-	-	65	-		
		3	600	-	100	-	-	65	25		
SFP	70-250	2	480	-	200	-	-	65	-		
		3	600	-	200	-	-	65	25		
Spectra RMS	SGH4 <sup>1</sup>	125-400	2,3	600	-	65	-	-	35	25	
	SGH6 <sup>1</sup>	250-600	2,3	600	-	65	-	-	35	25	
	SGL4	125-400	2,3	600	-	100	-	-	65	65	
	SGP4	125-400	2,3	600	-	200	-	-	100	65	
	SGL6	250-600	2,3	600	-	100	-	-	65	65	
	SGP6	250-600	2,3	600	-	200	-	-	100	65	
	SKH8	300-800	2,3	600	-	65	-	-	50	25	
	SKL8	300-800	2,3	600	-	100	-	-	65	42	
	SKP8	300-800	2,3	600	-	200	-	-	100	65	
	Tmax XT	XT1H	15-125	3	480	-	100	-	-	65	-
		XT1S	15-125	3	480	-	65	-	-	35	-
		XT4H	25-250	3	480	-	150	-	-	65	-
XT4L		25-250	3	480	-	200	-	-	100	-	
XT4S		25-250	3	480	-	100	-	-	35	-	
XT5H		250-400 and 450-600	3	480	-	150	-	-	65	-	
XT5L		250-400 and 450-600	3	480	-	200	-	-	100	-	
XT5S		250-400 and 450-600	3	480	-	100	-	-	50	-	
XT6H		600-800	3	480	-	200	-	-	65	-	
XT6S		600-800	3	480	-	100	-	-	50	-	
XT6N	600-800	3	480	-	65	-	-	35	-		

<sup>1</sup> Not current limiting breaker type

## Circuit breaker terminals (Cu-Al)

Frame				Wire Cu-Al (Unless otherwise specified)	
Standard	Current Limiting / High Interrupting	Poles <sup>2</sup>	Cat. No.	Per Lug	Range
TEY	–	1,2,3	Fixed to Breaker Terminal	1	(15-20A) #14-#12 Cu or #12-1 Al, (30-60A) #10-#6 Cu or #8-#4 Al, (70-100A) #4-#1 Cu or #2-1/0 Al
–	SEH, SEL, SEP	2,3	TCAL18	1	#12-3/0 Al; #12-3/0 Cu
SFHA	SFLA, SFPA	2,3	TCAL129	1	#8-350kcmil
SGHA	SGL, SGP	2	TCLK265	–	2 (2/0-400kcmil, Cu) or 2 (2/0-500kcmil, Al) or #6-600kcmil
		3	TCLK365	–	2 (2/0-400kcmil, Cu) or 2 (2/0-500kcmil, Al) or #6-600kcmil
–	FGN4, FGH4	2,3	FCALK318H	–	Top Hole #8-400kcmil Cu or #6-500kcmil Al Bottom hole #2/0-600kcmil Cu and Al
SKHA8	SKLA8, SKPA8	2,3	TCAL41	1	#4-600kcmil or 2 (1/0-250kcmil)
			TCAL61	2	2/0-500kcmil
			TCAL81	3	3/0-500kcmil
XT6	–	3	1SDA113070R1 <sup>3</sup>	3	Cu Al 3x2/0 AWG-400kcmil
XT5	–	3	1SDA113066R1 <sup>3</sup>	2	Cu Al 2x2/0 AWG-500kcmil
XT4-250A	–	3	1SDA075865R1 <sup>3</sup>	1	Cu Al 1x3/0 AWG-350kcmil <sup>4</sup>
XT4 (<250A)	–	3	1SDA075861R1 <sup>3</sup>	1	Cu Al 1x4 AWG-300kcmil
XT1	–	3	1SDA075837R1 <sup>3</sup>	1	Cu Al 1x14-2/0 AWG

<sup>2</sup> 3 pole XT breakers can be used in 2 pole applications

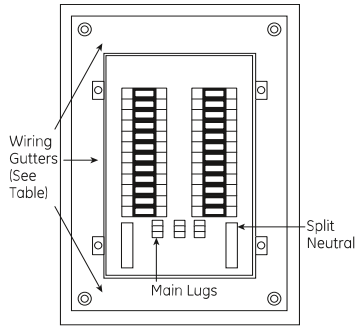
<sup>3</sup> Kit contains 3pcs lug

<sup>4</sup> External solution: lugs to be mounted on EF terminals supplied in the kit

## Wiring space

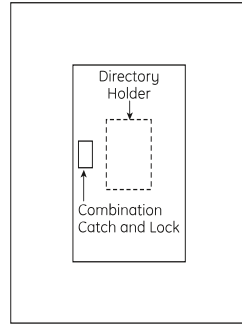
### Typical panelboard

Front view with trim removed

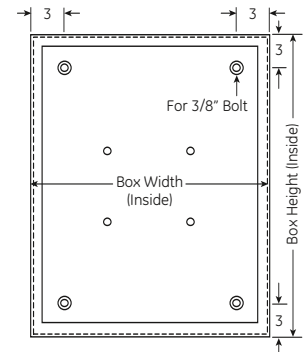


### Typical front w/concealed hinges and trim adjusting screws

Surface mounting – add 1/4" to inside box dimensions  
 Flush mounting – add 1 1/2" to inside box dimensions



### Typical box



Minimum wiring space, from end of lug to box wall, in inches

Main rating in amps	Main Lugs Only, to End Wall				Main Circuit Breaker		
	Phase Lug	Neutral Lug	Frame Type	Mounting	Phase Lug		Neutral Lug
					To Side Wall (20" Wide box)	To End Wall	
125A MLO, 100A Main Breaker	6	6	TEY, SE, XT1	Horizontal	5	–	6
225A	12	12	SF, XT4	Vertical	–	6	12
400A	15	11 <sup>5</sup>	SF, SG, FG, XT5	Vertical	–	15	11 <sup>5</sup>
600A	15	11 <sup>5</sup>	SG, XT5	Vertical	–	16	–
800A <sup>6</sup>	15	11 <sup>5</sup>	SK, XT6	Vertical	–	18	–

<sup>5</sup> To side wall

<sup>6</sup> Box width is 30" and 7.81" deep

### Wiring space – branch circuit breakers

Branch Circuit Devices	Frame	No. of Poles	Minimum Wiring Spaces To Side Wall (20" Wide Box)
Double Branched Bolt-on Devices	TEY	1,2,3	6.5"
Horizontal Subfeeds, Single Branch Mounted, Maximum 6 Poles	TED4, XT1, XT4	2,3	5.5"
Horizontal Subfeeds, Single Branch Mounted, Maximum 3 Poles	SEHA, SELA	2,3	–
Horizontal Subfeeds, Single Branch Mounted, Maximum 6 Poles	SFHA, SFLA, XT1, XT4	2,3	5.5"

## Enclosures

Panel Size	Box		Front Cat. No. <sup>9</sup>
	Cat. No. <sup>7</sup>	Size Inches <sup>8</sup>	
0-25.5	AB25B	25.5	AF25F,S
28.5-31.5	AB31B	31.5	AF31F,S
34.5-37.5	AB37B	37.5	AF37F,S
40.5-43.5	AB43B	43.5	AF43F,S
46.5-49.5	AB49B	49.5	AF49F,S
52.5-55.5	AB55B	55.5	AF55F,S
57.5-64.5	AB64B	64.5	AF64F,S
67.5-76.5	AB76B	76.5	AF76F,S

<sup>7</sup> "B" suffix provides blank end walls. Order "K" suffix for endwalls with knockouts.

<sup>8</sup> Standard boxes are 20" wide by 5.81" deep.

<sup>9</sup> Flush fronts are 1 1/2" larger than box. Surface fronts are 1/4" larger.

## Box options

Description	Cat. No. Suffix <sup>10</sup>
Painted Box	P
30" wide <sup>11</sup>	W
NEMA 3R/12/4S/4X	3 or 4
NEMA 3RX Door-in-door	3M
NEMA 4X (316 Stainless Steel)	4S

<sup>10</sup> Add to base box product number.

<sup>11</sup> Includes field installable gutter barrier.

## Permanent circuit number kits

Description	Cat. No.
1-48	APN48
43-84	APN84
85-126	APN126

## Front options

Description	Cat. No. Suffix <sup>12</sup>
Screw cover	C
Front hinged to box	D
Yale 5116 w/Rosette Lock	Y
Corbin 15767 Lock	L
75 Key Lock	E
Corbin 60 Key Lock	J
Door within a door <sup>13</sup>	P
Stainless steel <sup>14</sup>	S
30" wide	W
Nameplate	N
Screw on nameplate	U
Metal directory	M

<sup>12</sup> Add to base front catalog number.

<sup>13</sup> Consists of two lockable doors—one over panel interior and one over box wiring gutters. Yale locks not available.

<sup>14</sup> Flush only. Available with C and N options.

## Stainless steel enclosures

Dimensions (inches)			Cat. No.	
H	W	D	UL Standard	CSA Labeled
25.5	20	6	AB254S	AB254AS
25.5	30	8	AB254DWS	AB254DWAS
31.5	20	6	AB314S	AB314AS
31.5	30	8	AB314DWS	AB314DWAS
37.5	20	6	AB374S	AB374AS
37.5	30	8	AB374DWS	AB374DWAS
43.5	20	6	AB434S	AB434AS
43.5	30	8	AB434DWS	AB434DWAS
49.5	20	6	AB494S	AB494AS
49.5	30	8	AB494DWS	AB494DWAS
55.5	20	6	AB554S	AB554AS
55.5	30	8	AB554DWS	AB554DWAS
64.5	20	6	AB644S	AB644AS
64.5	30	8	AB644DWS	AB644DWAS
76.5	20	6	AB764S	AB764AS
76.5	30	8	AB764DWS	AB764DWAS

## Accessories

Field installed kits/replacement parts

### Filler plates

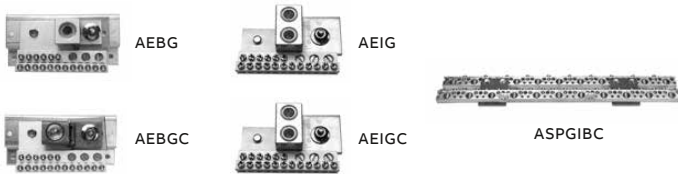
Breaker Type	Cat. No.
THQB/THHQB/THQL THHQL/TEY	TQLFP1
TQD/THQD/TED4/SE/FB	TEDFP1

### Endwall kits

Field installed. 1 each, for standard 20"w x 5.81"d boxes.

Type	Cat. No.
Blank	ABEW2
Knockout	ABEW2

### Equipment grounds



Item	Description	Wire Range	Cat. No.
Metal Equipment Ground	Bonded	#14-#8 Cu, #12-#8 Al (small holes); #14-#4 Cu, #6-#4 Al (large holes)	TGL2
	Extruded Bonded	#14-#8 Cu, #12-#8 Al (small holes); #14-#4 Cu, #6-#4 Al (large holes)	EGS12
Aluminum Equipment Ground	Extruded Bonded	(1) #6-350MCM	AEBG
	Extruded Isolated	(2) #6-250MCM	AEIG
Copper Equipment Ground	Main Lug	#14-#8 Cu, #12-#8 Al (small holes); #14-#4 Cu, #6-#4 Al (large holes)	TGL2
	Bonded	#14-#8 Cu, #12-#8 Al (small holes); #14-#4 Cu, #6-#4 Al (large holes)	TGC2
Copper Equipment Ground	Extruded Bonded	(1) #4-350MCM	AEBGC
	Extruded Isolated	(1) #6-250MCM	AEIGC
	Insulated Isolated	2/0 max.	ASPGIBC

### Bonding kits

Description	Cat. No.
For Split and Load End Neutral	343L886G16
For 225A Horizontal Neutrals	343L886G13
225A Horizontal Neutral To Convert 3W to 4W	ASP225HNCP
125/225A Horizontal Neutral Conversion from Service Entrance to Non-Service Entrance	ASPHNCPSENOT
125/225A Horizontal Neutral to Convert from Non-Service Entrance to Service Entrance	ASPHNCPSE

### Installation and maintenance kit

Order catalog number PROCARE. Kit includes:

- (5) filler plate hardware kits
- (9) bus stud nuts
- (5) MLA1 filler plates
- (2) 225A phase barriers
- (2) feed-thru barriers
- (1) 400/600A phase barrier
- (50) directory cards/rating books
- (50) circuit number strips (1-48)
- (50) circuit number strips (43-84)
- (5) standard locks and keys
- (50) deadfront screws
- (10) AQ/AE - RQ/RE front hardware kits
- (10) AD front hardware kits
- (50) service disconnect labels
- (50) main labels

### Parts

Description	Cat. No.
Directory Card	139C5612P3
Replacement Lock with Std. Key	569B737P1
Replacement Lock with GE75 Key	569B737P2
Additional Keys for Above Lock	569B737P5
Circuit Numbering Strips 1-48	569B806G1
Circuit Numbering Strips 49-84	569B806G2
Circuit Numbering Strips 85-126	569B806G3
Adhesive Backed Lamicaid Nameplate 3/4" x 3"	315A7190P1
Metal Directory Card Holder	139C5491G1
Directory Card Holder	139C5491P4
Delta Hi-leg Conversion Kit, to Add B-Phase Plug on AL Panels	APHBL
Bolt on RE/RQ Panels	APHBQ
NEMA 3R/12 Tamper Proof Tork Screw Kit	NEMATRX
2P to 3P TQD Conv. Kit	ASP2PTQD3P
2P to 3P SF Conv. Kit for horizontal subfeed	ASP2PTFJ3P
AD 25 to 65 kAIC Barrier kit	ASP25AD65KA1
Service Entrance Kit	ASPSERENT
2 wire Relay Kit	ASP2WRelay
Yale Lock Kit	ASPYALE47
Corbin Lock Kit	ASPCORBNTU1
2-3 pole TQD Mechanical Interlock	TQDFM1
RQ/RL/RE Rail Bracket	ASPAQLEBKT
Front Flush Adjust Kit	ASPFLUSHADJ
RE Front Mounting Kit	139C5720G3
RQ/RL Front Mounting Kit	139C5720G6
AD Front Mounting Kit	139C5728G9
Front Hinge to Box Mounting Kit	139C5700G6
Front Extension Mounting Kit	139C5700G11

**Box extensions**

Bolts to box with or without endwall in place. Extensions can be combined to obtain lengths greater than 18 and 24 inches.

Box Width and Depth	Box Mounting	Box Extension Length (Inches)	Cat. No.
20 x 5.81	Flush	9	ABX2509F
		18	ABX2518F
		24	ABX2524F
	Surface	9	ABX2509S
		18	ABX2518S
		24	ABX2524S
		31	ABX2531S
		37	ABX2537S
		43	ABX2543S
		49	ABX2549S
		55	ABX2555S
		64	ABX2564S
		76	ABX2576S
		30 x 5.81	Flush
24	ABX3524F		
Surface	18		ABX3518S
	24		ABX3524S
30 x 7.81	Flush	18	ABX3718F
		24	ABX3724F
	Surface	18	ABX3718S
		24	ABX3724S

**Box extension covers only**

10 covers per kit

Description	Cat. No.
9" Covers Surface	ASPABX09S
9" Covers Flush	ASPABX09F
18" Covers Surface	ASPABX18S
18" Covers Flush	ASPABX18F
64" to 76" Covers Surface	ASPABX20S
64" to 76" Covers Flush	ASPABX20F



## Specifications

Panelboards and branch breakers meet or exceed the following standards and specifications:

- National Electrical Code—Ref. Article 384
- UL67 panelboards: UL50 cabinets and boxes. UL943 GFCI
- UL489 molded case circuit breakers. UL98 fusible switches
- cUL listing for ReliaGear™ lighting panelboards
- CSA Listing for ReliaGear non-service entrance panelboards
- International Building Code Seismic Zone 3 and 4
- California Building Code Seismic Zone 4
- NEMA PB1
- Federal Specifications—Panelboards, W-P-115c. Type 1—Circuit breaker equipped
- Class 1—Panelboards Class 2—Load centers
- Molded case circuit breakers, WC-375B/GEN. – Fusible switches, W-S-865c

### Boxes

- Galvaneal painted and 316 stainless offerings
- Blank end walls are standard; knockouts are available when specified with NEMA 1 enclosures only
- Boxes furnished with provisions for ground bus as standard

### Fronts

- Finished in ANSI-61 grey polyester powder coat paint.
- Equipped with corrosion-resistant Valox combination catch and lock door latch (doors over 48" high provided with 2 latches)
- Equipped with concealed hinges and trim adjusting screws
- Directory holder permanently mounted to door

### Panels

- Dead front construction
- Interiors are factory assembled on rigid steel frames
- Metal gages in accordance with UL and NEMA standards
- Solderless, anti-turn main lugs suitable for copper or aluminum wires are front removable. Branch straps are silver-plated copper. AE and RE panels with TEY or TEYF branch breakers have branch straps fully rated at 180A. AS and RS panels with TEYD, TEYH, or TEYL branch breakers have branch straps fully rated at 250A, allowing branch breakers of any combination of ratings to be located across from each other.
- Main bus is aluminum with copper branch connections unless otherwise specified
- Main disconnect device is identified when supplied, and numbers are provided for branch circuits
- Interior base assemblies are Noryl and provide breaker mounting and busbar insulation

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### Publications

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E-DET-465	Certification of seismic compliance
1TQC173100E0004	AE/RE/AS/RS lighting panel application guide
1TQC173100E0001	Lighting panels rating labels, wiring diagrams and circuit directory

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