LOW VOLTAGE SWITCHBOARD AND DISTRIBUTION PANELS

OEM selection guide for ReliaGear® assemblers

Partnering for better power distribution

—

Ready to speed up assembly? Ready to answer your customer's demands more quickly? ABB's ReliaGear OEM offering enables you, our partner assembler, to build distribution switchboards and panelboards using the ReliaGear neXT plug-in design. By purchasing premade plug-in vertical bus and plug-in circuit breaker assemblies from ABB, you can manufacture panels and group-mounted sections with your own branding and expertise.

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Overview

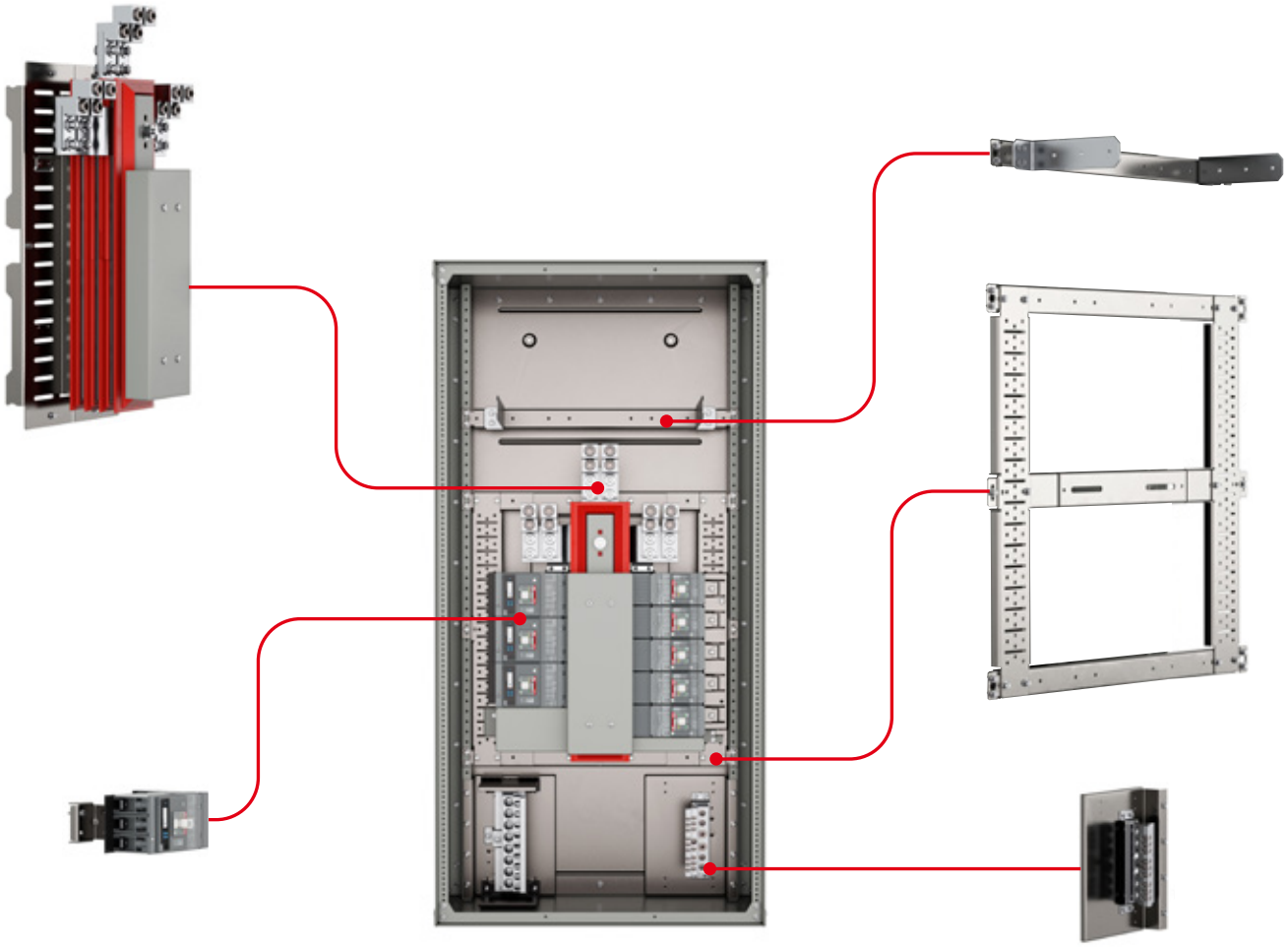
Overview

Plug in. Break out

EASY
The ReliaGear assembler offering is easy to understand and integrate into your product design. This program puts documentation, part numbering, CAD models and other pertinent information at your fingertips.

FLEXIBLE
This design is modular and enables you to manage your inventory responsibly. Achieve late point definition with circuit breakers and accessories that plug directly into the bus stack and can be oriented per customer specifications. The interiors can be oriented for top or bottom feed in the factory or in the field.

STATE-OF-THE-ART
Your customers want the best. Because of that, they specify the technologies found in the ReliaGear offering, including finger-safe features, plug-in design, circuit breakers with communications and asset monitoring features, and interior designs that are shared between panelboards and switchboards.



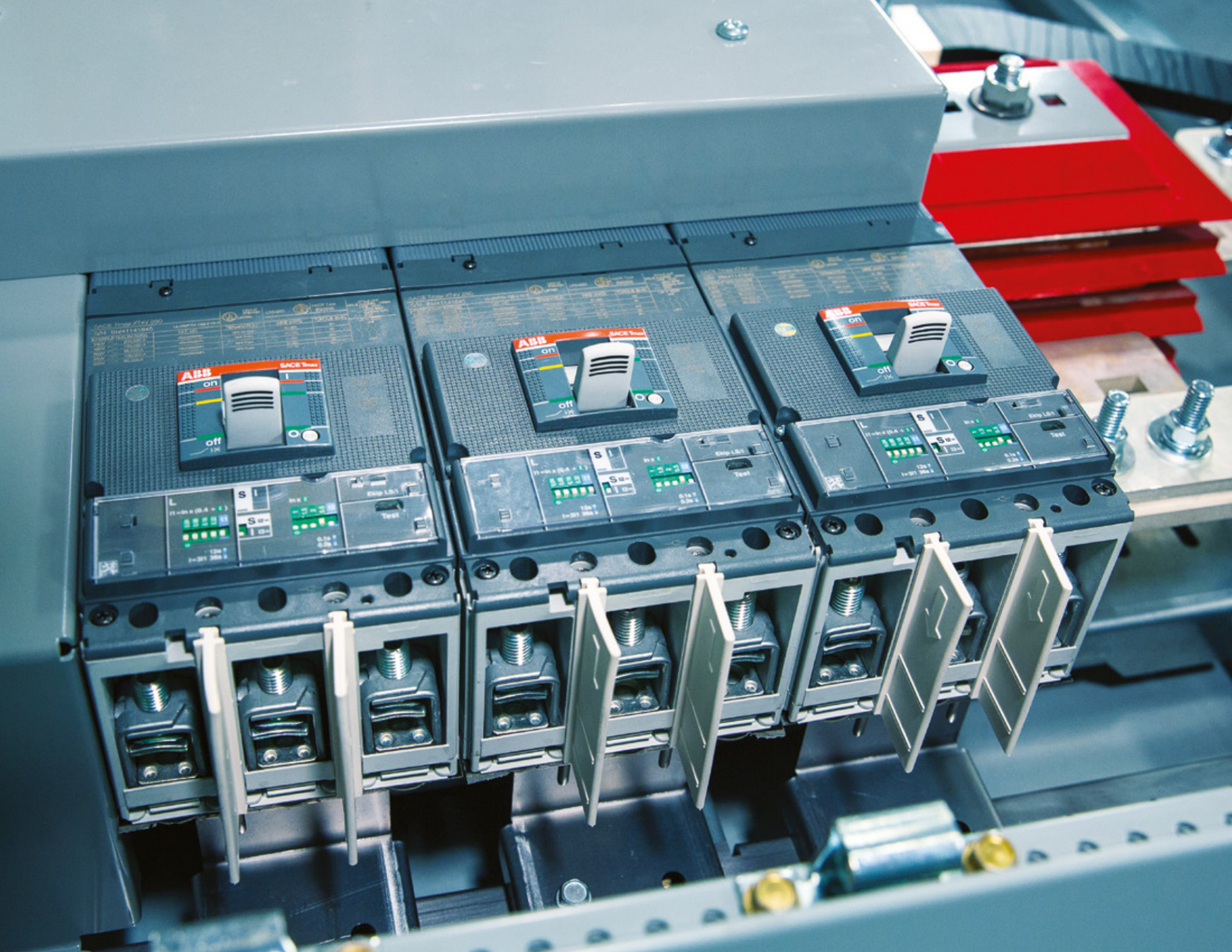


ABB
on
off
SACE Tmax
Test

Panelboard details

The ReliaGear power panelboard can be equipped with circuit breakers from 15 A to 1200 A with options of 100% rated breakers up to 1200 A. The maximum short circuit rating is equal to 200 kAIC at 480 V or 100 kAIC at 600 V, or the lowest current interruption rating of any device installed.

The ReliaGear power panelboards can be used on the following system voltages:

- 240 V AC; 3-phase, 3-wire
- 480 V AC; 3-phase, 3-wire
- 600 V AC; 3-phase, 3-wire
- 208Y/120 V AC; 3-phase, 4-wire
- 480Y/277 V AC; 3-phase, 4-wire
- 600Y/347 V AC; 3-phase, 4-wire
- 240/120 V AC Delta hi-leg; 3-phase, 4-wire

The ReliaGear panelboard is available with multiple options.

Feed location: top or bottom.

Incoming type: main lug only (MLO), main circuit breaker (MCB, either vertically or horizontally mounted) and with feed-through lug pads.

Bus stack ratings: 600 A, 800 A and 1200 A.

Bus stack material: silver- or tin-plated, heat-rated or density-rated copper.

All ReliaGear panelboards are double sided, with branch breakers that can fit on both left and right side of the bus stack. The maximum ampacity of the breakers selected will determine the width of panelboard needed. The bus stack can be either mounted in the center of the box or offset to the right (default) or to the left.

Panelboard width (in.)	Bus stack position inside the box	Max. branch breaker ampacity on wide side (A)	Max. branch breaker ampacity on narrow side (A)
30	Center	250 (XT4)	250 (XT4)
40	Offset	600 (XT5)	250 (XT4)
45	Center	600 (XT5)	600 (XT5)
45	Offset	1200 (XT7)	250 (XT4)

Switchboard details

ABB's ReliaGear group-mounted switchboard distribution panels were designed with the flexibility to move and/or add Tmax® XT, TEY and Record Plus® molded case circuit breakers in the field with ease. Assemblers have access to these circuit breaker assemblies and to double- or single-sided switchboard interiors with tiered connections.

ReliaGear switchboards can be used on the following system voltages:

- 240 V AC; 3-phase, 3-wire
- 480 V AC; 3-phase, 3-wire
- 600 V AC; 3-phase, 3-wire
- 208Y/120 V AC; 3-phase, 4-wire
- 480Y/277 V AC; 3-phase, 4-wire
- 600Y/347 V AC; 3-phase, 4-wire

ReliaGear switchboard interiors come in several configurations.

Tier connections: top, bottom or center.

Bus stack ratings: 1200 A, 2000 A, 3000 A and 4000 A.

Note: 4000 A switchboard interior bus stack is UL listed only; all other ampacities are UL and cUL listed

Bus stack options: single or double sided.

Bus stack material: silver- or tin-plated density-rated copper.

Plug in to partnership
Codes and standards application information

Your customers have unique requirements that get passed to you. ABB partners with you to make sure the end results satisfy both. Choose your level of support from ABB — your design, your business defines the model.

Option 1 — Maximum ABB support
You purchase everything from ABB, empower quote only. Everything is UL listed or recognized and provided for you to assemble into assemblies at your convenience. No UL file extensions to obtain, no design work required.

Option 2 — Minimum ABB support
You purchase the bus stack and plug-in circuit breakers from ABB and install them into an assembly of your design. ABB's UL listed/ recognized components are available to be incorporated into your design and your UL file. Your product, built on ABB's neXT plug-in technology, can be as unique as you are.

Standards

ReliaGear distribution panelboards are designed, tested and constructed in accordance with the following industry standards:

- Underwriters Laboratories UL®: UL 67, File # E2366
- Canadian Standards Association (CSA®): CSA C22.2 No. 29

ReliaGear switchboard interiors are designed, tested and constructed in accordance with the following industry standards:

- Underwriters Laboratories UL®: UL 891, File # E466042
- Canadian Standards Association (CSA®): CSA C22.2 No. 244

02

Product design and selection

Product design and selection

Product design and selection
Getting started

Would you like to build UL 67 and UL 891 distribution products with ABB's ReliaGear design? Wondering where to begin? ABB has tools to support you in this journey. ReliaGear components are catalog number driven, and ABB has configurators that help get you started.

1 **Step 1**
Compile pertinent information about the lineup or section such as incoming service, voltage, panel ampacity and main/feeder information.

2 **Step 2**
Use the Quote feature of empower.abb.com to configure a panelboard or switchboard. If you have a panel schedule, you can use the "panel scan" feature of empower for quick entry and configuration. Once configured in the quote feature of empower.abb.com, navigate to the BOM or Drawing tabs to retrieve information such as standard enclosure dimensions, frame mounting locations and a list of catalog numbers in the BOM.

3 **Step 3**
Navigate to the Flow feature of empower.com, or the empower home screen. Use the catalog numbers from the BOM to enter an order for the components you require.

4 **Step 4**
Navigate to http://reliagear-drawingselector.com/. Download any required STP models.

5 **Step 5**
Ensure that codes and standards requirements are met. Purchase ReliaGear components from ABB. Begin assembly.

Panelboard interior configurations
Bus stack

The bus stack consists of a back pan, busbars assembled one on top of the other and an insulator to protect from live components. Some bus stack configurations are IP20 finger-safe, an industry-exclusive and patented feature.

NN

BL

BF

The bus stack can be either bottom or top fed. Standard bus stacks feature silver-plated heat-rated or density-rated (1000 A per square inch) copper bus bars. Bus stacks with tin-plated copper bus bars are also available for applications in harsh environments where hydrogen sulfide is present, such as water treatment facilities.

Both main lug only (MLO) and main circuit breaker (MCB) configurations are available. The main circuit breaker can be either vertically or horizontally mounted. For the main lugs option, an appropriate barrier post kit is needed.

Standard mechanical lugs are available from 250 kcmil up to 750 kcmil. Compression lugs are also offered from 1/0 AWG to 750 kcmil.

Sub-feed (dual main) lug and feed-through lug options are available to address instances where a panelboard requires more than one enclosure.

Three bus stack ampere ratings are available: 600 A, 800 A and 1200 A.

The bus stack dimensions are optimized to reach the highest power density and number of circuits. Four different dimensions are available: 16X, 24X, 32X and 40X.

We define X-space as the number of mounting positions available on each bus stack side. One X-space is equal to 1.385 inch. Each circuit-breaker frame and bus-stack-mounted accessory has specific requirements for X-spaces. Each set of lug pads also requires four X-spaces. Refer to the breaker section for more details.

ReliaGear neXT features a field-reversible bus stack that can be flipped 180˚ to accommodate top or bottom feeds without extra components.

Possible combinations of bus stack and enclosures

Bus height	16X			24X			32X			40X		
Bus type	**NN**	**BL**	**BF**	**NN**	**BL**	**BF**	**NN**	**BL**	**BF**	**NN**	**BL**	**BF**
Enclosure height (in.)												
60	•	•		•								
72	•	•	•	•	•							
84		•	•	•	•	•	•	•		•		
96					•	•	•	•	•	•	•	•

NN: clean bus, no lug pads
BL: 1 set of lug pads
BF: feed-through, 2 sets of lug pads
- 250 A for XT4 available on the narrow side only with 350 kcmil internal lugs (breaker digit 12 = "8")
- Lug pads take up 4X of space on each side of the bus stack

Possible combinations of bus stack and enclosures

Bus height	16X		24X–32X–40X	
Bus type	**3P–Silver**	**3P–Tin**	**3P–Silver**	**3P–Tin**
Bus amperage				
600 A	•		•	•
800 A	•		•	•
1200 A	•		•	•

3P–Silver: Three-phase silver plating
3P–Tin: Three-phase tin plating

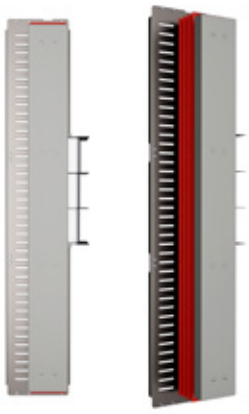
Switchboard interior configurations
Bus stack

— 01 Single-sided — center tier
— 02 Double-sided — center tier
— 03 Single-sided — top tier
— 04 Double-sided — top tier
— 05 Single-sided — bottom tier
— 06 Double-sided — bottom tier

ReliaGear panelboards and switchboards share the same bus stack design. Both are finger-safe and both accept ReliaGear plug-in circuit breaker assemblies and accessories.

Switchboard interiors come in multiple ampacities. They have single- and double-sided variants that can be applied within your design. There are also three different ways that these interiors can connect to the horizontal bus: top, bottom and center tier.

On two-sided bus stacks, tier connections take up 5 X-spaces. Bus stacks up to 2000 A have one set of tier connections. Bus stacks above 2000 A have two sets of tier connections. On single-sided bus stacks, tier connections do not take up any X-space.



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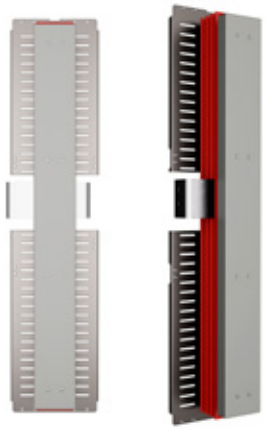

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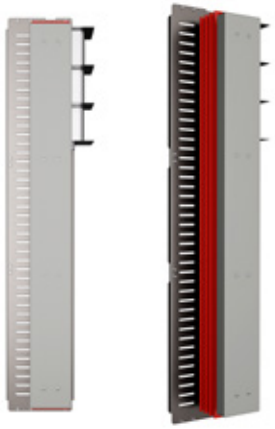

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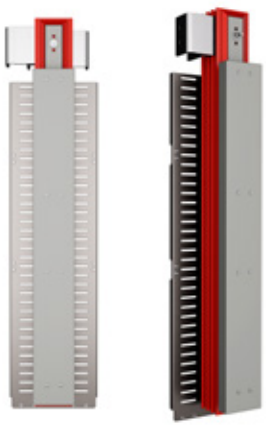

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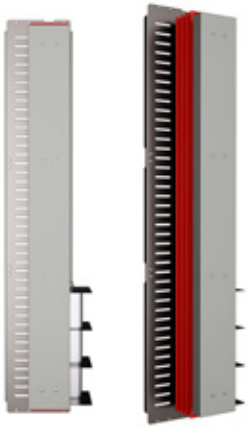

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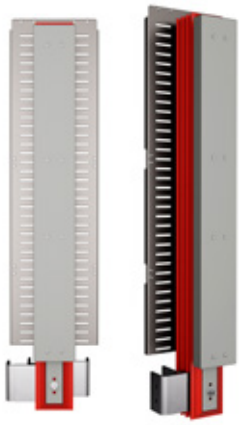

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03

Molded case circuit breakers

Molded case circuit breakers

Tmax XT range
Molded case circuit breakers

The SACE Tmax XT range offers higher performance, better protection and more precise metering than equivalent units and can handle from 15 A up to 1200 A.

Combined with precise electronic trip units in small frames, the new range delivers significant time savings and enhances installation quality. Reliability is further increased, and speed of installation reduced, thanks to Bluetooth® and Ekip connectivity for mobile devices. Tmax XT circuit breakers and their accessories are constructed in compliance with UL 489 and CSA C22.2 standards.

Molded case circuit breakers (MCCB)

			XT1		
Frame size		**[A]**			**125**
Poles		[No.]			3
Rated voltage	(AC) 50–60 Hz	[V]			480 V Δ (2)
Versions					Fixed
Interrupting ratings			N	S	H
	240 V (AC)	[kA]	50	65	100
	480 V (AC)	[kA]	25	35	65
	600Y/347 V (AC)	[kA]	18	22	25
	600 V (AC)	[kA]	–	–	–
Trip units for power distribution					
TMF					●
TMA					
Ekip DIP					
Ekip Touch					

(1) Current-limiting circuit breaker in 480 V AC and 600 V AC
(2) 600Y/347
(3) Without line-side connectors

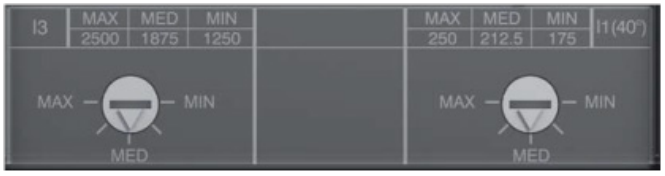
					XT2						**XT4**						**XT5**						**XT6**		**XT7**		
					125						**250**						**400–600**						**800**		**800–1000–1200**		
					3						3						3						3		3		
					600						600						600						600		600		
					Fixed						Fixed						Fixed						Fixed		Fixed		
N	S	H [1]	L [1]	V [1]	X	N	S	H [1]	L [1]	V [1]	X	N	S	H [1]	L [1]	V	X	N	S	H	S	H	L			
65	100	150	200	200	200	65	100	150	200	200	200	65	100	150	200	200	200	65	100	200	65	100	200			
25	35	65	100	150	200	25	35	65	100	150	200	35	50	65	100	150	200	35	50	65	50	65	100			
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–			
18	22	25	35	42	42	18	22	25	50	65	100	18	25	35	65	100	100	20	25	35	25	50	65			
					●						●															
					●						●						●			●						
					●						●						●			●			●			
					●						●						●						●			

Tmax XT range
Trip units

SACE Tmax XT trip units represent a new benchmark for molded case circuit breakers, able to satisfy any performance requirement. These complete, flexible protection trip units can be adapted to the level of protection required, independently of the complexity of the system. The range is available for three levels of performance to meet any requirement, from simple to advanced applications.

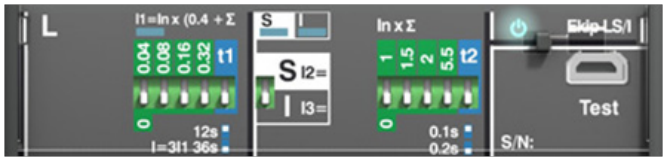
Thermal-magnetic trip unit

An easy solution for protection against overloads and short circuits.



Ekip DIP

The first level of electronic trip units: Ekip DIP trip units are based on microprocessor technologies designed for high reliability and tripping precision.



Ekip Touch/Hi-Touch

The Ekip Touch/Hi-Touch trip units provide a complete series of protections and high accuracy measurements of all electrical parameters. They are intended to integrate seamlessly with most common automation and supervision systems.

Record Plus FB, TEY and Formula A2
Molded case circuit breakers

Record Plus FB, TEY and Formula A2 circuit breakers complete the breakers offering for the ReliaGear neXT panelboard.

The Record Plus FB line features true one- and two-pole construction, has a double-break contact system for fast response and current limitation to help with arc flash and coordination. This non-adjustable thermal-magnetic circuit breaker up to 100 A offers four interrupt tiers — through 100 kA at 480 V AC and 35 kA at 600/347 V AC.

TEY also offers true one-pole construction up to 70 A and two-pole construction up to 125 A. This line offers nonadjustable thermal-magnetic trip units with three interrupt tiers — through 100 kA at 240 V and 65 kA at 480/277 V AC.

The Formula A2 line features true two-pole breaker construction from 125A to 250A. This line offers fixed (non-adjustable) thermal-magnetic trip units with two interrupt tiers - 10 kA and 25 kA at 240 V.

Record Plus FB

Poles	1, 2
Amperes	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
Trip unit	Fixed thermal-magnetic

Interrupting ratings

Ampere rating	Maximum voltage	Type	Poles	UL listed interrupting rating rms symmetrical kA AC voltage 240 V	277 V	347 V	480 V	600 V
15–100	600Y/ 347 V AC	FBV	1	35	35	22	–	–
			2	65	–	–	35	22
		FBN	1	65	65	25	–	–
			2	150	–	–	65	25
		FBH	1	100	100	35	–	–
			2	200	–	–	100	35
		FBL	1	100	150	42	–	–
			2	200	–	–	150	42

TEY

Poles	1, 2
Amperes	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125
Trip unit	Fixed thermal-magnetic

Interrupting ratings

Ampere rating	Maximum voltage	Type	Poles	UL listed interrupting rating rms symmetrical kA AC voltage 120/240 V	480/277 V
15–70 (1-pole)	277 V AC (1-pole)	TEYD	1–2	65	25
15–125 (2-pole)	480Y/ 277 V AC (2-pole)	TEYH	1–2	65	35
		TEYL	1–2	100	65

Formula A2

Ampere rating	Maximum voltage	Type	Poles	UL listed interrupting rating rms symmetrical kA AC voltage 240 V
125-250	240V	A2A	2	10
		A2N	2	25

01

02

03

04

05

01 1-pole FB
02 2-pole FB
03 1-pole TEY
04 2-pole TEY
05 Formula A2

Mounting space requirements
For molded case circuit breakers

Each circuit breaker frame has specific requirements for the number of mounting positions (X-spaces). Thanks to the optimized dimensions of the XT1, the mounting positions required are lower when two or five breakers are mounted close to one another.

SPD, metering and RELT also require X-space, since they are plug-in modules. Refer to the table below. In main lugs configuration, each set of lug pads occupies 4 X-spaces. A set of lug pads is needed also with a vertical main breaker.

Frame	Max. ampacity (A)	Poles	X-spaces
Single XT1	125	3	3
Two XT1	125	3	5
Five XT1	125	3	11
XT2	125	3	3
XT4	250	3	3
XT5	600	3	4
XT6	800	3	6
XT7	1200	3	6
FB	100	1	1
FB	100	2	2
TEY	70	1	1
TEY	125	2	2
A2	250	2	2
SPD	–	–	10
RELT	–	–	3
Main metering	–	–	4

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01

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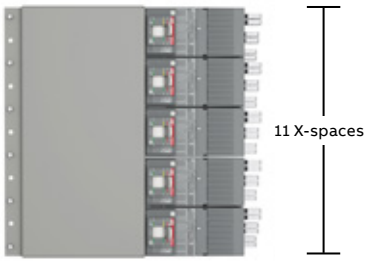
02



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03

—
01 Single XT1
—
02 Two XT1
16% space saving
—
03 Five XT1
26% space saving

Note: Installation of Tmax XT1 circuit breakers requires a rail for ReliaGear neXT power panelboards and ReliaGear SB switchboards. Refer to Fillers and blanks in the numbering system chapter.

For replacement breakers or additional breakers being added to the panel, use the below table to select the required fillers and blanks to fill in leftover X space.

Space to be filled	30" center	40" offset left	40" offset right	45" center	45" offset left	45" offset right
1X	SR01BB	SR01BF	SR01BB	SR01BF	SR01BF	SR01BB
2X	SR02BB	SR02BF	SR02BB	SR02BF	SR02BF	SR02BB
3X	SR03BB	SR03BF	SR03BB	SR03BF	SR03BF	SR03BB

Line-side connectors and lugs
For molded case circuit breakers

Line-side connectors
Each breaker horizontally mounted on the bus stack is provided with a line-side connector (LSC) and a mounting bracket. The LSC is designed to ensure an easy and accurate connection between the breakers and the conductive busbars. A patented clip design with a loaded spring ensures full contact in any circumstance. Each breaker frame has a specific LSC with the right number of clips to ensure the highest performance.

Breaker lugs offering
All ReliaGear neXT breakers are provided with a set of lugs on the load side. All lugs accept either copper or aluminum wires.

Breaker lugs

Frame	Ampacity (A)	Wire size (AWG or kcmil) Cu or Al	Number of cables per lug	Installation
XT1	125	#10–2/0	1	Horizontal
XT2	25	#14–1/0 (Cu)	1	Horizontal
XT2	125	#10–2/0	1	Horizontal
XT4	25–70	#14–1/0	1	Horizontal
XT4	80–225	#4–300	1	Horizontal
XT4	250	3/0–350	1	Horizontal
XT5	600	2/0–500	2	Horizontal/vertical
XT5	600	500–750**	2	Horizontal/vertical
XT6	800	500–750	2	Horizontal
XT6	800	2/0–400	3	Horizontal
XT7	1200	4/0–500	4	Horizontal/vertical
XT7	1200	500–750	2*/3	Horizontal/vertical
FB/TEY	15–20	#14–#10	1	Horizontal
FB/TEY	25–60	#10–#4	1	Horizontal
FB	70–100	#1–1/0	1	Horizontal
TEY	70–125	#4–2/0	1	Horizontal
A2	125–250	#1-250, 2/0-300	1	Horizontal
A2	250	350 (Al)	1	Horizontal

* Max. two 750 kcmil cables allowed in horizontal installation due to wire-bending space limitation.
** XT5 with 750MCM lugs must go in 45" offset

04

Catalog numbering scheme

Catalog numbering scheme

Catalog number scheme

Power panelboard interior bus stack

IN 16 06 BL 3 H2

Part identifier

Code	
IN	Interior

X height

Code	
16	16X
24	24X
32	32X
40	40X

Bus material

Code	
B3	Silver density-rated copper
B4	Tin density-rated copper

Code	
H2	Silver heat-rated copper
H4	Tin heat-rated copper

Ampacities

Code	
06	600 A
08	800 A
12	1200 A

Type

Code	
BL	Bolted lug pad
BF	Bolted feed-through
NN	Clean bus

Number of phases

Code	
3	3

Power panelboard interior frame

IF 16 30 C

Part identifier

Code	
IF	Interior frame

Orientation

Code	
C	Center
F	Offset

X-spaces

Code	
16	16X
24	24X
32	32X
40	40X

Width

Code	
30	30"
40	40"
45	45"

Catalog number scheme

Switchboard interior bus stack

Note: 4000 A switchboard interior bus stack is UL listed only; all other ampacities are UL and cUL listed

IN 32 12 XT 3 B3 1S

Part identifier

Code	
IN	Interior

X height

Code	
32	32X
40	40X
48	48X

Bus material

Code	
B3	Silver density-rated copper
B4	Tin density-rated copper

Ampacities

Code	
12	1200 A
20	2000 A
30	3000 A
40	4000 A

ASM type

Code	
XT	Bottom tier
TX	Top tier
CC	Center tier

Number of phases

Code	
3	3

1- or 2-sided

Code	
1S	1-sided
2S	2-sided

Switchboard interior frame

IF 48 50 C 4 A

Part identifier

Code	
IF	Interior frame

X-spaces

Code	
32	32X
40	40X
48	48X

Ampacity

Code	
2	Up to 2000 A
4	Up to 4000 A

Width

Code	
30	30"
35	35"
40	40"
45	45"
50	50"
55	55"
60	60"

Orientation

Code	
C	Center, 2-sided
F	Offset, 2-sided
S	1-sided

Feed

Code	
A	Top/center/bottom fed
T	Top fed
C	Center fed
B	Bottom fed

Note: Switchboard interior frames are not UL 891 listed components

Catalog number scheme

Tmax XT breakers

Part identifier

Code	
XT	Breaker family

Interrupting rating

Code	
N	N
S	S
H	H
L	L
V	V
X	X

kAIC rating depending on voltage level; refer to performance table.

Poles

Code	
3	3 poles

XT 1 N U 3 015

Frame

Code	
1	XT1
2	XT2
4	XT4
5	XT5
6	XT6
7	XT7

Standard

Code	
U	UL 80% rated
Q	UL 100% rated

Frame amps

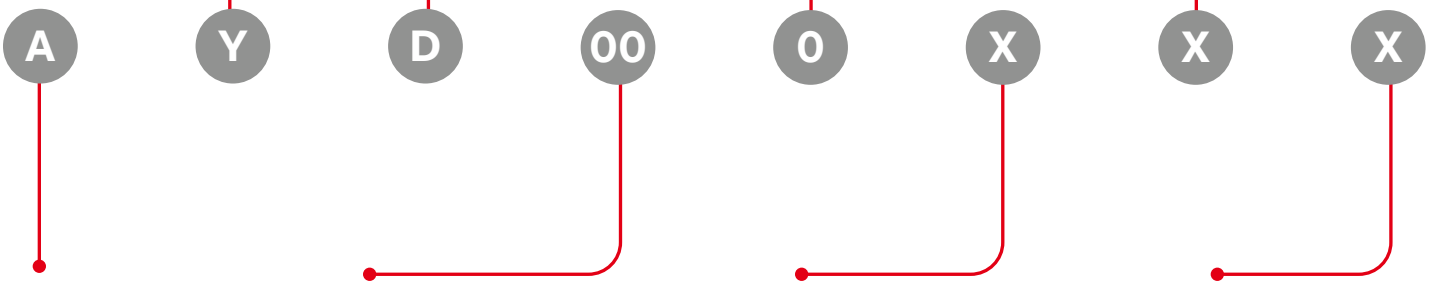
Code	
015	15 A
020	20 A
025	25 A
030	30 A
035	35 A
040	40 A
045	45 A
050	50 A
060	60 A
070	70 A

Code	
080	80 A
090	90 A
100	100 A
110	110 A
125	125 A
150	150 A
175	175 A
200	200 A
225	225 A
250	250A (XT4)

Code	
25A	250 A (XT5)
30A	300 A
40A	400 A
50B	500 A
60B	600 A (XT5)
600	600 A (XT6)
800	800 A (XT6)
80C	800 A (XT7)
10E	1000 A
12E	1200 A

Note: Tmax XT1 circuit breakers require a rail to mount in ReliaGear neXT power panelboards and ReliaGear SB switchboards. This rail and associated hardware comes standard with the different spacer options.

	30" center	40" offset left	40" offset right	45" center	45" offset left	45" offset right
Single XT1	SR1XBR	SR1XBF	SR1XBR	SR1XBF	SR1XBF	SR1XBR
Two XT1 group mount	SR2XBR	SR2XBF	SR2XBR	SR2XBF	SR2XBF	SR2XBR
Five XT1 group mount	SR5XBR	SR5XBF	SR5XBR	SR5XBF	SR5XBF	SR5XBR



Trip unit

Code	
A	TMF
B	TMA
C	Ekip DIP LIG
D	Molded case switch
E	Ekip DIP LS/I
F	Ekip DIP LSI
G	Ekip DIP LSIG
P	Ekip Touch LSI
Q	Ekip Touch LSIG
R	Ekip Touch Measuring LSI
S	Ekip Touch Measuring LSIG
T	Ekip Hi-Touch LSI
U	Ekip Hi-Touch LSIG

Line-side terminals (top)

Code	
Y	Line-side connectors

Load-side terminal (bottom)

Code	
A	XT2 14–1/0 AWG Cu only
D	XT1/XT2 10–2/0 AWG
G	XT4 14–1/0 AWG, 100 A
J	XT4 4 AWG–300 kcmil, 225 A
8	XT4 3/0 AWG–350 kcmil, 250 A

Code	
N	XT5 2x2/0 AWG–500 kcmil
O	XT6 2x500–750 kcmil
U	XT6 3x2/0 AWG–400 kcmil
W	XT7 4x4/0 AWG–500 kcmil
X	XT7 3x500–750 kcmil

Accessories combination

Code	
00	None
	Aux.
	Bell alarm
	Shunt opening release
	Undervoltage release
	Communication modules
	...

Please refer to Tmax XT technical catalog for more information

Front accessories

Code	
0	None
G	Padlock

Key locks

Code	
X	None
A	Ronis key lock – A type key
E	Ronis key lock – Different keys
G	Kirk key lock XT5-XT7
K	Castell key lock XT5-XT7

Advanced functionalities

Code	
X	None

Additional certifications

Code	
X	None

Catalog number scheme

Record Plus FB breakers

Part identifier

Code	
NEFB	neXT FB breakers

Poles

Code	
1	1 pole
2	2 pole

Trip unit

Code	
TE	Fixed thermal magnetic

NEFB V 1 6 TE 015

Interrupting rating

Code	
V	V
N	N
H	H

kAIC rating depending on voltage level; refer to performance table.

Voltage rating

Code	
6	600/347 V

TEY breakers

Part identifier

Code	
TEYA	neXT TEY breakers

Poles

Code	
E	1 pole
F	2 pole

Phase

Code		Code	
0A	A phase (1p)	AB	AB phase (2p)
0B	B phase (1p)	AC	AC phase (2p)
0C	C phase (1p)	BC	CB phase (2p)

TEYA D E C 0A A

Interrupting rating

Code	
D	D
H	H
L	L

kAIC rating depending on voltage level; refer to performance table.

Frame amps

Code		Code		Code		Code	
C	015	G	035	L	060	Q	100
D	020	H	040	M	070	R	110
E	025	J	045	N	080	S	125
F	030	K	050	P	090		

Frame amps

Code	
015	15 A
020	20 A

Code	
025	25 A
030	30 A

Code	
035	35 A
040	40 A

Code	
045	45 A
050	50 A

Code	
060	60 A
070	70 A

Code	
080	80 A
090	90 A

Code	
100	100 A

R2A

Phase

Code	
R2A	A phase (1p)
R2B	B phase (1p)
R2C	C phase (1p)

Code	
R2AB	AB phases (2p)
R2AC	AC phases (2p)
R2BC	BC phases (2p)

Load lug

Code	
A	(1) #14–10. 15–20 A
B	(1) #10–4. 25–60 A
D	(1) #4–2/0. 70–125 A

X

Shunt trip

Code	
X	None
K	24 V
M	120 V
N	240 V

Auxiliary contacts

Code	
X	None
0	277 V

X

Bell alarm

Code	
X	None
A	Bell alarm

Other

Code	
X	None

X

Padlock

Code	
X	None
C	Padlock

Other

Code	
X	None

X

Catalog number scheme

A2 breakers

Part identifier

Code	
A2	neXT A2 breakers

Poles

Code	
2	2 pole

Phases

Code	
AB	AB
BC	BC
AC	AC

A2 A 2 125 AB D

Interrupting rating

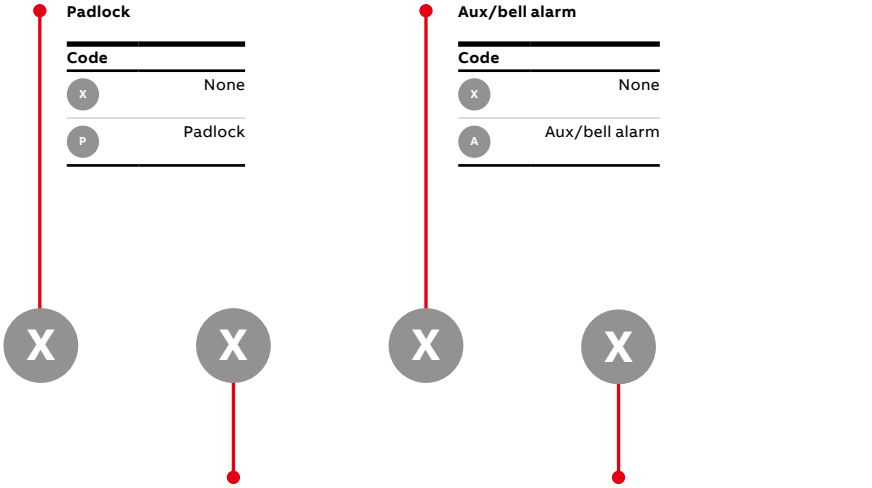
Code	
A	10 ka
N	25 ka

Frame amps

Code		Code	
125	125A	200	200A
150	150A	225	225A
175	175A	250	250A

Lug size

Code	
D	300MCM
L	350MCM (250A only)



Padlock

Code	
X	None
P	Padlock

Aux/bell alarm

Code	
X	None
A	Aux/bell alarm

Shunt trip

Code	
X	None
N	Shunt trip

Service entrance

Code	
X	None
E	Service Entrance Barriers

05

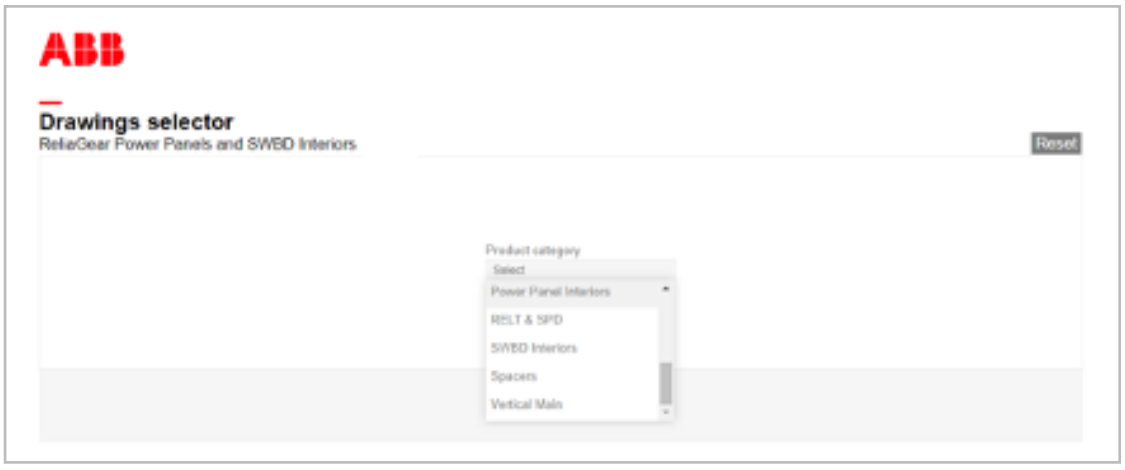
Drawings and dimensions

Drawings and dimensions

OEM drawing selector

http://reliagear-drawingselector.com/

Step 1: Select product category



Step 2: Use selection filters to narrow down your search based on the specific part you are looking for.

a. Ex. Under product category “power panel interiors”, select your amperage, interior height and main type to find the exact part you are looking for.

b. Alternatively, search by the SKU number

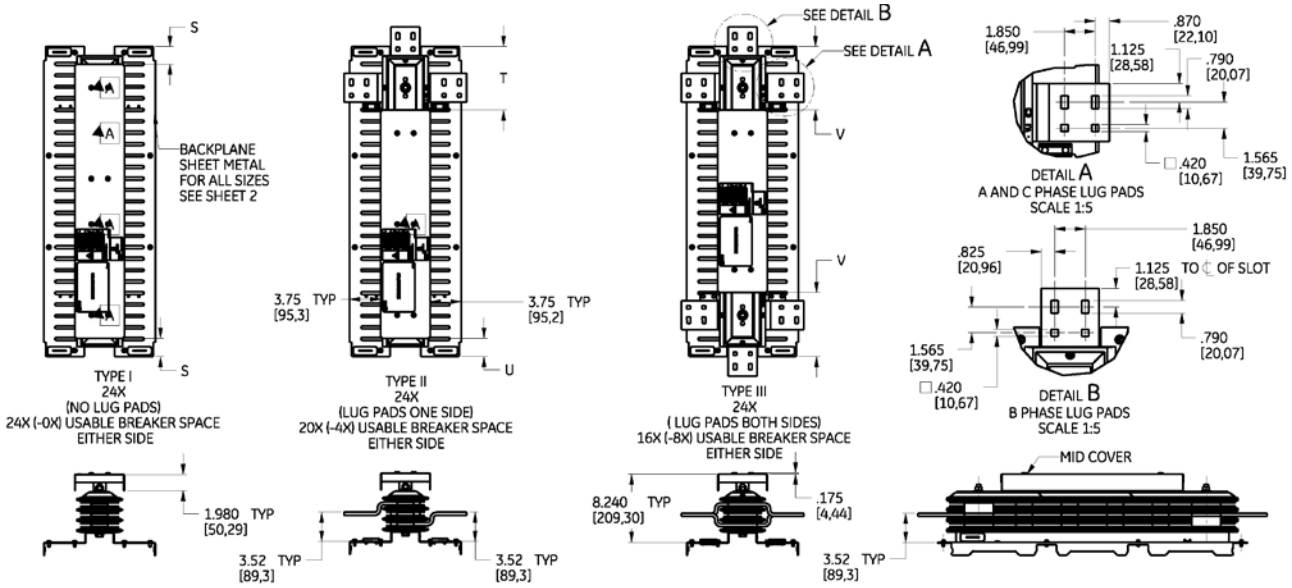
c. Click on the document number to the link for the document linked to the 1SQC number, and you will be redirected to download the drawing.

d. Open the downloaded drawing using your preferred software.

ReliaGear bus stack

Panelboard interior dimension detail

See outline drawings below for required dimensional spacing for ReliaGear bus stacks. These bus stack units apply to power panel applications.



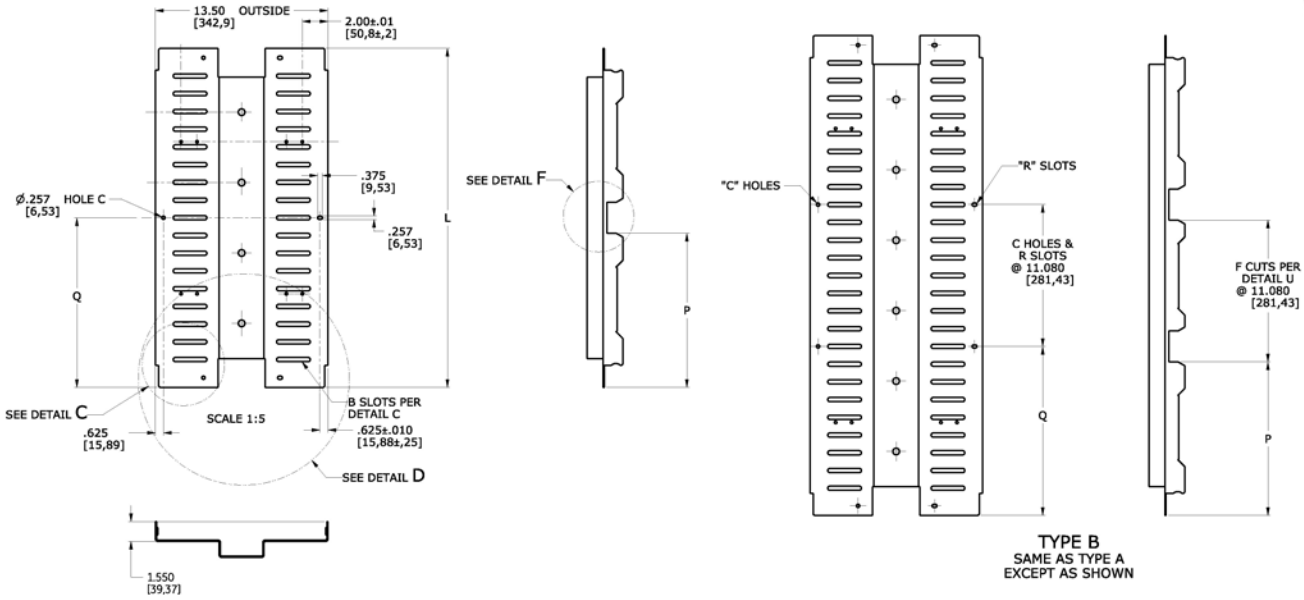
Description	Type	S	T	U	V
Bolted lugs (BL), 16X	II	–	7.740	2.240	–
Bolted lugs (BL), 24X	II	–	7.700	2.200	–
Bolted lugs (BL), 32X	II	–	7.660	2.160	–
Bolted lugs (BL), 40X	II	–	7.620	2.120	–
Bolted feed-through (BF), 24X	III	–	–	–	7.720
Bolted feed-through (BF), 32X	III	–	–	–	7.680
Bolted feed-through (BF), 40X	III	–	–	–	7.640
Clean bus, 16X	I	2.220	–	–	–
Clean bus, 24X	I	2.180	–	–	–
Clean bus, 32X	I	2.140	–	–	–
Clean bus, 40X	I	2.100	–	–	–

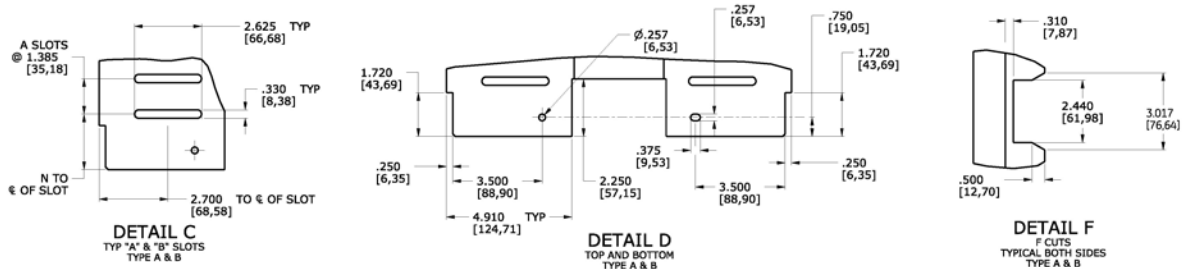
Notes:
1. All dimensions are for reference
2. Dimensions in [ ] are in mm
3. BF type interior in 16X not offered
4. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear bus stack

Panelboard interior dimension detail

See outline drawings below for required dimensional spacing for ReliaGear bus stacks. These bus stack units apply to power panel applications.





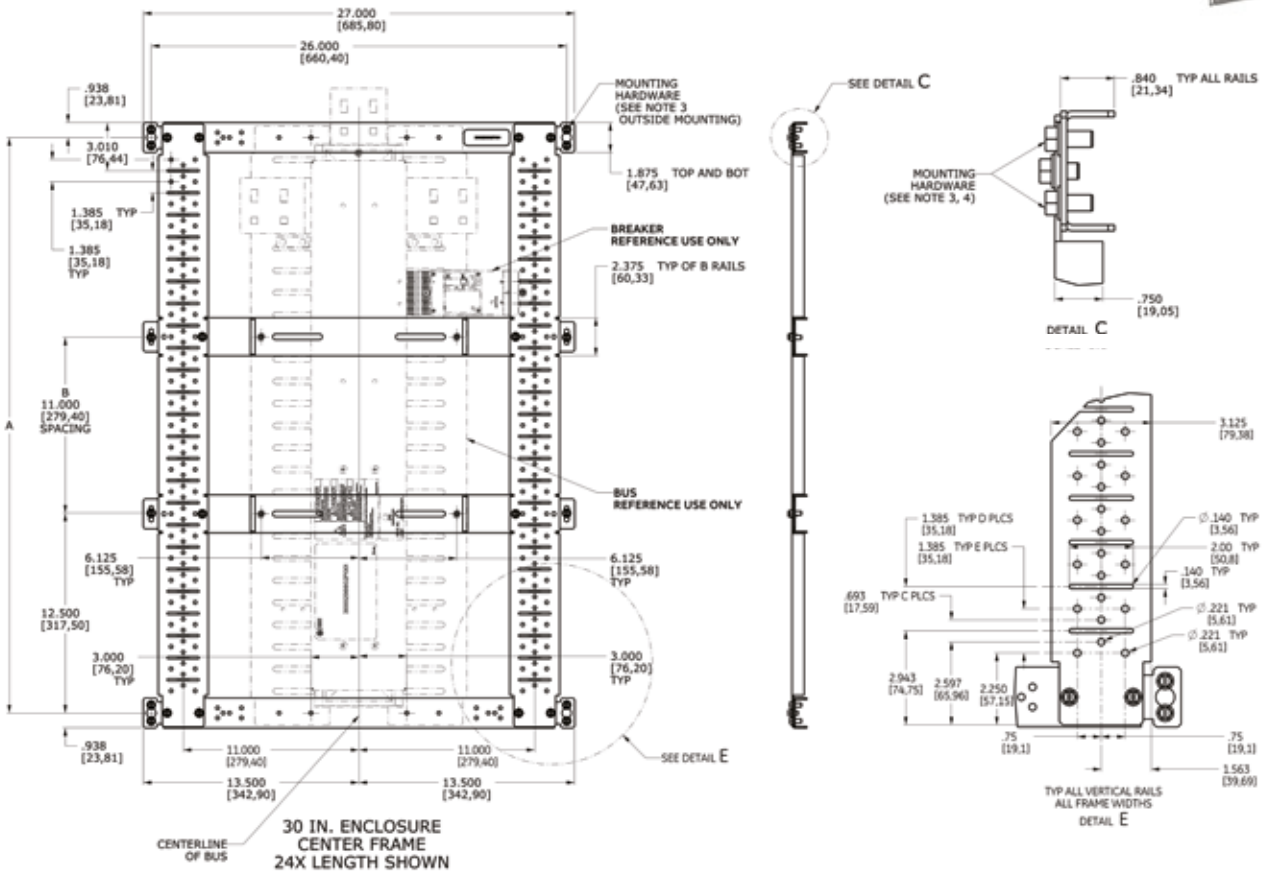
Bus stack length used with	A	B	c	E	F	H	L	N	p	Q	R	Type
16X	17	17	1	4	1	-	26.500	2.170	12.030	13.250	1	A
24X	25	25	2	6	2	1	37.500	2.130	11.990	13.210	2	B
32X	33	33	3	8	3	2	48.500	2.090	11.950	13.170	3	B
40X	41	41	4	10	4	3	59.500	2.050	11.910	13.130	4	B

Notes:
1. All dimensions are for reference
2. Dimensions in [ ] are in mm
3. BF type interior in 16X not offered
4. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear bus stack frame — 30 in. center

Panelboard interior dimension detail

See outline drawings below for required dimensional spacing for ReliaGear bus mounting frames. These bus stack units apply to power panel applications.



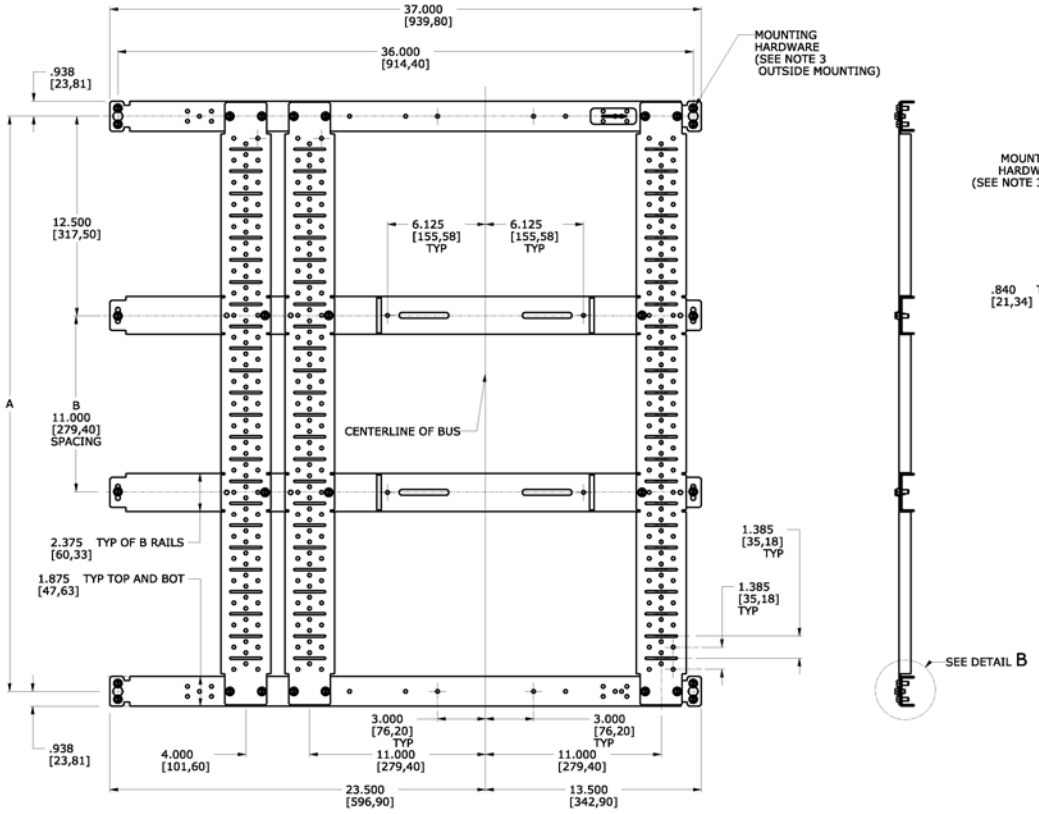
X spacing	A (in.)	B (places)	C	D	E	Type
16X	25	–	32	16	17	30 in. center
24X	36	1	48	24	25	
32X	47	2	64	32	33	
40X	56	3	80	40	41	

Notes:
1. All dimensions are for reference
2. Dimensions in [ ] are in mm
3. Hardware hex head, ¼ x ½ — thread forming
4. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear bus stack frame — 40 in. offset

Panelboard interior dimension detail

See outline drawings below for required dimensional spacing for ReliaGear bus mounting frames. These bus stack units apply to power panel applications.



40 IN. ENCLOSURE
OFFSET FRAME
24X LENGTH SHOWN

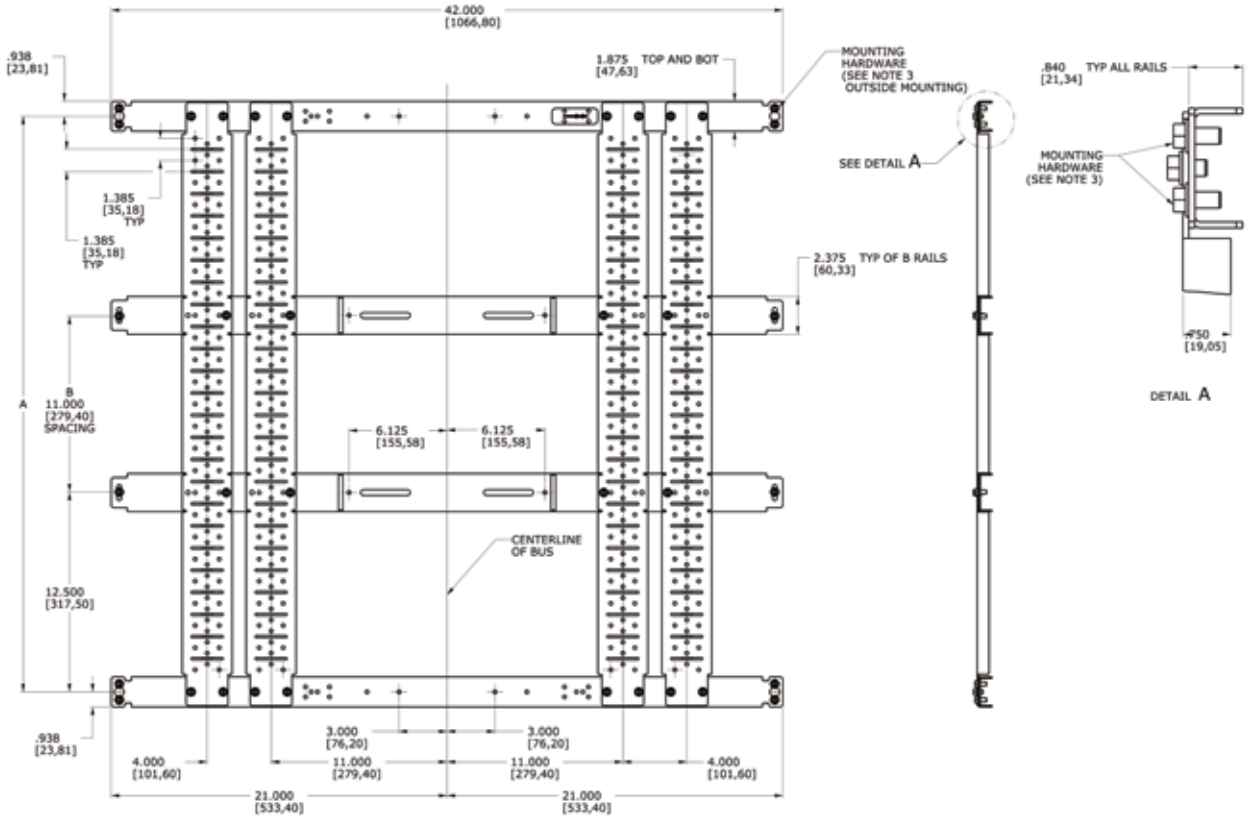
X spacing	A (in.)	B (places)	Type
16X	25	–	40 in. center
24X	36	1	
32X	47	2	
40X	56	3	

Notes:
1. All dimensions are for reference
2. Dimensions in [ ] are in mm
3. Hardware hex head, ¼ x ½ — thread forming
4. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear bus stack frame — 45 in. center

Panelboard interior dimension detail

See outline drawings below for required dimensional spacing for ReliaGear bus mounting frames. These bus stack units apply to power panel applications.



45 IN. WIDE ENCLOSURE
CENTER FRAME
24X LENGTH SHOWN

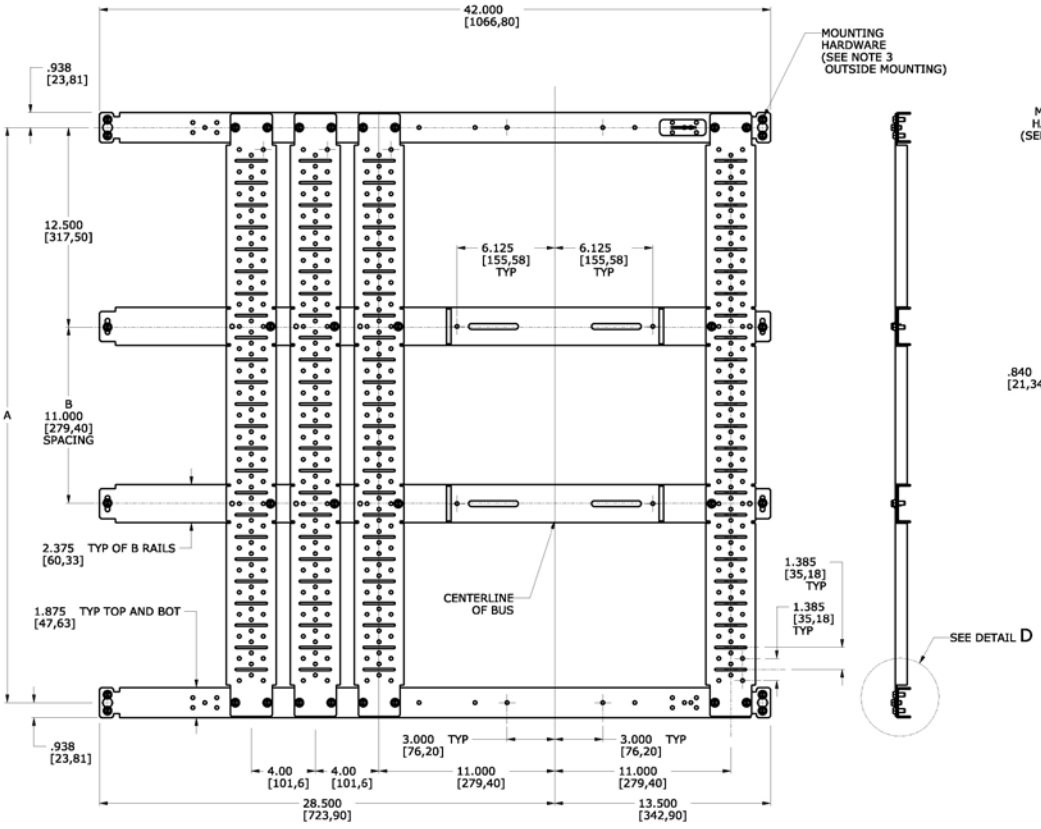
X spacing	A (in.)	B (places)	Type
16X	25	–	45 in. center
24X	36	1	
32X	47	2	
40X	56	3	

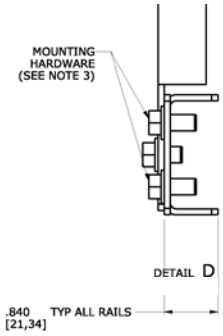
Notes:
1. All dimensions are for reference
2. Dimensions in [ ] are in mm
3. Hardware hex head, ¼ x ½ — thread forming
4. See sheet 1 for vertical rail detail
5. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear bus stack frame — 45 in. offset

Panelboard interior dimension detail

See outline drawings below for required dimensional spacing for ReliaGear bus mounting frames. These bus stack units apply to power panel applications.





45 IN. WIDE ENCLOSURE
OFFSET FRAME
24X LENGTH SHOWN

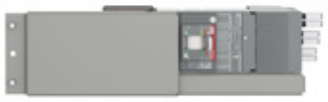
X spacing	A (in.)	B (places)	Type
16X	25	–	45 in. offset
24X	36	1	
32X	47	2	
40X	56	3	

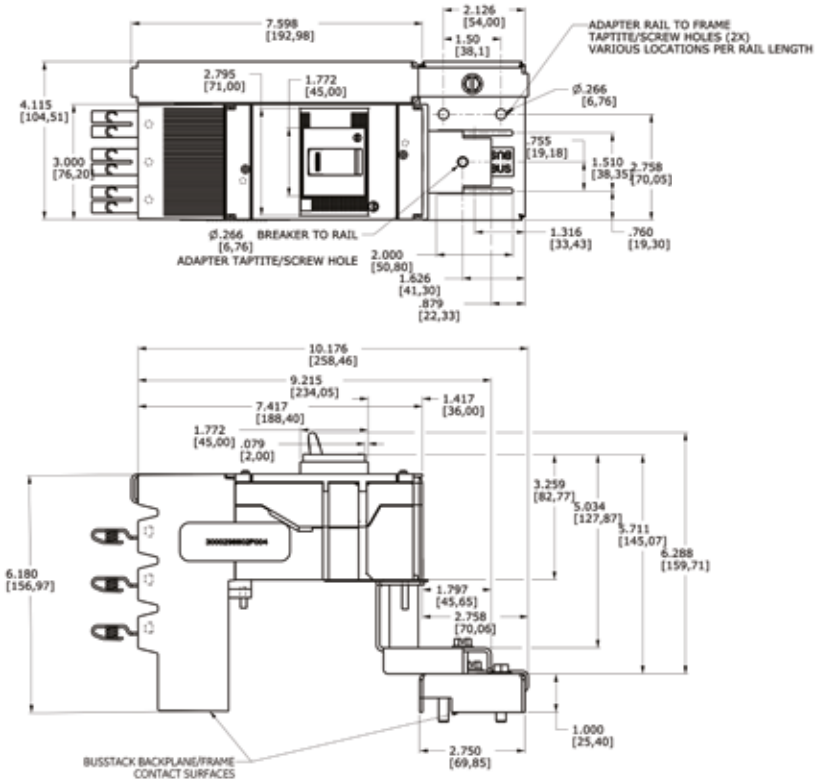
Notes:
1. All dimensions are for reference
2. Dimensions in [ ] are in mm
3. Hardware hex head, ¼ x ½ — thread forming
4. See sheet 1 for vertical rail detail
5. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Tmax XT1 — single mount

Plug-in circuit breaker dimension detail

The XT1 frames for ReliaGear circuit breaker assemblies are offered in quantities of one, two or five. This improves circuit breaker density within distribution panels and switchboards. See outline drawings below for required dimensional spacing.





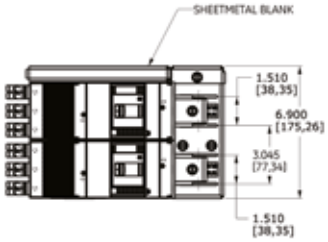
Amps	Wire size (AWG)	Wires per lug	Wire bend space (in.)	Installation
25–125	10–2/0	1	Up to 3.5	Horizontal

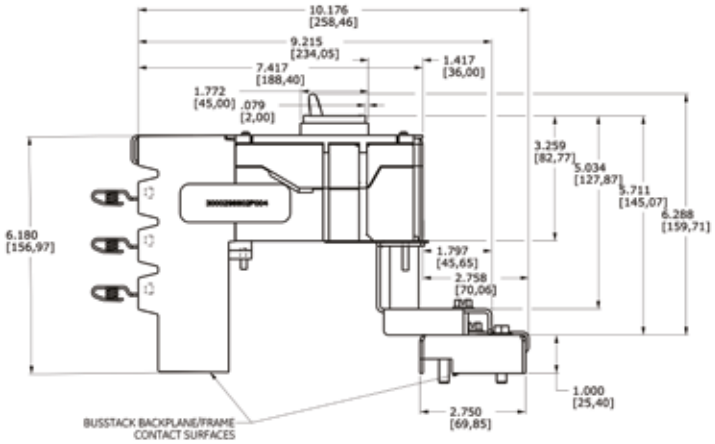
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. 1 XT1 breaker and spacer takes up 3 X spaces (order SR1XBF for 1 single XT1)
6. 2 XT1 breakers and spacer take up 5 X spaces (order SR2XBF for 2 adjacent XT1)
7. 5 XT1 breakers take up 11 X spaces (order SR5XBF for 5 adjacent XT1)
8. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Tmax XT1 — group mount, 2 breakers

Plug-in circuit breaker dimension detail

The XT1 frames for ReliaGear circuit breaker assemblies are offered in quantities of one, two or five. This improves circuit breaker density within distribution panels and switchboards. See outline drawings below for required dimensional spacing.





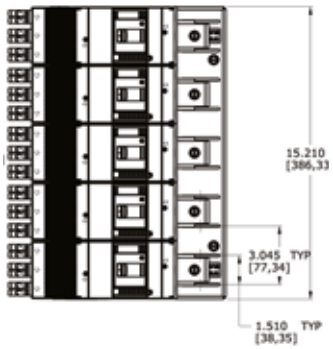
Amps	Wire size (AWG)	Wires per lug	Wire bend space (in.)	Installation
25–125	10–2/0	1	Up to 3.5	Horizontal

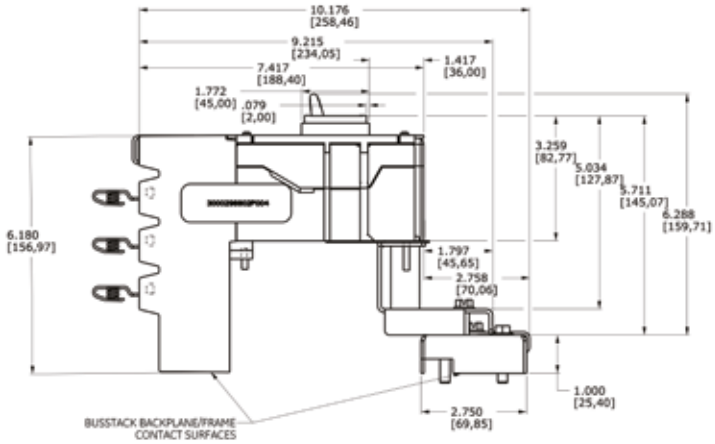
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. 1 XT1 breaker and spacer takes up 3 X spaces (order SR1XBF for 1 single XT1)
6. 2 XT1 breakers and spacer take up 5 X spaces (order SR2XBF for 2 adjacent XT1)
7. 5 XT1 breakers take up 11 X spaces (order SR5XBF for 5 adjacent XT1)
8. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Tmax XT1 — group mount, 5 breakers

Plug-in circuit breaker dimension detail

The XT1 frames for ReliaGear circuit breaker assemblies are offered in quantities of one, two or five. This improves circuit breaker density within distribution panels and switchboards. See outline drawings below for required dimensional spacing.





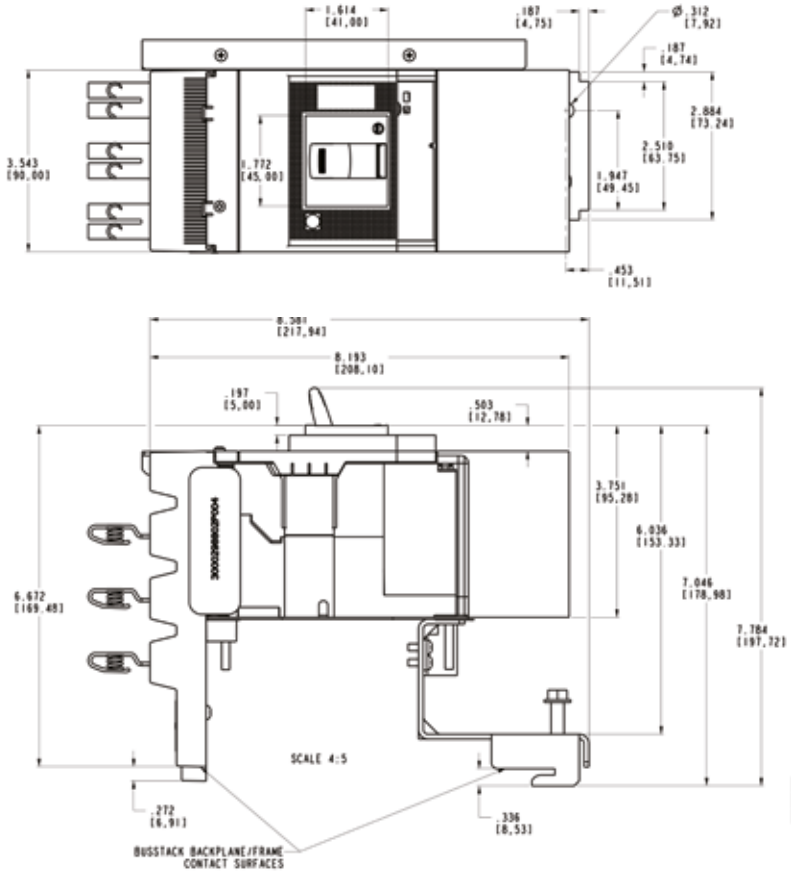
Amps	Wire size (AWG)	Wires per lug	Wire bend space (in.)	Installation
25–125	10–2/0	1	Up to 3.5	Horizontal

Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. 1 XT1 breaker and spacer takes up 3 X spaces (order SR1XBF for 1 single XT1)
6. 2 XT1 breakers and spacer take up 5 X spaces (order SR2XBF for 2 adjacent XT1)
7. 5 XT1 breakers take up 11 X spaces (order SR5XBF for 5 adjacent XT1)
8. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Tmax XT2

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear Tmax XT2 required dimensional spacing. This frame covers 125 A applications at 600 V max. These plug-in units apply to both power panel and switchboard applications.



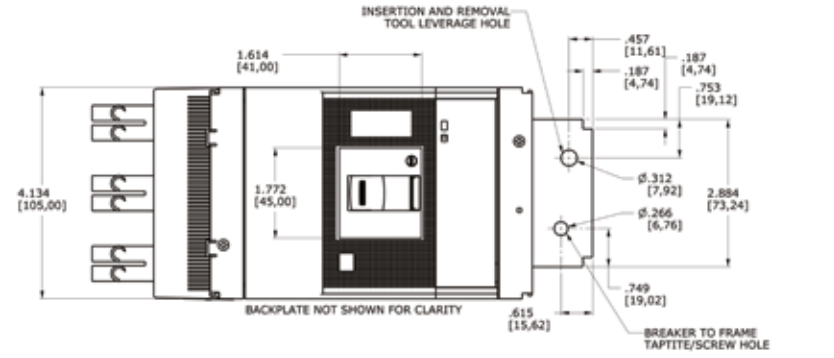
Amps	Wire size (AWG or kcmil)	Wires per lug	Wire bend space (in.)	Installation
10-25	14-1/0 (Cu)	1	Up to 3.5	Horizontal
10-125	10-2/0	1	Up to 3.5	Horizontal

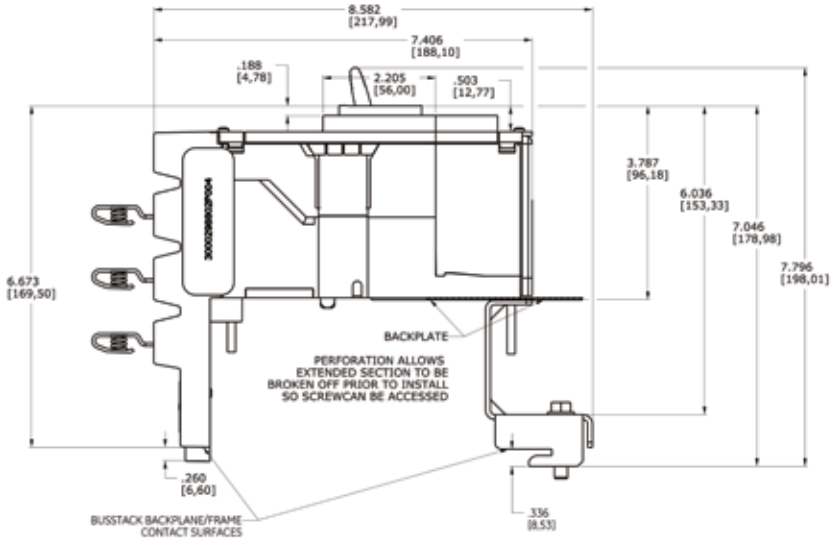
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. XT2 breaker takes up 3 X spaces in ReliaGear neXT power panelboard
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Tmax XT4

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear Tmax XT4 required dimensional spacing. This frame covers 250 A applications at 600 V max. These plug-in units apply to both power panel and switchboard applications.





Amps	Wire size (AWG or kcmil)	Wires per lug	Wire bend space (in.)	Installation
25–70	14–1/0	1	Up to 3.5	Horizontal
80–225	4–300	1	2–5	Horizontal
250	3/0–350	1	4–5	Horizontal

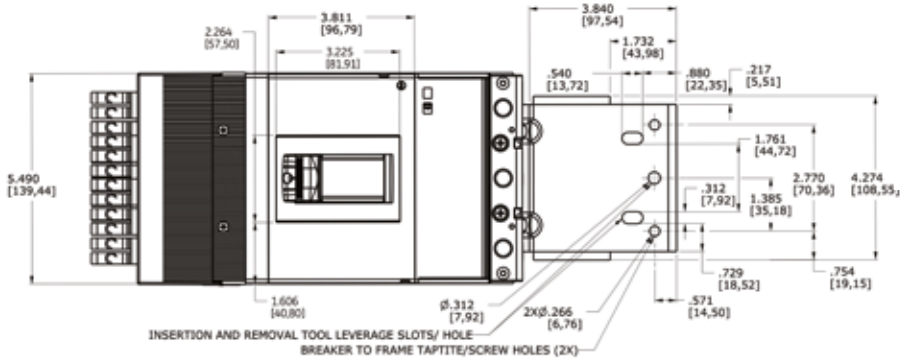
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. XT4 breaker takes up 3 X spaces in ReliaGear neXT power panelboard
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

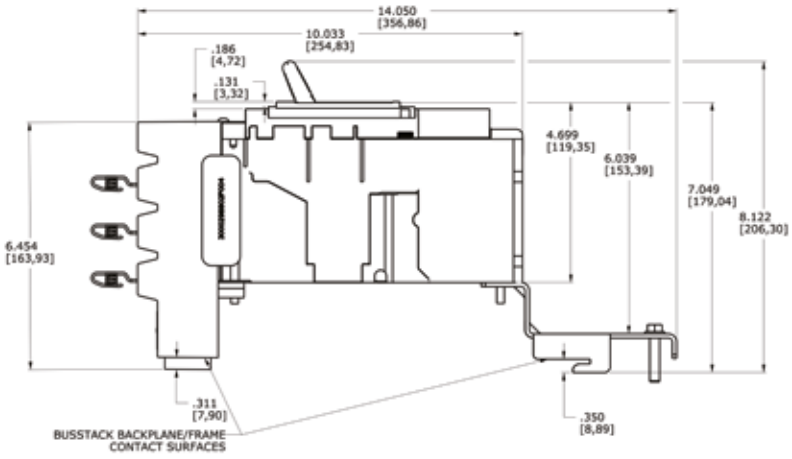
05

ReliaGear Tmax XT5

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear Tmax XT5 required dimensional spacing. This frame covers 600 A applications at 600 V max. These plug-in units apply to both power panel and switchboard applications.





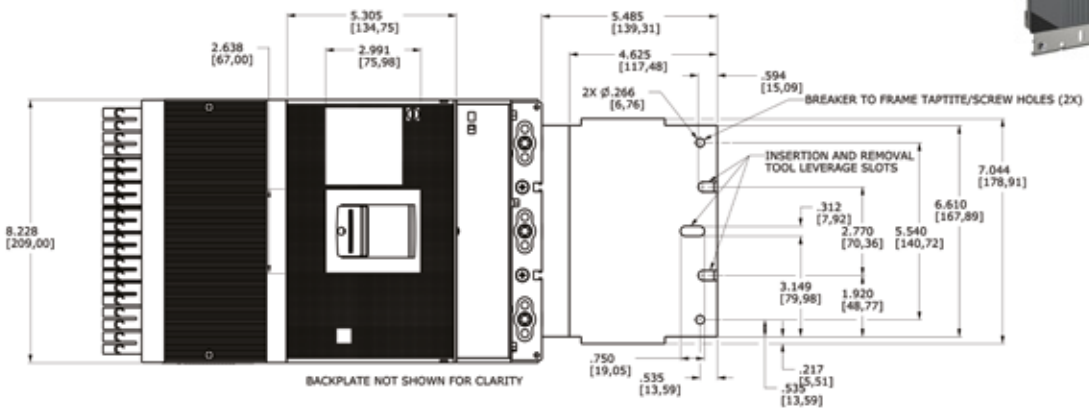
Amps	Wire size (AWG or kcmil)	Wires per lug	Wire bend space (in.)	Installation
250–600	2/0–500	1	3.5–6	Horizontal
250–600	2/0– 500	2	5–8	Horizontal

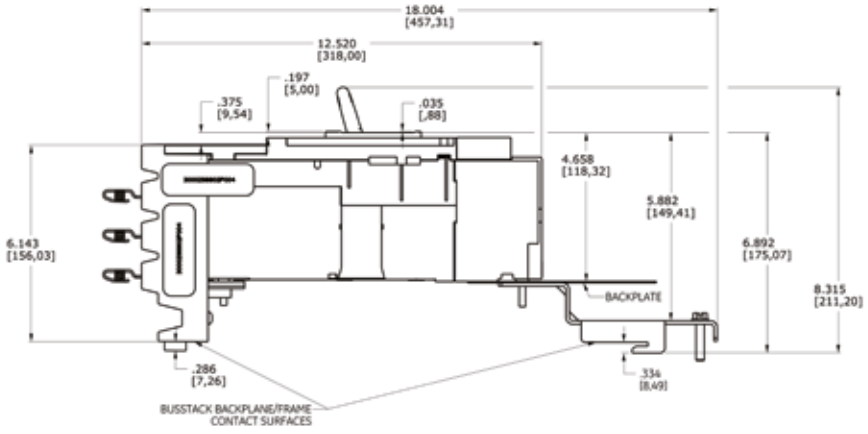
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. XT5 breaker takes up 4 X spaces in ReliaGear neXT power panelboard
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Tmax XT6

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear Tmax XT6 required dimensional spacing. This frame covers 800 A applications at 600 V max. These plug-in units apply to both power panel and switchboard applications.





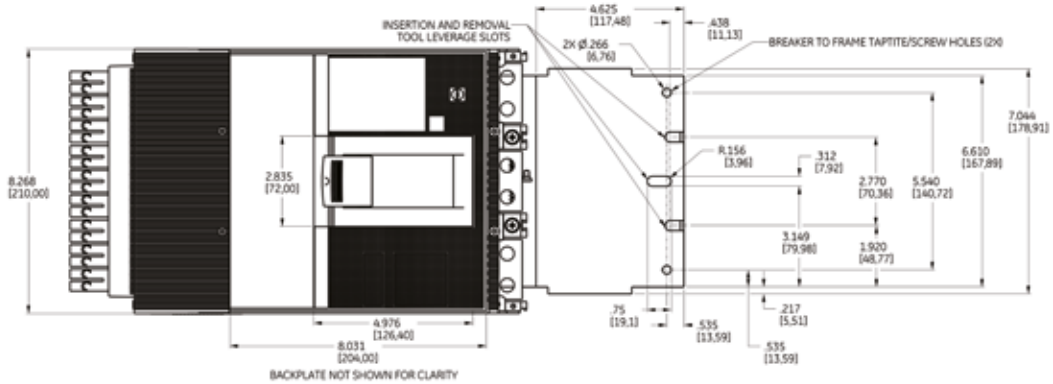
Amps	Wire size (AWG or kcmil)	Wires per lug	Wire bend space (in.)	Installation
600–800	2/0–400	1	3.5–6	Horizontal
600–800	2/0–400	2	5–8	Horizontal
600–800	2/0–400	3	7–10	Horizontal

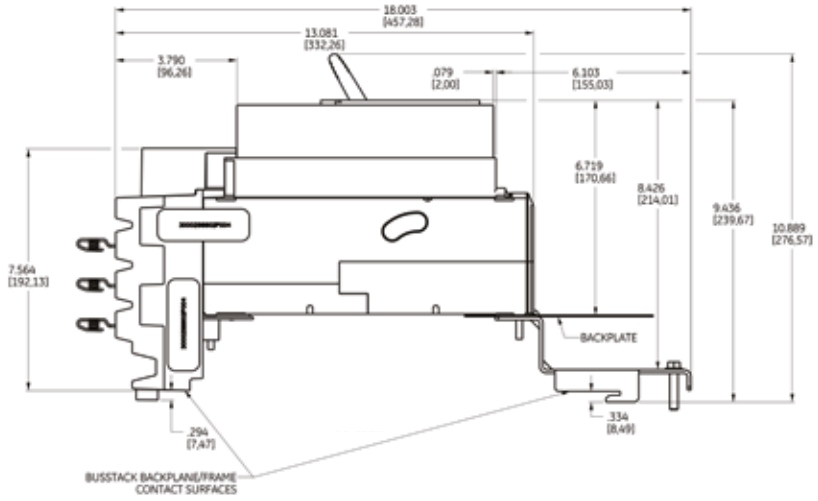
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. XT6 breaker takes up 6 X spaces in ReliaGear neXT power panelboard
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Tmax XT7

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear Tmax XT7 required dimensional spacing. This frame covers 1200 A applications at 600 V max. These plug-in units apply to both power panel and switchboard applications. For 1200 A, 100% rated offering, please see next page.





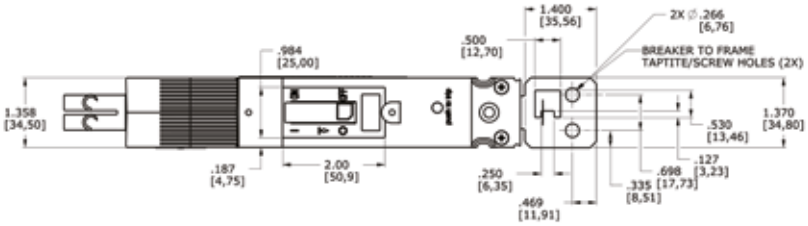
Wire size (AWG or kcmil)	Wires per lug	Wire bend space (in.)	Installation
4/0–500	1	4–6	Horizontal
4/0–500	2	6–8	Horizontal
4/0–500	3	8–10	Horizontal
4/0–500	4	10–12	Horizontal
500–750	1	6–8	Horizontal
500–750	2	8–10	Horizontal
500–750	3	10–12	Horizontal

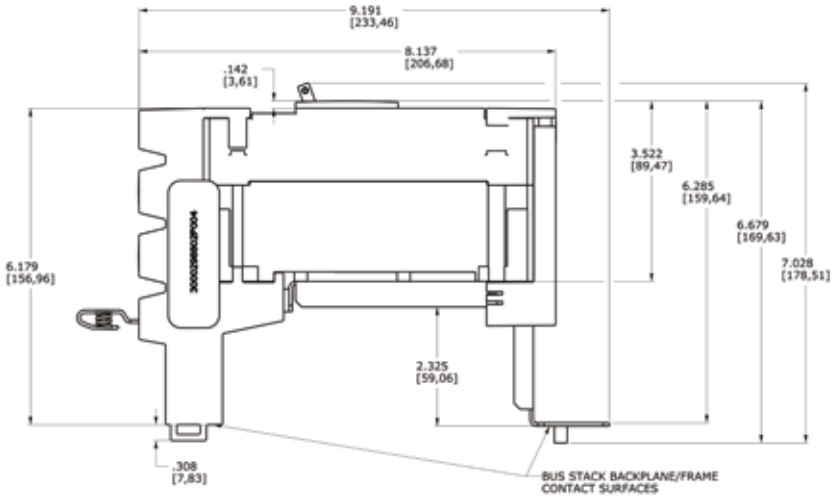
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. XT7 breaker takes up 6 X spaces in ReliaGear neXT power panelboard
6. Table references two different lugs; for the 500–750 kcmil lug (qty. 3), 750 kcmil cable requires more wire bend space than possible in the largest ReliaGear neXT panel
7. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Record Plus FB 1-pole

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear FB required dimensional spacing. This frame covers 100 A single- and two-pole applications at 600 V max. These plug-in units apply to both power panel and switchboard applications.





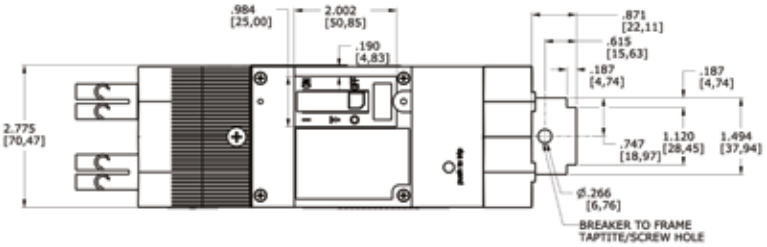
Amps	Wire size (AWG)	Wire bend space (in.)
15–20	14–10	Not specified
25–60	10–4	Up to 2
70–100	1–1/0	3–3.5

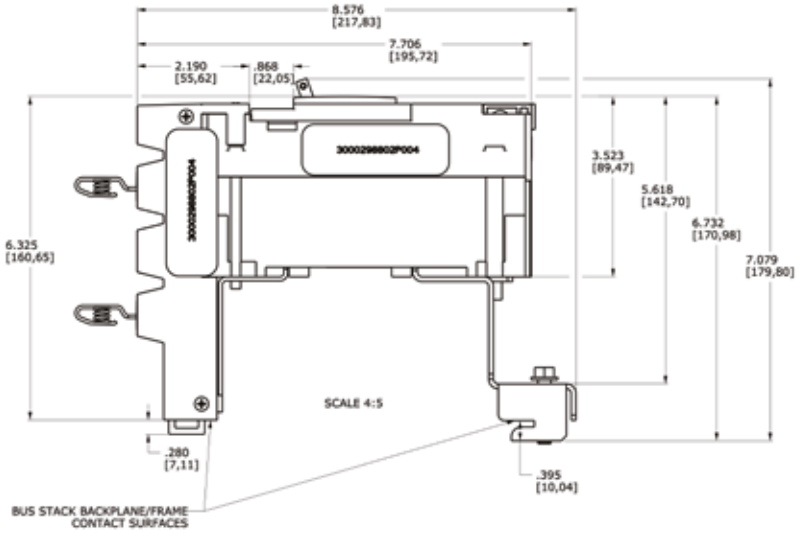
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. FB 1-pole breaker takes up 2 X spaces in ReliaGear neXT power panel
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Record Plus FB 2-pole

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear FB required dimensional spacing. This frame covers 100 A single- and two-pole applications at 600 V max. These plug-in units apply to both power panel and switchboard applications.





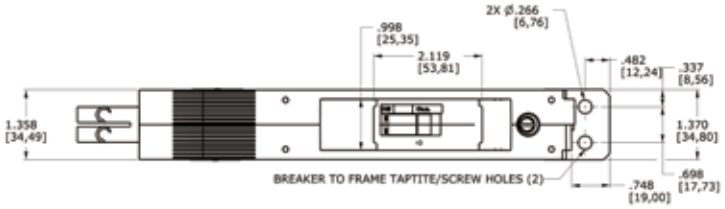
Amps	Wire size (AWG)	Wire bend space (in.)
15–20	14–10	Not specified
25–60	10–4	Up to 2
70–100	1–1/0	3–3.5

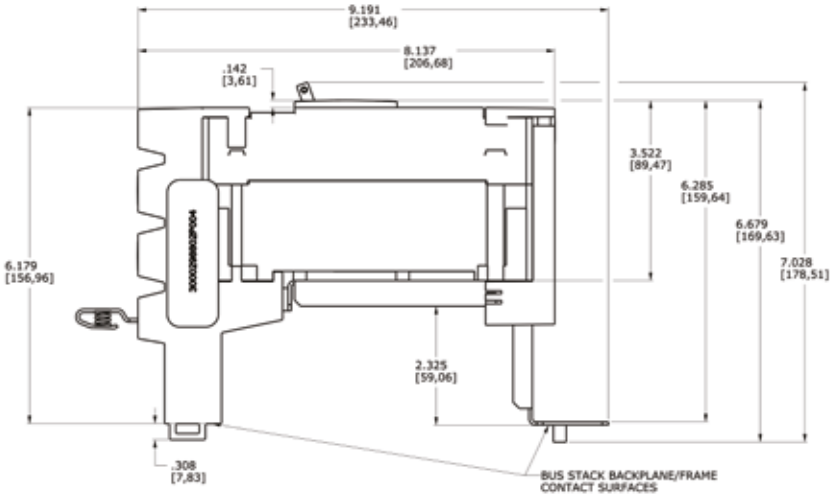
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. FB 2-pole breaker takes up 2 X spaces in ReliaGear neXT power panel
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear TEY 1-pole

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear TEY required dimensional spacing. This frame covers 100 A single- and two-pole applications at 600 V max. These plug-in units apply to both power panel and switchboard applications.





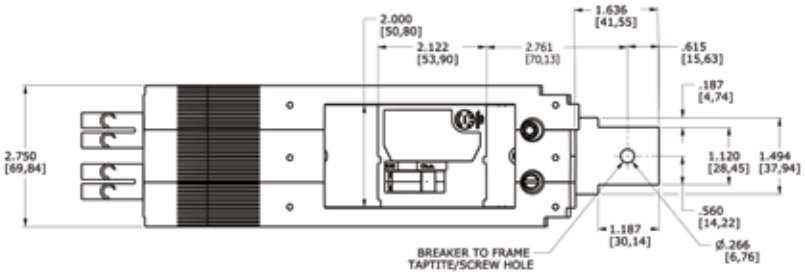
Amps	Wire size (AWG)	Wire bend space (in.)
15–30	14–10	Not specified
35–60	10–4	Up to 2
70	4–1/0	3–3.5

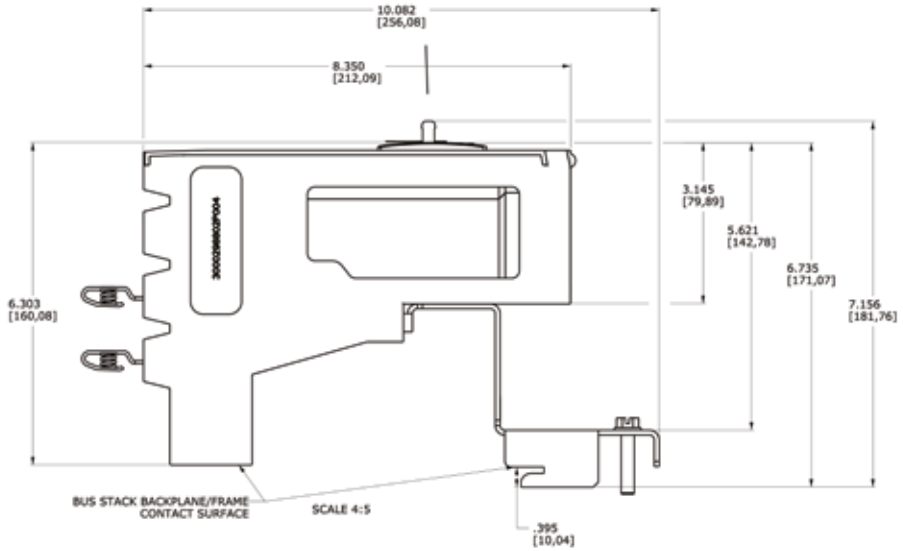
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. TEY D/H/L (STEY) 1-pole breaker takes up 1 X space in ReliaGear neXT power panelboard
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear TEY 2-pole

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear TEY required dimensional spacing. This frame covers 100 A single- and two-pole applications at 600 V max. These plug-in units apply to both power panel and switchboard applications.





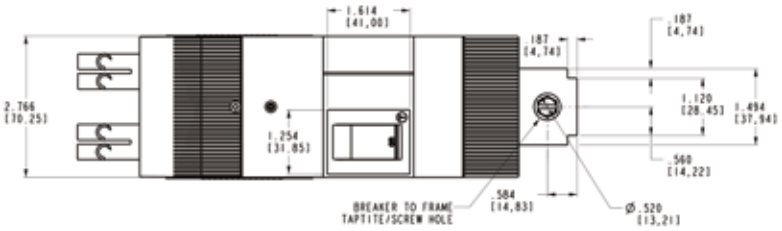
Amps	Wire size (AWG)	Wire bend space (in.)
15–30	14–10	Not specified
35–60	10–4	Up to 2
70–100	4–1/0	3–3.5
110–125	4–2/0	3–3.5

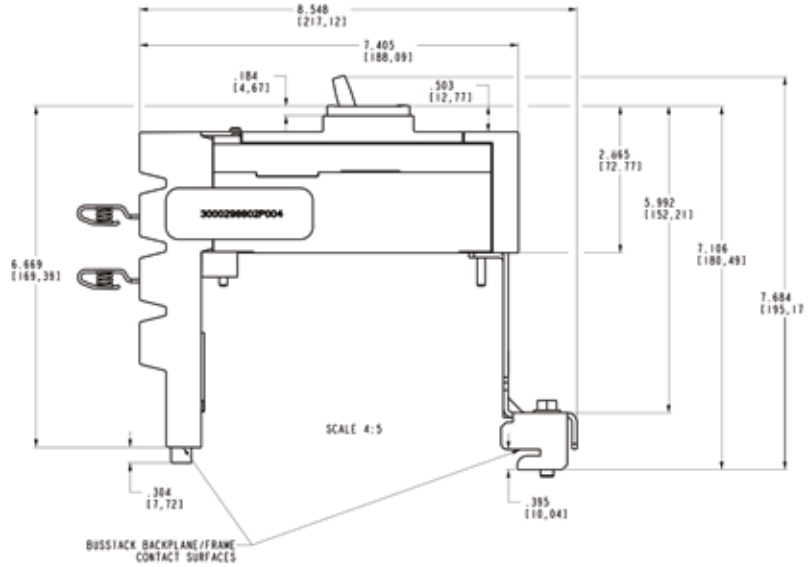
Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. TEY 2-pole breaker takes up 2 X spaces in ReliaGear neXT power panelboard
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

ReliaGear Formula A2

Plug-in circuit breaker dimension detail

See outline drawings below for ReliaGear Formula A2 required dimensional spacing. This frame covers 125-250 A applications at 240 V max. These plug-in units apply to power panel applications.





Amps	Wire size (AWG or kcmil)	Wires per lug	Wire bend space (in.)	Installation
125–250	#1–250 (Cu)	1	3.5–5	Horizontal
	2/0–300 (Al)		3–4.5	
250	350 (Al)	1	5	Horizontal

Notes:
1. Minimum wire bend space is determined by largest cable able to be installed in lugs
2. Minimum wire bend space per UL 67 table 17.2
3. All dimensions are for reference
4. Dimensions in [ ] are in mm
5. A2 breaker takes up 3 X spaces in ReliaGear neXT power panelboard
6. For additional details, see OEM drawing selector website http://reliagear-drawingselector.com/

Additional resources

Product websites
- ReliaGear neXT power panel
- ReliaGear SB switchboard

Product guides
- ReliaGear neXT power panel
- ReliaGear SB switchboard

Video assembly instructions
Product installation video
- ReliaGear neXT — Bus stack installation
- ReliaGear neXT — Fronts and gutter doors installation
- ReliaGear neXT — Branch circuit breaker installation
- ReliaGear neXT — Ground and neutral installation
- ReliaGear neXT — Interior frame installation
- ReliaGear neXT — Lug wire post installation

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