

DESCRIPTIVE BULLETIN

ReliaGear® SB Switchboards

The road to reliability

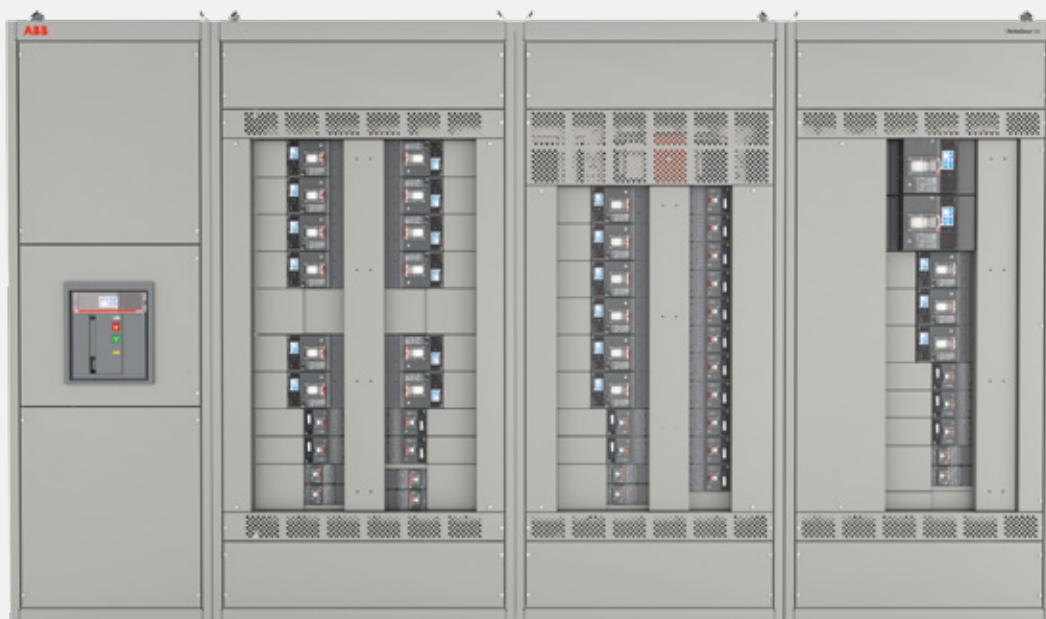


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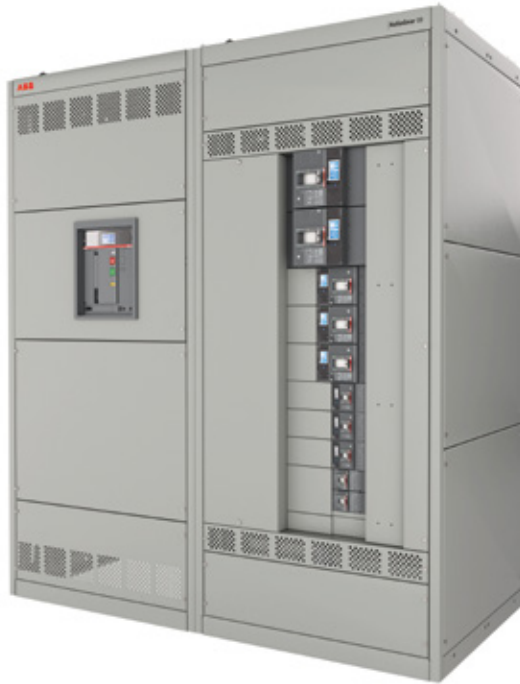
The road to reliability

ReliaGear® SB Switchboards

Ready to dramatically speed up field modifications and eliminate labor-intensive bolt-on components? Plug into what's next in switchboards: ReliaGear SB.

—
01 One-sided
configurations available
to minimize the width

ReliaGear SB features a safe, reliable design that dramatically saves time, labor and cost while helping to ensure greater energy efficiency and reliability.



—
01



Install components in seconds

Safe. Smart. Sustainable.

— 02 Finger-safe bus stack that meets IP20 standards in select models

— 03 Spring-loaded circuit breaker plug-in connectors



SAFE

The next level of protection

ABB is passionate about safety. From the largest piece of arc-resistant switchgear down to the smallest arc fault and ground fault sensing circuit breaker, ABB is always designing ways to help keep personnel out of harm's way. ReliaGear panelboard and switchboard designs come with an improved finger-safe bus stack that meets IP20 standards. Thanks to the circuit breaker integrated Bluetooth® technology, it is also possible to set parameters and check measurements directly from your smartphone from an arc-free zone.



— 02



— 03

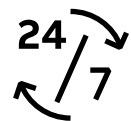
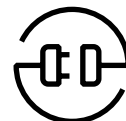
—
04 Hinged splice plate
with captive hardware



SMART

Modular, flexible, fast

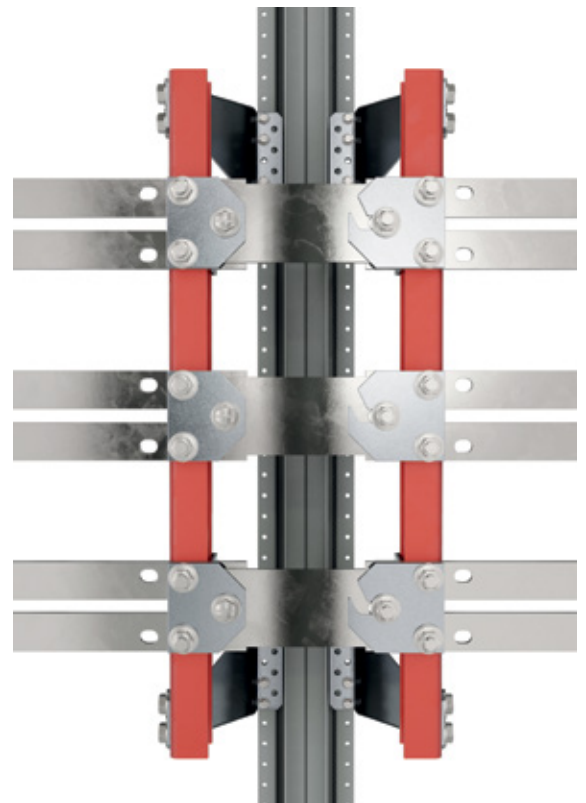
The ReliaGear® SB features plug-in, single-tool simplicity enabling easy, fast component installation or replacement in the field. For even greater flexibility, circuit breakers can be installed anywhere on the bus stack. Hinged gutter doors allow quick, convenient access for wiring of circuit breakers. Captive splice plates between sections allow for quick assembly.



SUSTAINABLE

Dependable connections

Spring-loaded circuit breaker plug-in connectors have plating that is durable enough to withstand repeated insertion and removal. Levering features further reduce installation and removal forces. The plug-in connector design uses the magnetic forces generated by a short circuit event to help make the connection even stronger and more reliable. Fewer bolted joints mean fewer potential loose connections to check and retorquer.



SACE® Tmax® XT plug-in circuit breakers feature spring-loaded primary disconnects, enabling fast installation, easy replacement and reliable connection to maximize uptime.

When reliability matters, count on ReliaGear® SB. To learn more, contact your ABB representative or visit electrification.us.abb.com/products/switchboards/reliagear-sb-switchboard.

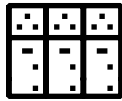


More advantages

—
05 Angled lifting brackets
for fast placement

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06 Remote access to
accurate information
anywhere, anytime

—
07 Components can
be installed in as
little as 20 seconds



SAFE

Set in place

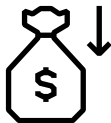
With ReliaGear® SB, angled lifting brackets enable switchboard sections to be placed together without having to remove the brackets, allowing for faster, more precise placement of switchboard sections next to each other.



SMART

Link to data analysis in real time

With ABB Ability™ cloud connectivity, multiple communication options and built-in metering, SACE® Emax 2 and SACE® Tmax® XT circuit breakers put facility managers in control. Precise measured data allows users to access accurate information anywhere or anytime, making it easier to monitor resources and identify savings opportunities.



SUSTAINABLE

Speed up your project

Reducing labor and saving time is crucial for electrical contractors. In fact, an 8% savings in labor costs for a typical large project can mean 133% more profit for the contractor.* ReliaGear SB's intuitive installation enables components to be installed in as few as 20 seconds, dramatically saving skilled-labor costs, reducing downtime and lowering the risk of mistakes.

*From "How to Make a Good Estimate Even Better" by Don Kiper, JEC&M, 2017.



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05



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06



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07

Switchboard details

ReliaGear® SB can be equipped with circuit breakers from 15 to 6000 A. The maximum short circuit rating is equal to 150 kAIC at 480 V AC or the lowest current interruption rating of any device installed.

ReliaGear SB 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

Available environmental enclosure types

- NEMA 1
- NEMA 3R

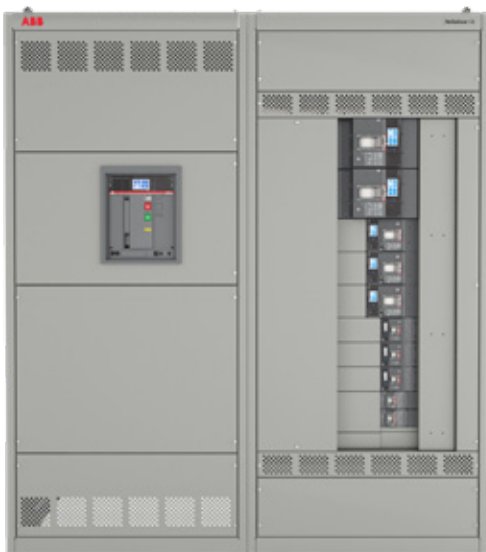
Section depths

- 25–60" in 5" increments
- (5000 to 6000 A - 30" minimum depth)

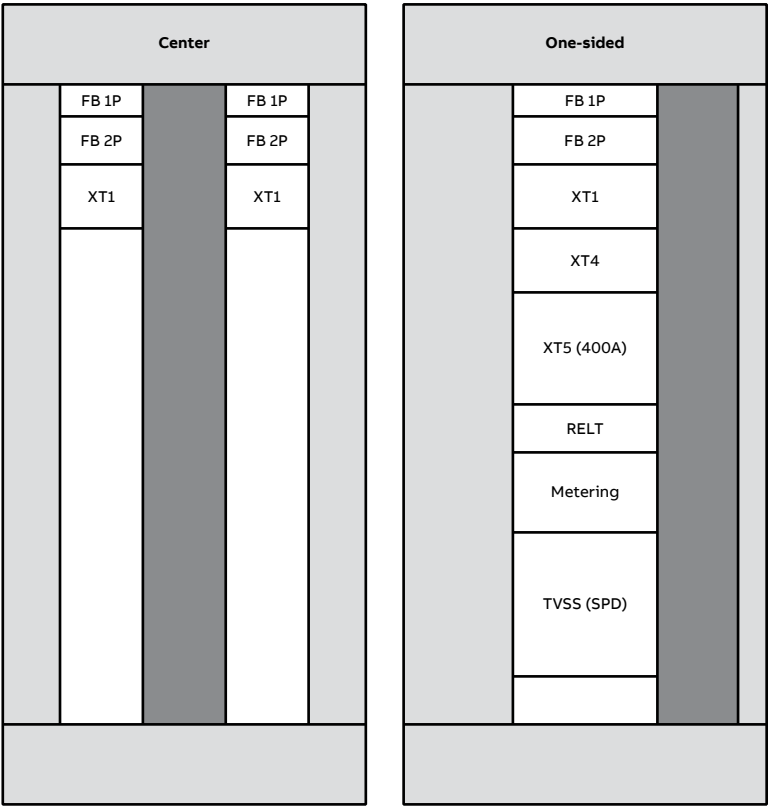
ReliaGear SB is available with multiple options

- **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 material:**
Copper or aluminum, heat-rated or density-rated

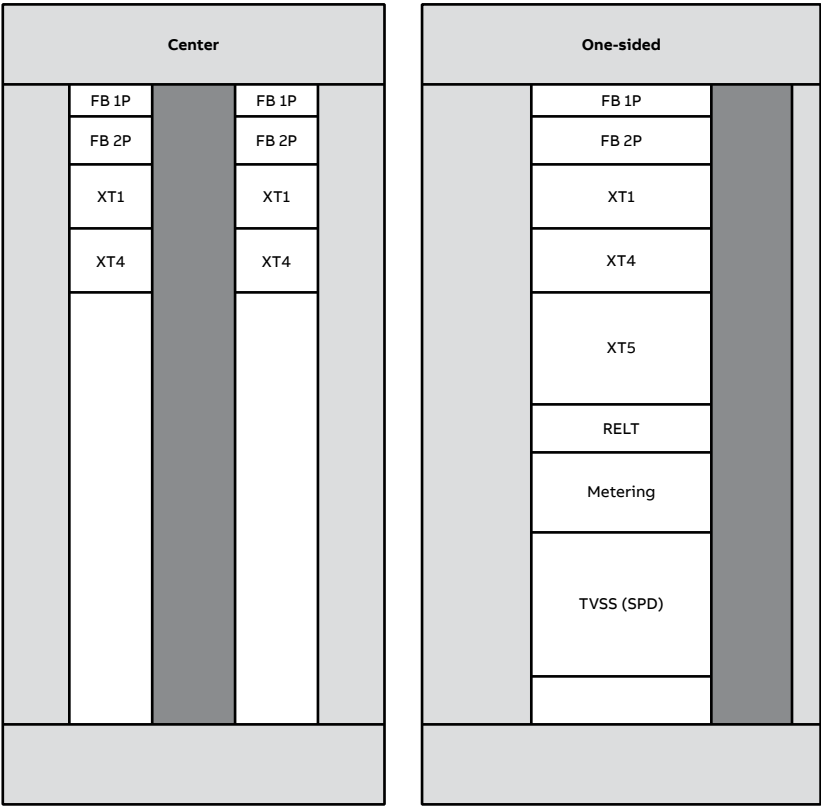
ReliaGear SB group-mounted distribution sections come in three bus stack configurations: center, offset and one-sided. The bus stack configuration and width of the switchboard section determine the maximum ampacity circuit breaker allowed on the side(s) of the bus stack.



Device fit per section width

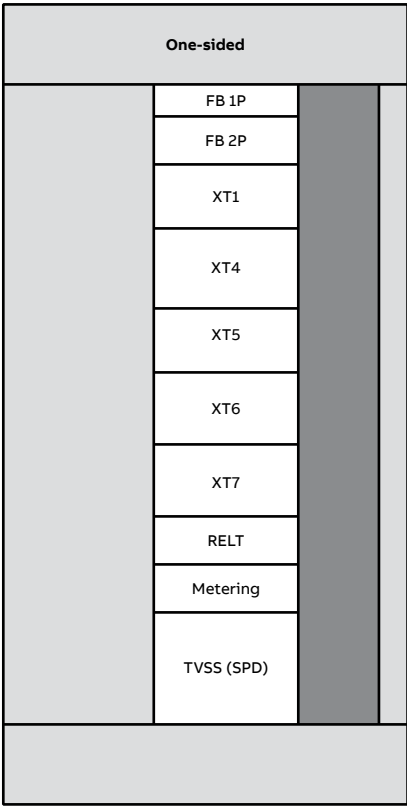
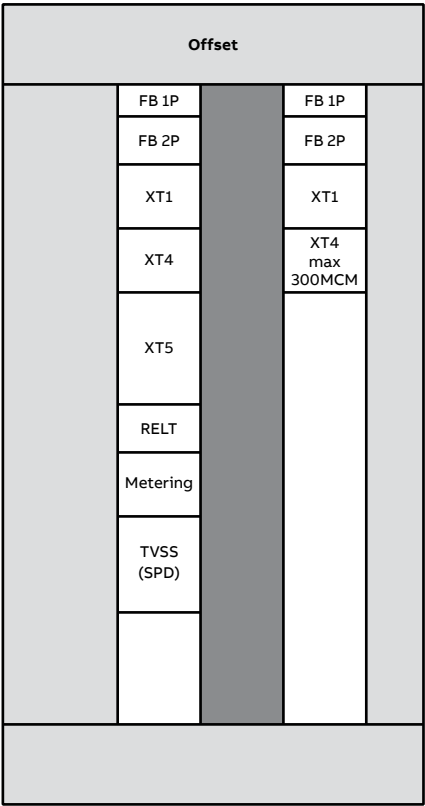


08 Device mounting configurations 30W



09 Device mounting configurations 35" W

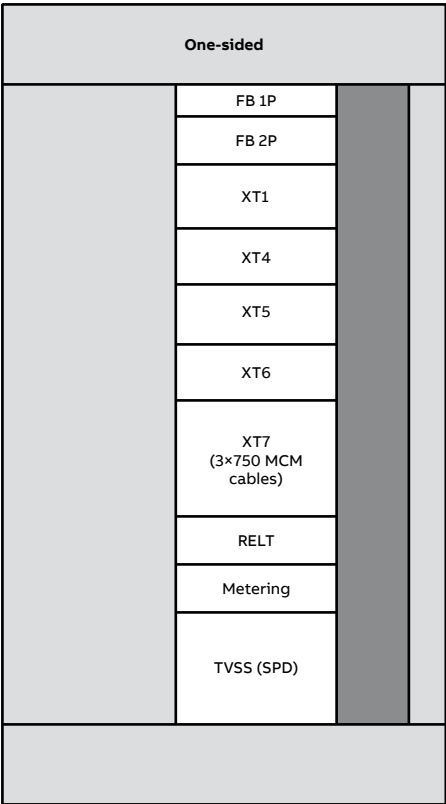
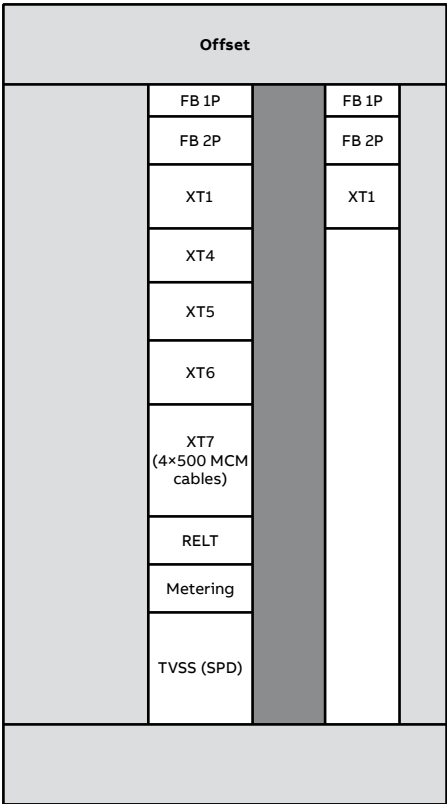
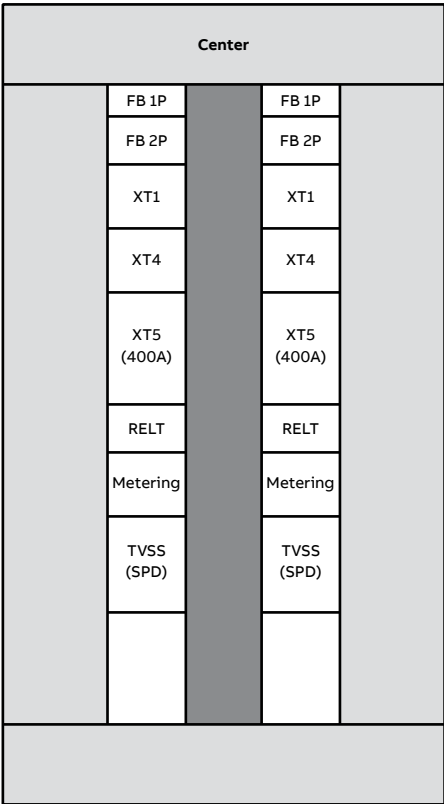
Device fit per section width



Key:

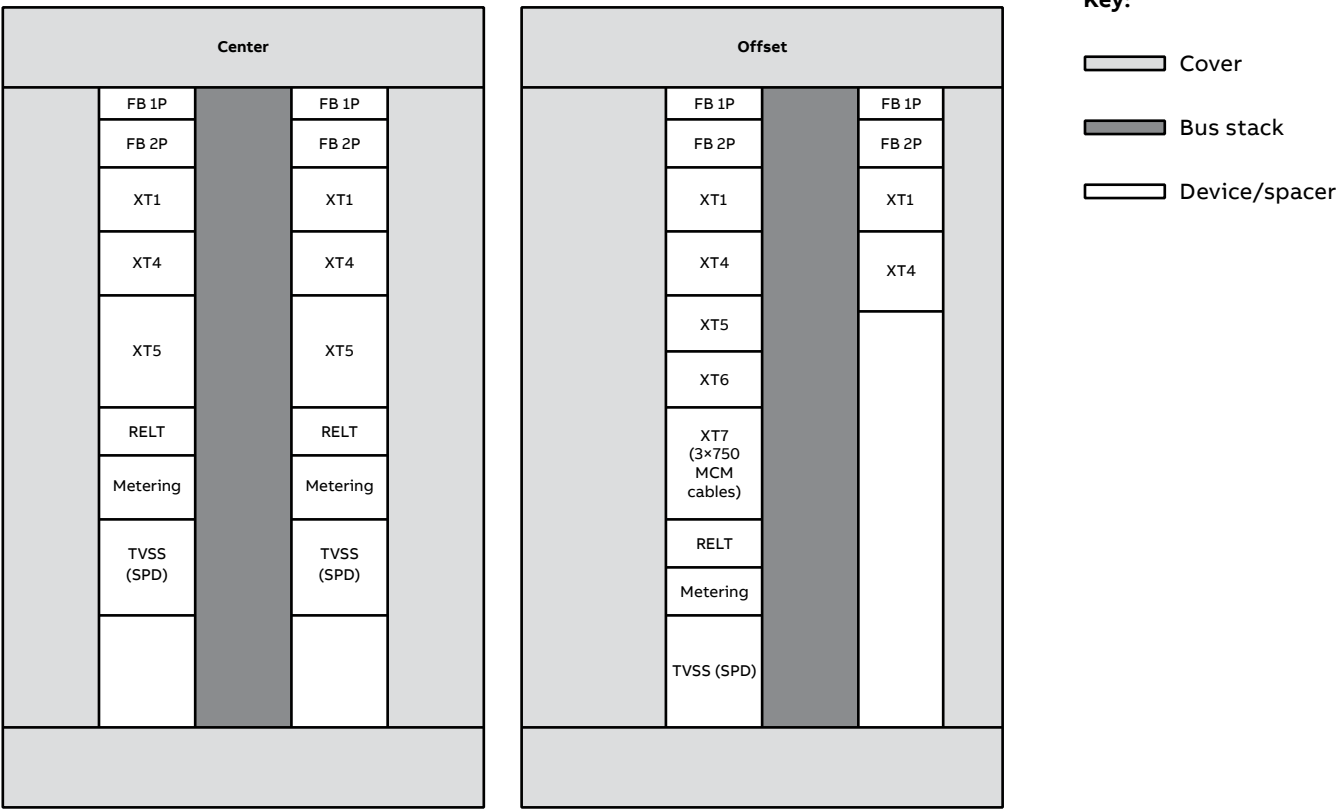
- Cover
- Bus stack
- Device/spacer

10 Device mounting configurations 40" W

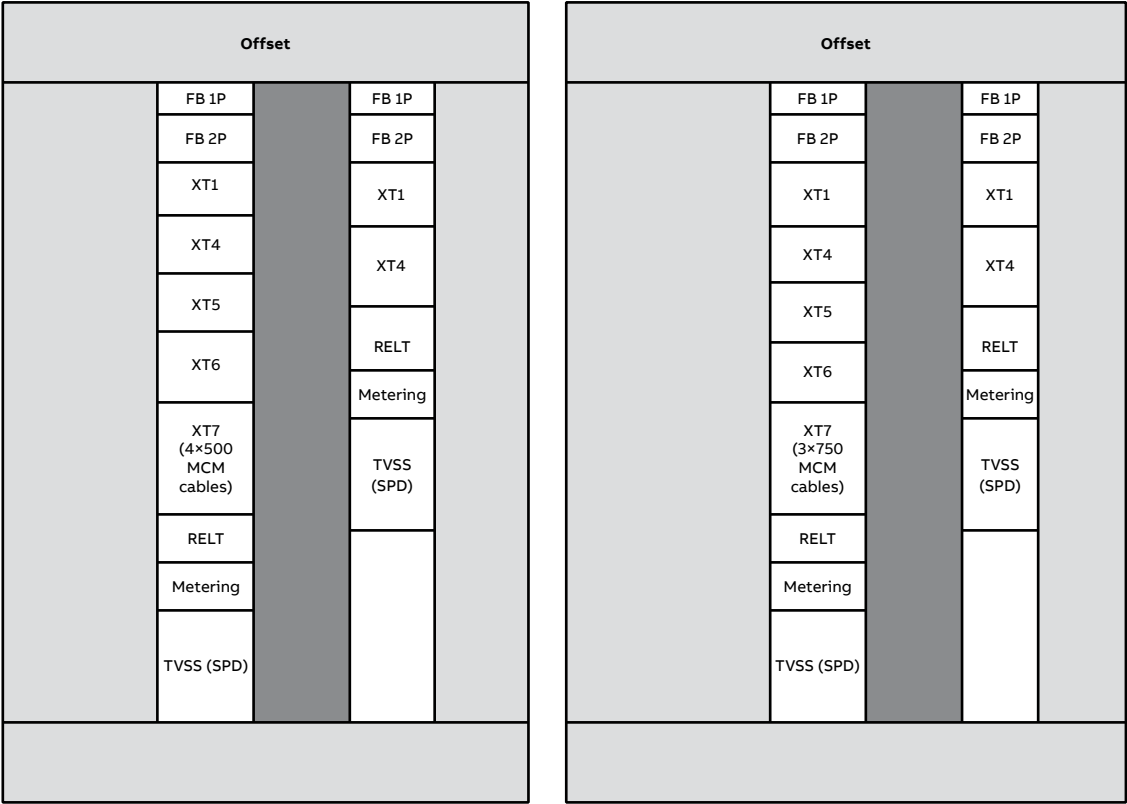


11 Device mounting configurations 45" W

Device fit per section width



12 Device mounting configurations 50" W



13 Device mounting configurations 55" W

14 Device mounting configurations 60" W

Power circuit breakers

Power circuit breaker – SACE® Emax 2

The SACE Emax 2 product line is a multifunctional platform able to manage the next generation of electrical plants such as microgrids, evolving into a true power manager.



		E1.2						E2.2			E4.2			E6.2	
Current		B-A	N-A	S-A	B-A	N-A	S-A	H-A	V-A	S-A	H-A	V-A	H-A	V-A	
	[A]	800	800	250	1600	1600	800	800	250	2500	2500	800	4000	4000	
	[A]	1200	1200	400	-	1200	1200	1200	400	3200 ¹	3200 ¹	1600	5000	5000	
	[A]	-	-	800	-	-	1600	1600	800	-	-	2000	6000 ²	6000 ²	
	[A]	-	-	1200	-	-	2000	2000	1200	-	-	2500	-	-	
	[A]	-	-	-	-	-	-	-	1600	-	-	3200 ¹	-	-	
	[A]	-	-	-	-	-	-	-	2000	-	-	-	-	-	
Poles	[No.]	3–4						3–4			3–4			3–4 ²	
(AC) 50-60 Hz	[V]	635						635			635			635	
Versions		Fixed (F) - Drawout (W)						Fixed (F) - Drawout (W)			Fixed (F) - Drawout (W)			Fixed (F) - Drawout (W)	
	254 V	42	50	65	42	50	65	85	100	65	85	100	85	100	
	508 V	42	50	65	42	50	65	85	100	65	85	100	85	100	
Interrupting ratings	635 V	42	42	42	42	50	65	85	100	65	85	100	85	100	
Trip units for power distribution															
Ekip Touch		•						•			•				

⁽¹⁾ Circuit breaker will be labeled 3200 A; switchboard section will be labeled 3000 A

(2) 6000 A circuit breakers only available in a 3-pole drawout version

Insulated case circuit breaker - Power Break® II

Power Break II insulated case circuit breakers are highly compact, heavy-duty circuit breakers that combine ease of use and state-of-the-art performances up to 4000 A frame sizes.



Current		Standard								Hi break	
	[A]	800	1600	2000	3000	4000	800	1600	2000	3000	4000
	[No.]										3
	(AC) 50–60 Hz	[V]									600
Versions									Fixed (F) - Drawout (W)		
Interrupting ratings	480 V	65	65	65	100	100	100	100	100	150	150
Trip units for power distribution											
EntelliGuard® TU							•				

Molded case circuit breakers

Record Plus FB

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.



								FB	
Frame size		[A]						100	
Pole(s)		[No.]	1					2	
Rated voltage		(AC) 50–60 Hz [V]	600					600	
Versions			Fixed					Fixed	
			V	N	H	V	N	H	
			240 V (AC) [kA]	35	65	100	65	150	200
			277 V (AC) [kA]	35	65	100	-	-	-
			347 V (AC) [kA]	22	25	35	-	-	-
			480 V (AC) [kA]	-	-	-	35	65	100
Interrupting ratings			600 V (AC) [kA]	-	-	-	22	25	35
Trip units for power distribution									
Fixed thermal-magnetic (TMF)						•			

SACE® Tmax® XT range

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 helps to enhance installation quality. Reliability is further increased, and speed of installation improved, thanks to Bluetooth® and Ekip connectivity for mobile devices.



Model	Frame size (amps)	No. of poles	Rated voltage 50–60 Hz AC	Interrupt ratings (kA)	Dimensions – fixed, 3 poles W x D x H ⁽³⁾ mm (in.)	Trip units for power distribution
XT1	125	3	480A ⁽¹⁾	At 240 V AC: N = 50, S = 65, H = 100 At 480 V AC: N = 25, S = 35, H = 65 At 600V/347 V AC: N = 18, S = 22, H = 25	76.2 x 70 x 130 / (3 x 2.75 x 5.12)	TMF
XT2	125	3	600	At 240 V AC: N = 65, S = 100, H = 150, L = 200, V = 200, X = 200 At 480 V AC: N = 25, S = 35, H = 65, L = 100, V = 100, X = 200 At 600 V AC: N = 18, S = 22, H ⁽²⁾ = 25, L ⁽²⁾ = 35, V ⁽²⁾ = 42	90 x 83.56 x 131.1 / (3.54 x 3.29 x 5.16)	TMF, Ekip DIP, Ekip Touch
XT4	250	3	600	At 240 V AC: N = 65, S = 100, H = 150, L = 200, V = 200, X = 200 At 480 V AC: N = 25, S = 35, H = 65, L = 100, V = 100, X = 200 At 600 V AC: N = 18, S = 22, H ⁽²⁾ = 25, L ⁽²⁾ = 50, V ⁽²⁾ = 65	105 x 82.5 x 160 / (4.13 x 3.25 x 6.3)	TMF, Ekip DIP, Ekip Touch
XT5	400–600	3	600	At 240 V AC: N = 65, S = 100, H = 150, L = 200, V = 200, X = 200 At 480 V AC: N = 25, S = 35, H = 65, L = 100, V = 100, X = 200 At 600 V AC: N = 18, S = 25, H ⁽²⁾ = 35, L ⁽²⁾ = 65	140 x 103 x 205 / (5.51 x 4.05 x 8.07)	TMA, Ekip DIP, Ekip Touch
XT6	800	3	600	At 240 V AC: N = 65, S = 100, H = 200 At 480 V AC: N = 35, S = 50, H = 65 At 600 V AC: N = 20, S = 25, H = 35	210 x 103.5 x 268 / (8.27 x 4.07 x 10.55)	TMA, Ekip DIP
XT7	800–1000–1200	3	600	At 240 V AC: S = 65, H = 100, L = 200 At 480 V AC: S = 50, H = 65, L = 100 At 600 V AC: S = 25, H = 50, L = 65	210 x 167 x 268 / (8.27 x 6.57 x 10.55)	Ekip DIP, Ekip Touch

⁽¹⁾ Current-limiting circuit breaker in 480 V AC and 600 V AC

⁽²⁾ 600 V/347 V AC

⁽³⁾ Dimensions include line-side connector and mounting bracket

Ekip trip units

Ekip trip units represent a new benchmark for 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. Available in both fixed and adjustable versions depending on the circuit breaker frame size.



Ekip DIP

As 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 automation and supervision systems. With a common and intuitive user experience between the SACE® Emax 2 and SACE® Tmax® XT circuit breakers, Ekip Touch/Hi-Touch offer class 1 active energy measurement compliance with IEC 61557-12 and embedded Bluetooth® technology, allowing for fast interaction within a safe distance from the equipment.

Several communication protocols allow users to remotely supervise electrical systems and control the circuit breaker.



Thanks to the maximum flexibility guaranteed by these packages, the Ekip Touch/Hi-Touch trip units are completely customizable and field upgradeable. Depending on the specific trip unit version, different packages are available by default, but all of them can be added to the trip unit.

Table 1: Default functionalities and upgradeability of trip units

	Ekip Touch	Ekip Touch measuring	Ekip G Touch	Ekip M Touch	Ekip Hi-Touch	Ekip G Hi-Touch
 Standard protection	•	•	•	•	•	•
 Standard measures	•	•	•	•	•	•
 Measuring package	↑	•	•	•	•	•
 Voltage protections	↑	↑	↑	•	•	•
 Frequency protections	↑	↑	↑	•	•	•
 Power protections	↑	↑	↑	↑	↑	•
 Adaptive protections	↑	↑	↑	•	•	•
 Adaptive protections	↑	↑	↑	↑	•	•
 Network analyzer	↑	↑	•	↑	•	•
 Advanced voltage protections	↑	↑	↑	↑	↑	•
 ROCOF protections	↑	↑	↑	↑	↑	•
 Power controller	↑	↑	↑	↑	↑	↑

Default functionalities and upgradeability of the trip units:

• Available by default

↑ Upgradeable

↑ Some functions available.







Upgradeable with the full package.

Fast shipping options

Time vs. complexity: Your choice



Brand: ReliaGear® SB

Program	On Demand	On Demand Mid Cycle	EXcelerate (CTO)	Standard SB – normal	Standard SB – normal +
Lead time before PFA	2 weeks	10 weeks		 	  
PFA (if needed)	Not required	Not required	Not required	Often required	Required
Type	SKU	SKU	Configured to order (CTO)	Engineered to order (ETO)	Engineered to order (ETO)
Number of configurations available	7	7	~4700	Over 1M	Over 1M
Current max. (amps)	4000	4000	4000	6000	6000
Enclosure options (NEMA)	N1/N3R	N1/N3R	N1/N3R	N1/N3R	N1/N3R
Interrupting rating	100 kAIC	100 kAIC	65/100 kAIC	Up to 150 kAIC ¹	Up to 150 kAIC ¹
Voltage max. (volts)	480 V AC	480 V AC	600 V AC	600 V AC	600 V AC
Utility sections	No	No	Yes ²	Yes	Yes

¹ 200 kAIC with fuses

² EUSERC utility only

ReliaGear® SB Switchboards

Fast shipping options – EXcelerate

Fast lead time and great flexibility with 4700+ preconfigured options available in empower, ABB Reliagear SB – EXcelerate uses a configure-to-order approach that allows the customer to easily combine pre-engineered sub-assemblies to build switchboards up to six sections, thanks to the streamlined configuration option in empower. The switchboards are sent to manufacture at the moment of the order, eliminating the need for engineering, and the drawings are immediately available in empower, making the process easier and turnaround time faster.

EXcelerate highlights

- 2X faster lead times than standard switchboards
- 4700+ configurations of simple and mid-complexity switchboards available
- Configured-to-order (CTO) sub-assemblies reduce project cycle times
- Simple selection process results in no engineering interaction, immediate manufacturing and faster delivery
- Available in empower quote

Features and benefits

- 1200 to 4000 A 3P 4W
- 208 V, 480 V and 600 V
- Indoor and outdoor enclosures (NEMA 1, NEMA 3R)
- Copper and aluminum bussing up to 100 kA
- Tmax® XT1 to XT7 distribution breakers (TMA and Ekip DIP, Touch for XT7 1200 A only)
- Fixed section width (determined by amperage) and depth (front and rear aligned)
- Optional SPD Type 1 and 2, 125 kA and 200 kA individually mounted
- Optional RGM meter 2200, 6000, 6010 and 7000
- Single section shipping split
- Cable in / cable out for main option
- Individually mounted Emax 2 feeders (E2.2, E4.2, and E6.2)
- Individually mounted main
- Group mounted main (GMM)
- Main lug only (MLO) feeder only application
- Feeder sections can be spliced into existing EXcelerate switchboard
- EUSERC utility sections up to 4000 A for the companies listed below*

EUSERC* utility sections available in EXcelerate

EUSERC utility company	State
Arizona Public Service Co.	AZ
Hawaii Elec Light Hawaii	HI
Hawaiian Elec Co. Honolulu	HI
Los Angeles Dept Waterpower	CA
Nevada Power Co. Las Vegas	NV
Pacific Gas & Electric	CA
Pacific Power & Light	CA/WA/OR
Portland General Electric	OR
Puget Sound Energy	WA
Rocky Mountain Power	CO
San Diego Gas & Electric	CA
Seattle City Light	WA
Snohomish County Pug#l	WA
Southern California Edison	CA

ReliaGear® SB Switchboards

Fast shipping options – On Demand

ABB's On Demand program provides customers the opportunity to easily order and quickly receive ReliaGear SB Switchboards, with product ready to ship in as few as two weeks.*

The On Demand program can potentially reduce project cycle times, helping customers gain a competitive advantage wherever 24/7 reliability is an absolute necessity.

On Demand program highlights

- Product shipment in as few as two weeks
- Seven pre-configured designs with flexible breaker settings
- Catalog-number driven for easy ordering
- Potentially reduces project cycle times

Features and benefits

- Main bus, 2000 A or 4000 A, copper bus
- Emax 2 main device with GF and RELT
- 480/277 V AC maximum at 100 kAIC
- ReliaGear plug-in panel type for easy installation of breakers
- Fully rated bus with provision for future extensions
- Front access only with hinged doors
- Front and rear alignment for splicing sections
- Features XT DIP trip units for maximum flexibility
- RGM 2200 (2000 A) and RGM 6000 (4000 A) digital power meter provided
- Qualified for seismic ratings per publication 9AKK108466A5933 and OSP-0044-10
- Enclosures available in NEMA Type 1 and 3R



*Items must be in stock to meet two-week delivery timeframe.
Please check empower Flow for current availability. 10-week mid cycle also available.

ReliaGear® SB Switchboards – On Demand

Catalog numbers

—
2-week cycle

	Catalog number	Current (A)	Voltage (V)	Bus bracing/ interrupting rating (kA)	Enclosure rating	Dimensions (W x H x D - inches)	Feeder breakers				Feeder breakers spaces
							XT4-250 A	XT5-600 A	XT7- 1200 A	XT4-250 A	
Full switchboards	SWBSTS20E	2000	480Y/277	100	NEMA 1	70x90x35	8	2	–	2	
	SWBSTS40E	4000				90x90x35	3	2	2	5	
	SWBSTS20EN3R	2000			NEMA 3R	70x90x40*	8	2	–	2	
	SWBSTS40EN3R	4000				90x90x40*	3	2	2	5	
Add-on feeder sections	SWBSTS20EDIST	2000			NEMA 1	40x90x35	8	2	–	2	
	SWBSTS40EDIST	4000				50x90x35	3	2	2	5	
	SWBSTS40EDISTN3R	4000			NEMA 3R	50x90x40*	3	2	2	5	

*+5" overhang

—
10-week cycle

	Catalog number	Current (A)	Voltage (V)	Bus bracing/ interrupting rating (kA)	Enclosure rating	Dimensions (W x H x D - inches)	Feeder breakers				Feeder breakers spaces
							XT4-250 A	XT5-600 A	XT7- 1200 A	XT4-250 A	
Full switchboards	SWBSTS20E-M	2000	480Y/277	100	NEMA 1	70x90x35	8	2	–	2	
	SWBSTS40E-M	4000				90x90x35	3	2	2	5	
	SWBSTS20EN3R-M	2000			NEMA 3R	70x90x40*	8	2	–	2	
	SWBSTS40EN3R-M	4000				90x90x40*	3	2	2	5	
Add-on feeder sections	SWBSTS20EDIST-M	2000			NEMA 1	40x90x35	8	2	–	2	
	SWBSTS40EDIST-M	4000				50x90x35	3	2	2	5	
	SWBSTS40EDISTN3R-M	4000			NEMA 3R	50x90x40*	3	2	2	5	

*+5" overhang

Notes



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