CATALOG

ReliaGear® OEM Low Voltage Switchboards and Power Distribution Panelboards

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 to build distribution switchboards and panelboards using the ReliaGear® neXT plug-in design. By purchasing pre-built 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.

Table of contents

01. Overview 04

02. Switchboard offering 10

03. Power panelboard offering 20

04. Switchboard and panelboard accessories 28

05. Molded case circuit breakers 36

06. Drawings, dimensions and additional resources 52

01

Overview

Overview

Overview	
General characteristics	06
ReliaGear® OEM offering	08
Partnering up with ABB	09

01

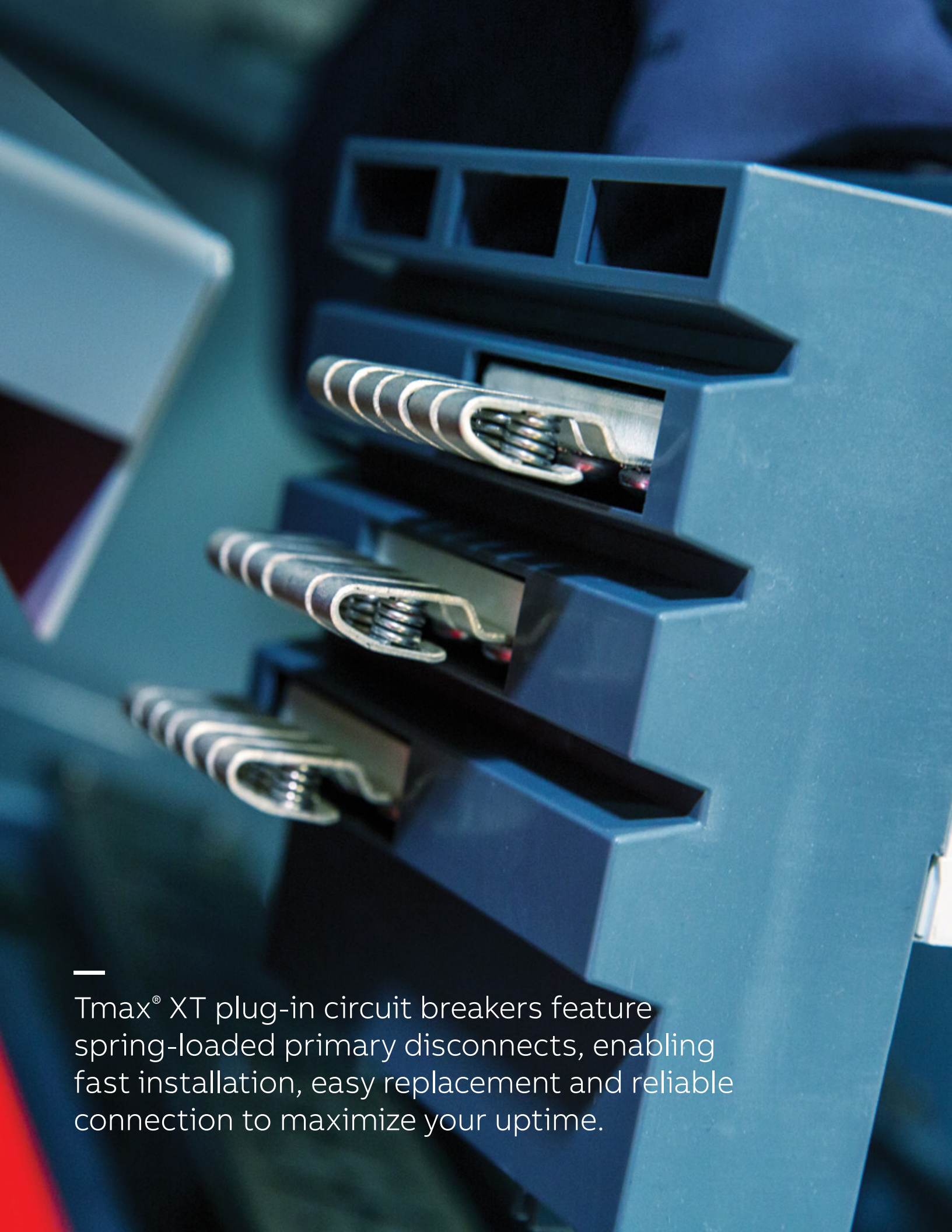
ReliaGear® — Plug in. Break out.

Take switchboard and power panelboard design to the next level

Easy
- Easy to understand and integrate into your product design
- Plug-in, single-tool simplicity
- Catalog number driven offering
- Installation guides, CAD models and other resources available online

Flexible
- Modular design
- Circuit breakers and accessories install anywhere on the bus stack
- Interior options that feature multiple connection locations
- Interior designs that are shared between panelboards and switchboards

State-of-the-art
- Plug-in power panels to save time, labor and cost
- Improved finger-safe bus stack that meets IP20 standards
- Innovative plug-in circuit breaker design, leveraging spring-loaded connectors using magnetic forces, enabling fast installation
- ABB's SACE® Tmax® XT breakers include adjustable trip settings, enhanced protection functionalities, embedded communication, Bluetooth® and cloud capabilities to access accurate information anywhere, anytime



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

ReliaGear® OEM offering

Build switchboard and distribution power panelboards leveraging ReliaGear® design.

An alternative to a factory-built assembly, the OEM offering enables you to construct your UL 67 power distribution panelboards and UL 891 group-mounted distribution section switchboard with ABB's:

- Interior bus stacks
- Plug-In circuit breaker assemblies (including line-side connector and lugs)
- Optional accessories, such as interior frames, neutrals, grounds, RELT (reduced energy let-through), SPDs, fillers and blanks

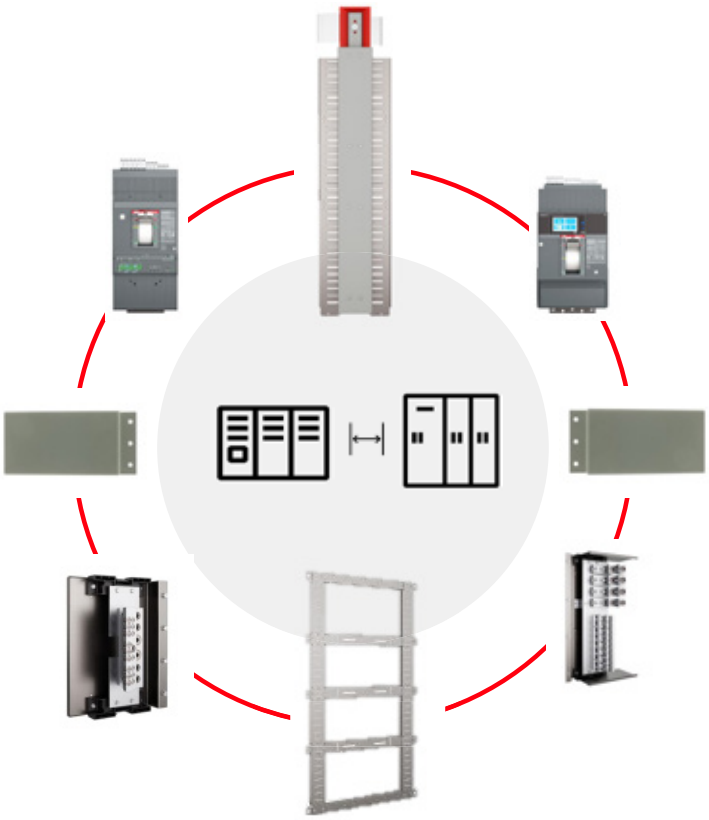
ABB level of support:

Option 1 (UL 67 and UL 891): Your design and UL file, ABB core components

- We provide you with the core components to implement into your design and UL certified equipment.

Option 2 (UL 67 only): Embrace the ABB design through a file extension

- Build a power panelboard using the same design as ABB. We provide you with the core components and extend our UL file for sheet metal components design (fabrication up to you). No need for certification or testing. Refer to page 9 for UL file extension process.



Partnering up with ABB

UL file extension

Would you like to build UL 67 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**
Discuss with your ABB representative to define the ABB level of support needed. Once established, an NDA and License Agreement are signed.

2 **Step 2**
Contact UL to be added to the ReliaGear® neXT OEM program. Follow the process with your UL representative.

3 **Step 3**
ABB will review the request and, based upon approval, will work with UL to extend.

4 **Step 4**
Once the request is approved, OEMs can obtain the ABB detailed design of sheet metal components via the ABB website.

5 **Step 5**
Purchase ReliaGear® bus stack, breakers and required accessories from ABB, and fabricate sheet metal parts according to the ABB design.

6 **Step 6**
Assemble your solutions and deliver value to your customers.

UL file extensions is only applicable to UL 67 power panelboards.

02

Switchboard offering

Switchboard offering

Switchboard offering	
ReliaGear® SB switchboard offering overview	12
Selection and tier connection space	13
Switchboard product selection	15

ReliaGear® SB switchboard offering overview

Option 1

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. OEMs have access to these circuit breaker assemblies and to single- and double- 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

Tier connections: Top, bottom or center tier
- Center tier options: strap center (SC), strap lower (SL), and strap upper (SU)

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

SCCR: Fully rated up to 200 kAIC at 480 V AC and 100 kAIC at 600 V AC

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

Bus stack options: Single- and double- sided / 1- and 2-sided

Bus stack material: Silver- and tin-plated density-rated copper

Standards and approvals
- MCCBs: UL 489
- Bus stack: UL 891 / CSA22.2 No. 244
- UL File No. E466042
- CSA C22.2 No. 244

Bus stacks and breakers are UL listed. Additional switchboard certification is required based on final OEM designs.

ReliaGear® SB switchboard

Selection and tier connection space

—
01 1-sided (1S) bottom tier
—
02 1-sided (1S) top tier
—
03 2-sided (2S) top tier
—
04 2-sided (2S) bottom tier
—
05 1- and 2-sided (XS) center
—
06 1- and 2-sided (XS) center upper strap
—
07 1- and 2-sided (XS) center lower strap

ReliaGear® switchboards and panelboards share the same bus stack design. Each are finger safe and both accept ReliaGear® plug-in circuit breakers and accessories.

Switchboard interiors come in multiple ampacities, offering single- and double-sided variants that can be applied within your design. These interiors can connect to the horizontal bus in one of three ways — top, bottom or center tier (center strap, lower strap or upper strap).

Depending upon amperage and tier connection, the physical connection of the tier requires different amounts of X-space.

For one-sided (1S) bus stacks, tier connection takes up no X-space.

For two-sided (2S) bus stacks, tier connection takes up 5 X-spaces.

For one- and two-sided (XS) bus stacks, tier connection X-space varies by amperage:

- 12 X-spaces for 1200 A and 2000 A
- 17 X-spaces for 3000 A
- 18 X-spaces for 4000 A

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01

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02

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03

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04

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05

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06

—
07

Switchboard product selection

Catalog numbering schemes

Switchboard interior

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	Density-rated copper
B4	Tin density-rated copper

Ampacities

Code	
12	1200 A
20	2000 A

Code	
30	3000 A
40	4000 A

ASM type

Code	
SC	Center tier — center strap
SL	Center tier — strap lower
SU	Center tier — strap upper

Code	
TX	Top tier
XT	Bottom tier

Number of phases

Code	
3	3

1- or 2-sided

Code	
1S	1-sided
2S	2-sided
XS	1-sided or 2-sided

Switchboard interior frame

IF 48 30 S 2 L

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"

Code	
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
C	Center fed/strap center
B	Bottom fed
L	Center tier — strap lower
U	Center tier — strap upper
T	Top fed

Switchboard product selection

Switchboard interiors

—

Bus material: B3 — Density-rated copper

			Sides		
Ampacity	**X-height**	**Tier connection location**	**1-sided (1S)**	**2-sided (2S)**	**1- and 2-sided (XS)**
1200	32	TX (top tier)	IN3212TX3B31S	IN3212TX3B32S	–
		SC (strap center)	–	–	IN3212SC3B3XS
		XT (bottom tier)	IN3212XT3B31S	IN3212XT3B32S	–
	40	TX (top tier)	IN4012TX3B31S	IN4012TX3B32S	–
		SU (strap upper)	–	–	IN4012SU3B3XS
		SL (strap lower)	–	–	IN4012SL3B3XS
		XT (bottom tier)	IN4012XT3B31S	IN4012XT3B32S	–
	48	TX (top tier)	IN4812TX3B31S	IN4812TX3B32S	–
		SU (strap upper)	–	–	IN4812SU3B3XS
		SL (strap lower)	–	–	IN4812SL3B3XS
		XT (bottom tier)	IN4812XT3B31S	IN4812XT3B32S	–
2000	32	TX (top tier)	IN3220TX3B31S	IN3220TX3B32S	–
		SC (strap center)	–	–	IN3220SC3B3XS
		XT (bottom tier)	IN3220XT3B31S	IN3220XT3B32S	–
	40	TX (top tier)	IN4020TX3B31S	IN4020TX3B32S	–
		SU (strap upper)	–	–	IN4020SU3B3XS
		SL (strap lower)	–	–	IN4020SL3B3XS
		XT (bottom tier)	IN4020XT3B31S	IN4020XT3B32S	–
	48	TX (top tier)	IN4820TX3B31S	IN4820TX3B32S	–
		SU (strap upper)	–	–	IN4820SU3B3XS
		SL (strap lower)	–	–	IN4820SL3B3XS
		XT (bottom tier)	IN4820XT3B31S	IN4820XT3B32S	–
3000	32	SC (strap center)	–	–	IN3230SC3B3XS
	40	SU (strap upper)	–	–	IN4030SU3B3XS
		SL (strap lower)	–	–	IN4030SL3B3XS
	48	SU (strap upper)	–	–	IN4830SU3B3XS
		SL (strap lower)	–	–	IN4830SL3B3XS
4000	32	SC (strap center)	–	–	IN3240SC3B3XS
	40	SU (strap upper)	–	–	IN4040SU3B3XS
		SL (strap lower)	–	–	IN4040SL3B3XS
	48	SU (strap upper)	–	–	IN4840SU3B3XS
		SL (strap lower)	–	–	IN4840SL3B3XS

Switchboard product selection

Switchboard interiors

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Bus material: B4 — Tin density-rated copper

			Sides		
Ampacity	**X-height**	**ASM type**	**1-sided (1S)**	**2-sided (2S)**	**1- and 2-sided (XS)**
1200	32	TX (top tier)	IN3212TX3B41S	IN3212TX3B42S	–
		SC (strap center)	–	–	IN3212SC3B4XS
		XT (bottom tier)	IN3212XT3B41S	IN3212XT3B42S	–
	40	TX (top tier)	IN4012TX3B41S	IN4012TX3B42S	–
		SU (strap upper)	–	–	IN4012SU3B4XS
		SL (strap lower)	–	–	IN4012SL3B4XS
		XT (bottom tier)	IN4012XT3B41S	IN4012XT3B42S	–
	48	TX (top tier)	IN4812TX3B41S	IN4812TX3B42S	
		SU (strap upper)	–	–	IN4812SU3B4XS
		SL (strap lower)	–	–	IN4812SL3B4XS
		XT (bottom tier)	IN4812XT3B41S	IN4812XT3B42S	
2000	32	TX (top tier)	IN3220TX3B41S	IN3220TX3B42S	–
		SC (strap center)	–	–	IN3220SC3B4XS
		XT (bottom tier)	IN3220XT3B41S	IN3220XT3B42S	–
	40	TX (top tier)	IN4020TX3B41S	IN4020TX3B42S	–
		SU (strap upper)	–	–	IN4020SU3B4XS
		SL (strap lower)	–	–	IN4020SL3B4XS
		XT (bottom tier)	IN4020XT3B41S	IN4020XT3B42S	–
	48	TX (top tier)	IN4820TX3B41S	IN4820TX3B42S	–
		SU (strap upper)	–	–	IN4820SU3B4XS
		SL (strap lower)	–	–	IN4820SL3B4XS
		XT (bottom tier)	IN4820XT3B41S	IN4820XT3B42S	–
3000	32	SC (strap center)	–	–	IN3230SC3B4XS
	40	SU (strap upper)	–	–	IN4030SU3B4XS
		SL (strap lower)	–	–	IN4030SL3B4XS
	48	SU (strap upper)	–	–	IN4830SU3B4XS
		SL (strap lower)	–	–	IN4830SL3B4XS
4000	32	SC (strap center)	–	–	IN3240SC3B4XS
	40	SU (strap upper)	–	–	IN4040SU3B4XS
		SL (strap lower)	–	–	IN4040SL3B4XS
	48	SU (strap upper)	–	–	IN4840SU3B4XS
		SL (strap lower)	–	–	IN4840SL3B4XS

Switchboard product selection

Switchboard interior frames

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Switchboard interior frames

Ampacity	Main type	Size	Width	Sides		
				1-sided	Center, 2-sided	Offset, 2-sided
Up to 2000 A interior	Bottom fed	48X	30	IF4830S2B	–	–
			35	IF4835S2B	–	–
			40	IF4840S2B	–	–
			45	IF4845S2B	–	–
	Center fed/ strap center (SC)	32X	30	IF3230S2C	IF3230C2C	–
			35	IF3235S2C	IF3235C2C	–
			40	IF3240S2C	–	IF3240F2C
			45	IF3245S2C	IF3245C2C	IF3245F2C
			50	–	IF3250C2C	IF3250F2C
			55	–	–	IF3255F2C
			60	–	–	IF3260F2C
	Center tier — strap lower (SL)	40X	30	IF4030S2L	IF4030C2L	–
			35	IF4035S2L	IF4035C2L	–
			40	IF4040S2L		IF4040F2L
			45	IF4045S2L	IF4045C2L	IF4045F2L
			50	–	IF4050C2L	IF4050F2L
			55	–	–	IF4055F2L
			60	–	–	IF4060F2L
		48X	30	IF4830S2L	IF4830C2L	–
			35	IF4835S2L	IF4835C2L	–
			40	IF4840S2L	–	IF4840F2L
			45	IF4845S2L	IF4845C2L	IF4845F2L
			50	–	IF4850C2L	IF4850F2L
			55	–	–	IF4855F2L
			60	–	–	IF4860F2L
	Center tier — strap upper (SU)	40X	30	IF4030S2U	IF4030C2U	–
			35	IF4035S2U	IF4035C2U	–
			40	IF4040S2U		IF4040F2U
			45	IF4045S2U	IF4045C2U	IF4045F2U
			50	–	IF4050C2U	IF4050F2U
			55	–	–	IF4055F2U
			60	–	–	IF4060F2U
		48X	30	IF4830S2U	IF4830C2U	–
			35	IF4835S2U	IF4835C2U	–
			40	IF4840S2U	–	IF4840F2U
			45	IF4845S2U	IF4845C2U	IF4845F2U
			50	–	IF4850C2U	IF4850F2U
			55	–	–	IF4855F2U
			60	–	–	IF4860F2U
	Top fed	48X	30	IF4830S2T	–	–
			35	IF4835S2T	–	–
			40	IF4840S2T	–	–
			45	IF4845S2T	–	–

Switchboard product selection

Switchboard interior frames

				Sides		
Ampacity	**Main type**	**Size**	**Width**	**1-sided**	**Center, 2-sided**	**Offset, 2-sided**
Up to 4000 A interior	Center fed/ strap center (SC)	32X	30	IF3230S4C	IF3230C4C	–
			35	IF3235S4C	IF3235C4C	–
			40	IF3240S4C	–	IF3240F4C
			45	IF3245S4C	IF3245C4C	IF3245F4C
			50	–	IF3250C4C	IF3250F4C
			55	–	–	IF3255F4C
			60	–	–	IF3260F4C
	Center tier — strap lower (SL)	40X	30	IF4030S4L	IF4030C4L	–
			35	IF4035S4L	IF4035C4L	–
			40	IF4040S4L	–	IF4040F4L
			45	IF4045S4L	IF4045C4L	IF4045F4L
			50	–	IF4050C4L	IF4050F4L
			55	–	–	IF4055F4L
			60	–	–	IF4060F4L
		48X	30	IF4830S4L	IF4830C4L	–
			35	IF4835S4L	IF4835C4L	–
			40	IF4840S4L	–	IF4840F4L
			45	IF4845S4L	IF4845C4L	IF4845F4L
			50	–	IF4850C4L	IF4850F4L
			55	–	–	IF4855F4L
			60	–	–	IF4860F4L
	Center tier — strap upper (SU)	40X	30	IF4030S4U	IF4030C4U	–
			35	IF4035S4U	IF4035C4U	–
			40	IF4040S4U	–	IF4040F4U
			45	IF4045S4U	IF4045C4U	IF4045F4U
			50	–	IF4050C4U	IF4050F4U
			55	–	–	IF4055F4U
			60	–	–	IF4060F4U
		48X	30	IF4830S4U	IF4830C4U	–
			35	IF4835S4U	IF4835C4U	–
			40	IF4840S4U	–	IF4840F4U
			45	IF4845S4U	IF4845C4U	IF4845F4U
			50	–	IF4850C4U	IF4850F4U
			55	–	–	IF4855F4U
			60	–	–	IF4860F4U
	Top/center/bottom fed	32X	30	IF3230S4A	IF3230C4A	–
			35	IF3235S4A	IF3235C4A	–
			40	IF3240S4A	–	IF3240F4A
			45	IF3245S4A	IF3245C4A	IF3245F4A
			50	–	IF3250C4A	IF3250F4A
			55	–	–	IF3255F4A
			60	–	–	IF3260F4A
		40X	30	IF4030S4A	IF4030C4A	–
			35	IF4035S4A	IF4035C4A	–
			40	IF4040S4A	–	IF4040F4A
			45	IF4045S4A	IF4045C4A	IF4045F4A
			50	–	IF4050C4A	IF4050F4A
			55	–	–	IF4055F4A
			60	–	–	IF4060F4A
		48X	30	–	IF4830C4A	–
			35	–	IF4835C4A	–
			40	–	–	IF4840F4A
			45	–	IF4845C4A	IF4845F4A
			50	–	IF4850C4A	IF4850F4A
			55	–	–	IF4855F4A
			60	–	–	IF4860F4A

03

Power panelboard offering

Power panelboard offering

Power panelboard offering	
ReliaGear® neXT power panelboard OEM offering overview	22
Panelboard interior configurations	23
Panelboard product selection	24

ReliaGear® neXT power panelboard OEM offering overview

Option 1 and option 2

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

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

SCCR: 200 kAIC at 240 V AC, 200 kAIC at 480 V AC, 100 kAIC at 600 V AC

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 mounted either 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)

*Note the widths depicted in the table above are in reference to using ABB products. Understand that OEM design widths may vary based on application while adhering to wire bending space guidelines.

Standards and approvals
- ANSI/NEMA PB 1, panelboards
- ANSI/NFPA 70, National Electrical Code (NEC)
- UL 489, molded-case circuit breakers and circuit-breaker enclosures
- UL 50, enclosures for electrical equipment
- UL 67, panelboards, cUL listing for low voltage power panels
- Seismic certification according to ICC-ES AC156, refer to OSP-0304
- UL File No. E2366, CSA C22.2 No. 29

All standards and approvals apply because testing and certifications were completed by ABB

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 busbars. Bus stacks with tin-plated copper busbars 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 MCM to 750 MCM. Compression lugs are also offered from 1/0 AWG to 750 MCM.

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 inches. 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.

The ReliaGear® neXT power panelboard 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 MCM 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

Panelboard product selection

Catalog numbering schemes

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"

Panelboard product selection

ReliaGear® neXT interiors

			Bus material			
Ampacity	**Interior height**	**Main type**	**1000 PSI rated copper**	**1000 PSI rated tin-plated copper**	**Heat-rated copper**	**Tin-plated heat-rated copper**
600 A	16X	Bolted lugs (BL)	IN1606BL3B3	–	IN1606BL3H2	–
		Clean bus (NN)	IN1606NN3B3	–	IN1606NN3H2	–
	24X	Bolted feed through (BF)	IN2406BF3B3	IN2406BF3B4	IN2406BF3H2	IN2406BF3H4
		Bolted lugs (BL)	IN2406BL3B3	IN2406BL3B4	IN2406BL3H2	IN2406BL3H4
		Clean bus (NN)	IN2406NN3B3	IN2406NN3B4	IN2406NN3H2	IN2406NN3H4
	32X	Bolted feed through (BF)	IN3206BF3B3	IN3206BF3B4	IN3206BF3H2	IN3206BF3H4
		Bolted lugs (BL)	IN3206BL3B3	IN3206BL3B4	IN3206BL3H2	IN3206BL3H4
		Clean bus (NN)	IN3206NN3B3	IN3206NN3B4	IN3206NN3H2	IN3206NN3H4
	40X	Bolted feed through (BF)	IN4006BF3B3	IN4006BF3B4	IN4006BF3H2	IN4006BF3H4
		Bolted lugs (BL)	IN4006BL3B3	IN4006BL3B4	IN4006BL3H2	IN4006BL3H4
		Clean bus (NN)	IN4006NN3B3	IN4006NN3B4	IN4006NN3H2	IN4006NN3H4
800 A	16X	Bolted lugs (BL)	IN1608BL3B3	–	IN1608BL3H2	–
		Clean bus (NN)	IN1608NN3B3	–	IN1608NN3H2	–
	24X	Bolted feed through (BF)	IN2408BF3B3	IN2408BF3B4	IN2408BF3H2	IN2408BF3H4
		Bolted lugs (BL)	IN2408BL3B3	IN2408BL3B4	IN2408BL3H2	IN2408BL3H4
		Clean bus (NN)	IN2408NN3B3	IN2408NN3B4	IN2408NN3H2	IN2408NN3H4
	32X	Bolted feed through (BF)	IN3208BF3B3	IN3208BF3B4	IN3208BF3H2	IN3208BF3H4
		Bolted lugs (BL)	IN3208BL3B3	IN3208BL3B4	IN3208BL3H2	IN3208BL3H4
		Clean bus (NN)	IN3208NN3B3	IN3208NN3B4	IN3208NN3H2	IN3208NN3H4
	40X	Bolted feed through (BF)	IN4008BF3B3	IN4008BF3B4	IN4008BF3H2	IN4008BF3H4
		Bolted lugs (BL)	IN4008BL3B3	IN4008BL3B4	IN4008BL3H2	IN4008BL3H4
		Clean bus (NN)	IN4008NN3B3	IN4008NN3B4	IN4008NN3H2	IN4008NN3H4
1200 A	16X	Bolted lugs (BL)	IN1612BL3B3	–	IN1612BL3H2	–
		Clean bus (NN)	IN1612NN3B3	–	IN1612NN3H2	–
	24X	Bolted feed through (BF)	IN2412BF3B3	IN2412BF3B4	IN2412BF3H2	IN2412BF3H4
		Bolted lugs (BL)	IN2412BL3B3	IN2412BL3B4	IN2412BL3H2	IN2412BL3H4
	32X	Clean bus (NN)	IN2412NN3B3	IN2412NN3B4	IN2412NN3H2	IN2412NN3H4
		Bolted feed through (BF)	IN3212BF3B3	IN3212BF3B4	IN3212BF3H2	IN3212BF3H4
		Bolted lugs (BL)	IN3212BL3B3	IN3212BL3B4	IN3212BL3H2	IN3212BL3H4
		Clean bus (NN)	IN3212NN3B3	IN3212NN3B4	IN3212NN3H2	IN3212NN3H4
	40X	Bolted feed through (BF)	IN4012BF3B3	IN4012BF3B4	IN4012BF3H2	IN4012BF3H4
		Bolted lugs (BL)	IN4012BL3B3	IN4012BL3B4	IN4012BL3H2	IN4012BL3H4
		Clean bus (NN)	IN4012NN3B3	IN4012NN3B4	IN4012NN3H2	IN4012NN3H4

Panelboard product selection

ReliaGear® neXT interior frames

Power panelboard interior frames X-spaces	Width	Center	Orientation Offset
16X	30	IF1630C	–
	40	–	IF1640F
	45	IF1645C	IF1645F
24X	30	IF2430C	–
	40	–	IF2440F
	45	IF2445C	IF2445F
32X	30	IF3230C	–
	40	–	IF3240F
	45	IF3245C	IF3245F
40X	30	IF4030C	–
	40	–	IF4040F
	45	IF4045C	IF4045F

04

Switchboard and panelboard accessories

Switchboard and panelboard accessories

Switchboard and panelboard accessories	
Fillers and blanks	30
RELT and SPD	31
Neutrals	32
Grounds, neutral lugs and barrier posts	33
Vertical main kits/vertical main rail kits	34

ReliaGear® switchboard and panelboard accessories

Fillers and blanks

Suitable for switchboard and panelboard

Description	Catalog number
1X blank only	SR01BB
1X blank filler	SR01BF
1X filler only	SR01EF
2X blank only	SR02BB
2X blank filler	SR02BF
2X filler only	SR02EF
3X blank only	SR03BB
3X blank filler	SR03BF
3X filler only	SR03EF
4X filler only	SR04EF
3X RELT filler	SR06RF
10X SPD filler	SR10SF
1 XT1 mounting kit blank	SR1XBB
1 XT1 mounting kit blank filler rail	SR1XBF
1 XT1 mounting kit filler only	SR1XEF
2 XT1 mounting kit blank	SR2XBB
2 XT1 mounting kit blank filler rail	SR2XBF
2 XT1 mounting kit filler only	SR2XEF
5 XT1 mounting kit blank filler rail	SR5XBF
5 XT1 mounting kit filler only	SR5XEF
XT1 blank only	SRT1BB
1 XT1 mounting kit blank rail	SR1XBR
2 XT1 mounting kit blank rail	SR2XBR
5 XT1 mounting kit blank rail	SR5XBR
XT6 6X filler only	SR06EF
XT4 Accessory blank filler	SR01AF
XT4 Accessory blank only	SR01AB

ReliaGear® switchboard and panelboard accessories

RELT and SPD

Suitable for switchboard and panelboard

Description	Catalog number
120/240 V, 208/120 V and 240 V Delta neXT power panelboard RELT	RT04A
480 V, 480 V Delta and 480/277 V neXT power panelboard RELT	RT04B
600 V, 600 V Delta and 600/347 V neXT power panelboard RELT	RT04C
120 V AC Wye , 65 kA, neXT power panelboard SPD — type 1	SP120Y06X401
120 V AC Wye , 65 kA, neXT power panelboard SPD — type 2	SP120Y06X402
120 V AC Wye , 80 kA, next power panelboard SPD — type 1	SP120Y08X401
120 V AC Wye , 80 kA, next power panelboard SPD — type 2	SP120Y08X402
120 V AC Wye , 125 kA, next power panelboard SPD — type 1	SP120Y12X401
120 V AC Wye , 125 kA, next power panelboard SPD — type 2	SP120Y12X402
120 V AC Wye , 150 kA, next power panelboard SPD — type 1	SP120Y15X401
120 V AC Wye , 150 kA, next power panelboard SPD — type 2	SP120Y15X402
120 V AC Wye , 200 kA, next power panelboard SPD — type 1	SP120Y20X401
120 V AC Wye , 200 kA, next power panelboard SPD — type 2	SP120Y20X402
120 V AC Wye , 300 kA, next power panelboard SPD — type 1	SP120Y30X401
120 V AC Wye , 300 kA, next power panelboard SPD — type 2	SP120Y30X402
277 V AC Wye , 65 kA, next power panelboard SPD — type 1	SP277Y06X401
277 V AC Wye , 65 kA, next power panelboard SPD — type 2	SP277Y06X402
277 V AC Wye , 80 kA, next power panelboard SPD — type 1	SP277Y08X401
277 V AC Wye , 80 kA, next power panelboard SPD — type 2	SP277Y08X402
277 V AC Wye , 125 kA, next power panelboard SPD — type 1	SP277Y12X401
277 V AC Wye , 125 kA, next power panelboard SPD — type 2	SP277Y12X402
277 V AC Wye , 150 kA, next power panelboard SPD — type 1	SP277Y15X401
277 V AC Wye , 150 kA, next power panelboard SPD — type 2	SP277Y15X402
277 V AC Wye , 200 kA, next power panelboard SPD — type 1	SP277Y20X401
277 V AC Wye , 200 kA, next power panelboard SPD — type 2	SP277Y20X402
277 V AC Wye , 300 kA, next power panelboard SPD — type 1	SP277Y30X401
277 V AC Wye , 300 kA, next power panelboard SPD — type 2	SP277Y30X402
347 V AC Wye , 65 kA, next power panelboard SPD — type 1	SP347Y06X401
347 V AC Wye , 65 kA, next power panelboard SPD — type 2	SP347Y06X402
347 V AC Wye , 80 kA, next power panelboard SPD — type 1	SP347Y08X401
347 V AC Wye , 80 kA, next power panelboard SPD — type 2	SP347Y08X402
347 V AC Wye , 125 kA, next power panelboard SPD — type 1	SP347Y12X401
347 V AC Wye , 125 kA, next power panelboard SPD — type 2	SP347Y12X402
347 V AC Wye , 150 kA, next power panelboard SPD — type 1	SP347Y15X401
347 V AC Wye , 150 kA, next power panelboard SPD — type 2	SP347Y15X402
480 V AC Delta , 65 kA, next power panelboard SPD — type 1	SP480D06X401
480 V AC Delta , 65 kA, next power panelboard SPD — type 2	SP480D06X402
480 V AC Delta , 80 kA, next power panelboard SPD — type 1	SP480D08X401
480 V AC Delta , 80 kA, next power panelboard SPD — type 2	SP480D08X402
480 V AC Delta , 125 kA, next power panelboard SPD — type 1	SP480D12X401
480 V AC Delta , 125 kA, next power panelboard SPD — type 2	SP480D12X402
480 V AC Delta , 150 kA, next power panelboard SPD — type 1	SP480D15X401
480 V AC Delta , 150 kA, next power panelboard SPD — type 2	SP480D15X402
480 V AC Delta , 200 kA, next power panelboard SPD — type 1	SP480D20X401
480 V AC Delta , 200 kA, next power panelboard SPD — type 2	SP480D20X402
480 V AC Delta , 300 kA, next power panelboard SPD — type 1	SP480D30X401
480 V AC Delta , 300 kA, next power panelboard SPD — type 2	SP480D30X402

ReliaGear® switchboard and panelboard accessories

Neutrals

Suitable for panelboard only

Description	Catalog number
1200 A with ground fault, XT7 750 MCM bottom-fed 12" standard neutral Al	NL12I0G7X7BA7
1200 A with ground fault, XT7 750 MCM top-fed 12" standard neutral Al	NL12I0G7X7TA7
1200 A with ground fault, XT7 bottom-fed 12" standard neutral Al	NL12I0G5X7BA7
1200 A with ground fault, XT7 bottom-fed neutral Al	NL12I0G5X7BAL,NL12I0G7X7BAL
1200 A with ground fault, XT7 bottom-fed neutral Cu	NL12I0G5X7BCU,NL12I0G7X7BCU
1200 A with ground fault, XT7 top-fed 12" standard neutral Al	NL12I0G5X7TA7
1200 A with ground fault, XT7 top-fed neutral Al	NL12I0G7X7TAL
1200 A with ground fault, XT7 top-fed neutral Cu	NL12I0G7X7TCU
1200 A without ground fault, compression main lug 12" standard neutral Al	NL12I0NCOMPA7
1200 A without ground fault, compression main lug neutral Al	NL12I0NCOMPAL
1200 A without ground fault, dual main compression lug 12" standard neutral Al	NL12I0NDCOMA7
1200 A without ground fault, dual main compression lug neutral Al	NL12I0NDCOMAL
1200 A without ground fault, dual main mechanical lug neutral Al	NL12I0ND5X7AL,NL12I0ND7X7AL
1200 A without ground fault, dual main mechanical lug neutral Cu	NL12I0ND5X7CU,NL12I0ND7X7CU
1200 A without ground fault, horizontal main/main lug neutral Al	NL12I0N7X7XAL
1200 A without ground fault, horizontal main/main lug neutral Cu	NL12I0N7X7XCU
1200 A without ground fault, standard 12" neutral Al	NL12I0NST12A7
1200 A without ground fault, standard 15" neutral Al	NL12I0NST15A7
1200 A without ground fault, standard 21" neutral Al	NL12I0NST21A7
1200 A without ground fault, standard neutral Al	NL12I0NSTNDAL
1200 A without ground fault, standard neutral Cu	NL12I0NSTNDCU
1200 A without ground fault, vertical main neutral Al	NL12I0NV47BAL,NL12I0NV47TAL
1200 A without ground fault, vertical main neutral Cu	NL12I0NV47BCU,NL12I0NV47TCU
250 A with ground fault, XT4 bottom-fed 12" standard neutral Al	NL02I0GXT4BA7
250 A with ground fault, XT4 bottom-fed neutral Al	NL02I0GXT4BAL
250 A with ground fault, XT4 bottom-fed neutral Cu	NL02I0GXT4BCU
250 A with ground fault, XT4 top-fed 12" standard neutral Al	NL02I0GXT4TA7
250 A with ground fault, XT4 top-fed neutral Al	NL02I0GXT4TAL
250 A with ground fault, XT4 top-fed neutral Cu	NL02I0GXT4TCU
400 A with ground fault, XT5 bottom-fed 12" standard neutral Al	NL04I0GXT5BA7
400 A with ground fault, XT5 bottom-fed neutral Al	NL04I0GXT5BAL
400 A with ground fault, XT5 bottom-fed neutral Cu	NL04I0GXT5BCU
400 A with ground fault, XT5 top-fed 12" standard neutral Al	NL04I0GXT5TA7
400 A with ground fault, XT5 top-fed neutral Al	NL04I0GXT5TAL
400 A with ground fault, XT5 top-fed neutral Cu	NL04I0GXT5TCU
400 A without ground fault, standard 12" neutral Al	NL04I0NST12A7
400 A without ground fault, standard neutral Al	NL04I0NSTNDAL
400 A without ground fault, standard neutral Cu	NL04I0NSTNDCU
600 A with ground fault, XT5 bottom-fed 12" standard neutral Al	NL06I0GXT5BA7
600 A with ground fault, XT5 bottom-fed neutral Al	NL06I0GXT5BAL
600 A with ground fault, XT5 bottom-fed neutral Cu	NL06I0GXT5BCU
600 A with ground fault, XT5 top-fed 12" standard neutral Al	NL06I0GXT5TA7
600 A with ground fault, XT5 top-fed neutral Al	NL06I0GXT5TAL
600 A with ground fault, XT5 top-fed neutral Cu	NL06I0GXT5TCU

ReliaGear® switchboard and panelboard accessories

Grounds, neutral lugs and barrier posts

Suitable for panelboard only

Grounds

Description	Catalog number
neXT PP ground 10 bonded	GDBG10AL
neXT PP ground 47 bonded	GDBG47AL
neXT PP ground 47 bonded	GDBG47CU
neXT PP ground 47 Isolated	GDIG47AL
neXT PP ground 47 Isolated	GDIG47CU
neXT PP ground 49 bonded	GDBG49A7
neXT PP ground 49 Isolated	GDIG49A7

Suitable for panelboard only

Neutral lugs

Description	Catalog number
neXT power panelboard lugs neutrals 1/0 AWG	LGN010
neXT power panelboard lugs neutrals 2/0 AWG	LGN020
neXT power panelboard lugs neutrals 3/0 AWG	LGN030
neXT power panelboard lugs neutrals 4/0 AWG	LGN040
neXT power panelboard lugs neutrals 250 MCM	LGN250
neXT power panelboard lugs neutrals 300 MCM	LGN300
neXT power panelboard lugs neutrals 350 MCM	LGN350
neXT power panelboard lugs neutrals 400 MCM	LGN400
neXT power panelboard lugs neutrals 500 MCM	LGN500
neXT power panelboard lugs neutrals 600 MCM	LGN600
neXT power panelboard lugs neutrals 750 MCM	LGN750

Suitable for panelboard only

Barrier posts

Description	Catalog number
neXT power panelboard barrier post 30W center	BP30C
neXT power panelboard barrier post 40W offset	BP40F
neXT power panelboard barrier post 45W center	BP45C
neXT power panelboard barrier post 45W offset	BP45F

ReliaGear® switchboard and panelboard accessories

Vertical main kits/vertical main rail kits

Suitable for panelboard only

Vertical main kits

Description	Catalog number
neXT power panelboard vertical main kit XT7	VMXT73PS
neXT power panelboard vertical main kit XT5	VMXT53PS
neXT power panelboard vertical main kit XT7 1-phase	VMXT72PS
neXT power panelboard vertical main kit XT5 1-phase	VMXT52PS
neXT power panelboard vertical main kit XT7	VMXT73PT
neXT power panelboard vertical main kit XT5	VMXT53PT
neXT power panelboard vertical main kit XT7 1-phase	VMXT72PT
neXT power panelboard vertical main kit XT5 1-phase	VMXT52PT

Suitable for panelboard only

Vertical main rail kits

Description	Catalog number
neXT power panelboard vertical main rail kit 30W center	VMR30C
neXT power panelboard vertical main rail kit 40W offset	VMR40F
neXT power panelboard vertical main rail kit 45W center	VMR45C
neXT power panelboard vertical main rail kit 45W offset	VMR45F

05

Molded case circuit breakers

Molded case circuit breakers

Molded case circuit breakers	
Tmax® XT range	38
Record Plus FB, TEY and Formula A2	47
Mounting space requirements	48
Line-side connectors and lugs	49
Breaker accessories	50

Tmax® XT range

ReliaGear® molded case circuit breakers for alternating current (AC) distribution

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.

The molded case circuit breakers for ReliaGear® neXT power panelboards can also be used in ReliaGear® SB switchboards. The same mounting hardware, fillers, blanks and rails are also applicable for ReliaGear® SB.

Note: Tmax® XT MCCBs for ReliaGear® neXT power panelboards and ReliaGear® SB switchboards come with filler plates when ordered separately, except XT1 where the XT1 group-mount rail kits need to be ordered separately. Refer to fillers and blanks in the numbering system chapter.

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]	–	–	–
Mechanical life		[No. operations]			25000
		[No. hourly operations]			240
Dimensions – fixed (width x depth x height)	3 poles	[mm]/[in]			[77 x 184 x 265] / [3.0 x 7.2 x 10.4]
Weight	Fixed 3 poles	[kg]/[lb]			[1.9] / [4.2]
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

	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 [1]	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
					25000						25000						20000			20000			10000
					240						240						240			240			240
					[105 x 198 x 249] / [4.1 x 7.8 x 9.8]						[105 x 198 x 249] / [4.2 x 7.8 x 9.8]						[141 x 206 x 387] / [5.6 x 8.1 x 15.2]			[210 x 211 x 488] / [8.3 x 8.3 x 19.2]			[211 x 277 x 488] / [8.3 x 10.9 x 19.2]	
					[2.8] / [6.1]						[3.2] / [7.0]						[7.0] / [15.4]			[12.0] / [26.5]			[17.2] / [37.9]	
					•						•													
					•												•			•				
					•						•						•			•			•	
					•						•						•						•	

Tmax® XT range

100% rated breakers and trip units

100% rated breakers

All Tmax® XT circuit breakers are available both as standard versions and as 100% rated versions. Because of the additional heat generated at 100% of continuous current rating, the use of specific 90 °C rated wires sized per 75 °C ampacity may be required.

Frame	Max. ampacity (A)	Wires
XT4	200	75 °C
XT5	400	75 °C
XT7	800	75 °C
XT7	1000/1200	90 °C

Trip units

SACE® Tmax® XT trip units represent a new benchmark for molded case circuit breakers, being able to satisfy any performance requirement.

The Tmax® XT trip units are designed to be used in a wide range of applications. These complete, flexible protection trip units can be adapted to the actual 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:
- TM thermal-magnetic trip unit
- Ekip DIP electronic trip unit
- Ekip Touch/Hi-Touch electronic trip units

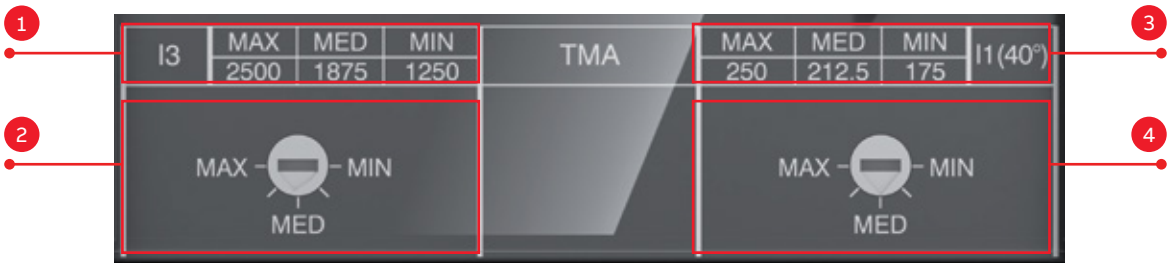
For the single-phase offering, the following trip units are available:
- XT1, XT2, XT4, XT5, XT6:
  - TM thermal-magnetic trip unit
- XT7:
  - Ekip DIP electronic trip unit
  - Ekip Touch/Hi-Touch electronic trip units

Tmax® XT range

Thermal-magnetic trip unit

The thermal-magnetic trip unit is an easy solution for protection against overloads and short circuits. Overload protection is ensured by the ABB thermal device, based on a temperature-dependent bimetal heated by current. Protection against short-circuit is realized with a magnetic device.

Key:
1. Current threshold for short-circuit protection.
2. Rotary switch for short-circuit protection.
3. Current threshold for overload protection.
4. Rotary switch for overload threshold setting.



Rotary switch
Depending on the version, it is possible to set the desired thresholds for protection by turning the front rotary switch.

Tmax® XT range

Thermal-magnetic trip unit

			L – overload protection		I – short-circuit protection	
Field of application		**Trip unit**	**Current threshold**	**Trip time**	**Current threshold**	**Trip time**
Power distribution protection		TMF	Fixed	Fixed	Fixed	Fixed instantaneous
		TMA	Adjustable	Fixed	Adjustable	Fixed instantaneous

TMF

In [A]	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**125**	**150**	**175**	**200**	**225**	**250**
XT1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
XT2	•	•	•	•	•	•		•	•	•										
XT4			•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•

TMA

In [A]	**80**	**90**	**100**	**110**	**125**	**150**	**175**	**200**	**225**	**250**	**300**	**400**	**500**	**600**	**800**
XT2	•	•	•	•	•										
XT4	•	•	•	•	•	•	•	•	•	•					
XT5											•	•	•	•	
XT6														•	•

TMA trip unit setting range

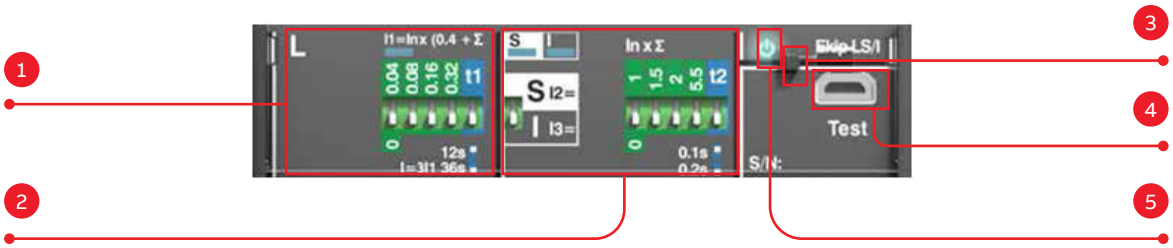
Breaker frame	**Sensor**	**Minimum trip amps**
XT2–125 A	80 A	56 A
	90 A	63 A
	100 A	70 A
	110 A	77 A
	125 A	88 A
XT4–250 A	80 A	56 A
	90 A	63 A
	100 A	70 A
	110 A	77 A
	125 A	88 A
	150 A	105 A
	175 A	123 A
	200 A	140 A
	225 A	158 A
	250 A	175 A
XT5–400 A	300 A	210 A
	400 A	280 A
XT5–600 A	500 A	350 A
	600 A	420 A
XT6–800 A	600 A	420 A
	800 A	560 A

Tmax® XT range

Ekip DIP

The first level of electronic trip units, Ekip DIP trip units, are based on microprocessor technologies and guarantee high reliability, protection adjustability and coordination.

They provide protection against overloads, selective short circuits, short circuits and ground faults. The power required for their operation is provided directly from the current sensors.



Key:
1. DIP switches for overload-protection setting.
2. DIP switches for short-circuit and time-delayed short-circuit.
3. Slot for lead seal.
4. Test connector.
5. Power-on LED.

DIP switches
The DIP switches on the front of the trip unit allow manual settings when the trip unit is off.

LEDs
The LEDs on the front indicate the status of the release (on/off) and provide information about the protection tripped when the Ekip TT accessory is connected.

Front connector
The connector on the front of the unit allows the connection of:
Ekip TT for trip testing, LED-test and signaling of the most recent trip.
- Ekip T&P for connection to a laptop with the Ekip Connect program (thus measurement reading, as well as trip and protection function tests, are made available to the user).

Thermal memory
All the Ekip DIP trip units include a thermal memory function. The trip unit records the trips that have occurred in the last few minutes. Since the trip causes overheating, to protect the cables and let them cool down, the trip unit imposes a shorter delay-tripping time in case of a fault. Thus, the system is protected against damage due to cumulative overheating. This can be disabled if needed by using the Ekip T&P.

Characteristics of electronic Ekip DIP trip units

Operating temperature	-25 °C to +70 °C
Relative humidity	98%
Self-supplied	0.2xIn (single phase)*
Auxiliary supply (where applicable)	24 V DC ± 20%
Operating frequency	45 to 66 Hz
Electromagnetic compatibility	IEC 60947-2 Annex F

*For 10 A: 0.4 in

Tmax® XT range

Ekip DIP

			L-overload protection		S-selective short-circuit protection		I-short circuit protection		G-ground fault protection	
		Trip unit	Current threshold	Trip time	Current threshold	Trip time	Current threshold	Trip time	Current threshold	Trip time
Power distribution protection	Ekip DIP	LS/I	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Fixed	-	-
		LSI	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Fixed	-	-
		LSIG	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Fixed	Adjustable	Adjustable

In [A]	10	25	40	60	100	125	150	225	250	300	400	600	800	1000	1200
XT2	•	•		•	•	•									
XT4			•	•	•		•	•	•						
XT5									•	•	•	•			
XT6												•	•		
XT7												•	•	•	•

Breaker frame	Sensor	Minimum trip amps
XT2–125 A	10 A	7 A
	25 A	18 A
	60 A	42 A
	100 A	70 A
	125 A	88 A
XT4–250 A	40 A	28 A
	60 A	42 A
	100 A	70 A
	150 A	105 A
	225 A	158 A
	250 A	175 A
XT5–400 A	250 A	175 A
	300 A	210 A
	400 A	280 A
XT5–600 A	600 A	420 A
XT6–800 A	800 A	560 A
XT7–800 A	600 A	420 A
	800 A	560 A
XT7–1000 A	1000 A	700 A
XT7–1200 A	1200 A	840 A

Tmax® XT range
Ekip Touch/Hi-Touch

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

Key:
1. Power-on LED; pre-alarm LED; alarm LED.
2. Test and programming connector.
3. Display.
4. Home pushbutton to return to homepage.
5. Pushbutton for testing and tripping information.

Communication and connectivity
The Ekip Touch/Hi-Touch trip units integrate perfectly into most common automation and energy management systems to improve productivity and energy consumption and for remote control. The circuit breakers can be equipped with communication modules for Modbus, Profibus and DeviceNet™ protocols, as well as Modbus TCP, Profinet and EtherNet/IP™. The modules can be easily installed even at a later date.

Furthermore, the IEC 61850 communication module enables connection to automation systems widely used in medium-voltage power distribution to create intelligent networks (smart grids). In addition, with an easy connection thanks to the Ekip Com hub module, the circuit breakers allow the system to be monitored via ABB Ability EDCS.

The integrated display makes interaction with the Ekip Touch/Hi-Touch an easy and intuitive experience for the user, and the embedded Bluetooth functionality allows fast interaction via EPiC (electrification products intuitive configurator), the new mobile application to configure and check the status of ABB low-voltage circuit breakers.

Tmax® XT range

Ekip Touch/Hi-Touch

Trip unit	Current measurement and protection	Voltage, power, energy measurements	Voltage, power, energy protections	Embedded functions*
Ekip Touch LSI	●	○	○	○
Ekip Touch LSIG	●	○	○	○
Ekip Touch Measuring LSI	●	●	○	○
Ekip Touch Measuring LSIG	●	●	○	○
Ekip Hi-Touch LSI	●	●	●	●
Ekip Hi-Touch LSIG	●	●	●	●

● Default available
○ Additional features
* Please refer to the Tmax® XT catalog 1SXU210248C0201 for more details.
LSIG trip units not available for single phase applications

In [A]	40	60	100	125	150	225	250	300	400	600	800	1000	1200
XT2	●	●	●	●									
XT4			●		●	●	●						
XT5							●	●	●	●			
XT7										●	●	●	●

Breaker frame	Sensor	Minimum trip amps
XT2–125 A	40 A	16 A
	60 A	24 A
	100 A	40 A
	125 A	50 A
XT4–250 A	100 A	40 A
	150 A	60 A
	225 A	90 A
	250 A	100 A
XT5–400 A	250 A	100 A
	300 A	120 A
	400 A	160 A
XT5–600 A	600 A	240 A
XT6–800 A	800 A	320 A
XT7–800 A	600 A	240 A
	800 A	320 A
XT7–1000 A	1000 A	400 A
XT7–1200 A	1200 A	480 A

Record Plus FB, TEY and Formula A2

ReliaGear® molded case circuit breakers for alternating current (AC) distribution

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 non-adjustable 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.

Note: FB, TEY and A2 MCCBs for ReliaGear® neXT power panelboards and ReliaGear® SB switchboards come with filler plates when ordered separately.

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	Type	Poles	UL listed interrupting rating rms symmetrical kA AC voltage 240 V	277 V	347 V	480 V	600 V
15–100	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	Type	Poles	UL listed interrupting rating rms symmetrical kA AC voltage 120/240 V	480/277 V
15–70 (1-pole)	TEYD	1–2	65	25
15–125 (2-pole)	TEYH	1–2	65	35
	TEYL	1–2	100	65

Formula A2

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

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

01

02

03

04

05

Mounting space requirements

For molded case circuit breakers

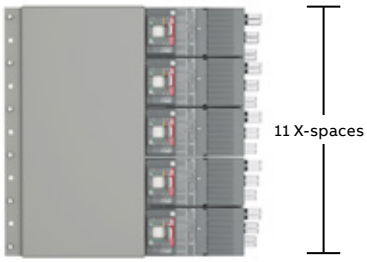
Each circuit breaker frame has specific requirements for the number of mounting positions (X-spaces). Thanks to the optimized dimensions of the XT1, the mounting positions required are lower when two or five breakers are mounted close to one another.

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
Submetering	–	–	9–14

—
01

—
02



—
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 frame	Ampacity (A)	Wire size (AWG or kcmil) Cu or Al	Tightening torque (lb-in)	Number of cables per lug	Circuit breaker poles
XT1	15–125	#10–#8	40	1	3
		#6–2/0	80		
XT2	10–25	#14–#8 (Cu)	40	1	3
		#6–1/0 (Cu)	50		
	10–125	#10–#8	40	1	3
		#6–2/0	80		
XT4	15–70	#14–#10	20.4	1	3
		#8–1/0	50		
	80–225	#4–300	200	1	3
	250	3/0–350	200	1	3
XT5	100–600	2/0–500	274	2	3
		500–600	440	2	3
		750	530		
XT6	350–800	2/0–4/0	301	3	3
		250–400	380		
		500–750	593	2	3
XT7	250–1200	4/0–500	380	4	3
		500–750	593	3	3
FB	15–20	#14–#10	35	1	1, 2
FB	25–60	#10	35	1	1, 2
		#8	40		
		#6–#4	45		
FB	70–100	#4	45	1	1, 2
		#3–1/0	50		
TEY	15–20	#14–#10 (Cu) #12–#10 (Al)	35	1	1, 2
TEY	25–60	#10 (Cu)	35	1	1, 2
		#8	40	1	
		#6 (Cu) #6–#4 (Al)	45	1	
TEY	70	#4–#1 (Cu) #2–1/0 (Al)	45	1	1, 2
	80–100	#4–#1 (Cu) #2–1/0 (Al)	45	1	2
	125	#3–3/0 (Cu) #1–3/0 (Al)	100	1	
A2	125–250	#1–250 (Cu) 2/0–300 (Al)	135	1	2
A2	250	300–350 (Al)	177	1	2

Accessories

For molded case circuit breakers

Internal accessories
Common internal accessories (shunt trips, undervoltage releases, auxiliary switches, etc.) are available in common voltage ratings and are UL listed for field assembly.

Auxiliary contacts — AUX
The SACE® Tmax® XT, Record Plus FB, TEY and Formula A2 circuit breakers can be equipped with auxiliary contacts that signal the status of the breaker and can be routed outside the circuit breaker itself. Options are one or two AUX on XT1, XT2, XT4, XT5 and XT6, four AUX on XT7, one AUX on 2-pole FB, TEY and two AUX on A2. The following information is available:
Open/closed (Q): indication of the status of the circuit-breaker power contacts
Trip (SY): signals that the circuit breaker is opening due to the intervention of the trip unit, or to the opening of undervoltage/shunt opening releases, or to the use of the test button

Shunt opening release — SOR/YO
This allows the circuit breaker to open by means of a non-permanent electrical control. Release operation is guaranteed for voltage between 70% and 110% of the rated power supply voltage (Un), in both alternating and direct current. The SOR is equipped with a built-in limit contact to shut off the power supply in the open position with the trip unit tripped.
A remote-controlled emergency opening command can be generated by connecting an opening button to the SOR.

Frame			Voltage
XT1– XT2–XT4–XT5 –XT6	24–30 V AC/DC	110–127 V AC/ 110–125 V DC	220–240 V AC/ 220–250 V DC
XT7	24 V AC/DC	110–120 V AC	220–240 V AC
FB (2-pole only)	24 V AC/DC	110–130 V AC 110–125 V DC	220–240 V AC/ 250 V DC
TEY (2-pole only)	24 V AC/DC	120 V AC	240 V AC
A2		110-127 V AC/ 110-125 V DC	

Undervoltage release — UVR/YU
This allows the circuit breaker to open when the release is subject either to a power failure or a voltage drop.
As prescribed in the standards, opening is guaranteed when the voltage is between 70% to 35% Un. After tripping, the circuit breaker can be closed again if the voltage exceeds 85% of Un.
When the undervoltage release is not energized, neither the circuit breaker nor the main contacts can be closed.
A remote-controlled emergency opening command can be generated by connecting an opening button to the UVR.

Frame			Voltage
XT1–XT2 –XT4–XT5–XT6	24–30 V AC/DC	110–127 V AC/ 110–125 V DC	220–240 V AC/ 220–250 V DC
XT7	24 V AC/DC	110-120 V AC	220–240 V AC
FB (2-pole only)	24 V AC/DC	110–130 V AC/ 110–125 V DC	220–240 V AC/ 250 V DC

Padlocks and key locks
Padlocks or key locks prevent the circuit breaker from being closed and/or opened. Maximum number of padlocks (PLL) and maximum stem dimensions are the following:

Frame	Padlocks*	Stem min.–max.
XT1–XT2–XT4	3	Ø 0.24–0.275" / Ø 6–7 mm
XT5–XT7	3	Ø 0.24–0.315" / Ø 6–8 mm
XT6	3	Ø 0.2–0.31"/ Ø 5–8 mm
FB / TEY	1	Ø 0.25" / Ø 6.35 mm
A2	3	Ø 0.24–0.275" / Ø 6–7 mm

*Padlocks are not included in the kits.

Multiple models of keylock provisions are offered: Kirk KCAM00010 / KCAM00010S (XT5-XT7), Ronis 1228 (XT1-XT2-XT4-XT5-XT7) and Castell (XT7). Kirk and Castell locks are at customer expense and not provided in the kit. Two options are available for Ronis: same keys (type A) and different keys. This allows the customer to create interlocking logics.

Internal modules
Available with several different communication protocols, the Ekip Com internal module is installed directly inside the circuit breaker. It allows the circuit breaker to be integrated in a communication network for supervision and control. Ekip Com internal modules can be used for XT2, XT4 and XT5. They can be connected to the trip unit when Ekip Touch is used. Ekip Com modules require 24 V isolated power supply to power communications. Protocols supported include:
- Modbus RTU
- Modbus TCP/IP
- Profinet
- EtherNet/IP
- IEC 61850

Accessories

For molded case circuit breakers

Cartridge modules
Cartridge Ekip Com modules, along with the internal modules, allow integration in any communication network. They can be used only on the XT7 circuit breaker equipped with an Ekip Touch/Hi-Touch trip unit, mounted directly on the terminal box. Ekip Com modules require 24 V isolated power supply to power communications. Several modules can be used simultaneously, enabling systems with different protocols. Modbus RTU, Profibus-DP and DeviceNet modules contain a terminating resistor and two dip switches for optional activation to terminate the serial network or bus. The Profibus-DP module also contains a polarization resistor and two DIP switches for its activation.

- Modbus RTU
- Modbus TCP/IP
- Profinet
- Profibus
- EthernNet/IP
- DeviceNet
- IEC 61850

Ekip Com hub
The Ekip Com hub is the new communication module for cloud connectivity. A circuit breaker equipped with the Ekip Com hub can establish a connection with the ABB Ability Electrical Distribution Control System (EDCS) for the low-voltage power distribution panel. This dedicated module is available for the XT7 breaker even when other modules are present. For further information on ABB Ability EDCS, please see page 48.

Signaling modules
The Ekip 2K signaling cartridge modules, available for XT7, supply two input and two output contacts for control and remote signaling of alarms and circuit breaker trips.

The Ekip 1K signaling module, available for the XT5, supplies one input contact and one output contact for control and remote signaling. It is installed inside the circuit breaker in the housing provided on the left down side of the circuit breaker and can be used when an Ekip Touch/Hi-Touch trip unit is present.

Ekip signaling modules can be programmed from the trip unit display or via the Ekip Connect software and app. When using Ekip Connect, combinations of events can be freely configured.

Ekip power supply
The Ekip power supply module supplies all Ekip trip units and modules present on the XT7 with several auxiliary power sources (in AC or DC). The cartridge module permits the installation of other advanced modules. It can be field installed at any time. Two versions are available according to the control voltage:

- Ekip supply 110–240 V AC/DC
- Ekip supply 24–48 V DC

This module is always needed with any Ekip Com module or the signaling 2K module.

06

Drawings, dimensions and additional resources

Drawings, dimensions and additional resources

Drawings, dimensions and additional resources	
OEM drawing selector	54
Additional resources	55

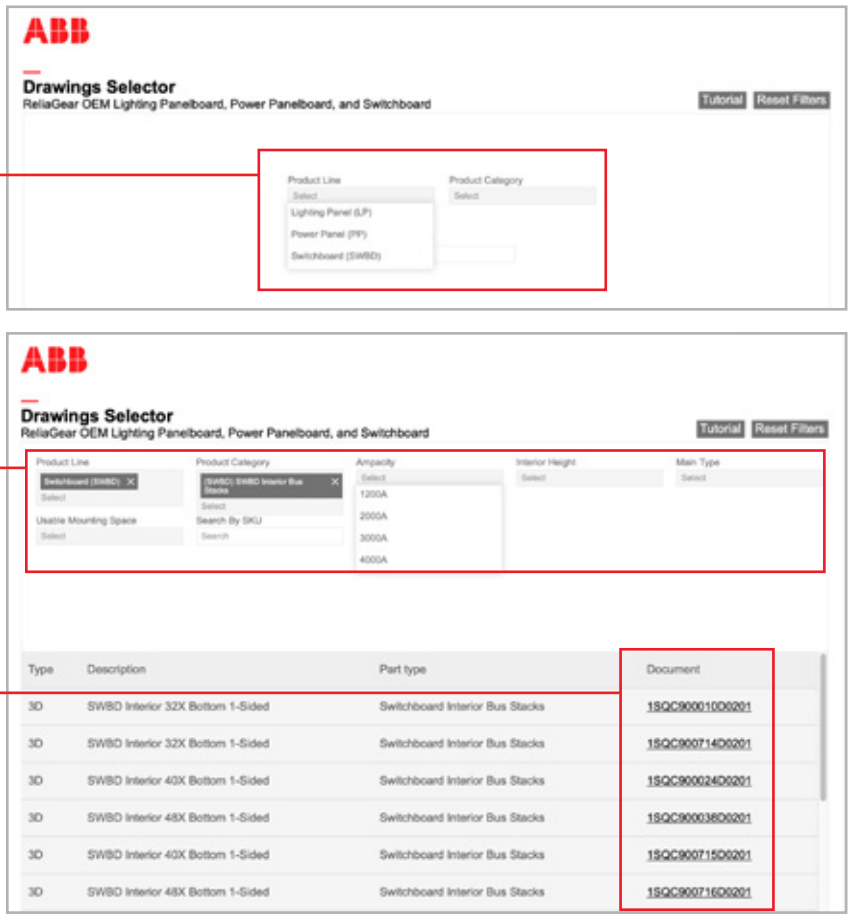
OEM drawing selector

3D CAD models can be obtained using the OEM drawing selector.

1 Select product line and product category.

2 Use selection filters to narrow down your search based on the specific part you need.

3 Click on the provided document link and download the drawing file.



Use drawing selector

Additional resources

Product websites
- OEM Solutions
- ReliaGear® neXT Power Panelboard US Electrification
- ReliaGear® SB Switchboard
- ReliaGear® Smart Power Distribution

Instructions/helpful links
- ReliaGear® OEM SB Technical Guide
- ReliaGear® neXT and SB Plug-In Connections
- ReliaGear® neXT Video Manuals
- Mt. Juliet (USA) Stocking Guide
- ReliaGear® Switchboard Selector Tool

ABB Inc.
305 Gregson Drive
Cary, NC 27511

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