



RELIAGEAR® SB SWITCHBOARD-COMPACT

Utility Service Entrance Switchboard

ENGINEERED
TO OUTRUN



 Made in Canada

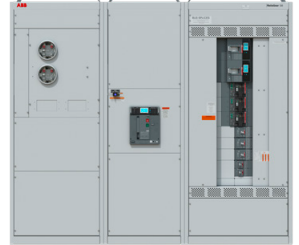
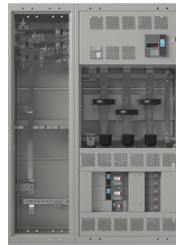
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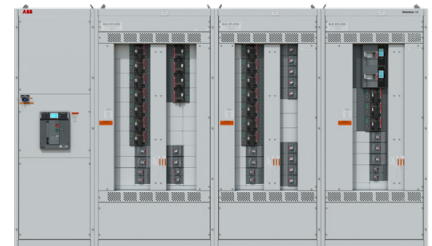
OVERVIEW

ReliaGear SB Switchboards



ReliaGear® SB – Fast shipping options

Program	CompaXT	EXcelerate	Configured
Lead time	🕒	🕒🕒	🕒🕒🕒
PFA (if needed)	not required	not required	not required
Type	Configured to order	Configured to order	Configured to order
Number of configurations	20+	~5,000	~5,000
Current max (Amps)	1,200	4,000	4,000
Enclosure options (NEMA)	N1/N2	N1/N3R	N1/N3R
Interrupting rating	Up to 50kAIC	65/100kAIC	65/100kAIC
Voltage max (Volts)	600	600V AC	600V AC
Utility sections	Yes	Yes	Yes



ReliaGear® SB – Engineered and custom switchboards

Program	Engineered - Mid cycle	Engineered SB - Normal	Engineered SB - Normal +
Lead time	🕒🕒🕒	🕒🕒🕒🕒	🕒🕒🕒🕒🕒
PFA (if needed)	4 weeks	4 weeks	6 weeks
Type	Engineered to order (ETO)	Engineered to order (ETO)	Engineered to order (ETO)
Number of configurations	~10,000	Over 1M	Over 1M
Current max (Amps)	4,000	6,000	6,000
Enclosure options (NEMA)	N1/N3R	N1/N3R	N1/N3R
Interrupting rating	65/100kAIC	Up to 150kAIC*	Up to 150kAIC*
Voltage max (Volts)	600V AC	600V AC	600V AC
Utility sections	Yes	Yes	Yes

*200kAIC with fuses

RELIAGEAR® COMPAXT SWITCHBOARD

Configurable. Compact. Canadian.

Overview

The ABB ReliaGear CompaXT Utility Service Entrance Switchboard is designed especially for the Canadian market. This compact solution combines an electrical distribution panel, a main service disconnect and a utility metering compartment in one space-saving unit that meets a variety of application needs.

The floor-mounted switchboard is rated up to a maximum 1200A, 50kAIC @600V. At 15" (381 mm) deep, the electrical distribution switchboard easily fits into the tightest areas where space is typically limited. The ReliaGear CompaXT is cUL certified to meet CSA C22.2 #244 standard and meets the seismic requirements of IBC Zone 4 and CBC Zone 4.

Designed and approved busfed pull sections provide solutions for multiple utilities including BC Hydro. ReliaGear CompaXT is available with mains rated at 800A, 1000A and 1200A, with the option of ground fault protection. A full line of field installable digital solid-state electronic trip molded case breakers is also available. With a combination of superior features and options, the ABB ReliaGear CompaXT Utility Service Entrance Switchboard not only meets your space saving needs, its design also offers total flexibility to meet project requirements.

• Applications

- Commercial buildings
- Office/Retail buildings
- Condominiums
- Light Manufacturing/ Industrial buildings

Designed and approved for these utilities

- | | |
|-----------------|------------------|
| • Hydro Québec | • Fortis Alberta |
| • BC Hydro | • Epcor |
| • Hydro One | • ATCO |
| • Alectra | • Manitoba Hydro |
| • Toronto Hydro | • Saskpower |
| • Hydro Ottawa | • Fortis BC |
| • Enmax | • NB Power |

Primary features

- Switchboard style, type 1 indoor enclosure with drip hood
- 1200A – heat rated bus max., 50kAIC @ 600V max
- Optional ground fault protection
- Left or right hand pull sections – depending on region
- Top or bottom feed main – depending on region
- cUL certified
- The busfed pull section is 90°C rated
- 22X (11X on each side) of device space for feeder breakers
- Seismic IBC Zone 4, CBC Zone 4, UBC Zone 4
- Heat-rated aluminum bus bar standard
- Accepts incoming aluminum or copper cable
- 40" W (1016 mm) x 90" H (2286 mm) x 15" D (381 mm) main/distribution section
- 25" W (635 mm) x 90" H (2286 mm) x 15" or 20" D (381 mm) – busfed pull section
- Branch feeder – Tmax MCCB 15-600A

Product capability/specifications	ReliaGear SB Switchboard-CompaXT	Additional information
Enclosure type	NEMA 1	NEMA 1 with drip hood
Particle size detection	40" W x 90" H x 15" D (1016 mm x 2286 mm x 381 mm) Main/distribution section 25" W x 90" H x 15" or 20" D (635 mm x 2286 mm x 381 or 508 mm) Bussed pull section	
Voltage	600V max.	
Amperage	1200A – heat rated	
Bus-bar	AL	
80% rating	800A to 1200A	
100% rating	800A to 1000A	
Standards	cUL, NEMA, NEC	
Seismic rating	IBC Zone 4, CBC Zone 4, UBC Zone 4	
Entry	Cable or bussed pull section	
Top or bottom feed	Top and bottom feed	
Lug type	Mechanical aluminum	
Incoming cable	Copper or aluminum	
Max. bus KA rating	50kAIC	
Neutral rating	100% – heat rated	
Main devices	1200A Manually operated Stationary	
Main device accessories	UV*, ST*	Field installed
Utility CT provision	Bar type CT	
Utility PT provision	Yes	
Branch/feeder breakers	MCCB 15 – 600A	FB, XT1, XT2, XT4, XT5
Branch accessories	UV*, ST*	Field installed
Branch mounting	22X (11X on each side) bus stack for XT plug in breakers	1X = 1.385"
Accessories available	Full filler plates Padlocking devices Load lugs	
Bussed pull section	90° C	

*Shunt trip or UV cannot install on same breakers.

Note: Bus material – aluminum

Bussed pull sections are not convertible from left to right or right to left.

Main breaker is selected based on the switchboard current rating.

For single section, the maximum incoming cable is limited to 4 x 500kcmil.

Cables directly connected to the main breaker are limited to 3 x 500-700kcmil (only 2 x 750kcmil cables can be connected due to wire bending radius) or 4 x 4/0 AWG- 500 kcmil.

TMAX XT MOLDED CASE CIRCUIT BREAKER

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					XT2					XT4					XT5					XT7				
Frame size		[A]					125					125					250					400-600				
Poles		[No.]					3					3					3					3				
Rated Voltage (AC) 50-60 Hz		[V]					480 V Δ^2					600					600					600				
Versions		Fixed					Fixed					Fixed					Fixed					Fixed				
		N S H					N S H L V X					N S H ¹ L ¹ N S H ¹ L ¹					S H L									
240 V (AC)		[kA]					50 65 100 65 100 150 200 200 200					65 100 150 ⁴ 200 ⁴ 65 100 150 ⁴ 200 ⁴					65 100 200 ⁴					65 100 200 ⁴				
480 V (AC)		[kA]					25 35 65 25 35 65 100 150 200					25 35 65 100 35 50 100 35					50 65 100									
600Y/347 V (AC)		[kA]					18 22 25 - - - - -					18 22 25 50 18 25 35 65					- - - - -									
600 V (AC)		[kA]					- - - 18 22 25 35 42 42					18 22 25 50 18 25 35 65					25 50 65									
Interrupting ratings		[No. operations]					25.000					25.000					25.000					20.000				
Mechanical life		[No. hourly operations]					240					240					240					240				
Dimensions – fixed (width x depth x height) ³		[mm]/[in]					[76.2 × 70 × 130] / [3 × 2.75 × 5.12]					[90 × 82.5 × 130] / [3.54 × 3.25 × 5.12]					[105 × 82.5 × 160] / [4.13 × 3.25 × 6.3]					[140 × 103 × 205] / [5.51 × 4.05 × 8.07]				
Weight ³		[kg]/[lb]					[1.1] / [2.43]					[1.2] / [2.65]					[2.5] / [5.51]					-				
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

⁴ The maximum interrupt rating of the circuit breaker into the ReliaGear SB switchboard is 100 kA.

100 percent rated circuit breakers

Tmax XT circuit breakers are available both as standard versions, and as 100 percent rated versions. For some 100 percent rated versions the use of specific 90°C rated wires sized per 75°C ampacity may be required.

Circuit breaker 100% rated applications

Frame	°Max. ampacity	Wire insulation temperature rating
FB	-	-
XT1	-	-
XT4	200	75°C
XT5	400	75°C
XT5 ¹	600 ²	75°C
XT6	-	-
XT7	800	75°C
XT7	1200	90°C
SS ⁴	4000	75°C
SH ⁴	4000	75°C
Emax 2 ⁵	6000	75°C
BPS	4000	75°C

¹ Individually mounted only

² 600A is only available when using bus mounted lug provisions

³ May use 75°C insulated cable when using bus mounted lug provisions

⁴ 4000A must be draw-out construction

⁵ 6000A must be draw-out construction

Trip units

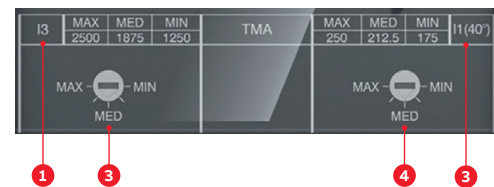
ABB Ekip trip units represent a new benchmark for molded case circuit breakers, being able to satisfy any performance requirement. Ekip trip units are designed to be used in a wide range of applications.

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

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.



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.

Thermal-magnetic trip unit protections

	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

Thermal-magnetic fixed - TMF

[illegible]

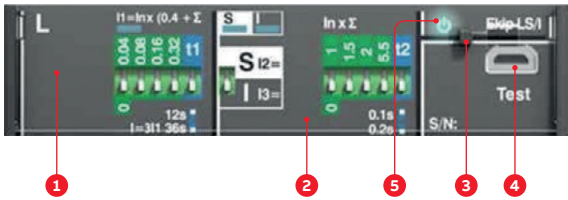
Thermal-magnetic adjustable - TMA

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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.



Ekip DIP trip unit features:

- 1. 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 signalling of the most recent trip.
- Ekip T&P for connection to a laptop with the EkipConnect program (thus measurement reading, as well as trip and protection function tests, are made available to the user).

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

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.

Ekip Dip trip unit protections

Field of application	Trip unit	L – overload protection		S – selective short-circuit protection		I – short-circuit protection	
		Current threshold	Trip time	Current threshold	Trip time	Current threshold	Trip time
Power distribution protection	Ekip DIP	LS/I	Adjustable	Adjustable	Adjustable	Adjustable	Fixed
		LIG	Adjustable	Adjustable	-	Adjustable	Fixed
		LSI	Adjustable	Adjustable	Adjustable	Adjustable	Fixed
		LSIG	Adjustable	Adjustable	Adjustable	Adjustable	Fixed

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.



Ekip Touch/Hi-Touch trip unit features:

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.

Ekip Touch/Hi-Touch trip unit protections

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.

Power distribution protection

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

RECORD PLUS FB MOLDED CASE CIRCUIT BREAKER

Record Plus FB circuit breakers complete the circuit breaker offering for the ReliaGear SB switchboard.

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.

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

Record Plus FB characteristics

Poles	1, 2	
Amperes	15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100	
Trip unit	Fixed thermal-magnetic	
	12.5 x ±15%	
Endurance/ durability	No load	20,000
	Full load at 240 V AC	20,000
	Full load at 480 V AC	10,000



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 Tmax XT1, the mounting positions required are lower when two or five circuit breakers are mounted next to one another.

Line-side connectors and lugs for molded case circuit breakers

Line-side connectors

Each circuit 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 circuit breakers and the conductive busbars.

A patented clip design with a loaded spring ensures full contact in any circumstance. Each circuit breaker frame has a specific LSC with the right number of clips to ensure the highest performance.

Circuit breaker lugs offering

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

—
Group mounted device X-height (One X height equals 1.385")

Frame	Max. ampacity (A)	Poles	X-height
Single XT1	125	3	3
Two XT1	125	3	5
Five XT1	125	3	11
XT4	250	3	3
XT5	600	3	4
XT6	800	3	6
XT7	1200	3	6
FB	100	1	1
FB	100	2	2

— Circuit breakers 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
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
XT6	800	2/0-400	3	Horizontal
XT7	1200	4/0–500	4	Horizontal
XT7	1200	500–750	3	Horizontal
FB	15-20	#14–#10	1	Horizontal
FB	25-60	#10–#4	1	Horizontal
B	70-100	#1–1/0	1	Horizontal

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 and Record Plus FB circuit breakers can be equipped with auxiliary contacts that signal the status of the circuit breaker and can be routed outside the circuit breaker itself. 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 percent and 110 percent 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.

Shunt opening release characteristics

Frame		Voltage	
XT1–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

For accessory voltages above 240V AC or 250V DC, consult factory.

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 percent to 35 percent Un. After tripping, the circuit breaker can be closed again if the voltage exceeds 85 percent 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.

Shunt opening release characteristics

Frame		Voltage	
XT1–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

For accessory voltages above 240V AC or 250V DC, consult factory.

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:

Padlock characteristics

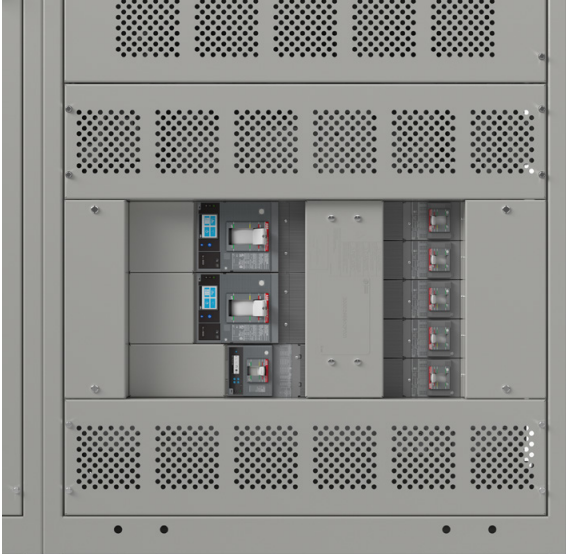
Frame	Padlocks*	Stem min.+max.
XT1–XT4	3	Ø 0.24"÷0.275" / Ø 6÷7 mm
XT5–XT7	3	Ø 0.24÷0.315" / Ø 6÷8 mm
FB	1	Ø 0.25" / Ø 6.35 mm

*Padlocks are not included in the kits.

Multiple models of keylocks are offered: Kirk KCAM00010 / KCAM00010S (XT5–XT7), Ronis 1228 (XT1–XT4–XT5–XT7) and Castell (XT7). Kirk and Castell locks must be customer supplied, while Ronis is provided in the kits. Two options are available for Ronis: same keys and different keys. This allows the customer to create interlocking logics.

GROUP MOUNTED CONFIGURATIONS

Frame	Max. ampacity (A)	Poles	X-spaces	Notes
Single XT1	125	3	3	
Two XT1	125	3	5	
Five XT1	125	3	11	
XT2	125	3	3	
XT4	250	3	3	4 for Touch, Hi-touch
XT5	600	3	3	5 for Touch, Hi-touch, or other accessories
XT7	1200	3	4	
FB/TEY	100/70	1	6	
FB/TEY	100/125	2		



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.

1X = 1.385"

More Feeders capability with XT1
Use upto 10 XT1 Breakers. 5 on each side.

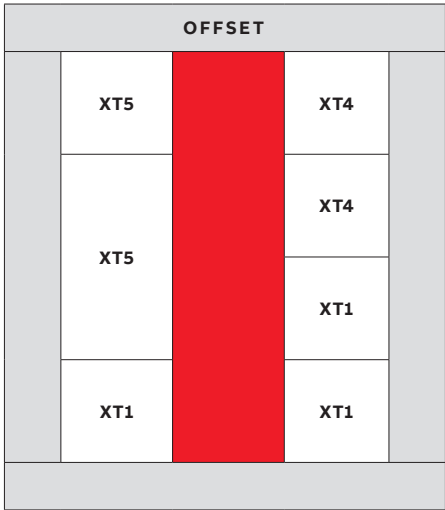
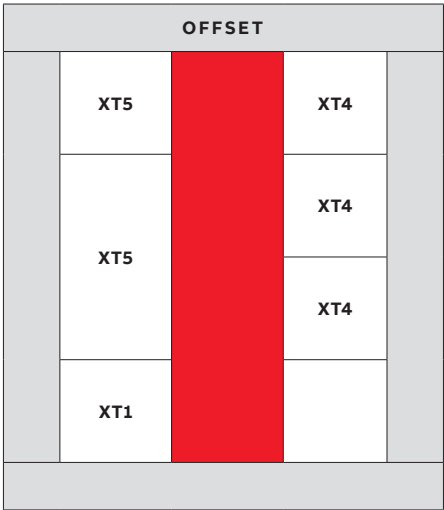
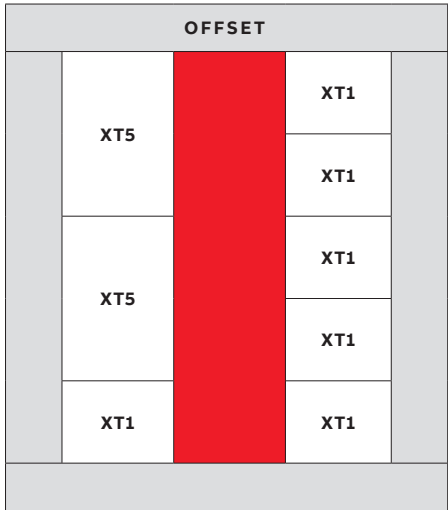
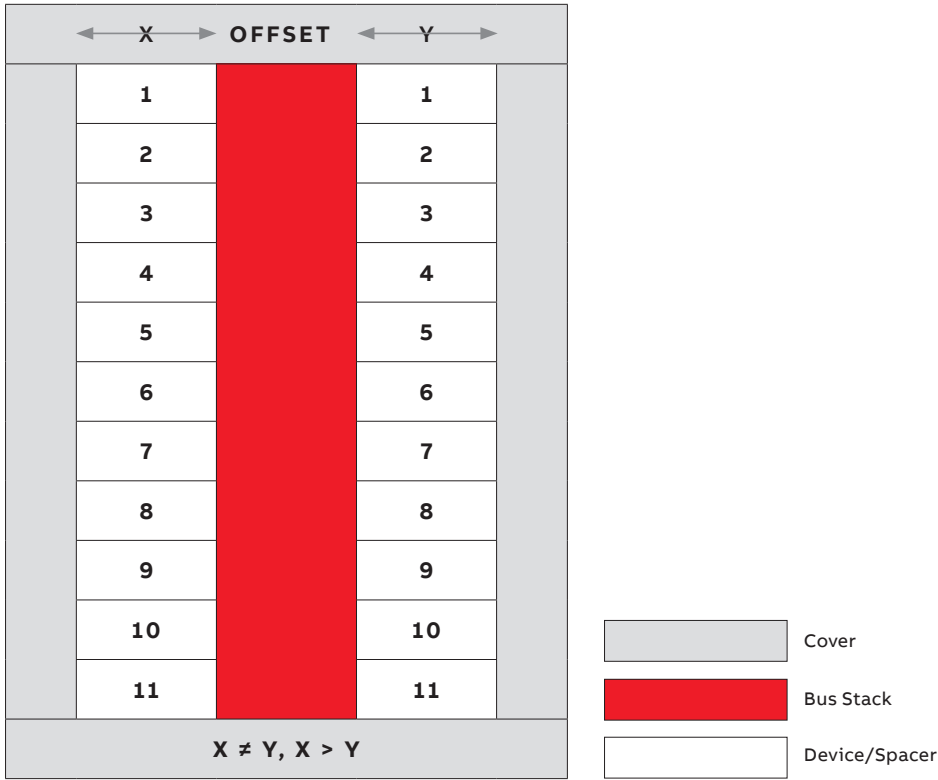


16% space saving with two XT1
26% space saving with five XT1



11 X-spaces

GROUP MOUNTED CONFIGURATIONS



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