Switchboard MaxSB

Low Voltage Products and Systems

New / Experienced

Building on years of experience in supplying low voltage distribution equipment all over the world ABB opens a new approach to what a switchboard can be and how it can better serve the user, the design engineer and the contractor.

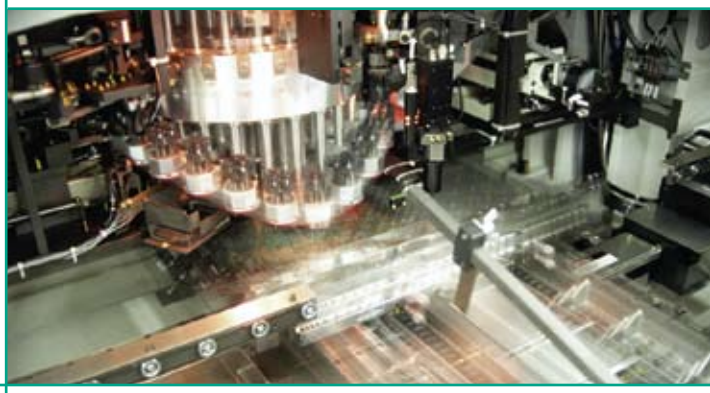
Fresh / Familiar

ABB builds on the familiar look of a switchboard with group mounted molded case circuit breakers and fixed or draw out main breakers. Fresh ideas are incorporated with features such as a slotted vertical bus design, a full hinged door that incorporates the breaker cover plates, and a modular frame enclosure system.

Unique / Reliable

Unique design features such as the slotted bus, and hinged door make this switchboard new. Plated copper bus, bolted bus connections, a frame enclosure structure, and ABB's proven breaker technology make this ABB switchboard highly reliable. Quality is a standard feature in ABB switchboards. A list of expensive options is not needed to ensure the highest quality standards are met.

Main breakers available up to 5000 Amps



- Hinged door and large wire ways save time and money in field wiring.
- Unique bus layout delivers the freedom to locate feeder breakers independent of any hole pattern.
- Plated copper bus used in all three phases and neutral.
- Copper ground bus extends full width of switchboard.
- Horizontal bus up to 5000 Amps
- Vertical bus up to 3000 Amps
- Group mounted feeder breakers ranging from 15 amps to 1200 Amps
- Main breakers up to 5000 Amps
- Strong frame construction isolates bus and breaker assemblies from enclosure “skin”. Durable dry paint finish. Four inch base and lifting eyes are standard.

Unique hole-less bus bar arrangement allows you to install feeder breakers in any location vertically. Less time less hassle.

Precise / Flexible

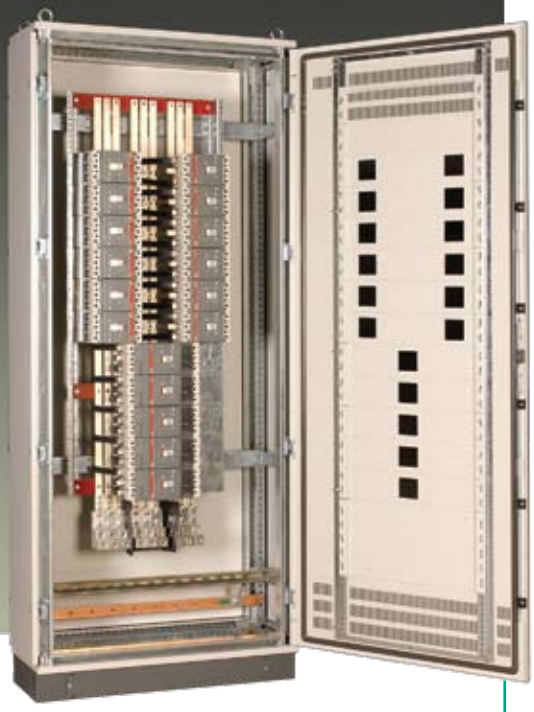
ABB's switchboard uses a frame-based enclosure system. Unlike self-supporting enclosures the frame supports the bus bar and breaker assemblies. Front panels, sidewalls, and rear panels are also supported by the frame structure. This design offers a number of advantages over self-supporting enclosure systems. Damaged walls and panels can be easily replaced without the need to disassemble interior bus or breaker assemblies. The modular nature of ABB's frame enclosure system makes it easy to expand the switchboard by adding sections as system requirements change. Simply remove a side wall and butt the new section against the old. Overlapping horizontal bus design makes for a simple and accurate splice connection.

Custom / Standard

Wouldn't it be nice to have the freedom to layout a switchboard in such a way that it compliments the application and site requirements? Would you benefit from the freedom to locate breakers as you choose? Wouldn't you like to add custom features like a dust-proof enclosure, or a full glass door for added security and an enhanced appearance in high visibility sites?

ABB's standard switchboard design makes these and other custom like features affordable.

Easy access to incoming terminals. Less time less hassle



5000 amp Mains and 3000 amp vertical bus designs enable this switchboard to distribute power in the largest low voltage applications. A multi-layered bus design and modular enclosure system provide the flexibility to provide an 800 amp free-standing switchboard that has an extremely small foot print.

Industrial / Commercial

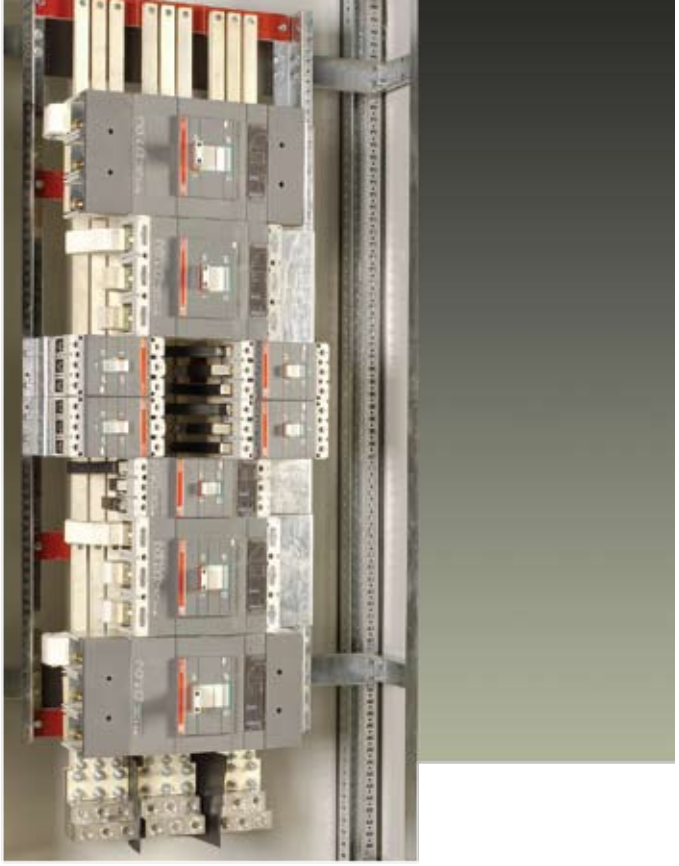
The Operations Manager wants reliability, the specifying engineer wants a product he can believe in, the service department demands maintainability, the CFO wants value and the contractor wants a supplier and product that is easy to work with and on time delivery. One company can match all of these requirements; ABB.

The Operations Manager and specifying engineer appreciate features such as plated copper bus and bolted bus connections. A frame-based enclosure system delivers strength, expandability and simplifies repairs. The complete system is designed and tested to meet or exceed UL requirements.

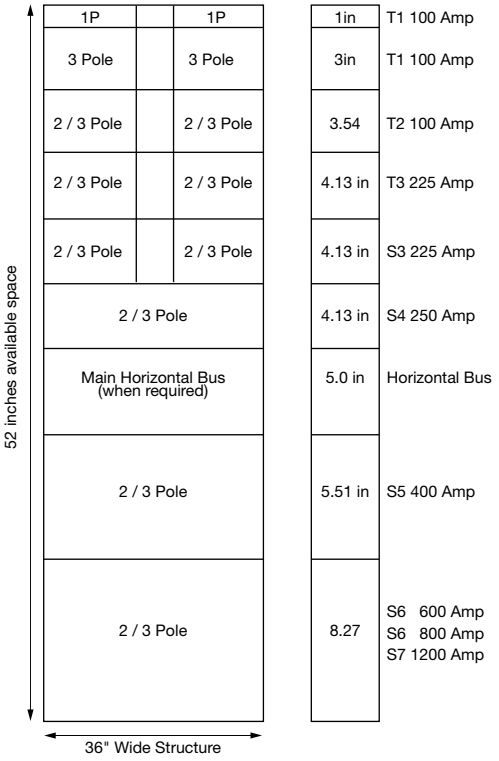
The maintenance department enjoys a hinged door that makes it easy for qualified personnel to access the cabinet to maintain and service ABB's switchboards. Connections are located so that you can actually get to them. A framed enclosure construction and bus design make this switchboard easy to expand as requirements change.

Contractors save on installation time with easy to access terminals, increased cable area and a design that makes it easy to add breakers and accessories in the field.

Feeder Breakers



Frame	Poles	Space inches	KAIC 277	KAIC 240	KAIC 480	Trip Frame Rating Amps 15	20	25	30	35	40	50	60
T1B	1	1.0	18										
T1N	3	3.0		50	22								
T2S	2/3	3.54		65	35								
T2H	2/3	3.54		100	65								
T3N	2/3	4.13		50	25								
T3S	2/3	4.13		65	35								
S3N	2/3	4.13		65	25								
S3H	2/3	4.13		100	50								
S3L	2/3	4.13		150	85								
						70	**80**	**90**	**100**				
T1B	1	1.0	18										
T1N	3	3.0		50	22								
T2S	2/3	3.54		65	35								
T2H	2/3	3.54		100	65								
T3N	2/3	4.13		50	25								
T3S	2/3	4.13		65	35								
S3N	2/3	4.13		65	25								
S3H	2/3	4.13		100	50								
S3L	2/3	4.13		150	85								
						125	**150**	**175**	**200**	**225**			
T3N	2/3	4.13		50	25								
T3S	2/3	4.13		65	35								
S3N	2/3	4.13		65	25								
S3H	2/3	4.13		100	50								
S3L	2/3	4.13		150	85								
						250 Electronic - adjustable 40 - 250							
S4N	2/3	4.13		65	25								
S4H	2/3	4.13		150	65								
S4L	2/3	4.13		200	100								
						400 Electronic - adjustable 160 - 400							
S5N	2/3	5.51		65	35								
S5H	2/3	5.51		150	65								
S5L	2/3	5.51		200	100								
						600 Electronic - adjustable 240 - 600							
S6N	2/3	8.27		65	50								
S6H	2/3	8.27		150	65								
S6L	2/3	8.27		200	100								
						800 Electronic - adjustable 320 - 800							
S6N	2/3	8.27		65	50								
S6H	2/3	8.27		150	65								
S6L	2/3	8.27		200	100								
						1200 Electronic - adjustable 480 - 1200							
S7H	2/3	8.27		100	65								



- S3L 15-30A 65kA@480V
- T1B 15A 10kA@277V
- T1N 15A 35kA@240V 14kA@480V

Maximum switchboard rating = 100kA

Molded Case Circuit Breakers

UL 489 CSA 22.2																
Circuit breakers				**Tmax T1 1p**	**Tmax T1**			**Tmax T2**				**Tmax T3**				
Maximum frame continuous current 40°C **Iu**			[A]	100	100			100				225				
Number of poles			[Nr]	1	3/4			2/3/4				2/3/4				
Rated operational voltage (AC) 50-60Hz **Ue**			[V]	277	480			480				480				
Short circuit interrupting capacity, **Icu**				B	N			S		H		N		S		
	AC	240V	[kA]		50			65		100		50		65		
		277V	[kA]	18												
		480V	[kA]		22			35		65		25		35		
	DC	250V 2 poles in series	[kA]		25							25		35		
		500V 3 poles in series	[kA]		25							25		35		
Relays			TM	■	■			■				■				
			PR22 1DS					■								
			MA					■				■				
Versions			MCCB	■	■			■				■				
			MCS		■							■				
			MCP					■				■				

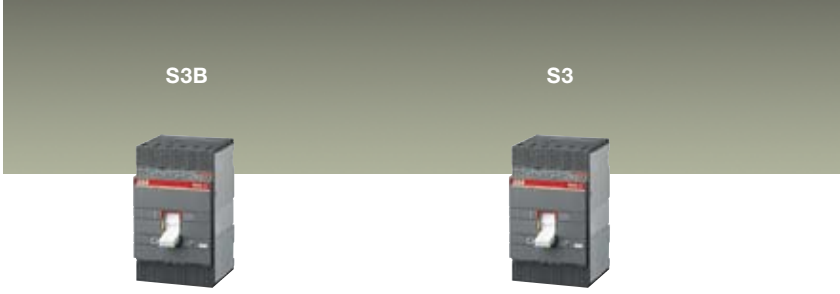
IEC 60047-2																
Circuit breakers				**Tmax T1 1p**	**Tmax T1**			**Tmax T2**				**Tmax T3**				
Rated uninterrupted current **Iu**			[A]	160	160			160				250				
Number of poles			[Nr]	1	3/4			3/4				3/4				
Rated service voltage, **Ue**	**AC**	50-60Hz	[V]	240	690			690				690				
	DC		[V]	125	500			500				500				
Rated ultimate short circuit breaking capacity , **Icu**				B	B	C	N	N	S	H	L	N		S		
	AC	220/230 V	[kA]	25	25	40	50	65	85	100	120	50		85		
		380/415 V	[kA]		16	25	36	36	50	70	85	36		50		
		440 V	[kA]		10	15	22	30	45	55	75	25		40		
		500 V	[kA]		8	10	15	25	30	36	50	20		30		
		690 V	[kA]		3	4	6	6	7	8	10	5		8		
	DC	250 V 2 poles in series	[kA]		16	25	36	36	50	70	85	36		50		
		250 V 2 poles in series	[kA]		20	30	40	40	55	85	100	40		55		
		500 V 2 poles in series	[kA]		16	25	36	36	50	70	85	36		50		
Trip Units		Fixed Thermal Magnetic		■												
		Fixed Thermal Magnetic				■			■				■			
		PR221/DS							■							
		Fixed Magnetic							■							
		Adjustable Magnetic							■				■			
Dimensions		H	[in/mm]	5.12/130	5.12/130			5.12/130				5.9/150				
		W 1p or 3p	[in/mm]	1/25.4	3/76			3.54/90				4.13/105				
		W 4P	[in/mm]		4/102			4.72/122				5.5/140				
		D	[in/mm]	2.76/70	2.76/70			2.76/70				2.76/70				
Mechanical life		[No operations]		25000	25000			25000				25000				
		[No. Hourly operations]	240	240	240						120	Electrical life				
		[No operations]		8000	8000			8000				8000				
		[No. Hourly operations]	120	120	120						120					

Tmax T2 can be fitted with the latest generation in electronic trip units. This is the first time that a circuit-breaker of this size can benefit from electronic protection, and the setting flexibility it provides.

 15A : 10kA@277Vac

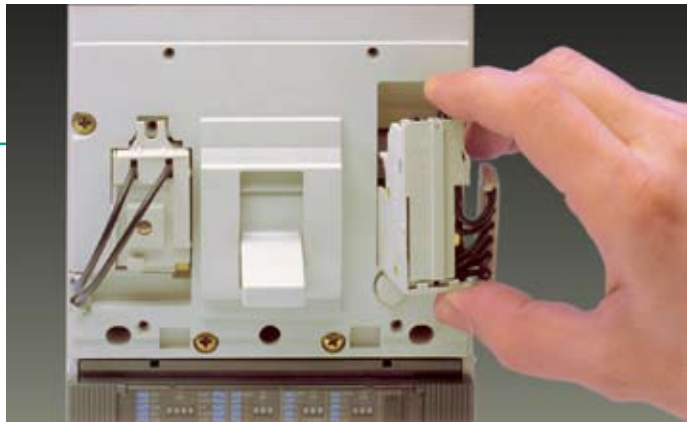
 15A : 35kA@240Vac; 14kA@480Vac

Molded Case Circuit Breakers



Circuit-breaker type			S3B	S3					
Maximum frame continuous rated current	40°C	A	225	150			225		
Rated operational voltage	50/60 Hz	V	240	600			480		
Test voltage	1 min. 50/60 Hz	V	3000	3000			3000		
Rated impulse withstand voltage		kV	6	6			6		
Poles		No.	2/3	2/3/4			2/3/4		
Performance level			**B**	**N**	**H**	**L**	**N**	**H**	**L**
	240VAC		150	65	100	150	65	100	150
UL/CSA short-circuit	**480VAC**		—	**25**	**50**	**85**	25	50	65
Interrupting capacity	600VAC	kA RMS	—	14	14	25	—	—	—
UL 489, File #E93565	500VDC		50	35	50	65	25	35	50
CSA, File #LR90467	600VDC		—	20	35	50	—	—	—
	220/230VAC		150	65	100	170	65	100	170
IEC-947 rated ultimate	**380/400/415VAC**		—	**35**	**65**	**85**	35	65	85
Short-circuit Icu	440VAC	kA RMS	—	30	50	65	30	50	65
breaking capacity	500VAC		—	25	40	50	25	40	50
	660/690VAC		—	14	18	20	14	18	20
Overcurrent trip unit/relay									
Thermal-magnetic			▪	▪			▪		
Microprocessor-based			—	—			—		
Dialogue unit			—	—			—		
Interchangeability			—	—			—		
Version — Terminals									
Fixed — front or rear			▪	▪			▪		
Plug-in — front or rear			▪	▪			▪		
Withdrawable — front or rear			▪	▪			▪		
Dimensions (fixed circuit-breaker)									
2P & 3P (H x W x D)		in	6.70 x 4.13 x 4.07	6.70 x 4.13 x 4.07			6.70 x 4.13 x 4.07		
4P (H x W x D)		in	6.70 x 5.51 x 4.07	6.70 x 5.51 x 4.07			6.70 x 5.51 x 4.07		
Mechanical duration									
Operations		No.	25,000	25,000			25,000		
Frequency		ops./hour	240	120			120		
Weights (Fixed 3P)		lbs.	6.75	6.75			6.75		

Isolation of control accessories and power poles allows for the safe addition / replacement of shunt trips, auxiliaries, bell alarm and under voltage relays.



For use with thermal - magnetic trip only: 500 VDC, 2 poles in series
600 VDC, 3 poles in series

15-30A units are 65kA at 480VAC

S4	S5	S6	S6	S7	S8
					
S4	**S5**	**S6**	**S6**	**S7**	**S8**
250	400	600	800	1200	1600/2000/2500
600	600	600	600	600	600
3000	3000	3000	3000	3000	3000
8	8	8	8	8	8
2/3/4	2/3/4	2/3/4	2/3/4	2/3/4	3
N H L	**N H L**	**N H L**	**N H L**	**H**	**V**
65 150 200	65 150 200	65 150 200	65 150 200	100	120
25 65 100	**35 65 100**	**50 65 100**	**50 65 100**	**65**	**100**
18 22 35	22 22 35	25 35 42	25 35 42	50	85
— — —	35 50 65	35 50 65	35 50 65	—	—
— — —	20 35 50	20 35 50	20 35 50	—	—
65 100 200	65 100 200	65 100 200	65 100 200	100	120
35 65 100	**35 65 100**	**35 65 100**	**35 65 100**	**65**	**120**
30 50 80	30 50 80	30 50 80	30 50 80	55	100
25 40 65	25 40 65	25 40 65	25 40 65	45	70
18 22 30	20 25 30	20 25 35	20 25 35	25	50
—	▪	▪	▪	—	—
▪	▪	▪	▪	▪	▪
▪	▪	▪	▪	▪	▪
▪	▪	▪	▪	▪	▪
▪	▪	▪	▪	▪	▪
▪	▪	▪	▪	—	—
▪	▪	▪	▪	▪	—
10.0 x 4.13 x 4.07 10.0 x 5.51 x 4.07	10.00 x 5.51 x 4.07 10.00 x 7.24 x 4.07	10.55 x 8.27 x 4.07 10.55 x11.0 x 4.07	14.25 x 8.27 x 4.07 14.25 x 11.0 x 4.07	15.98 x 8.27 x 5.45 15.98 x 11.0 x 5.45	15.75 x 15.98 x 9.25 —
25,000	20,000	20,000	20,000	10,000	10,000
120	120	120	120	120	20
8.8	11.0	21.0	22.0	37.5	135

Standard cable lug kits

For breakers	Amps	Wire range	Catalog number
S3	60	14AWG - 2AWG	K3TA
S3 - S4	100	14AWG - 1/0	K4TB
S3 - S4	150	2AWG - 4/0	K4TC
S3 - S4 - S5	225	4awg - 300kcmil	K4TD
S4	250	6AWG - 350kcmil	K4TE
S5	300	250kcmil - 500kcmil	K5TF
S5	400	(2) 3/0 - 250kcmil	K5TG
S6	600	(2) 250kcmil - 500kcmil	K5TH
S6	800	(3) 2/0 - 400kcmil	K6TJ
S7	1200	(4) 4/0 - 500kcmil	K7TK
S8	1600	(4) 1/0 - 750kcmil	K8TL
S8	2500	(6) 1/0 - 750kcmil	K8TM

Standard cable lugs, for use on load side of circuit breaker. Suitable for use with Cu or Al. Special versions available with taps and screw for control wire connection. Note: S6 and S7 lugs are Al9Cu (90°); all others AL7Cu (75°C). Must use wire based on 75°C ampacity.

K4TB

Air Circuit Breakers

Circuit-breaker type			E1	E2		E3			
Performance level			**B-A**	**B-A**	**N-A**	**N-A**	**S-A**	**H-A**	**V-A**
Rated continuous current		A	800	1600	1200	2000	1200	1200	1200
File # E194191		A	1200	—	1600	2500	1600	1600	1600
		A	—	—	—	—	2000	2000	2000
		A	—	—	—	—	2500	2500	2500
Rated short circuit current	240VAC	kA	42	42	65	65	85	85	100
	480VAC	kA	42	42	50	50	65	85	100
	600VAC	kA	35	42	50	50	65	65	85
Rated short time current		kA	35	42	50	50	65	65	65
Trip units									
PR111/P-A			▪	▪	▪	▪	▪	▪	▪
PR112/P-A			▪	▪	▪	▪	▪	▪	▪
PR113/P-A			▪	▪	▪	▪	▪	▪	▪
Operation times									
Make time (max)		ms	80	80	80	80	80	80	80
Break time (I<ST current)(max)		ms	70	70	70	70	70	70	70
Break time (I>ST current)(max)		ms	30	30	30	30	30	30	30
Overall dimensions, 3 pole									
Fixed:	H=418mm / 16.46in								
	D=302mm / 11.89in								
	W (3 poles)	mm/in	296/11.65	296/11.65		404/15.91			
Drawout:	H =461mm / 18.15in								
	D =396.5mm / 15.61in								
	W (3 poles)	mm/in	324/12.76	324/12.76		432/17.01			
Weights (CB with releases, RH terminals and CTs, accessories excluded)									
Fixed 3 poles		Kg/lbs	42/93	46/101		68/150			
Drawout 3 poles		Kg/lbs	65/143	72/159		100/220			
Overall dimensions, 4 pole									
Fixed:	H=418mm / 16.46in								
	D=302mm / 11.89in								
	W (4 poles)	mm/in	386/15.20	386/15.20		530/20.87			
Drawout:	H =461mm / 18.15in								
	D =396.5mm / 15.61in								
	W (4 poles)	mm/in	414/16.30	414/16.30		558/21.97			
Weights (CB with releases, RH terminals and CTs, accessories excluded)									
Fixed 4 poles		Kg/lbs	50/110	55/121		80/176			
Drawout 4 poles		Kg/lbs	80/176	89/196		125/275			
Specifications common to the entire range									
Rated max voltage	635VAC								
Rated voltage	600VAC								
Test voltage (1 min 50/60Hz)	2.2kV								
Frequency	50/60Hz								
Numbers of poles	3/4								
Versions	Fixed/Drawout								

ABB's Emax air circuit breaker is available with three trip units models. From the PR111 that offers only the basic protection functions to the PR113 that offers protection, multi-meter capability, and communication capability there is a trip unit for every application.

E4

E6

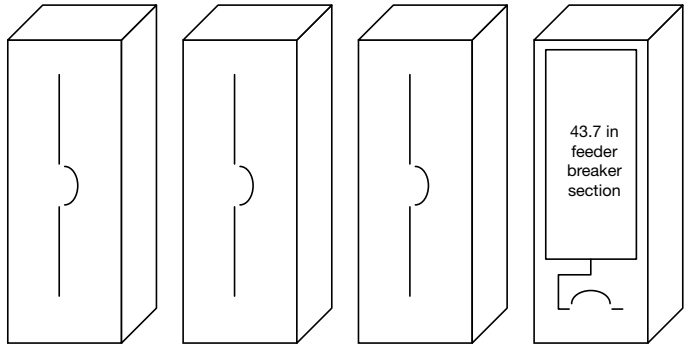
E4			E6	
S-A	H-A	V-A	H-A	V-A
3200	3200	3200	4000	4000
3600	3600	3600	5000	5000
—	—	—	—	—
—	—	—	—	—
85	100	100	125	125
65	85	100	85	125
65	85	85	85	85
65	85	85	100	100
				PR111/P-A
▪	▪	▪	▪	PR112/P-A
▪	▪	▪		
▪	▪		▪	Operation times
				ms
		Make time (max)		
		80Break time (I<ST current)(max)	ms	70
		(I>ST current)(max)	30	30
		ms		
566/22.28			782/30.79	Drawout:
				D =396.5 /
				W (3 poles)
		810/31.89		Weights (CB with releases, RH
				Fixed 3 poles
		140/309		Drawout 3 poles
		Overall dimensions, 4 pole		
		=418mm / 16.46in		
		mm/in		
		656/25.83		908/35.75
				W (3 poles)
		936/36.85		Weights (CB with releases, RH
				Fixed 4 poles
		170/374		Drawout 4 poles
		Specifications common to the entire range		
		voltage 635VAC		
		600VAC		
				Versions

Lugs: Main Breakers and Main Lugs Only

Frames	Catalog Number	Lug Size	Wire Size
E1	KE1CLK 4600	(4)	#2-600 kcmil
E2	KE2CLK 4600	(4)	#2-600 kcmil
E3	KE3CLK 6600	(6)	#2-600 kcmil
E4	KE4CLK 10600	(10)	#2-600 kcmil
E6	KE6CLK 12600	(12)	#2-600 kcmil

Typical Layouts

Mains



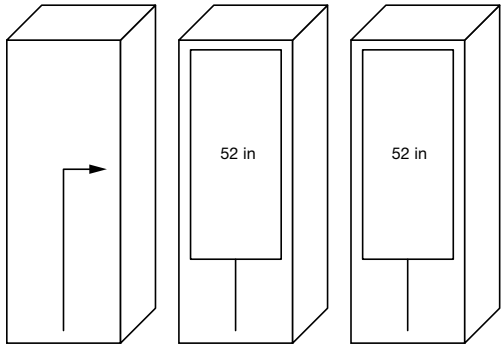
4000 - 5000 Amps
W/D/H: 45" / 33"/ 88"

3000 Amps
37.3" / 33"/ 88"

2000 - 2500 Amps
29.5" / 33"/ 88"

800 - 1200 Amps*
37.3" / 14.25"/ 88"

Mains Lugs Only and Feeder Breaker Sections



2500 - 5000 Amps
W/D/H: 29.5" / 25"/ 88"

800 - 1600 Amps
37.3" / 14.25"/ 88"

2000 - 2500 Amps
37.3" / 25"/ 88"

* 25" deep enclosure required as a minimum for multiple sections with horizontal bus.

MaxSB

Voltage:	240, 480, 600 V		
Current Rating			
- Horizontal Bus	2000, 2500, 3000, 4000, 5000		
- Vertical Bus	800, 1200, 1500, 2000, 2500*, 3000*		
	(* requires bussed pull section)		
Interrupt Rating	65KAIC Standard, 100 KAIC available C 480V		
Bus Material	Silver Plated Copper		
Bus Connections	Bolted with spring type washer		
Main Breakers	Emax Air Circuit Breakers 800 — 5000 Amps		
	Isomax S8 1600, 2000, 2500 Amps		
	Isomax S7 1200 Amps		
	Isomax S6 800 Amps		
	- smaller frame breakers may be used as mains however the smallest bus rating is 800 Amps		
Feeder Breakers	Frame	Size	Mounting
	T1 1 pole 100 A	1 in	Double
	T1 3 pole 100 A	3 in	Double
	T2 3 pole 100A	3.54	Double
	T3 3 pole 225 A	4.13 in	Double
	S3 3 pole 225 A	4.13 in	Double
	S4 3 pole 250 A	4.13 in	Single
	S5 3 pole 400 A	5.51 in	Single
	S6 3 pole 600 / 800 A1	8.27 in	Single
	S7 3 pole 1200 A	8.27 in	Single
Vertical Bus Space	52 in		
Enclosure	Expandable, frame construction,		
	Full length hinged door on feeder breaker sections		
	Sectioned hinged door on main breaker section		
	Aligned front and rear		
	Indoor		
	Dust proof available with full front door		
	Glass door available for security and dust proof applications		
	Light gray finish RAL 7035		
	Powder coat finish		
Approval	UL 891, File No.E221573		

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