

Low Voltage Products

Technical Brochure



**R. SANGHAVI MERCANTILE PVT. LTD.
KARANJIA BUILDING, GIRGAON ROAD,
DHOBI TALAO, MUMBAI - 400 002.
CELL: +91 93230 92384**



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ABB in India

ABB (www.abb.com) is a global leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries.

ABB's Automation Technologies division serves customers across the industry spectrum be it process, manufacturing or consumer industries and even buildings & infrastructure. This includes metals (ferrous & non-ferrous), pulp & paper, cement, automotive, petroleum, chemicals & petrochemicals, pharma & life sciences, marine, mining & minerals and many more.

ABB also offers a comprehensive automation technology product portfolio encompassing motors, drives, power electronics, robotics, control, instrumentation & analytics and a complete range of low voltage products.

ABB Low Voltage Products

ABB's comprehensive low voltage product range further consolidates our commitment to offer world-class products and solutions in India.

Launched in India in 1994, these products serve customers needs, offering value for money and high standards of quality and reliability.

These products are backed by the technological expertise of ABB's centres of excellence in France, Sweden, Germany, Italy and Finland, each excelling in a specific range of low voltage products. With over 3 decades of experience, ABB's low voltage products conform to the latest IEC publications, EN specifications, and national standards such as BS, VDE, etc., in addition to the "CE" mark.

ABB has implemented a quality assurance organisation in compliance with the international ISO 9000 series Quality Assurance Standards. ABB's manufacturing plants are ISO 9001 certified. ABB's range of low voltage products in India are designed, manufactured and tested in-house and conform with the requirements of the ISO 9000 series.

These products are backed by strong sales and marketing presence spread across the country, ready to meet the exacting needs of customers.

a) MCCB's

Motor Output (kW)	In Amps	Moulded Case Circuit Breaker					Magnetic Setting Fixed (Amps)	Contactor Type	Over-Load Relay Type	Relay Range (Amps)
		Type	Release Type	Protection Offered	Rated Current					
0.37	1.15	S2x80	Magnetic	S/C	1.6 A	21	B9	T25DU1.4	1-1.4	
0.55	1.4	S2x80	Magnetic	S/C	2 A	26	B9	T25DU1.8	1.3-1.8	
0.75	2	S2x80	Magnetic	S/C	2.5 A	33	B9	T25DU2.4	1.7-2.4	
1.1	2.5	S2x80	Magnetic	S/C	3.2 A	42	B9	T25DU3.1	2.2-3.1	
1.5	3.5	S2x80	Magnetic	S/C	5 A	65	B16	T25DU4.0	2.8-4.0	
2.2	5	S2x80	Magnetic	S/C	6.5 A	84	B25	T25DU6.5	4.5-6.5	
3.7	7.5	S2x80	Magnetic	S/C	8.5 A	110	B25	T25DU8.5	6.0-8.5	
4	8.4	S2x80	Magnetic	S/C	11 A	145	B30	T25DU11	7.5-11	
5.5	11	S2x80	Magnetic	S/C	16 A	210	B30	T25DU14	10-14	
7.5	14	S2x80	Magnetic	S/C	20 A	260	B30	T25DU19	13-19	
11	21	S2x80	Magnetic	S/C	25 A	325	B30	T25DU25	18-25	
15	28	S2x80	Magnetic	S/C	32 A	415	B40	T75DU32	24-32	
18.5	35	S2x80	Magnetic	S/C	42 A	540	B50	T75DU42	29-42	
22	40	S2x80	Magnetic	S/C	52 A	680	B50	T75DU52	36-52	
30	55	S2x80	Magnetic	S/C	63 A	820	B63	T75DU63	45-63	
37	66	S2x80	Magnetic	S/C	80 A	1040	B75	T75DU80	60-80	
45	80	S3H160	Magnetic	S/C	160 A	1250	EH90	Ti135DU90	65-91	
55	96	S3H160	Magnetic	S/C	160 A	1500	EH100	Ti135DU110	80-112	
75	135	S3H250	Magnetic	S/C	200 A	2150	EH145	Ti450DU185	130-185	
90	165	S3H250	Magnetic	S/C	200 A	2400	EH175	Ti450DU185	130-185	
110	200	S4H250 PR211	Microprocessor	O/C & S/C	250 A	3000	EH210	Ti450DU235	165-236	
132	242	S5H400 PR211	Microprocessor	O/C & S/C	320 A	3840	EH260	Ti450DU310	217-310	
160	280	S5H400 PR211	Microprocessor	O/C & S/C	400 A	4800	EH300	Ti450DU310	217-310	
200	340	S6S630 PR211	Microprocessor	O/C & S/C	630 A	6300	EH370	Ti450DU400	280-400	
250	425	S6S630 PR211	Microprocessor	O/C & S/C	630 A	7560	EH550	T900DU500	355-500	
295	500	S6S800 PR211	Microprocessor	O/C & S/C	800 A	8000	EH550	T900DU650	465-650	
315	535	S6S800 PR211	Microprocessor	O/C & S/C	800 A	9600	EH700	T900DU650	465-650	
355	580	S6S800 PR211	Microprocessor	O/C & S/C	800 A	9600	EH700	T900DU650	465-650	

Note: 1) Starting current is considered to be 7.2 times the rated current for a period of 6.0 seconds.

b) SFU's

Motor Output (kW)	In Amps	SFU+FUSE LINK (DIN)				SFU+FUSE LINK (BS)			Contactor	Over-Load Type	Relay Relay Type	Range (Amps)
		SFU type	Fuse Size	Fuse Rating	Fuse Type	SFU type	Dist. of Fuse Bolt	Fuse Rating				
0.37	1.15	OESA 00-32	00c	4 A	3 NA3 8	OESA32G1	73 mm	6 A	3NW TSA	B9	T25DU1.4	1-1.4
0.55	1.4	OESA 00-32	00c	4 A	3 NA3 8	OESA32G1	73 mm	6 A	3NW TSA	B9	T25DU1.8	1.3-1.8
0.75	2	OESA 00-32	00c	6 A	3 NA3 8	OESA32G1	73 mm	10 A	3NW TSA	B9	T25DU2.4	1.7-2.4
1.1	2.5	OESA 00-32	00c	6 A	3 NA3 8	OESA32G1	73 mm	10 A	3NW TSA	B9	T25DU3.1	2.2-3.1
1.5	3.5	OESA 00-32	00c	10 A	3 NA3 8	OESA32G1	73 mm	16 A	3NW TSA	B9	T25DU4.0	2.8-4.0
2.2	5	OESA 00-32	00c	16 A	3 NA3 8	OESA32G1	73 mm	16 A	3NW TSA	B9	T25DU6.5	4.5-6.5
3.7	7.5	OESA 00-32	00c	20 A	3 NA3 8	OESA32G1	73 mm	20 A	3NW TSA	B9	T25DU8.5	6.0-8.5
4	8.4	OESA 00-32	00c	20 A	3 NA3 8	OESA32G1	73 mm	20 A	3NW TSA	B9	T25DU11	7.5-11
5.5	11	OESA 00-32	00c	25 A	3 NA3 8	OESA32G1	73 mm	25 A	3NW TSA	B12	T25DU14	10-14
7.5	14	OESA 00-32	00c	32 A	3 NA3 8	OESA32G1	73 mm	32 A	3NW TSA	B16	T25DU19	13-19
11	21	OESA 00-32	00c	50 A	3 NA3 8	OESA32G1	73 mm	40 A	3NW TSS	B25	T25DU25	18-25
15	28	OESA 00-63	00c	63 A	3 NA3 8	OESA63G1	73 mm	50 A	3NW TSS	B30	T25DU32	24-32
18.5	35	OESA 00-63	00c	63 A	3 NA3 8	OESA63G1	73 mm	63 A	3NW TSS	B40	T75DU42	29-42
22	40	OESA 00-63	00c	80 A	3 NA3 8	OESA63G1	73 mm	80 A	3NW TSDS	B50	T75DU52	36-52
30	55	OESA 00	00c	100 A	3 NA3 8	OESA100G1	73 mm	100 A	3NW TSDS	B63	T75DU63	45-63
37	66	OESA 00	00	125 A	3 NA3 8	OESA100G1	94 mm	125 A	3NW TSFP	B63	T75DU80	60-80
45	80	OESA 00	00	125 A	3 NA3 8	OESA100G1	94 mm	125 A	3NW TSFP	EH80	Ti135DU90	65-91
55	96	OESA 00-160	00	160 A	3 NA3 8	OESA160B3	111 mm	160 A	3NW TSF	EH90	Ti135DU110	80-112
75	135	OESA250D3	1	200 A	3 NA3 1	OESA200B3	111 mm	200 A	3NW TF	EH145	Ti450DU185	130-185
90	165	OESA250D3	1	250 A	3 NA3 1	OESA250B3	111 mm	250 A	3NW TSK	EH175	Ti450DU185	130-185
110	200	OESA400D3	2	315 A	3 NA3 2	OESA315B3	111 mm	315 A	3NW TSK	EH210	Ti450DU235	165-236
132	242	OESA400D3	2	400 A	3 NA3 2	OESA400B3	111 mm	355 A	3NW TSMS	EH260	Ti450DU310	217-310
160	280	OESA400D3	2	400 A	3 NA3 2	OESA400B3	111 mm	400 A	3NW TSMS	EH300	Ti450DU310	217-310
200	340	OESA630D3	3	500 A	3 NA3 3	OESA400B3	111 mm	450 A	3NW TSTS	EH370	Ti450DU400	280-400
250	425	OESA630D3	3	630 A	3 NA3 3	OESA630B3	133 mm	560 A	3NW TSLS	EH550	T900DU500	355-500
295	500	OESA630D3	3	630 A	3 NA3 3	OESA630B3	133 mm	630 A	3NW TSLS	EH550	T900DU650	465-650
315	535	-	-	-	-	OESA800B3	133 mm	800 A	3NW TSLS	EH700	T900DU650	465-650

Note: 1) Fuses are of Siemens Make and chart is prepared based on the data published by Siemens for the above fuses.
2) Starting current is considered to be 7.2 times the rated current for a period of 6.0 seconds.

Air Circuit Breakers

SACE Emax.

Conforms to IEC 60947-2

Data common to the entire range

Rated service voltage Ue	690 - [V]
Rated insulation voltage Ui	1000 - [V]
Rated impulse withstand voltage Uimp	12 [kV]
Frequency f	50-60 [Hz]
Number of poles	3-4
Version	Fixed - Withdrawable



Circuit-breaker model

Performance level	
Currents	
Rated uninterrupted Iu	[A]
Current (at 40°C)	[A]
	[A]
	[A]
	[A]
Capacity of neutral pole for four-pole circuit-breakers	[%Iu]
Rated ultimate short-circuit Icu	220/230/380/400/415 V- [kA]
breaking capacity	440 V- [kA]
	550/660/690 V- [kA]
Rated service short-circuit Ics	220/230/380/400/415 V- [kA]
breaking capacity	440 V- [kA]
	550/660/690 V- [kA]
Rated short-time Icw	(1s) [kA]
withstand current Icw	(3s) [kA]
Rated short-circuit making capacity Icm	220/230/380/400/415 V- [kA]
(Peak value)	440 V- [kA]
	500/660/690 V- [kA]
Utilisation category	(CEI EN 60947-2)
Isolation behaviour	(CEI EN 60947-2)
Overcurrent protection	
Microprocessor based releases for a. c. application	
Operating time	
Opening time for I>Icw (max)	[ms]
Dimensions	
Fixed: H=418 mm -D=302 mm	L (3/4 poles) [mm]
Withdrawable: H=461 mm -D=396.5 mm	L (3/4 poles) [mm]
Weight (circuit-breaker complete with release and CT, excluding accessories)	
Fixed 3/4 poles	[kg]
Withdrawable 3/4 poles (including fixed part)	[kg]

(1) A version with a 100% neutral pole current capacity is available on request
(2) The performance at 500 V is 100 kA

E1	
B	N
800	800
1000	1000
1250	1250
1600	1600
100	
42	50
42	50
36	36
42	50
42	50
36	36
42	50
36	36
88.2	105
88.2	105
75.6	75.6
B	
■	
■	
30	
296/386	
324/414	
42/50	
65/80	

E2		
B	N	L
1600	1250	1250
2000	1600	1600
	2000	
100	100	100
42	65	130
42	65	110
42	55	85
42	65	130
42	65	110
42	55	65
42	55	10
42	42	-
88.2	143	286
88.2	143	242
88.2	121	187
B	B	A
■	■	■
■	■	■
30	30	12
296/386		
324/414		
46/55	46/55	45/53
72/89	72/89	70/87

E1 B-N	
800 - 1600	
25	25
60	60
10	10
30	30

E2 B-N		
1250	1600	2000
25	25	25
60	60	60
15	12	10
30	30	30

E2 L	
1250	1600
20	20
60	60
4	3
20	20

Rated uninterrupted current (at 40°C), Iu	[A]
Mechanical life	
With regular routine maintenance	[No. operations x 1000]
Frequency of operations	[Operations per hour]
Electrical life (440 V-)	[No. of operations x 1000]
Frequency of operations	[Operations per hour]



E3			
N	S	H	L
2500	1250	1250	2000
3200	1600	1600	2500
	2000	2000	
	2500	2500	
	3200	3200	
100	100	100	100
65	75	100	130
65	75	100	110
65	75	85	85
65	75	85	130
65	75	85	110
65	75	85	65
65	75	75	15
65	65	65	-
143	165	220	286
143	165	220	242
143	165	187	187
B	B	B	A
■	■	■	■
■	■	■	■
30	30	30	12
404/530			
432/558			
68/80	68/80	68/80	67/79
100/125	100/125	100/125	100/120

E4	
S	H
4000	3200
	4000
50 ⁽¹⁾	50 ⁽¹⁾
75	100
75	100
75	85 ⁽²⁾
75	100
75	100
75	85 ⁽²⁾
75	100
75	75
165	220
165	220
165	187
B	B
■	■
■	■
30	30
566/656	
594/684	
95/115	95/115
147/190	147/190

E6	
H	V
5000	3200
6300	4000
	5000
	6300
50 ⁽¹⁾	50 ⁽¹⁾
100	150
100	150
100	100
100	125
100	125
100	100
100	100
85	85
220	330
220	330
220	220
B	B
■	■
■	■
30	30
782/908	
810/936	
140/170	140/170
210/260	210/260

E3 N-S-H				
1250	1600	2000	2500	3200
20	20	20	20	20
60	60	60	60	60
12	10	9	8	6
20	20	20	20	20

E3 L	
2000	2500
15	15
60	60
2	1.8
20	20

E4 S-H	
3200	4000
15	15
60	60
7	5
10	10

E6 H-V			
3200	4000	5000	6300
12	12	12	12
60	60	60	60
5	4	3	2
10	10	10	10

Air Circuit Breakers

SACE Emax

Accessories: a standard range to make customising simpler

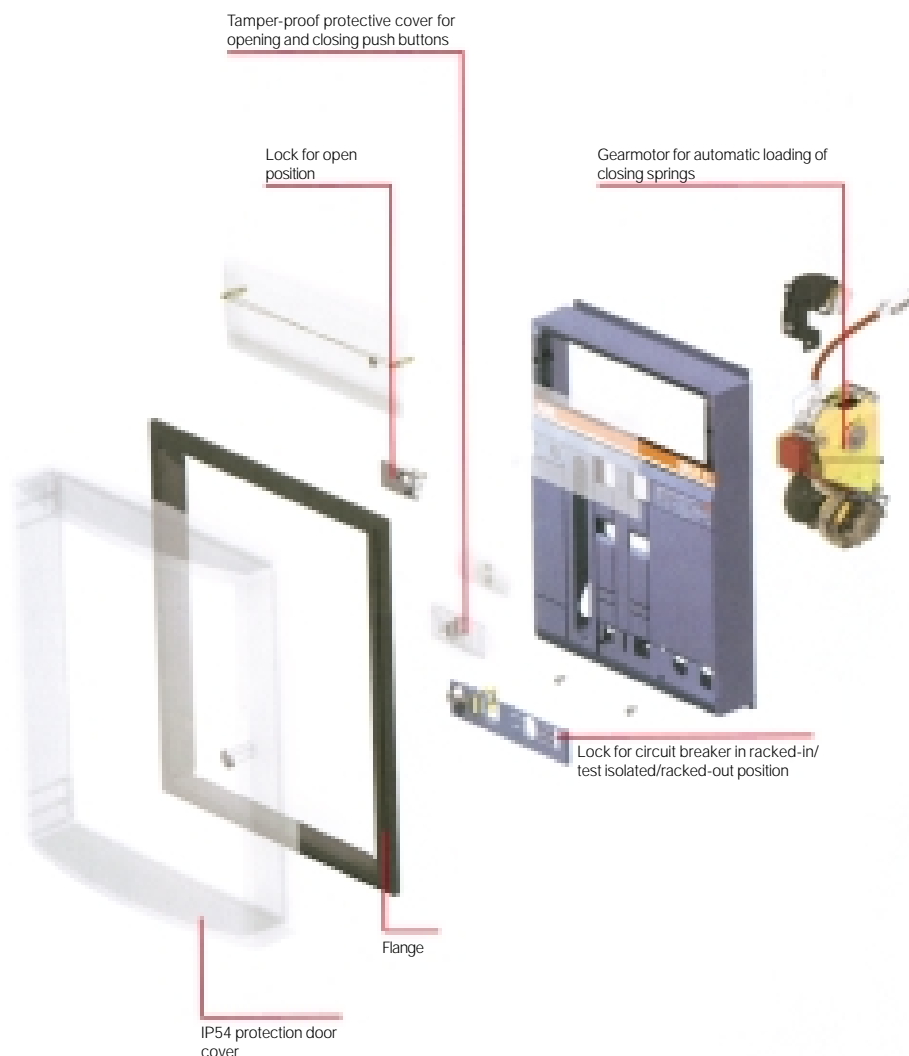
The entire series of SACE Emax circuit-breakers is served by a single line of accessories that can be used in both alternating current and direct current applications, and are always installed without any wiring.

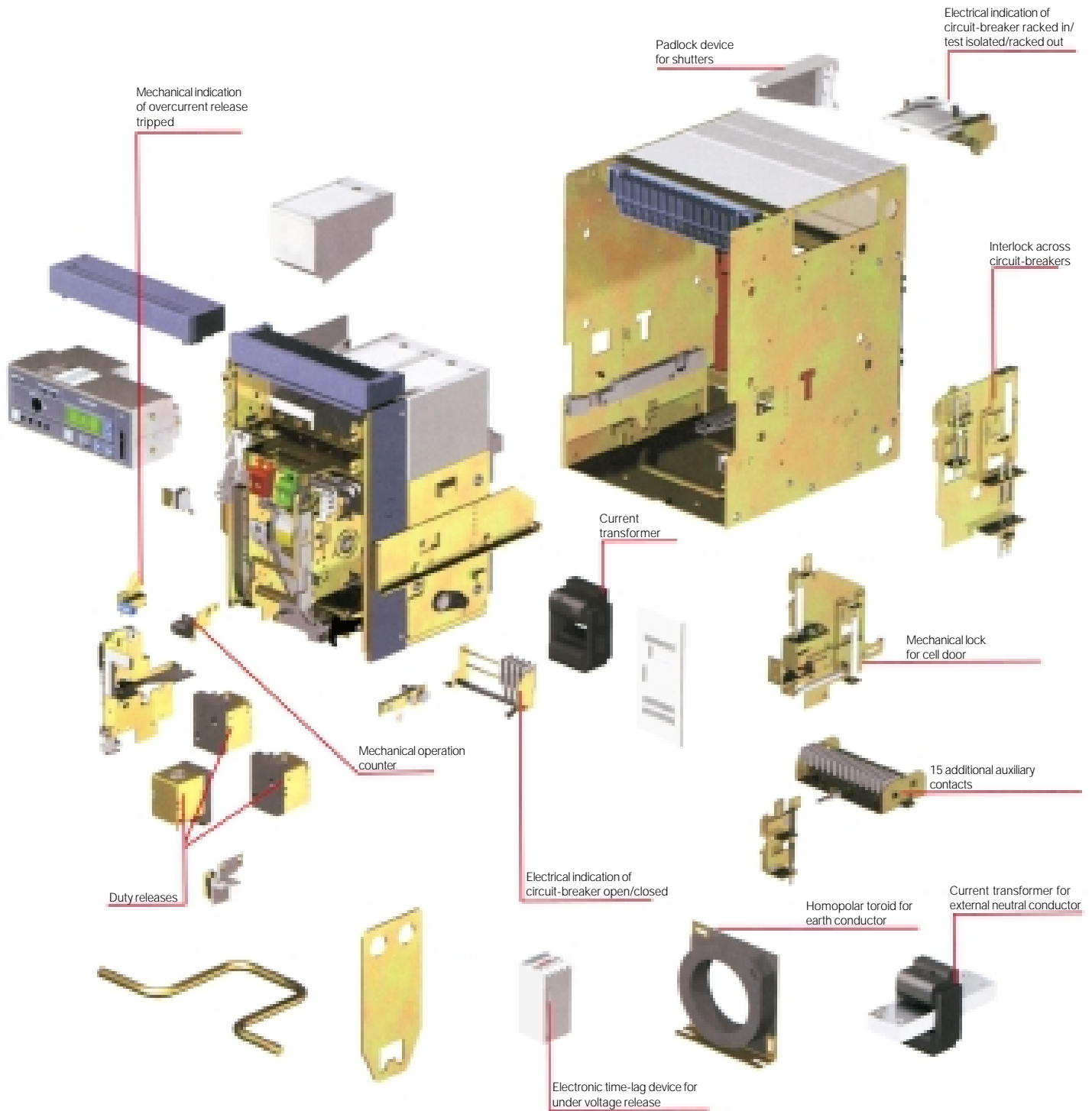
The ease with which the accessories are installed makes modular fitting operations fast and safe, allowing the end customer to carry out customisation as needs evolve.

The current transformers for different rated currents of the releases are very simple to change. Conversion kits are available for different terminal solutions and versions of circuit breakers.

Accessories

- **Shunt opening/closing release**
- **SOR test unit**
- **Under-voltage release**
- **Delay device for under-voltage release**
- **Geared motor for automatic charging of closing springs**
- **Mechanical signal of overcurrent release operation**
- **Mechanical and electrical signal of overcurrent releases tripped**
- **Electrical signal for circuit-breaker open/closed**
- **Electrical signal for circuit-breaker connected/isolated for test/isolated**
- **Contact for signalling closing springs charged**
- **Contact for signalling under-voltage release energised**
- **Current transformer for the circuit-breaker external neutral conductor**
- **Homopolar toroid for the earthing conductor of the main power supply**
- **Terminal box for fixed version circuit-breaker**
- **Sliding contacts for withdrawable version circuit-breaker**
- **Mechanical operation counter**
- **Key lock or padlock devices in open position**
- **Circuit-breaker lock in connected-isolated for test-isolated position**
- **Anti-insertion lock for circuit-breakers of different models**
- **Padlock devices for fixed part shutters**
- **Compartment door mechanical lock**
- **Protection for opening and closing push buttons**
- **IP54 door protection**
- **Interlock between circuit-breakers**
- **Lifting plate**
- **Racking out crank handle**
- **Flange for compartment door**

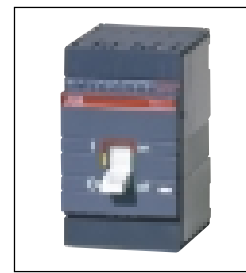
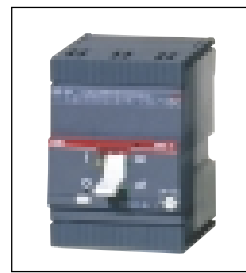




Moulded Case Circuit Breakers

SACE Isomax S

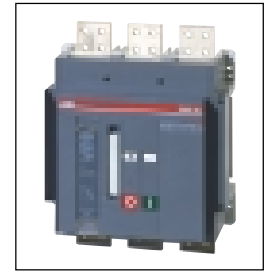
Conforms to IEC 60947-2



			SACE Isomax S1		SACE Isomax S2			SACE Isomax S3				
Rated uninterrupted current, I_u	[A]		125		160			160 - 250				
Number of poles	N ^o		3-4		3-4			3-4				
Rated service voltage, U_e	(a.c.) 50-60 Hz [V-]		500		690			690				
	(d.c.) [V-]		250		500			750				
Rated impulse withstand voltage, U_{imp}	[kV]		6		6			8				
Rated insulation voltage, U_i	[V]		500		690			800				
Test voltage at industrial frequency for 1 minute	[V]		3000		3000			3000				
Rated limit short-circuit breaking capacity, I_{cu}	(a.c.) 50-60 Hz	220/230 V- [kA]	B	N	B	N	S	N	H	L		
	(a.c.) 50-60 Hz	380/415 V- [kA]	25	40	25	50	65	65	100	170		
	(a.c.) 50-60 Hz	440 V- [kA]	16 ⁽⁷⁾	25	16	35 ⁽¹⁾	50	35 ⁽¹⁾	65	85		
	(a.c.) 50-60 Hz	440 V- [kA]	10	16	10	20	25	30	50	65		
	(a.c.) 50-60 Hz	500 V- [kA]	8	12	8	12	15	25	40	50		
	(a.c.) 50-60 Hz	690 V- [kA]	–	–	6	8	10	14	18	20 ⁽⁵⁾		
	(d.c.)	250 V - (2 poles in series) [kA]	16	25	16	35	50	35	65	85		
	(d.c.)	500 V - (2 poles in series) [kA]	–	–	–	–	–	35	50	65		
	(d.c.)	500 V - (3 poles in series) [kA]	–	–	16	35	50	–	–	–		
	(d.c.)	750 V - (3 poles in series) [kA]	–	–	–	–	–	20	35	50		
Rated duty short-circuit breaking capacity, I_{cs} ⁽²⁾	[%I _{cu}]		50%	50%	100%	75%	75%	100%	75%	75%		
Rated short-circuit making capacity (415 V-), I_{cm}	[kA]		32	52.5	32	74	105	74	143	187		
Opening time (415 V-)	[ms]		8	6	8	7	6	8	7	6		
Rated short time withstand current (1 s), I_{cw}	[kA]											
Use category (EN 60947-2)			A		A			A				
Isolation behaviour			■		■			■				
IEC 947-2, EN 60947-2			■		■			■				
Releases	thermomagnetic	T fixed, M fixed 5th	■	■								
		T fixed, M fixed 10th	■	■								
		T adjustable, M fixed 3th						■	■			
		T adjustable, M fixed 5th			■	■		■	■	■		
		T adjustable, M fixed 10th			■	■	■	■	■	■		
		T adjustable, M adjustable										
	magnetic only	M fixed		■	■	■	■	■	■	■		
	microprocessor-based	PR211/P (I - LI)										
		PR212/P (LSI - LSIG)										
	Interchangeability											
Versions			F - P		F - P			F - P - W				
Terminals ⁽⁶⁾	fixed		FC - R		EF - FC - FC CuAl - R			F-EF-ES-FC-FC CuAl-RC-R				
	plug-in		FC - R		FC - R			EF - FC - R				
	withdrawable ⁽³⁾		–		–			EF - FC - R				
Fixing on DIN rail			DIN EN 50022		DIN EN 50022			DIN EN 50023				
Mechanical life	[No. operations / Operations per hour]		25000 / 240		25000 / 240			25000 / 120				
Electrical life (at 415 V-)	[No. operations / Operations per hour]		8000 / 120		8000 / 120			10000 (160A) - 8000 (250A)/120				
Basic dimensions	fixed	3/4 poles	W[mm]	78 / 103		90 / 120			105 / 140			
			D[mm]	70		70			103,5			
			H [mm]	120		120			170			
Weights	fixed	3/4 poles	[kg]	0.9 / 1,2		1,1 / 1,5			2,6 / 3,5			
		plug-in	3/4 poles	[kg]	1/ 1,4		1,3 / 1,7			3,1 / 4,1		
			withdrawable	3/4 poles	[kg]	–		–			3,5 / 4,5	

Notes

- 1) All versions with I_{cu} = 35 kA are certified to 36 kA.
- 2) The percentage I_{cs} performance of S3 N/H/L, S4 N/H/L, S5 N/H and S6 N/S/H circuit-breakers is 25% lower at 690 V.
- 3) Withdrawable circuit-breakers must be fitted with the front flange for the lever operating mechanism or the accessories which are an alternative to it such as the rotary handle or motor operator.
- 4) The plug-in version of circuit-breaker S5 is only available for rated current 400 A.
- 5) The SACE S3 circuit-breaker with breaking capacity L at 690 V can only be powered from the top.



SACE Isomax S4			
160 - 250			
3-4			
690			
–			
8			
800			
3000			
N	H	L	
65	100	200	
35⁽¹⁾	65	100	
30	50	80	
25	40	65	
18	22	30	
–	–	–	
–	–	–	
–	–	–	
–	–	–	
100%	100%	75%	
74	143	220	
8	7	6	
A			
■			
■			
■	■		■
■	■		■
■			
F - P - W			
F-EF-ES-FC-FCCuAl-RC-R			
EF - FC - R			
EF - FC - R			
DIN EN 50023			
25000 / 120			
10000 (160A) - 8000 (250A)/120			
105 / 140			
103,5			
254			
4 / 5,3			
4,5 / 5,9			
4,9 / 6,3			

SACE Isomax S5			
400 - 630			
3-4			
690			
750			
8			
800			
3000			
N	H	L	
65	100	200	
35⁽¹⁾	65	100	
30	50	80	
25	40	65	
20	25	30	
35	65	100	
35	50	65	
–	–	–	
20	35	50	
100%	100%	75%	
74	143	220	
8	7	6	
500 (400 A)			
B (400 A) - A (630 A)			
■			
■			
■	■		■
■	■		■
■			
F - P (400) - W			
F-ES-FC-EF/FCCuAl/RC(400A)			
EF - FC - R ⁽⁴⁾			
EF(400)-ES-FC(400)-R-VR(630A)			
DIN EN 50023			
20000 / 120			
7000 (400A) - 5000 (630A)/60			
140 / 184			
103,5			
254			
5 / 7			
6,1 / 8,4			
6,4 / 8,7			

SACE Isomax S6			
630 - 800			
3-4			
690			
750			
8			
800			
3000			
N	S	H	L
65	85	100	200
35⁽¹⁾	50	65	100
30	45	50	80
25	35	40	65
20	22	25	30
35	50	65	100
20	35	50	65
–	–	–	–
16	20	35	50
100%	100%	100%	75%
74	105	143	220
10	9	8	7
7,6 (630 A) - 10 (800 A)			
B			
■			
■			
■	■	■	■
■	■	■	■
■			
F - W			
F-EF-FCCuAl-RC-R			
–			
EF - HR - VR			
DIN EN 50023			
20000 / 120			
7000 (630A) - 5000 (800A)/60			
210 / 280			
103,5			
268			
9,5 / 12			
–			
12,1 / 15,1			

SACE Isomax S7			
1250 - 1600			
3-4			
690			
–			
8			
800			
3000			
S	H	L	
85	100	200	
50	65	100	
40	55	80	
35	45	70	
20	25	35	
–	–	–	
–	–	–	
–	–	–	
100%	75%	50%	
105	143	220	
22	22	22	
15 (1250A) - 20 (1600 A)			
B			
■			
■			
■	■		■
■	■		■
■			
F - W			
F-EF-FCCuAl(1250A)-HR-VR			
–			
EF - HR - VR			
DIN EN 50023			
10000 / 120			
7000(1250A)-5000(1600A) / 20			
210/280			
138,5			
406			
17 / 22			
–			
21,8 / 29,2			

SACE Isomax S8		
2000-2500-3200		
3-4		
690		
–		
8		
690		
2500		
H	V	
85	120	
85	120	
70	100	
50	70	
40	50	
–	–	
–	–	
–	–	
50%	50%	
187	264	
20	20	
35		
B		
■		
■		
■		■
F		
F (2000-2500 A) - VR		
–		
–		
10000 / 20		
2500(2500A)20-1500(3200)/10		
406 / 556		
242		
400		
57 / 76		
–		
–		

6) F Front terminals
EF Extended front terminals
ES Spreaded front terminals
FC Front terminals for copper cables
FC CuAl Front terminals for copper/aluminium cables
R Rear threaded terminals
RC Rear terminals for copper/aluminium cables
HR Rear horizontal flat bar terminals
VR Rear vertical flat bar terminals

7) Type tested at CPRI, Bangalore for 25 KA @ 415 V, 50 Hz.

Moulded Case Circuit Breakers SACE Isomax S Construction characteristics

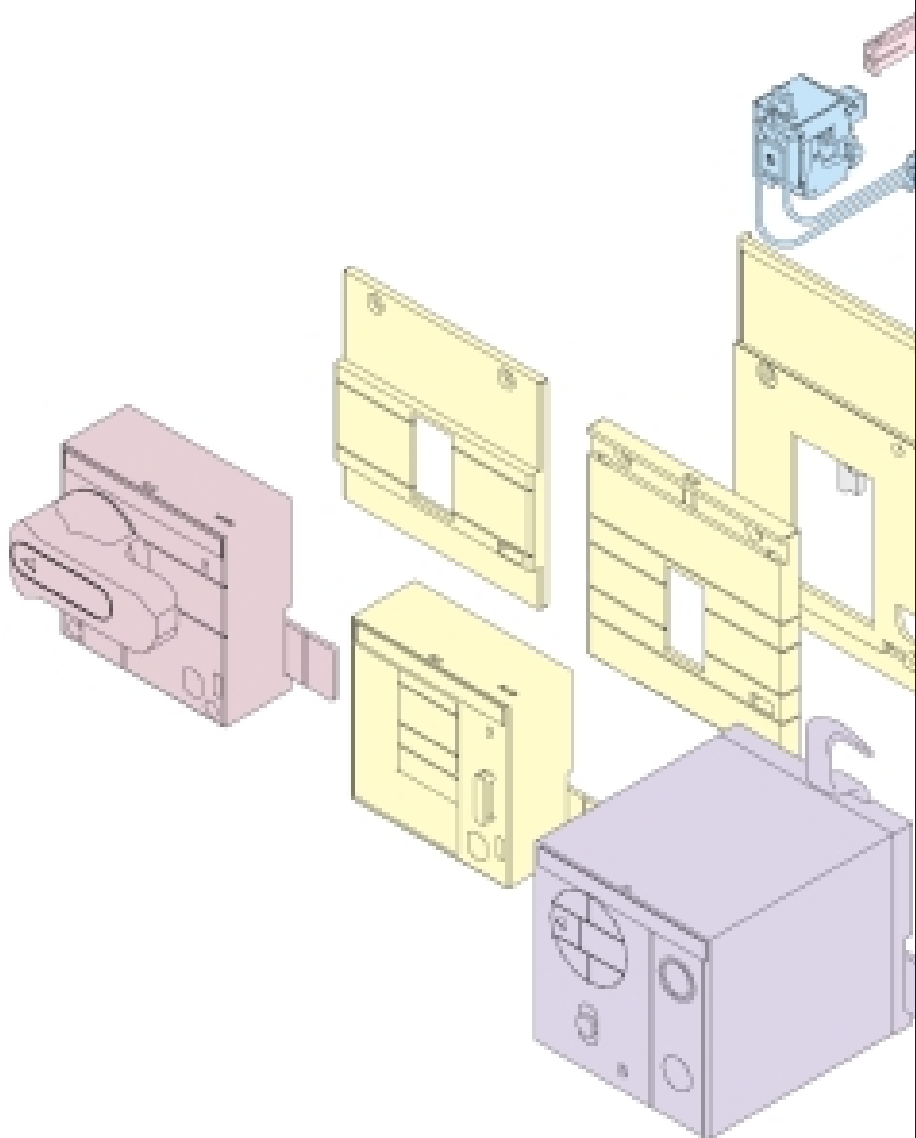
Various application needs are met by the fixed version through mounting the conversion kit.

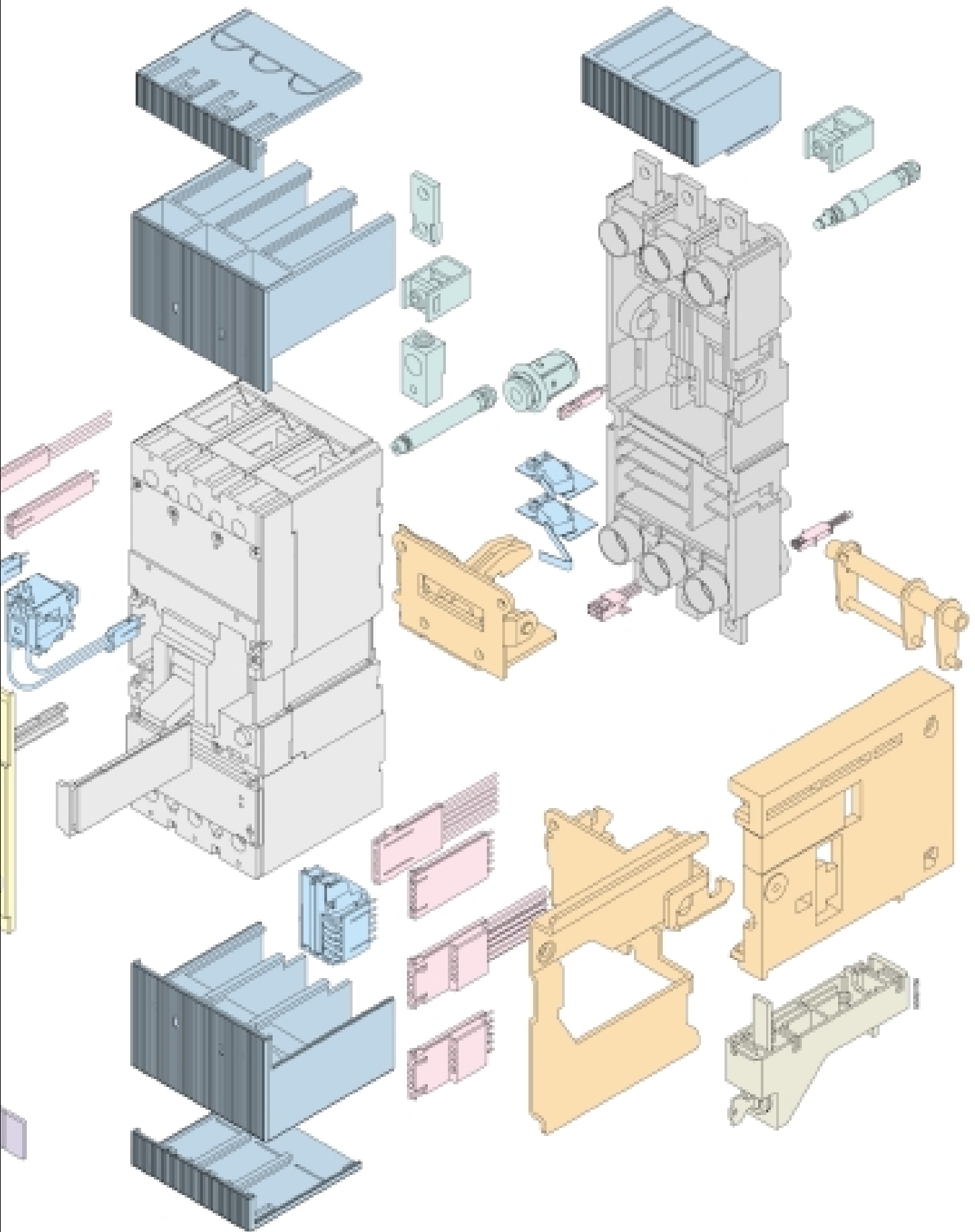
The following are available:

- Kit for conversion from fixed circuit-breaker to moving part of a plug-in or withdrawable circuit-breaker
- Conversion kit for the connection terminals which make it possible to obtain front and rear terminals for copper or aluminium cables, and front and rear terminals for flat bar terminals.

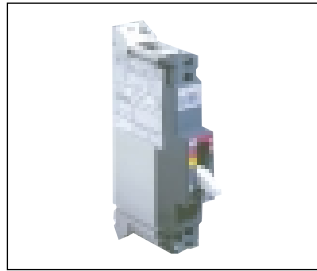
Accessories

- Shunt opening release
- Under voltage release
- Auxiliary contacts
- Position contacts
- Breaker for rear fixing onto DIN EN 50022 rail for S1-S2 circuit-breakers, DIN EN 50023 rail for S3-S4-S5 circuit-breakers
- Direct action motor operator, stored energy and solenoid
- Rotary handle operating mechanisms directly on the circuit-breaker and with transmission on the compartment door
- Residual-current releases
- Accessories for microprocessor-based overcurrent releases such as the signaling, dialogue and actuation unit and external CTs.
- Fixed parts for plug-in or withdrawable circuit-breakers with front terminals for cables or for flat bars and rear terminals for flat bars.
- Mechanical interlock to interlock 2 breakers of same frame sizes





Moulded Case Circuit Breakers
SACE Tmax
Conforms to IEC 60947-2



		Tmax T1 1P		Tmax T1		
Rated uninterrupted current, Iu [A]		160		160		
No. Poles	[No.]	1		3/4		
Rated service voltage, Ue	(AC) 50-60 Hz [V]	240		690		
	(DC) [V]	125		500		
Rated impulse withstand voltage, Uimp	[kV]	8		8		
Rated insulation voltage, Ui	[V]	500		800		
Test voltage at industrial frequency for 1 min.	[V]	3000		3000		
Rated ultimate short-circuit breaking capacity, Icu		B		B	C	N
	(AC) 50-60 Hz 220/230 V [kA]	25 ⁽¹⁾		25	40	50
	(AC) 50-60 Hz 380/415 V [kA]	–		16	25	36
	(AC) 50-60 Hz 440 V [kA]	–		10	15	22
	(AC) 50-60 Hz 500 V [kA]	–		8	10	15
	(AC) 50-60 Hz 690 V [kA]	–		3	4	6
	(DC) 250 V - 2 poles in series [kA]	25 (at 125 V)		16	25	36
	(DC) 250 V - 3 poles in series [kA]	–		20	30	40
	(DC) 500 V - 2 poles in series [kA]	–		–	–	–
	(DC) 500 V - 3 poles in series [kA]	–		16	25	36
	(DC) 750 V - 3 poles in series [kA]	–		–	–	–
Rated service short-circuit breaking capacity, Ics						
	(AC) 50-60 Hz 220/230 V [%Icu]	75%		100%	75%	75%
	(AC) 50-60 Hz 380/415 V [%Icu]	–		100%	100%	50% (25 kA)
	(AC) 50-60 Hz 440 V [%Icu]	–		100%	75%	50%
	(AC) 50-60 Hz 500 V [%Icu]	–		100%	75%	50%
	(AC) 50-60 Hz 690 V [%Icu]	–		100%	75%	50%
Rated short-circuit making capacity, Icm						
	(AC) 50-60 Hz 220/230 V [kA]	52.5		52.5	84	105
	(AC) 50-60 Hz 380/415 V [kA]	–		32	52.5	75.6
	(AC) 50-60 Hz 440 V [kA]	–		17	30	46.2
	(AC) 50-60 Hz 500 V [kA]	–		13.6	17	30
	(AC) 50-60 Hz 690 V [kA]	–		4.3	5.9	9.2
Opening time (415 V)	[ms]	7		7	6	5
Category of utilisation (EN 60947-2)		A		A		
Isolation behaviour		■		■		
Reference standard		IEC 60947-2		IEC 60947-2		
Releases: thermomagnetic						
T fixed, M fixed	TMF	■		–		
T adjustable, M fixed	TMD	–		■		
T adjustable, M adjustable (5...10 x In)	TMA	–		–		
T adjustable, M fixed (3 x In)	TMG	–		–		
T adjustable, M adjustable (2.5...5 x In)	TMG	–		–		
magnetic only	MA	–		–		
electronic	PR221DS-LS/I	–		–		
	PR221DS-I	–		–		
	PR222DS/P-LSI	–		–		
	PR222DS/P-LSIG	–		–		
	PR222DS/PD-LSI	–		–		
	PR222DS/PD-LSIG	–		–		
	PR222MP	–		–		
Interchangeability		–		–		
Versions		F		F		
Terminals fixed		FC Cu		FC Cu-EF-FC CuAl -HR		
plug-in		–		–		
withdrawable		–		–		
Fixing on DIN rail		–		DIN EN 50022		
Mechanical life	[No. operations]	25000		25000		
	[No. hourly operations]	240		240		
Electrical life @ 415 V AC	[No. operations]	8000		8000		
	[No. hourly operations]	120		120		
Basic dimensions - fixed version	3 poles	L [mm]	25.4 (1 pole)	76		
	4 poles	L [mm]	–	102		
		D [mm]	70	70		
		H [mm]	130	130		
Weight	fixed	3/4 poles	0.4 (1 pole)	0.9/1.2		
	plug-in	3/4 poles	–	–		
	withdrawable	3/4 poles	–	–		

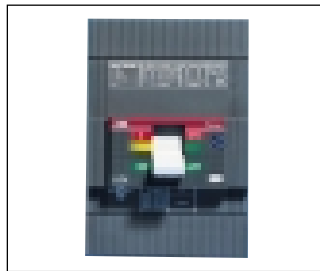
TERMINAL CAPTION
F = Front

EF = Front extended
ES = Front extended spread

FC Cu = Front for copper cables
FC CuAl = Front for CuAl cables

R = Rear orientated
HR = Rear in horizontal flat bar

VR = Rear in vertical flat bar
MC = Multicable



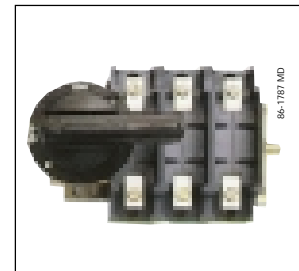
Tmax T2			
160			
3/4			
690			
500			
8			
800			
3000			
N	S	H	L
65	85	100	120
36	50	70	85
30	45	55	75
25	30	36	50
6	7	8	10
36	50	70	85
40	55	85	100
-	-	-	-
36	50	70	85
-	-	-	-
100%	100%	100%	100%
100%	100%	100%	75% (70 kA)
100%	100%	100%	75%
100%	100%	100%	75%
100%	100%	100%	75%
143	187	220	264
75.6	105	154	187
63	94.5	121	165
52.5	63	75.6	105
9.2	11.9	13.6	17
3	3	3	3
A			
■			
IEC 60947-2			
-			
■			
-			
-			
-			
■ (MF up to In 12.5 A)			
■			
■			
-			
-			
-			
-			
-			
-			
-			
-			
F-P			
F-FC Cu-FC CuAl-EF-ES-R			
F-FC Cu-FC CuAl-EF-ES-R			
-			
DIN EN 50022			
25000			
240			
8000			
120			
90			
120			
70			
130			
1.1/1.5			
1.5/1.9			
-			

Tmax T3	
250	
3/4	
690	
500	
8	
800	
3000	
N	S
50	85
36	50
25	40
20	30
5	8
36	50
40	55
-	-
36	50
-	-
75%	50%
75%	50% (27 kA)
75%	50%
75%	50%
75%	50%
105	187
75.6	105
52.5	84
40	63
7.7	13.6
7	6
A	
■	
IEC 60947-2	
-	
■	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
F-P	
F-FC Cu-FC Cu Al-EF-ES-R	
F-FC Cu-FC Cu Al-EF-ES-R	
-	
DIN EN 50022	
25000	
240	
8000	
120	
105	
140	
70	
150	
2.1/3	
2.7/3.7	
-	

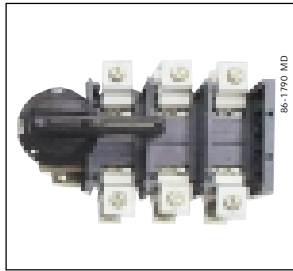
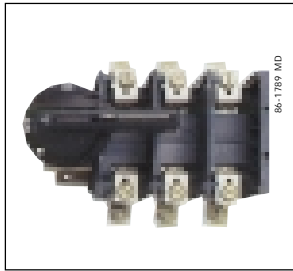
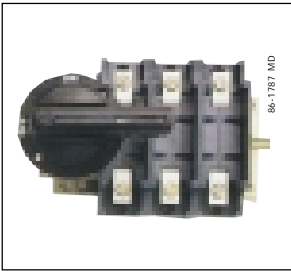
Tmax T4				
250/320				
3/4				
690				
750				
8				
1000				
3500				
N	S	H	L	V
70	85	100	200	300
36	50	70	120	200
30	40	65	100	180
25	30	50	85	150
20	25	40	70	80
36	50	70	100	150
-	-	-	-	-
25	36	50	70	100
-	-	-	-	-
16	25	36	50	70
100%	100%	100%	100%	100%
100%	100%	100%	100%	100%
100%	100%	100%	100%	100%
100%	100%	100%	100%	100%
100%	100%	100%	100%	100%
154	187	220	440	660
75.6	105	154	264	440
63	84	143	220	396
52.5	63	105	187	330
40	52.5	84	154	176
5	5	5	5	5
A				
■				
IEC 60947-2				
-				
■ (up to 50 A)				
■				
-				
-				
-				
-				
-				
-				
-				
-				
-				
-				
-				
-				
F-P-W				
F-FC Cu-FC CuAl-EF-ES-R-MC				
EF-ES-HR-VR-FC Cu-FC CuAl				
EF-ES-HR-VR-FC Cu-FC CuAl				
-				
20000				
240				
8000 (250 A) - 6000 (320 A)				
120				
105				
140				
103.5				
205				
2.35/3.05				
3.6/4.65				
3.85/4.9				

Tmax T5				
400/630				
3/4				
690				
750				
8				
1000				
3500				
N	S	H	L	V
70	85	100	200	300
36	50	70	120	200
30	40	65	100	180
25	30	50	85	150
20	25	40	70	80
36	50	70	100	150
-	-	-	-	-
25	36	50	70	100
-	-	-	-	-
16	25	36	50	70
100%	100%	100%	100%	100%
100%	100%	100%	100%	100%
100%	100%	100%	100%	100%
100%	100%	100%	100%	100%
100%	100%	100%	100% ⁽¹⁾	100% ⁽²⁾
100%	100%	100% ⁽¹⁾	100% ⁽²⁾	100% ⁽²⁾
154	187	220	440	660
75.6	105	154	264	440
63	84	143	220	396
52.5	63	105	187	330
40	52.5	84	154	176
6	6	6	6	6
A				
■				
IEC 60947-2				
-				
-				
-				
-				
-				
-				
-				
-				
-				
-				
-				
-				
-				
-				
F-P-W				
F-FC Cu-FC CuAl-EF-ES-R				
EF-ES-HR-VR-FC Cu-FC CuAl				
EF-ES-HR-VR-FC Cu-FC CuAl				
-				
20000				
120				
7000 (400 A) - 5000 (630 A)				
60				
140				
184				
103.5				
205				
3.25/4.15				
5.15/6.65				
5.4/6.9				

Switch Fuse Units
OS & OESA
Conforms to IEC 60947-3



Switch size	A	OS		EOESA	
		20	32	20	32
Rated insulation voltage and rated Direct strength	Pollution degree 3	V	1000	750	
	50 Hz, 1 min	kV	10	8	
Rated impulse withstand voltage		kV	12	12	
Rated thermal current in ambient 40°C max. fuse power dissipation ⁽¹⁾	In open air	A / W	20/3.5	32/7.5	
	In enclosure	A / W	20/3.5	32/7.5	
	In enclosure with solid links	A	32	40	
... with minimum cable cross section	Cu	mm ²	2.5	6	
Rated operational voltage AC-20 and DC-20		V	1000	750	
Rated operational current, AC-21A	up to 500 V	A	20	32	
	690 V	A	20	–	
Rated operational current, AC-22A	up to 500 V	A	20	32	
	690 V	A	20	–	
Rated operational current, AC-23A	up to 500 V	A	20	32	
	690 V	A	20	–	
Rated conditional short-circuit current r.m.s. and corresponding max. allowed cut-off current, peak values	80 kA, 415 V	kA	9	10	
	100 kA, 500 V	kA	7.5	6	
	50 kA, 690 V	kA	6	–	
- The cut-off currents refer to single phase fuse tests					
- Fuse selection tables on request					
Rated short-time withstand current, 1s	R.M.S. -value	kA	1	1.5	
Rated capacitor power	400 V	kVAr	10	15	
	415 V	kVAr	10	16	
	690 V	kVAr	15	–	
- The capacitor rating of the switch-fuse is limited by the fuse link					
Power loss / pole	With rated current, without fuse	W	1.3	0.7	
Mechanical endurance	Divide by two for operation cycles	Oper.	20 000	20 000	
Fuse types, IEC 269-2	Din 43620		–	00	
	NFC		–	–	
	BS 88		A1	A2-A3	
	-size/distance of fuse link bolts	mm	M4/44.5	M5/73	
Weight without accessories	3-pole switch fuses	kg	0.7	1.6	
	4-pole switch fuses	kg	0.9	1.9	
Built-in terminal size		Cu	mm ²	0.5...10	2.5 ... 25
Terminal bolt size	Metric thread diameter x length		mm		
Terminal tightening torque	Counter torque required	Nm	2	5	
Fuse-links bolts tightening torque		Nm	–	3.5	
Operating torque	Typical for 3-pole switch fuses	Nm	3	3	
Standard and special handles					YASDB 51
					YASDB 50
					YASDB 49
– 32 A ... 160 A, suitable for 6 mm square shaft	IP 54	door interlock			YASDB 10
					YASDB 20
– 200 A ... 800 A, suitable for 12 mm square shaft	IP 54	defeatable			YASDB 8
					YASDB 31
– Door drilling ϕ 45 mm,	IP 65			OHB 65 J5 - Black 1 – 0 (Standard)	YASDB 32
				OHY 65 J5 - Yellow-red ON – OFF	YASDB 33
for OETLZX 74 door drilling ϕ 18 mm					YASDB 76
					YASDB 77
– door interlock in ON-position					YASDB 78
– Padlockable with 3 padlocks in OFF-position					
– Handle kits for side operated switch fuses include a shaft					
Standard shaft / Shaft length					OESAZS 25 / 210
Detachable neutral link / Thermal current / Max. cable cross section					OESAZX 87 / 63A / 16
Change-over attachment kit / Shaft distance (incl. a handle with I-O-II indication)					OESAZW 1 / 90mm
Mechanical interlock kit / Shaft distance ⁽³⁾					–
Electrical interlock ⁽⁴⁾					–
Tunnel terminal sets for Cu-cables / Cable cross section (6 pcs / package)					not required
Terminal clamps for Al or Cu-cables / Cable cross section (3 pcs / package)					not required



	OESA		
	63	125	160
	750	750	750
	8	8	8
	12	12	12
	63/7.5	125/12	160/12
	63.75	125/12	135/9
	75	125	160
	16	50	50
	750	750	750
	63	125	160
	63 ⁽²⁾	125 ⁽²⁾	160 ⁽²⁾
	63	125	160
	63 ⁽²⁾	125 ⁽²⁾	135 ⁽²⁾
	63 ⁽²⁾	125	160
	40 ⁽²⁾	50 ⁽²⁾	50 ⁽²⁾
	12	23	23
	9	17	17
	8	14	14
	2	5	5
	30	50	57
	32	55	62
	50	90	100
	4	5	9
	20 000	20 000	20 000
	00	00	00
	14x51	22x58	-
	A2-A3	A2-A4	B1-B2
	75/73	M5/73, M8/94	M8/111
	1.6	1.8	1.8
	1.9	2.3	2.3
	2.5 ... 25		
		M8x25	M8x25
	5	15...22	15.22
	3.5	M5:3.5 / M8:10	10
	3	5	5
Black 1 – 0 (Standard) Black ON – OFF Red-yellow 1 – 0			
Black 1 – 0 Black ON – OFF Red-yellow 1 – 0			
Black 1 – 0, for side operated switch fuses Black ON – OFF, for side operated switch fuses Red-yellow 1 – 0, for side operated switch fuses			
mm			
mm ² Cu	OESAZX 86 / 160A / 240 mm ² Cu		
+ (0...10) x 15 mm			
	OZXA 5 / 1.5...35 mm ² Cu	-	
	OZXB 2L / 25...120 mm ² Al/Cu	OZXB 2L, OZXB 3 / 95...185mm ² Al/Cu	

Remarks:

- 1) Ambient temperature 60°C: derating 20%. Mounting on "ceiling": derating 10%. Mounting on wall, horizontal fuses: derating 8%.
- 2) Utilization category B.
- 3) The interlock attachment prevents one switch from closing to ON-position, if the other is not in OFF-position.
- 4) Closed circuit principal, for interlocking the switch movement. When the coil circuit is dead, A-types cannot be operated to ON-position and L-types to ON- or OFF-position. Coil voltages: 110V AC, 220V AC, 24V DC, 48V DC, 60V DC, 110V DC, 220V Dc.

Approvals:

KEMA	SEMKO
ASTA	NEMKO
UL-Listed, UL-Recognized	DEMKO
Canadian Standards Association	Lloyds Register of Shipping
SETI	Germanischer Lloyd
SEV	USSR Register of Shipping
Detailed list on request	

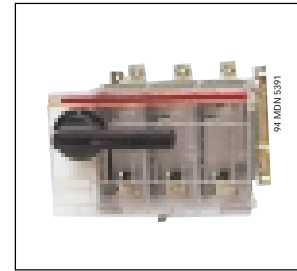
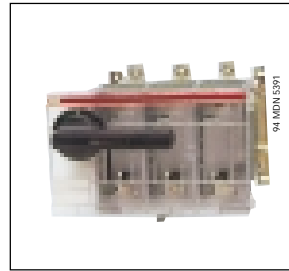
Comply with standards:

- IEC 60947-3
- IEC 408
- BS 5419
- VDE 0660, 0113
- UL 98, UL 508
- CSA C22.2 No 4 and 14
- SS 4280605
- KY 119-79/SETI

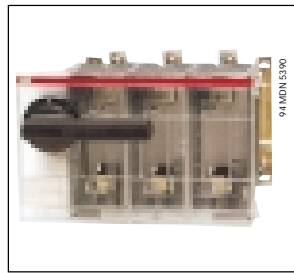
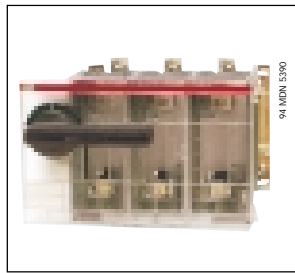
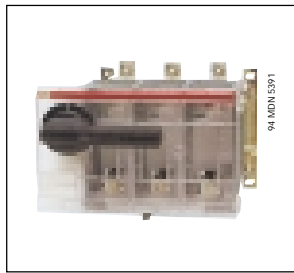
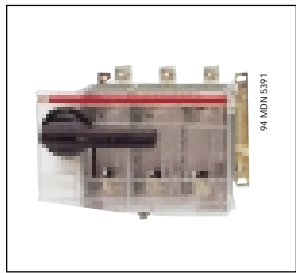
Tropical conditions:

- Suitable for the following climate types:
- Warm damp IEC 721-2-1- and DIN 50019 041, 50019 042
 - Extremely warm dry IEC 721-2-1- and DIN 50019 033, 50019 034 (consult derating)

Switch Fuse Units
OS & OESA
Conforms to IEC 60947-3



				PowerLine, OESA_PL	
				200	250
Switch size	A				
Rated insulation voltage and rated direct strength	Pollution degree 3	V	1000	1000	
	50 Hz, 1 min	kV	10	10	
Rated impulse withstand voltage		kV	12	12	
Rated thermal current in ambient 40°C max. fuse power dissipation ⁽¹⁾	In open air	A / W	200/22	250/32	
	In enclosure	A / W	200/22	250/23, 230/27	
	In enclosure with solid links	A	280	315	
... with minimum cable cross section	Cu	mm ²	95	120	
Rated operational voltage AC-20 and DC-20		V	1000	1 000	
Rated operational current, AC-21A	up to 500 V	A	200	250	
	690 V	A	200	250	
Rated operational current, AC-22A	up to 500 V	A	200	250	
	690 V	A	200	250	
Rated operational current, AC-23A	up to 500 V	A	200	250	
	690 V	A	200	250	
Rated conditional short-circuit current r.m.s. and corresponding max. allowed cut-off current, peak values	80 kA, 415 V	kA	40	40	
	100 kA, 500 V	kA	40	40	
- The cut-off currents refer to single phase fuse tests	50 kA, 690 V	kA	35	35	
- Fuse selection tables on request					
Rated short-time withstand current, 1s	R.M.S. -value	kA	8	8	
Rated capacitor power	400 V	kVAr	90	105	
- The capacitor rating of the switch-fuse is limited by the fuse link	415 V	kVAr	100	115	
	690 V	kVAr	160	190	
Power loss / pole	With rated current, without fuse	W	5	11	
Mechanical endurance	Divide by two for operation cycles	Oper.	16 000	16 000	
Fuse types, IEC 269-2	Din 43620		0-1	0-1	
	NFC		-	0-1	
	BS 88		B1-B2	B1-B3 ⁽⁵⁾	
	-size/distance of fuse link bolts	mm	M8/111	M8/111	
Weight without accessories	3-pole switch fuses	kg	6.9	6.9	
	4-pole switch fuses	kg	7.9	7.9	
Built-in terminal size		Cu			
Terminal bolt size	Metric thread diameter x length	mm	M10x40	M10x40	
Terminal tightening torque	Counter torque required	Nm	30...44	30...44	
Fuse-links bolts tightening torque		Nm	15	15	
Operating torque	Typical for 3-pole switch fuses	Nm	22	22	
Standard and special handles					YASDB 52 YASDB 53 YASDB 55 YASDB 13 YASDB 16 YASDB 11 YASDB 34 YASDB 35 YASDB 36 YASDB 7 YASDB 8
	IP 54	door interlock defeatable			
- 32 A ... 160 A, suitable for 6 mm square shaft					
- 200 A ... 800 A, suitable for 12 mm square shaft					
- Door drilling ϕ 45 mm,					
for OETLZX 74 door drilling ϕ 18 mm					
- door interlock in ON-position	IP 65				
- Padlockable with 3 padlocks in OFF-position					
- Handle kits for side operated switch fuses include a shaft					
Standard shaft / Shaft length					
Detachable neutral link / Thermal current / Max. cable cross section					OESAZX 85 / 400 A
Change-over attachment kit / Shaft distance (incl. a handle with I-O-II indication)					3-pole: OETLZW 11 / 210 mm + (0...11)
Mechanical interlock kit / Shaft distance ⁽³⁾					
Electrical interlock ⁽⁴⁾					
Tunnel terminal sets for Cu-cables / Cable cross section (6 pcs / package)					OZXA 11 / 70
Terminal clamps for Al or Cu-cables / Cable cross section (3 pcs / package)					OZXB 2L, OZXB 3,



315	400	630	800
1000	1000	1000	1000
10	10	10	10
12	12	12	12
315/32	400/45	630/60	800/65
315/32	400/34, 360/37	600/45, 570/50	720/55
400	450	700	900
185	240	2x185	2x240
1000	1000	1000	1000
315	400	630	800
315	400	630	800
315	400	630	800
315	400	630	800
315	400	630	720
315	400	630	720
40	40	75	75
40	40	75	75
35	35	60	60
10	10	16	16
145	180	250	310
160	200	270	340
250	325	450	550
13	30	55	77
16 000	16 000	10 000	10 000
-	0-2	3	3
-	0-2	3	-
B1-B3	B1-B4	C1-C2	C1-C3
M8/111	M8/111	M10/133, 184	M10/133, 184
7.3	7.8	15.5	17.0
8.3	8.8	19.0	21.0
M10x40	M10x40	M12x40	M12x40
30...44	30...44	50...75	50...75
15	15	40	40
22	22	28	28

Black 1 – 0 (Standard)
Black ON – OFF
Red-yellow 1 – 0

Black 1 – 0 (Standard)
Black ON – OFF
Red-yellow 1 – 0

Black 1 – 0
Black ON – OFF

Red-yellow 1 – 0
1 – 0 (metallic)
ON – OFF (metallic)



OESAZK 41 / 250 mm

/ 240 mm ² Cu	OESAZX 88 / 800 A / 240 mm² Cu
x 20mm, 4-pole: OETLZW 12 / 210 mm + (0...20) x 20 mm	
OETLZW 14 / 250 mm, OETLZW 3 / 300 mm, OETLZW 15 / 500 mm	
-	OETLZT 80 A / coil voltage, OETLZT 80 L / coil voltage
...120 mm ² Cu	OZXA 14 / 95...240 mm² Cu
OZXB 4/2 x (95...185) mm² Al/Cu, OZXB 5 / 120...300 mm² Al/Cu, OZXB 6 / 2 x (120...300) mm² Al/Cu	

Load Break Switches

OT & OETL

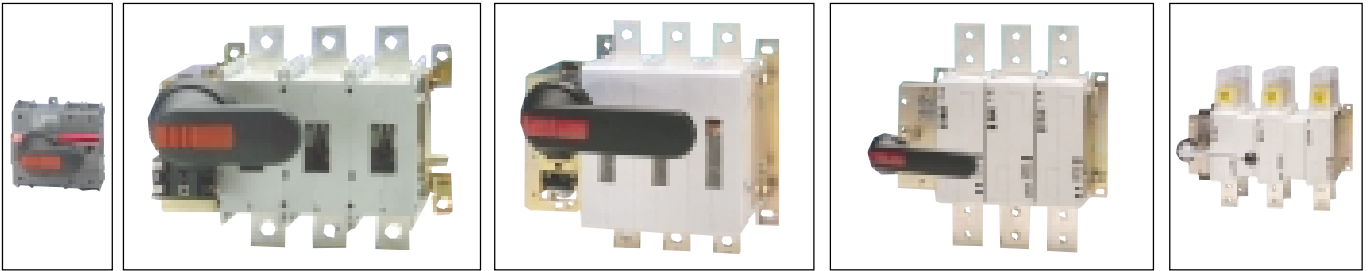
Conforms to IEC 60947-3



Switch size	A	OT								
		16	25	32	45	63	80	100	125	
Rated insulation voltage and rated operational voltage AC20/DC20	Pollution, degree 3	V	750	750	750	750	750	750	750	750
Dielectric strength	50 Hz 1 min.	kV	6	6	6	6	6	6	6	6
Rated impulse withstand voltage		kV	8	8	8	8	8	8	8	8
Rated thermal current and rated operational current AC20/DC20 / ambient 40°C	in open air	A	25	32	40	50	63	100	115	125
	in enclosure	A	25	32	40	50	63	80	115	125
	in enclosure	A	25	32	40	50	63	80	115	125
... with minimum conductor cross section	Cu	mm	4	6	10	16	16	25	35	50
Rated operational current, AC-21A	up to 415 V	A	16	25	32	45	63	80	100	125
	440 V	A	16	25	32	45	63	80	100	125
	500 V	A	16	25	32	45	63	80	100	125
	690 V	A	16	25	32	45	63	80	100	125
	1000 V	A	—	—	—	—	—	—	—	—
Rated operational current, AC-22A	up to 415 V	A	16	25	32	45	63	80	100	125
	440 V	A	16	25	32	45	63	80	100	125
	500 V	A	16	25	32	45	63	80	100	125
	690 V	A	16	25	32	45	63	80	100	125
	1000 V	A	—	—	—	—	—	—	—	—
Rated operational current, AC-23A	up to 415 V	A	16	20	23	30	38	55	80	90
	440 V	A	16	20	23	30	32	51	65	78
	500 V	A	16	20	23	30	32	32	60	70
	690 V	A	10	11	12	20	20	20	40	50
	1000 V	A	—	—	—	—	—	—	—	—
Rated conditional short-circuit current r.m.s	690 V / 500 V	kA								
Rated conditional short-circuit current r.m.s	10 kA, 400 V	kA								
and corresponding cut-off current of the fuse	10 kA, 690 V	kA								
in single-phase test according IEC269	50 kA, 415 V	kA	6,5	6,5	6,5	8,3	8,5	11	18	18
Breaker and fuse selection information on request	50 kA, 690 V	kA	4	4	4	6,7	6,7	10	10	10
	100 kA, 500 V	kA								
IEC269 OFAA-fuse size		A	25	32	40	50	63	80	100	125
Rated short-time withstand current	R.M.S. - value I_{cw}	690 V 0,2s	kA							
		690 V 0,25s	kA							
		690 V 1s	kA	0,5	0,5	0,5	1	1	1,5	2,5
Rated short-circuit making capacity	Peak value I_{cm}	690 V / 500 V	kA	0,705	0,705	0,705	1,4	1,4	2,1	3,6
Rated capacitor power	the capacitor rating are	400 V	kVAr							
	limited by the fuse link	415 V	kVAr							
		690 V	kVAr							
Power loss / pole	At rated operational current	W	0,3	0,6	1,0	1,4	2,8	6,4	4,0	6,3
Mechanical endurance	Divide by two for operation cycles	Oper.	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000
Weight without accessories	3-pole	kg	0,11	0,11	0,11	0,27	0,27	0,32	0,36	0,36
	4-pole	kg	0,15	0,15	0,15	0,35	0,35	0,40	0,5	0,5
Cable size	Cu-wire size suitable for terminal clamps	mm	0,75-1	00,75-1	00,75-1	01,5-25	1,5-25	1,5-50 ⁽²⁾	10-70	10-70
		AWG	18 - 8	18 - 8	18 - 8	14 - 4	14 - 4	14 - 0	8 - 00	8 - 00
	Metric thread diameter x length	mm								
Terminal tightening torque	Counter torque required	Nm	0,8	0,8	0,8	2	2	2,5	6	6
Operating torque	3-pole switch-disconnector	Nm	1	1	1	1,2	1,2	1,2	2	2

1) Fuse size 4
2) Minimum stranded 2.5 mm²
3) IEC 947-3 utilisation category B, in frequent operations
4) Pf. 0.95

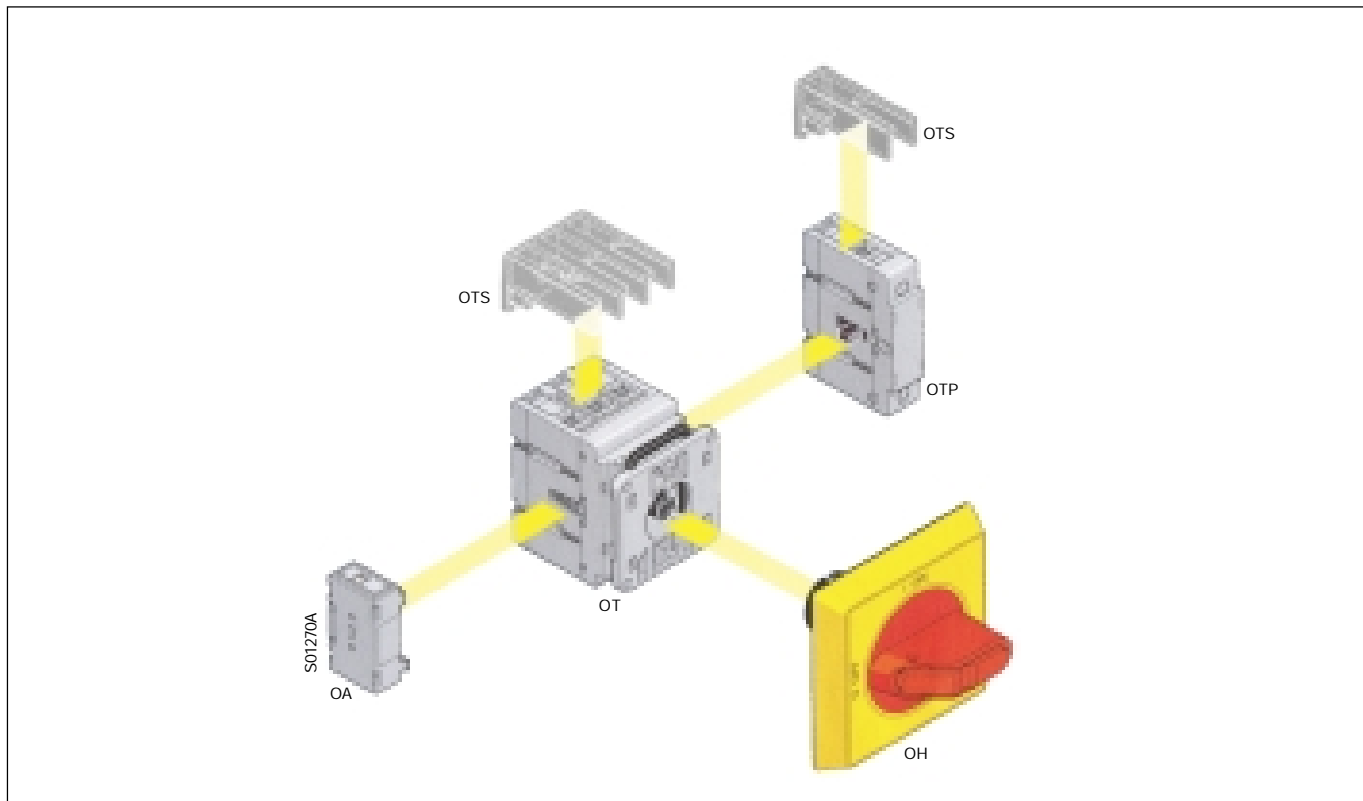
5) Pf. 0.65
6) At 380...415V when provided with busbar connection OEZXX6 or 13
7) Maximum distance between busbar support and switch terminal 70mm.



OT	OETL											
	160 E	200	250	315	400	630	800	1000	1250	1600	2500	3150
750	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
10	10	10	10	10	10	10	10	8	8	8	8	8
12	12	12	12	12	12	12	12	8	8	8	8	8
200 ⁽⁶⁾	250	315	350	500	630	800	1000	1250	1600	2500	3150	
160	200	270	315	500	630	720	1000	1250	1600	2300	2600	
160	175	220	260	410	500	600	900	1000	1250	1950	2300	
70	95	120	185	2x150	2x185	2x240	2x(60x5)	2x(80x5)	2x(100x5)	4x(100x5)	3x(100x10)	
200 ⁽⁶⁾	200	250	315	500	630	800	1000	1250	1600	2500 ⁽³⁾	3150 ⁽³⁾	
160	200	250	315	500	630	800	1000	1250	1600	2500 ⁽³⁾	3150 ⁽³⁾	
160	200	250	315	500	630	800	1000	1250	1600	2500 ⁽³⁾	3150 ⁽³⁾	
160	200	250	315	500	630	800	1000	1250	1600	2500 ⁽³⁾	3150 ⁽³⁾	
-	200	250	315	400	630	630						
200 ⁽⁶⁾	200	250	315	500	630	800	1000	1250	1600	1600 ⁽³⁾	1600 ⁽³⁾	
160	200	250	315	500	630	800	1000	1250	1600	1600 ⁽³⁾	1600 ⁽³⁾	
160	200	250	315	500	630	800	1000	1250	1600	1600 ⁽³⁾	1600 ⁽³⁾	
160	200	250	315	500	630	800						
	200	250	250	400	400	400						
135	200	250	315	500	630	720	800	800	800	800⁽³⁾	800⁽³⁾	
125	200	250	315	500	590	670	800	800	800	800 ⁽³⁾	800 ⁽³⁾	
125	200	250	315	500	580	600	800	800	800	800 ⁽³⁾	800 ⁽³⁾	
80	200	250	315	350	350	350						
	125	125	125	200	200	200						
							50	50	50	50/63	50/63	
25	35	35	35	43	63	63						
30	45	45	45	53	70	70						
200	400	400	400	500	800 ⁽¹⁾	800 ⁽¹⁾						
	17,5	17,5	17,5		38	38						
7				31								
4	8	8	8	17	17	17	50 ⁽⁷⁾	50 ⁽⁷⁾	50 ⁽⁷⁾	80 ⁽⁷⁾	80 ⁽⁷⁾	
12	35	35	35	65	80	80	105	105	105	105/140	105/140	
	90	110	140	250	300	330						
	90	110	140	250	300	330						
6.5	3.5	5.5	8.5	13	22	40	27	40	67	90	140	
20000	16000	16000	16000	10000	10000	10000	6000	6000	6000	1200	1200	
1,1	3	3	3	5,2	6,2	6,2	16,3	16,3	17,5	37	37	
1,3	3,7	3,7	3,7	6,4	7,6	7,6	20,5	20,5	22,5	47	47	
10 - 70												
8 - 00												
	8x25	10 x 30	10 x 30	10 x 40	12x40	12x40	12x60	12x60	12x60	12x60	12x60	
6	30.44	30.44	30.44	30.44	50.75	50.75	50.75	50.75	50.75	50.75	50.75	
6	8,2	8,2	8,2	17	21	21	21	21	21	50	50	

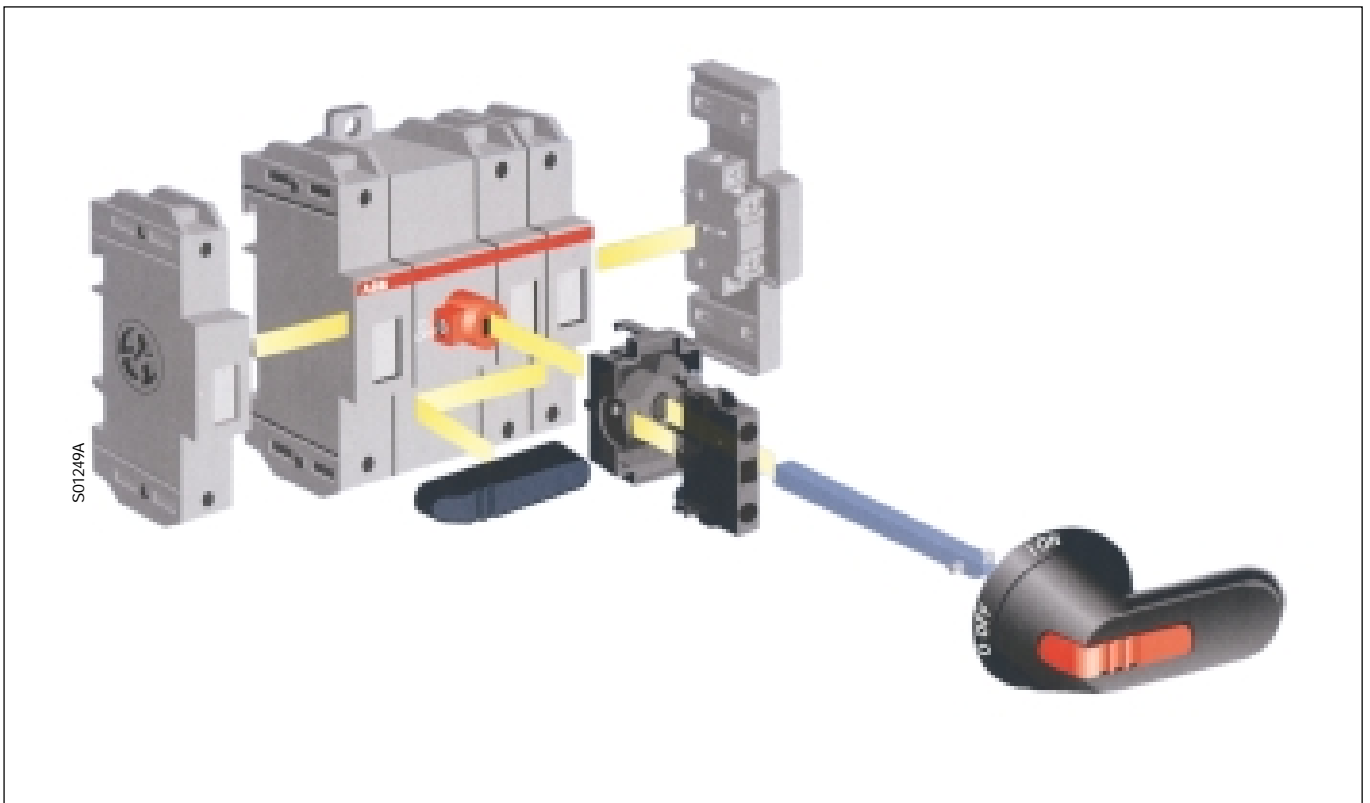
Note: a) For OT isolators shaft OXS5x180 and handle OHY3AH1 are to be ordered separately.
b) OETL 200...315A 3- and 4-pole – Black IP 65 handle OHB80J8, shaft OXP8x140, length 140 mm are supplied as standard.
c) OETL 400...800A 3- and 4-pole – Black IP 65 handle OHB125J12, shaft OXP12x166, length 166 mm are supplied as standard.
d) OETL 1000...1600A 3- and 4-pole – Black IP 65 handle OHB145J12, shaft OXP12x250, length 250 mm are supplied as standard.
e) OETL 2500...3150A 3- and 4-pole – Black IP 65 handle YASDA 7, shaft OXP12x325, length 325 mm are supplied as standard.

SwitchLine
OT 16 ... 125E
Accessories



Size		16	25	40	63	80	100	125
SwitchLine types		OT16ET_	OT25ET_	OT32ET_	OT45ET_	OT63ET_	OT100ET_	OT125ET_
4 th pole		OTP_32_ (right or left)			OTP_63_ (right or left)		OTP_125_ (right or left)	
Handles IP 54 Black, yellow-red, silver and grey I-O, ON-OFF		OH_1P_ OH_3P			-		-	
		OH_1R_ OH_3R						
Handles IP 65 Black, yellow-red, silver and grey I-O, ON-OFF		OH_2P			OH_2R			
		OH_2R						
Auxiliary contacts		OA1G_ OA2_			1NC, 1NO 1NO + 1NC			
Terminal shrouds		OTS 32_			OTS 63_		OTS 125_	

SwitchLine
 OT 125A and 160
 Accessories

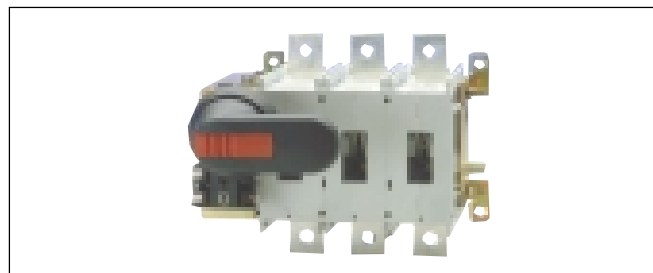




Size		125	160
SwitchLine types - Front operated		OT 125 A_	OT 160 E_
- Door mounted		-	OT 160 ET_
4 th pole		OTP_160 EP	
Handles		OH_65J6 OH_80J6	Black, red/yellow: I-O, ON-OFF, Grey: I-O
Shafts		YAST 1	Black
Auxiliary contacts		OXPA6X_	Shaft lengths from 130 mm up to 430 mm
		OBEA_ + OEXNP1 OA2G11 + OAZX1	1 NO, 1 NC 1 NO + 1 NC

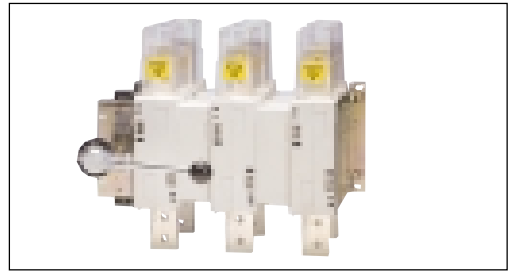
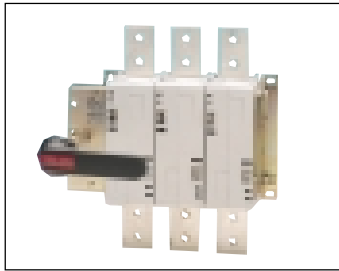
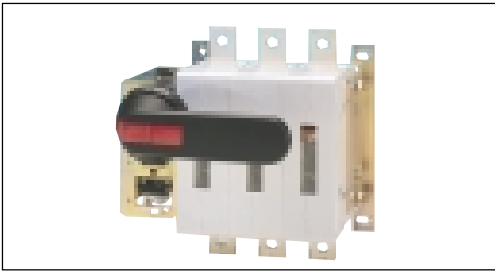
SwitchLine

OETL 200 ... 3150

Accessories



Size		200	250	315
SwitchLine types		OETL 200_	OETL 250_	OETL 315_
Handles		OH_65 J8 OH_80 J8	Black, red-yellow: I-O, ON-OFF Grey: I-O	
Shafts			OXP8X_	Shaft lengths from 140 mm up to 500 mm
Auxiliary contacts			OZXK_	1 NO + 1 NC, 2 NO + 2 NC, 4 NO + 4 NC, 2 NO, 4 NO, 8 NO
Terminal shrouds		OETLZX 128 -for one pole		



400 630 800 1000 1250 1600 2500 3150

OETL 400_ OETL 630_ OETL 800_ OETL 1000_ OETL 1250_ OETL 1600_ OETL 2500_ OETL 3150_

OH_125 J12 OH_145 J12 OH_175 J12 Black, red-yellow: I-O, ON-OFF
Grey: I-O

OH_275 J12 Black, red-yellow: I-O, ON-OFF
Grey: I-O

OXP12X166 Shaft length 166 mm

OXP12X_ Shaft lengths from 185 mm up to 280 mm

OXP12X_ Shaft lengths from 325 mm up to 535 mm

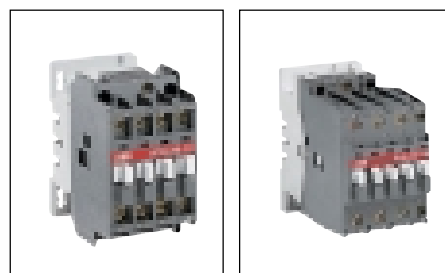
OZXK_ 1 NO + 1 NC, 2 NO + 2 NC,
4 NO + 4 NC, 8 NO + 8 NC, 2 NO, 4 NO, 8 NO, 16 NO

OETLZX31	OETLZX93	OETLZX111	OETLZX102
-for 3-pole	-for 3-pole	-for 3-pole	-for one pole

3-pole Contactors

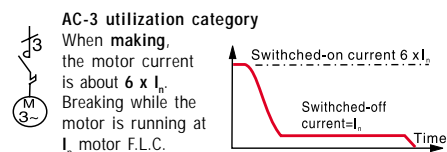
A..., AL..., AE..., AF..

Conforms to IEC 60947-4



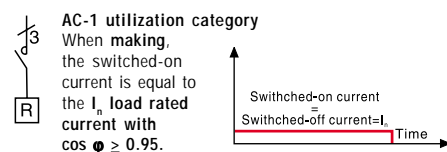
a.c. Circuit Switching

Switching of 3-phase Cage Motors



IEC			A9	A12	A16	A26	A30	A40
			AL9	AL12	AL16	AL26	AL30	AL40
AC-3 Power rating	$\theta < 55^\circ\text{C}$, 400 V	kW	4	5.5	7.5	11	15	18.5
AC-3 Rated operational current	$\theta < 55^\circ\text{C}$, 400 V	A	9	12	17	26	32	37
	$\theta < 55^\circ\text{C}$, 415 V	A	9	12	17	26	32	37
	$\theta < 55^\circ\text{C}$, 690 V	A	7	9	10	17	21	25

Switching of Resistive Circuits



IEC			A9	A12	A16	A26	A30	A40
AC-1 Rated operational current	$\theta < 40^\circ\text{C}$, 690 V	A	25	27	30	45	55	60
	$\theta < 55^\circ\text{C}$, 690 V	A	22	25	27	40	55	60
	$\theta < 70^\circ\text{C}$, 690 V	A	18	20	23	32	39	42
With conductor cross-sectional area		mm ²	2.5	4	4	6	10	16
Rated operational voltage		V	690					

3-phase Motor-rating

General use rating

UL/CSA			A9	A12	A16	A26	A30	A40
Motor-rating	480 V	hp	5	7.5	10	20	25	30
Amp-rating	600 V	A	21	25	30	40	50	60
Nema Size			00	0	-	1	1P	-

3-pole Contactors

a.c. Control supply range	Types	A9-30-10	A12-30-10	A16-30-10	A26-30-10	A30-30-10	A40-30-10
A..., AF... Contactors							
d.c. Control supply range	Types	AL9-30-10	AL12-30-10	AL16-30-10	AL26-30-10	AL30-30-10	AL40-30-10
AL..., AE..., AF... Contactors							

Contactors Main Accessories

Auxiliary contacts	CA 5-..., 1-pole, CAL ...-..., 2-pole	Types	CA 5-10, 1-pole, front mounting 1 x N.O.	CA 5-01, 1-pole, front mounting 1 x N.C.
Timers	TP..., Pneumatic (A..., AE..., AF... contactors only) TE..., Electronic Supply voltages: 24 V a.c./d.c., 110...120; 220...240; 380...440 V a.c.	Types	TP 40 DA, TP 180 DA Direct timing - Front mounting	TP 40 IA, TP 180 IA
Interlocks	VE5-..., Mechanical / Electrical VM..., Mechanical mounting between 2 contactors	Types	VE 5-1	VM 5-1
Surge suppressors	RV..., (Varistor) a.c./d.c. RC..., (Capacitor) a.c. RT..., (Transil diode) d.c.	Types	RV 5	RC 5-1 RT 5

Protection of 3-phase motors

O/L relays	TA..DU..., Thermal O/L relay E..DU..., Electronic O/L relay Standard starting time 2 ... 10 s tripping class 10 A	Types & setting range in Amps	<table border="1"> <thead> <tr> <th>TA 25 DU</th> <th>TA 42 DU</th> </tr> </thead> <tbody> <tr> <td>0.10...0.16</td> <td>1.0...1.4</td> </tr> <tr> <td>0.16...0.25</td> <td>1.3...1.8</td> </tr> <tr> <td>0.25...0.40</td> <td>1.7...2.4</td> </tr> <tr> <td>0.40...0.63</td> <td>2.2...3.1</td> </tr> <tr> <td>0.63...1.0</td> <td>2.8...4.0</td> </tr> <tr> <td></td> <td>3.5...5.0</td> </tr> <tr> <td></td> <td>4.5...6.5</td> </tr> <tr> <td></td> <td>6.0...8.5</td> </tr> <tr> <td></td> <td>7.5...11</td> </tr> <tr> <td></td> <td>10...14</td> </tr> <tr> <td></td> <td>13...19</td> </tr> <tr> <td></td> <td>18...25</td> </tr> <tr> <td></td> <td>24...32</td> </tr> <tr> <td></td> <td>29...42</td> </tr> <tr> <td></td> <td>22...32</td> </tr> <tr> <td></td> <td>29...42</td> </tr> </tbody> </table>	TA 25 DU	TA 42 DU	0.10...0.16	1.0...1.4	0.16...0.25	1.3...1.8	0.25...0.40	1.7...2.4	0.40...0.63	2.2...3.1	0.63...1.0	2.8...4.0		3.5...5.0		4.5...6.5		6.0...8.5		7.5...11		10...14		13...19		18...25		24...32		29...42		22...32		29...42
TA 25 DU	TA 42 DU																																				
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			<table border="1"> <thead> <tr> <th>E16 DU</th> </tr> </thead> <tbody> <tr> <td>0.1...0.32</td> </tr> <tr> <td>0.3...1.0</td> </tr> <tr> <td>0.9...2.7</td> </tr> <tr> <td>2...6.3</td> </tr> <tr> <td>5.7...18.9</td> </tr> </tbody> </table>	E16 DU	0.1...0.32	0.3...1.0	0.9...2.7	2...6.3	5.7...18.9																												
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5.7...18.9																																					



A50 A63 A75	A95 A110	A145 A185	A210 A260 A300	AF400 AF460	AF580 AF750	AF1350 AF1650
AE50 AE63 AE75	AE95 AE110	AF145 AF185	AF210 AF260 AF300			
22 30 37	45 55	75 90	110 140 160	200 250	315 400	475 560
50 65 75	96 110	145 185	210 260 305	400 460	580 750	860 1050
50 65 75	96 110	145 185	210 260 300	400 460	580 750	860 1050
35 43 46	65 82	120 170	210 220 280	350 400	500 650	800 950

100 115 125	145 160	250 275	350 400 500	600 700	800 1050	1350 1650
85 95 105	135 145	230 250	300 350 400	500 600	700 875	1150 1450
70 80 85	115 130	180 180	240 290 325	400 480	580 720	1000 1270
35 50 50	50 70	120 150	185 240 300	2 x 185 2 x 240	2x240 <small>bar / mm 2x50x8</small>	<small>bar / mm 2/100x5</small> <small>bar / mm 3/100x5</small>
1000			690	1000		

40 60 60	60 75	100 125	150 200 250	350 400	500 600	800 900
80 90 105	125 140	230 250	300 350 400	550 650	750 900	1350 1650
2 - 3	- -	4 -	- 5 -	- 6	- 7	- 8

A50-30-00 A63-30-00 A75-30-00	A95-30-00 A110-30-00	A145-30-11 A185-30-11	A210-30-11 A260-30-11 A300-30-11	AF400-30-11 AF460-30-11	AF580-30-11 AF750-30-11	AF1350-30-11 AF1650-30-11
AE50-30-00 AE63-30-00 AE75-30-00	AE95-30-00 AE110-30-00	AF145-30-11 AF185-30-11	AF210-30-11 AF260-30-11 AF300-30-11	AF400-30-11 AF460-30-11	AF580-30-11 AF750-30-11	AF1350-30-11 AF1650-30-11

CAL 5-11 2-pole, side mounting 1 x N.O. + 1 x N.C.	CAL 18-11 2-pole, side mounting 1 x N.O. + 1 x N.C. (1 st block)	CAL 18-11 B 2-pole, side mounting 1 x N.O. + 1 x N.C. (2 nd block)
Inverse timing - Front mounting	TESS Sep. mounting	TESS Direct timing - Separate mounting

VE 5-2	VM 300H	VM 750H	VM 1650H
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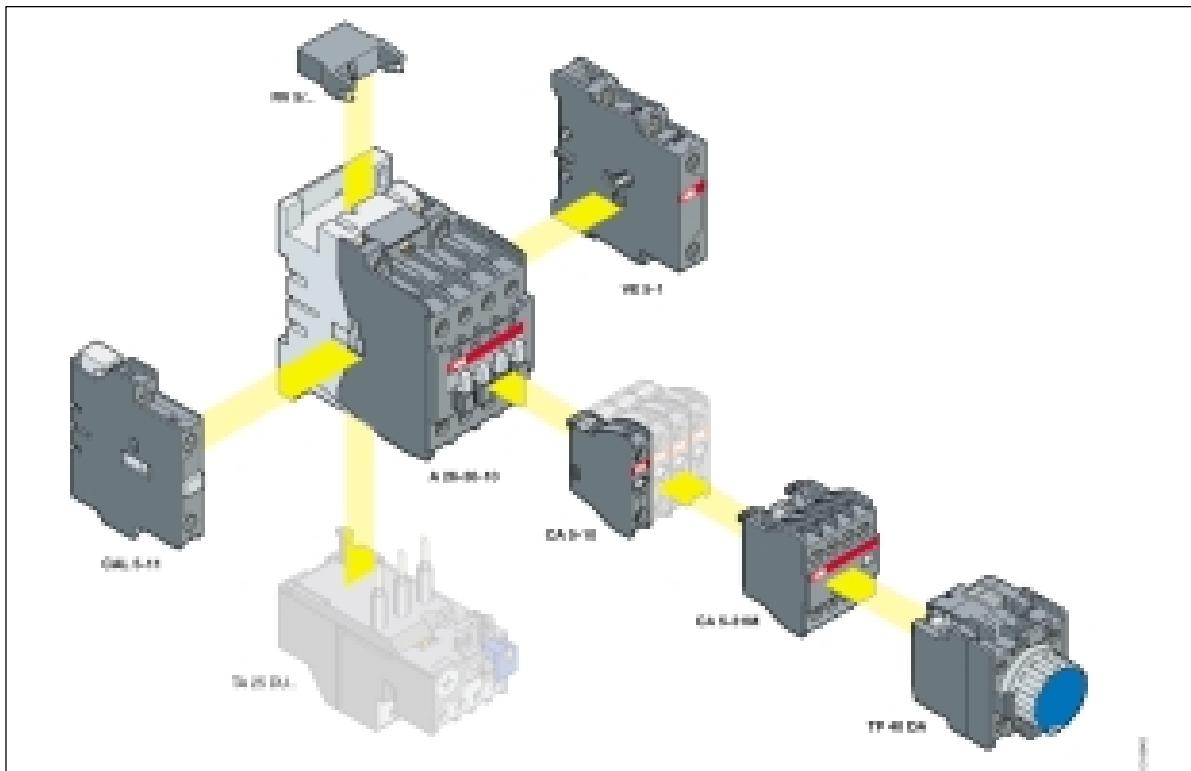
RV 5
RC 5-2
RT 5

The AF 50 ... AF 1650 contactors are equipped with a built-in electronic coil interface which eliminates the need of extra surge suppressors - For A 145 ... A 300 use RC-EH 300

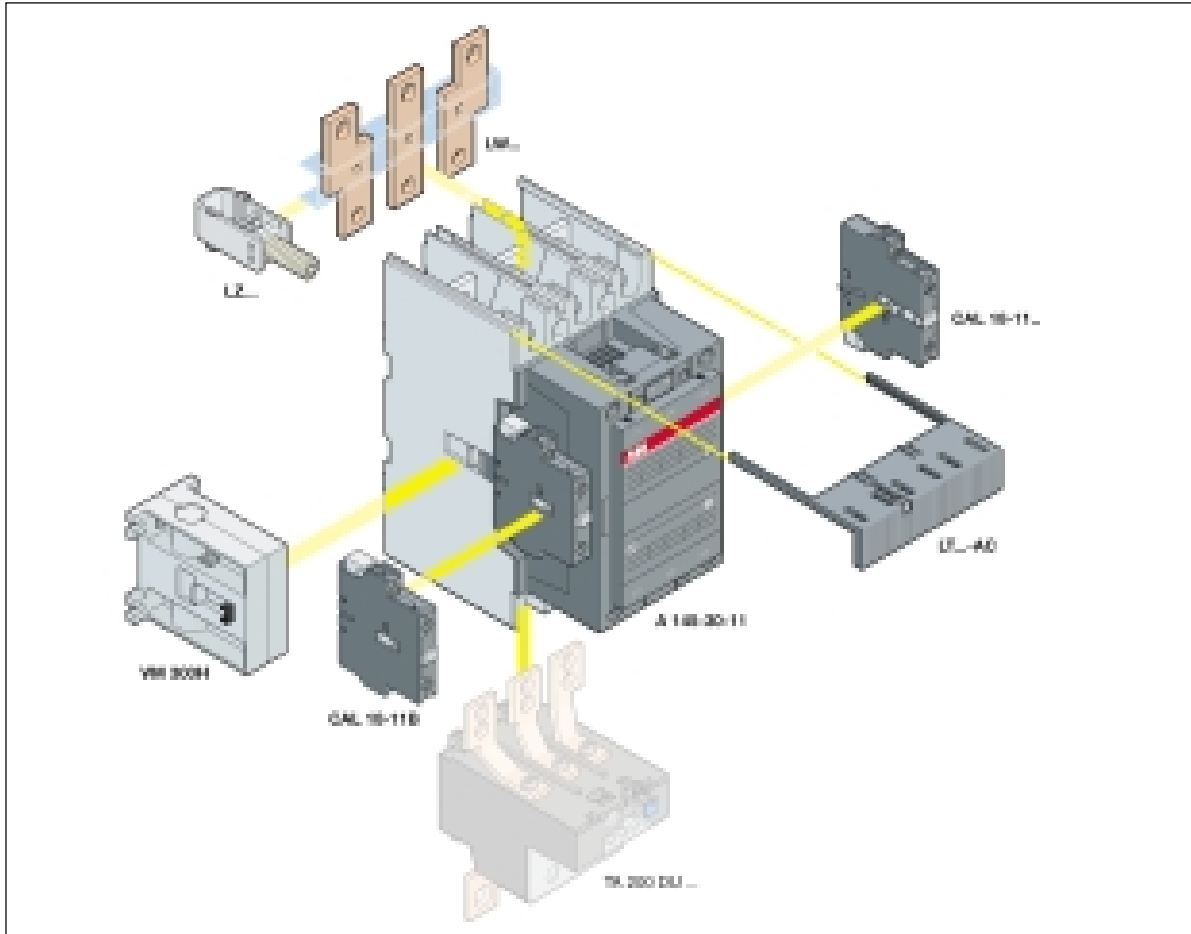
TA 75 DU 29...42 36...52 45...63 60...80	TA 80 DU 60...80 TA 110 DU 65...90 80...110	TA 200 DU 130...175 150...200	TA 450 DU 165...235 220...310	E 200 DU 60...200	E 320 DU 100...320	E 500 DU 150...500	E 800 DU 250...800	E 1250 DU 375...1250
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3-pole Contactors

A 9 ... A 110
Main Accessories



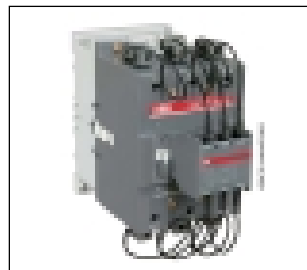
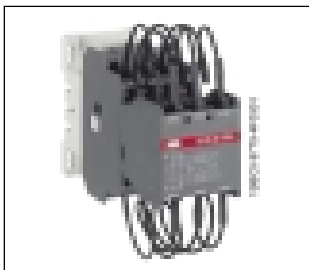
A 145 ... AF 1650



3-pole Contactors for Capacitor Switching

UA...RA

Conforms to IEC 60947-4



Application

The UA..RA contactors can be used in installations in which the peak current exceeds 100 times nominal rms current. The contactors are delivered complete with their damping resistors and must be used without additional inductances (see table below).

The capacitors must be discharged (maximum residual voltage at terminals ≤ 50 V) before being re-energized when the contactors are making. Their electrical durability is 250,000 operating cycles for $U_e < 500$ V and 100,000 operating cycles for $500 \text{ V} \leq U_e \leq 690$ V.

Description

The UA..RA contactors are fitted with a special front mounted block, which ensures the serial insertion of 3 damping resistors into the circuit to limit the current peak on energization of the capacitor bank. Their connection also ensures capacitor precharging in order to limit the second current peak occurring upon making of the main poles.

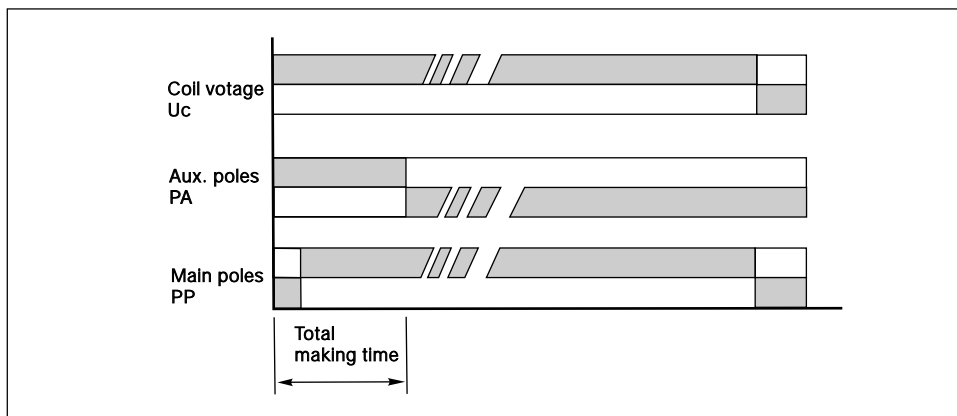
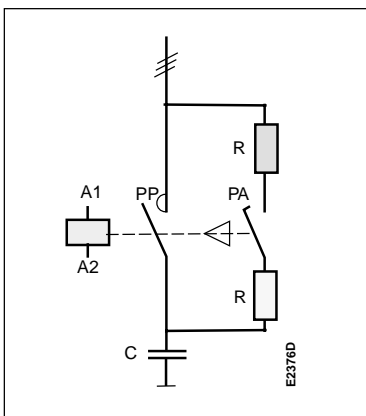
Operating principle

The front-mounted block mechanism of the UA..RA contactors ensures:

- early making of the auxiliary "PA" poles with respect to the main "PP" poles
- automatic return to the open position of the auxiliary "PA" poles after the main poles are closed.

When the coil is energized, the early making auxiliary poles connect the capacitor to the network via the set of 3 resistors. The damping resistors attenuate the first current peak and the second inrush current when the main contacts begin to make. Once the main poles are in the closed position, the auxiliary poles automatically break.

When the coil is de-energized, the main poles break ensuring the breaking of the capacitor bank. The contactor can then begin a new cycle.



The insertion of resistors allows to damp the highest current peak of the capacitor when switching on, whatever its level.

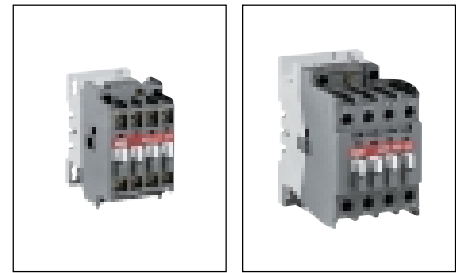
Selection table according to IEC

Type	Power in kvar - 50/60 Hz (AC-6b)															Max. permissible peak current I	gG type fuses A max (*)
	230/240 V			400/415 V			440 V			500/550 V			690 V				
	40°C	55°C	70°C	40°C	55°C	70°C	40°C	55°C	70°C	40°C	55°C	70°C	40°C	55°C	70°C		
UA 16-30-10 RA	8	7.5	6	12.5	12.5	10	15	13	11	18	16	12.5	22	21	17	Unlimited	80
UA 26-30-10 RA	12.5	11.5	9	22	20	15.5	24	20	17	30	25	20	35	31	26		125
UA 30-30-10 RA	16	16	11	30	27.5	19.5	32	30	20.5	34	34	25	45	45	32		200
UA 50-30-00 RA	25	24	20	40	40	35	50	43	37	55	50	46	72	65	60	Unlimited	200
UA 63-30-00 RA	30	27	23	50	45	39	55	48	42.5	65	60	50	80	75	65		200
UA 75-30-00 RA	35	30	25	60	50	41	65	53	45	75	65	55	100	80	70		200
UA 95-30-00 RA	40	35	30	70	60	53	75	65	58	85	75	70	120	105	85	Unlimited	250
UA 110-30-00 RA	45	40	35	80	70	60	85	75	70	95	82	78	130	110	100		250

4-pole Contactors

A., AL., AE., EK..

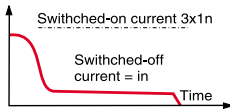
Conforms to IEC 60947-4



a.c. Circuit Switching

Switching of Resistive Circuits

When making, the switched-on current is equal to the I_n load rated current with $\cos \phi \geq 0.95$.



IEC	A9		A16		A26	
	AL9	AL16	AL16	AL16	AL26	AL26
AC-1 Rated operational current	$\theta < 40^\circ\text{C}$ A 25	$\theta < 55^\circ\text{C}$ A 22	$\theta < 70^\circ\text{C}$ A 18	30 27 23	45 40 32	45 40 32
With conductor cross-sectional area	mm ²		2.5	4	6	
Rated operational voltage	V		690			

3-phase Motor-rating

General use rating

UL/CSA		A9		A16		A26	
Amp-rating	600 V	A	21	30	40	40	40
Nema Size			00	0	1	1	1

4-pole Contactors

4 N.O. main poles

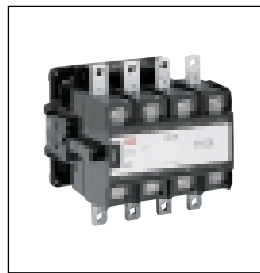
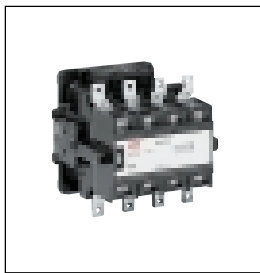
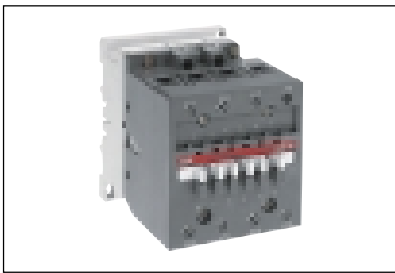
a.c. Control supply range A..., EK... Contactors	Types	A9-40-00 A16-40-00	A26-40-00
d.c. Control supply range AL..., AE..., EK... Contactors	Types	AL9-40-00 AL16-40-10	AL26-40-00

2 N.O. + 2 N.C. main poles

a.c. Control supply range A... Contactors	Types	A9-22-00 A16-22-00	A26-22-00
d.c. Control supply range AL..., AE... Contactors	Types	AL9-22-00 AL16-22-00	AL26-22-00

Contactors Main Accessories

Auxiliary contacts	CA 5-..., 1-pole, CAL ...-..., 2-pole	Types	CA 5-10 1-pole, front mounting 1 x N.O.	CA 5-01 1-pole, front mounting 1 x N.C.
Timers	TP..., Pneumatic for A..., AE... contactors only TE..., Electronic Supply voltages: 24 V a.c./d.c., 110...120; 220...240; 380...440 V a.c.	Types	TP 40 DA, TP 180 DA Direct timing - Front mounting TESS Direct timing - Separate mounting	TP 40 IA, TP 180 IA
Interlocks	VE5-..., Mechanical / Electrical VM.. VH... Mechanical mounting between 2 contactors	Types	VE 5-1	VM 5-1
Surge suppressors	RV..., (Varistor) a.c./d.c. RC..., (Capacitor) a.c. RT..., (Transil diode) d.c.	Types	RV 5	RC 5-2 RT 5



A45	A50	A75	EK110	EK150	EK175	EK210	EK370	EK550	EK1000
AE45	AE50	AE75							
70	100	125	200	250	300	350	550	800	1000
60	85	105	180	230	270	310	470	650	800
50	70	85	155	200	215	250	400	575	720
25	35	50	95	150	185	240	2 x 185	2 x 240	2 x 300
	690					1000			

80	80	105	170	200	250	300	420	540	-
2	2	3	-	-	-	-	-	-	-

A45-40-00	A50-40-00	A75-40-00	EK110-40-11	EK150-40-11	EK175-40-11	EK210-40-11	EK370-40-11	EK550-40-11	EK1000-40-11
AE45-40-00	AE50-40-00	AE75-40-00	EK110-40-21	EK150-40-21	EK175-40-21	EK210-40-21	EK370-40-21	EK550-40-21	EK1000-40-21

A45-22-00	A75-22-00	-	-	-	-	-	-	-	-
AE45-22-00	AE75-22-00	-	-	-	-	-	-	-	-

CAL 5-11 2-pole, side mounting
1 x N.O. + 1 x N.C.

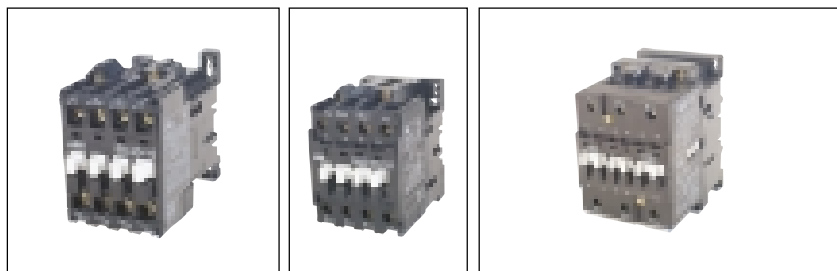
CAL 16-11 2-pole, side mounting
1 x N.O. + 1 x N.C.

Inverse timing - Front mounting

TE5S Direct timing - Separate mounting (interpose an N.. contactor relay for EK 370 ... EK 1000)

VE 5-2	VH 145 (Mechanical / Electrical)	VH 300 (Mechanical / Electrical)	-
-	-	-	VH 800
RV 5 RC 5-2 RT 5	-	RC-EH 300	RC-EH 800 (Varistor + RC)
			-

3-pole Air Break Contactors B & EH Conforms to IEC 60947-4



A.C. operated			Type	B 9	B 12	B 16	B 25	B 30	B 40	B 50	B 63	B 75		
Number of main poles				3	3	3	3	3	3	3	3	3		
Motor max. power rating ⁽¹⁾ AC-3														
50/60 Hz, 3-phase at:			220-230 V	kW	2.2	3	4	6.5	9	11	15	18.5	22	
			240 V	kW	2.2	3	4	7.5	9	11	15	18.5	22	
			380-400 V	kW	4	5.5	7.5	11	15	18.5	22	30	37	
Motors		415 V		kW	4	5.5	7.5	11	15	18.5	25	37	40	
		440 V		kW	4	5.5	7.5	11	15	22	25	37	40	40
		500 V		kW	4	5.5	7.5	11	15	22	30	37	45	45
		660-690 V		kW	4	5.5	5.5	11	15	22	30	37	40	40
		1000 V		kW	-	-	-	-	-	-	22	30	33	37
Rated operating current I_o max. AC-1														
			$\theta \leq 40^{\circ}\text{C}$ ⁽²⁾	A	22	24	28	45	55	70	100	115	125	
			$\theta \leq 55^{\circ}\text{C}$ ⁽²⁾	A	10	22	25	40	45	60	85	95	105	
			$\theta \leq 70^{\circ}\text{C}$ ⁽²⁾	A	17	19	23	32	36	50	70	80	85	
			with cable cross-section	mm²	2.5	2.5	4	6	6	35	50	50	50	
Motor rated operating current I_o max. AC-3														
50/60 Hz, 3-phase at:			220-230 V	A	9	12	16	25	33	40	53	65	75	
			240 V	A	9	12	16	25	32	40	50	65	75	
			380-400 V	A	9	12	16	25	32	40	50	65	75	
Motors		415 V		A	9	12	16	25	32	40	50	65	72	
		440 V		A	9	12	16	20	27	37	45	65	70	70
		500 V		A	7	10	13	17	23	33	45	55	65	65
		660-690 V		A	6	8	8	13	18	25	35	43	46	46
		1000 V		A	-	-	-	-	-	17	23	25	28	28
Short-circuit protection														
Without thermal O/L relay, Non-motor circuit ⁽³⁾														
U_o ≤ 500 V a.c., max. fuse gG (gl)			A	25	25	32/35	50	63	80	100	125	160		
Coil consumption (average value)														
for a.c. operated contactors			- 50 Hz pull-in	VA		65		85		175				
			- 60 Hz pull-in	VA		75		97		195				
			- 50 Hz holding	VAW		9/2.2		9/3		17/5				
			- 60 Hz holding	VAW		9/2.2		10/3		19/5.7				
Mechanical endurance			Mil. ops.					10						
Electrical endurance AC-3 for I_o ≤ 400 V			Mil. ops.					> 1						
Thermal overload relays			Type		T 25 DU				T 75 DU					
			Current range	A	0.1 ... 32 (18 ranges)				18 ... 80 (6 ranges)					
					T 25 DU				T 75 DU					

(1) Relationship kW/hp to the value of motor rated current at 1500 r.p.m., 50 Hz please contact us.
 (2) Temperature measured up to the contactor.
 (3) For short-circuit protection of motor starters, please inquire for co-ordination tables.
 (4) 40-400 Hz coils with built-in rectifier.



Type	EH 80	EH 90	EH 100	EH 145	EH 175	EH 210	EH 260	EH 300	EH 370	EH 550	EH 700	EH 800
main poles	3	3	3	3	3	3	3	3	3	3	3	
kW	22	30	30	45	55	59	80	90	110	160	220	220
kW	22	30	30	45	55	59	80	90	110	160	220	220
kW	40	45	55	75	90	110	140	160	200	280	370	400
kW	45	55	59	75	90	110	140	160	220	315	400	425
kW	45	55	59	75	90	110	140	160	220	315	400	450
kW	55	59	75	90	110	132	180	200	250	400	480	520
kW	45	59	110	110	132	160	200	250	355	500	600	650
kW	45	75	90	110	132	160	180	200	220	250	315	315
A	145	160	200	230	260	300	400	445	550	800	1000	1000
A	130	140	180	200	230	270	340	375	470	650	800	800
A	110	130	155	160	170	215	290	325	400	575	720	720
mm²	50	70	95	120	150	185	300	300	2x185	2x240	2x300	2x300
A	80	100	120	150	185	210	260	305	400	550	700	750
A	80	100	120	145	185	210	260	305	400	550	700	750
A	80	96	120	145	185	210	260	305	400	550	700	750
A	80	96	120	145	185	210	260	300	400	550	700	720
A	80	95	120	145	185	210	240	280	370	550	700	720
A	80	95	120	145	170	210	240	280	370	550	700	720
A	50	65	120	120	170	210	220	280	370	550	700	720
A	35	55	64	80	94	113	125	140	155	175	220	220
max. fuse gG (gl) A	160	200	250	250	355	355	500	500	630	800	1000	1000
VA	280	280	430	430	800	800	1100	1100	2600	2600	3500	3500
VA	325	325	490	490	900	900	1200	1200	2900	2900	4000	4000
VAW	25/9	25/9	30/10	30/10	44/15	44/15	52/18	52/18	90/36	90/36	125/50	125/50
VAW	25/10	25/10	35/11	35/11	52/18	52/18	65/25	65/25	105/44	105/44	140/60	140/60
Mil. ops.	10	10	10	10	10	10	10	10	5	5	5	5
Mil. ops.	> 1	> 1	> 1	> 1	> 1	> 1	> 0.6	> 0.6	> 0.5	> 0.5	> 0.5	> 0.5
Type	T 80 DU	Ti 135 DU		Ti 450 DU					T 900 DU/SU			
Range	A 29...80	65...140		130...400					265...850			



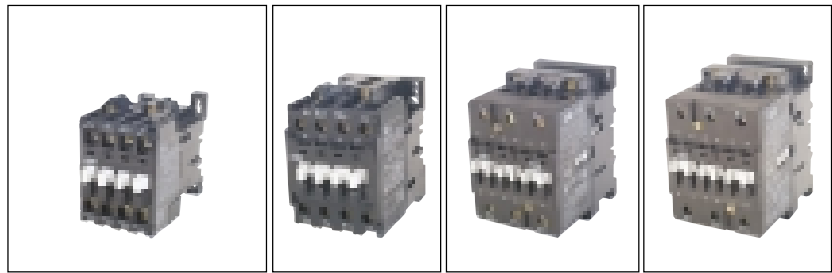
T 80 DU

Ti 135 DU

Ti 450 DU

T 900 DU

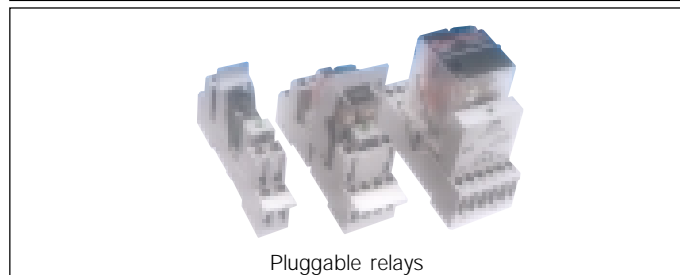
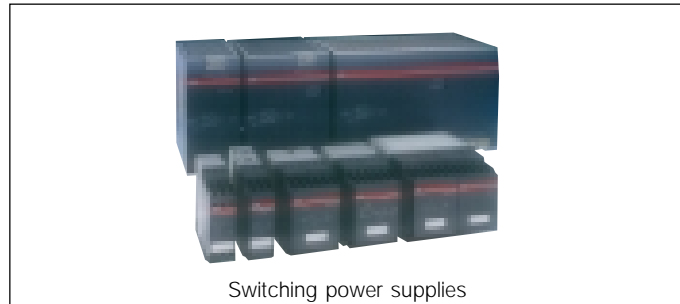
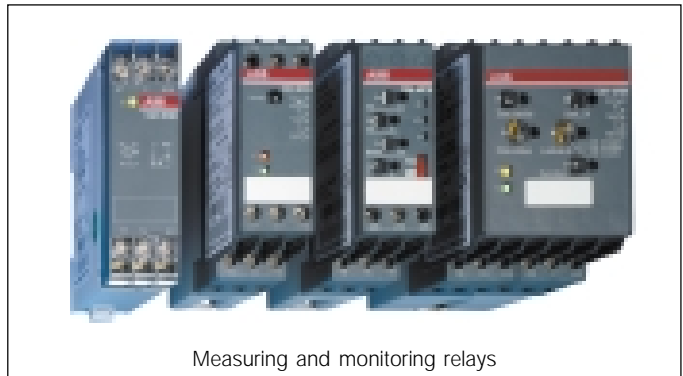
4-pole Air Break Contactors B & EK Conforms to IEC 60947-4



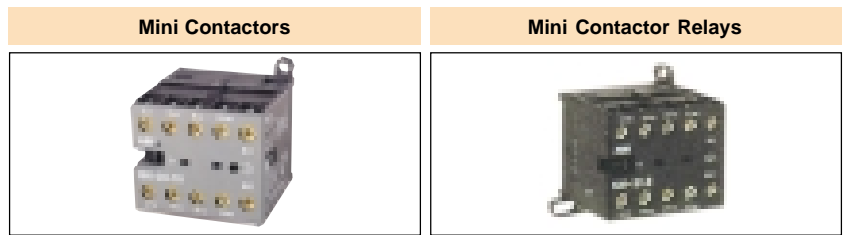
A.C. operated	Type	B 9	B 12	B 16	B 25	B 40	B 50	B63	B75	
Number of main poles		4	4	4	4	4	4	4	4	
Rated operating voltage U_o max. AC-1	V	690			1000					
Rated operating current I_o max. AC-1										
$\theta \leq 40^\circ\text{C}$ ⁽¹⁾	A	22	24	28	45	70	100	115	125	
$\theta \leq 55^\circ\text{C}$ ⁽¹⁾	A	20	22	25	40	60	85	95	105	
$\theta \leq 70^\circ\text{C}$ ⁽¹⁾	A	17	19	23	32	50	70	80	85	
with cable cross-section	mm ²	2.5	2.5	4	6	35	50	50	50	
Short-circuit protection										
Without thermal O/L relay, Non-motor circuit										
$U_o \leq 500$ V a.c., max. fuse gG (gl)	A	25	25	32/35	50	80	100	125	160	
Coil consumption (average value)										
for A.C. operated contactors										
- 50 Hz pull-in	VA		65		85		175			
- 60 Hz pull-in	VA		75		97		195			
- 50 Hz holding	VAW		9/2.2		9/3		17/5			
- 60 Hz holding	VAW		9/2.2		10/3		19/5.7			
Mechanical endurance	Mil. ops.	10								
Electrical endurance AC-1 for $I_o \leq 400$ V	Mil. ops.	> 0.65								

(1) Temperature measured up to the contactor.

Electronic Products









Air Break Contactors
Mini Contactor
Conforms to IEC 60947-4





A.C. operated	Connection Types	Screw	Flat pin	Soldering pins	Screw	Flat pin	Soldering pins
		B6... B7...	B6...F B7...F	B6...P B7...P	K6...	K6...F	K6...P
Number of paths		3 main poles + 1 aux. contact 4 main poles			4		
D.C. operated	Connection Types	Screw	Flat pin	Soldering pins	Screw	Flat pin	Soldering pins
		BC6... BC7...	BC6...F BC7...F	BC6...P BC7...P	KC6...	KC6...F	KC6...P
Number of poles		3 main poles + 1 aux. contact			4		
Max. power rating AC-3 3 phase - 50/60 Hz - 380/440 V kW		B(C)6 4		B(C)7 5.5			
Rated operating current AC-1 I_e max. at amb. temp. $\leq 40^\circ\text{C}$		A		20			
Conventional free air current I_e (1) acc. to IEC 947-5-1							
AC-15 at 230 V 50/60 Hz		A		-	4		
DC-13 at 24 V d.c.		A		-	2.5		

(1) Ratings also valid for AC11 respectively DC11 acc. to IEC 337-1

Accessories (major types)	Types		
Auxiliary contact blocks	 CA6-11 M Front mounting	 CA6-11 K-F mounting at one side	 CA6-11 M-P
Surge suppressor and thermal O/L Relay	 RV-BC6/...	Surge suppressor	Thermal O/L Relay and add-on aux. contact block CAT6  T 7 DU  CAT 6

Contactors Relays
4-pole
Conforms to IEC 60947-4

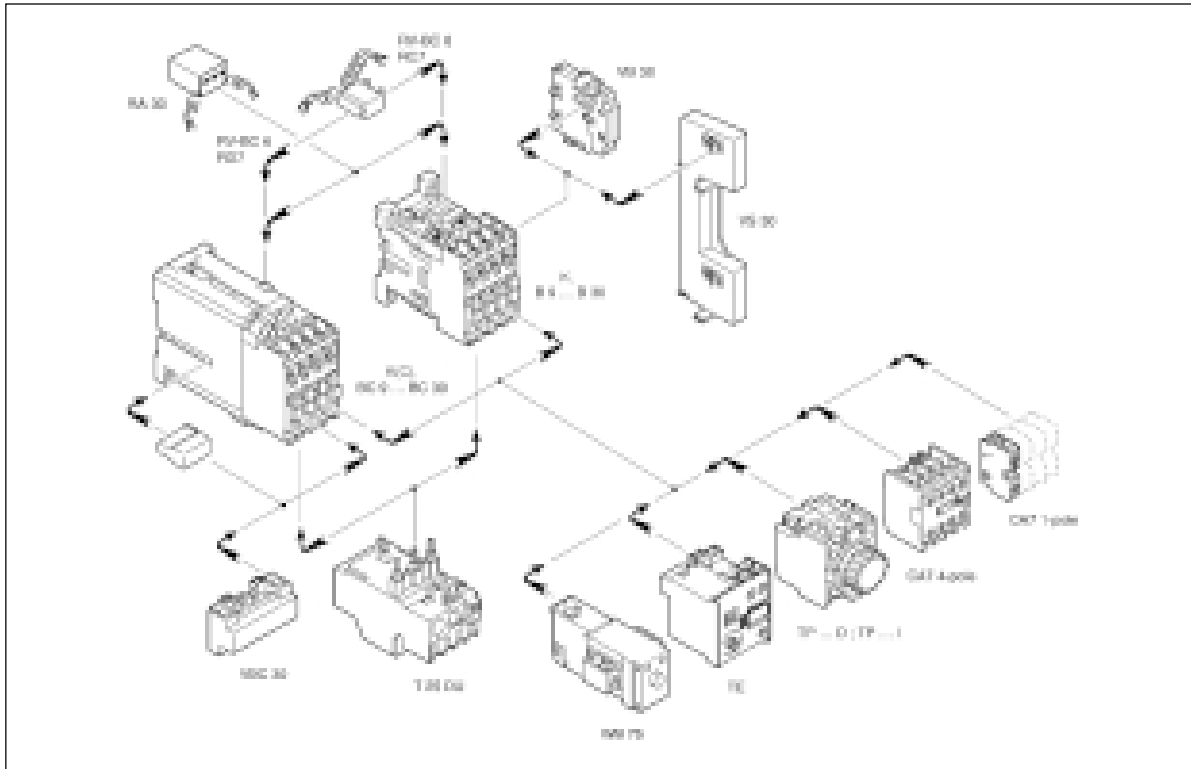


A.C. operated 	Types	D.C. operated (solid core type) 
	K22, K31, K40	
Version	1-stack	
Number of poles	4	
Conventional free air thermal current I_{th}	A	10
Rated operational current I_e (1) on AC-15 acc. to IEC 947-5-1 at 230-240 V - 50/60 Hz	A	4
on DC-13 acc. to IEC 947-5-1 at 48 V - D.C.	A	6

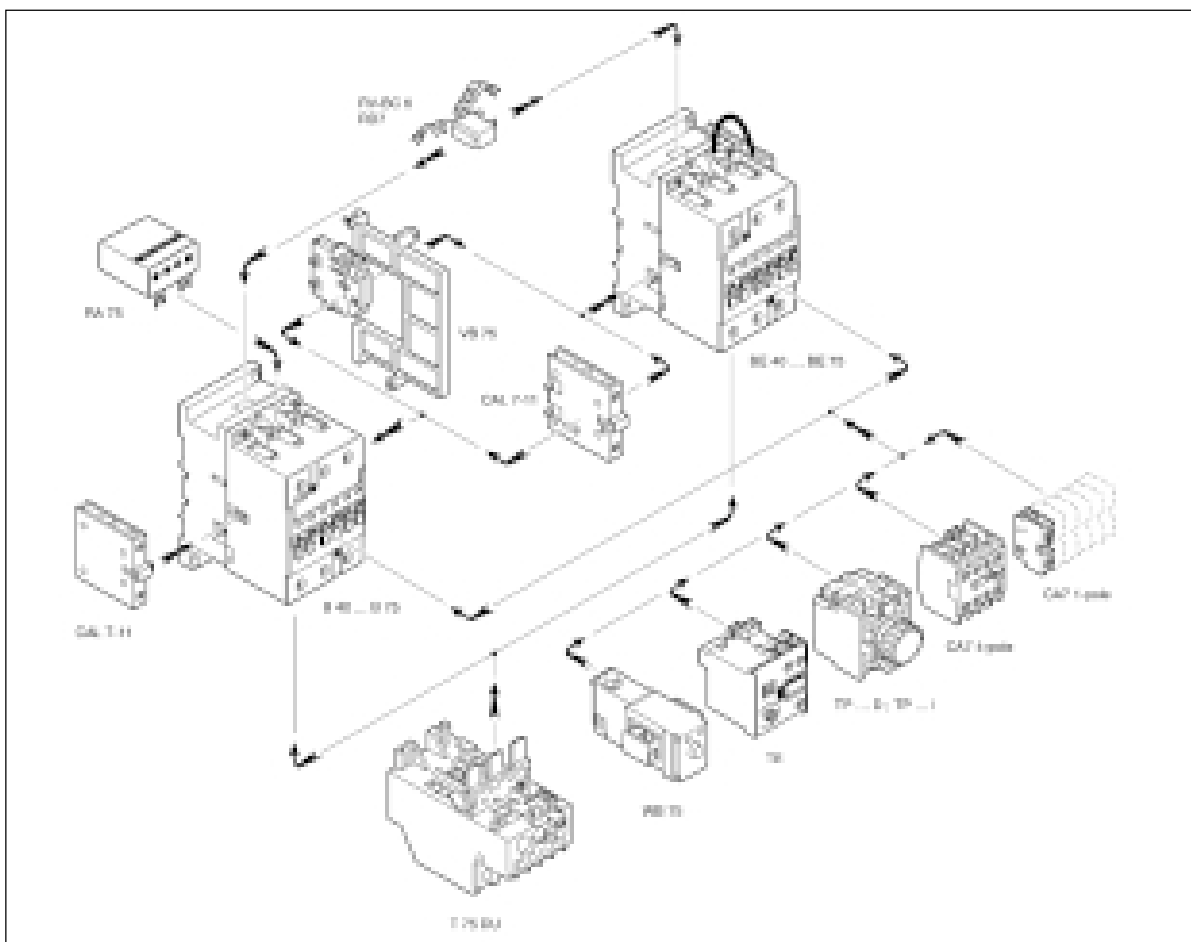
(1) Ratings also valid for AC11 respectively DC11 acc. to IEC 337-1

Air Break Contactors
Conforms to IEC 60947-4
Accessories

K(C), B(C)9 ... B(C) 30

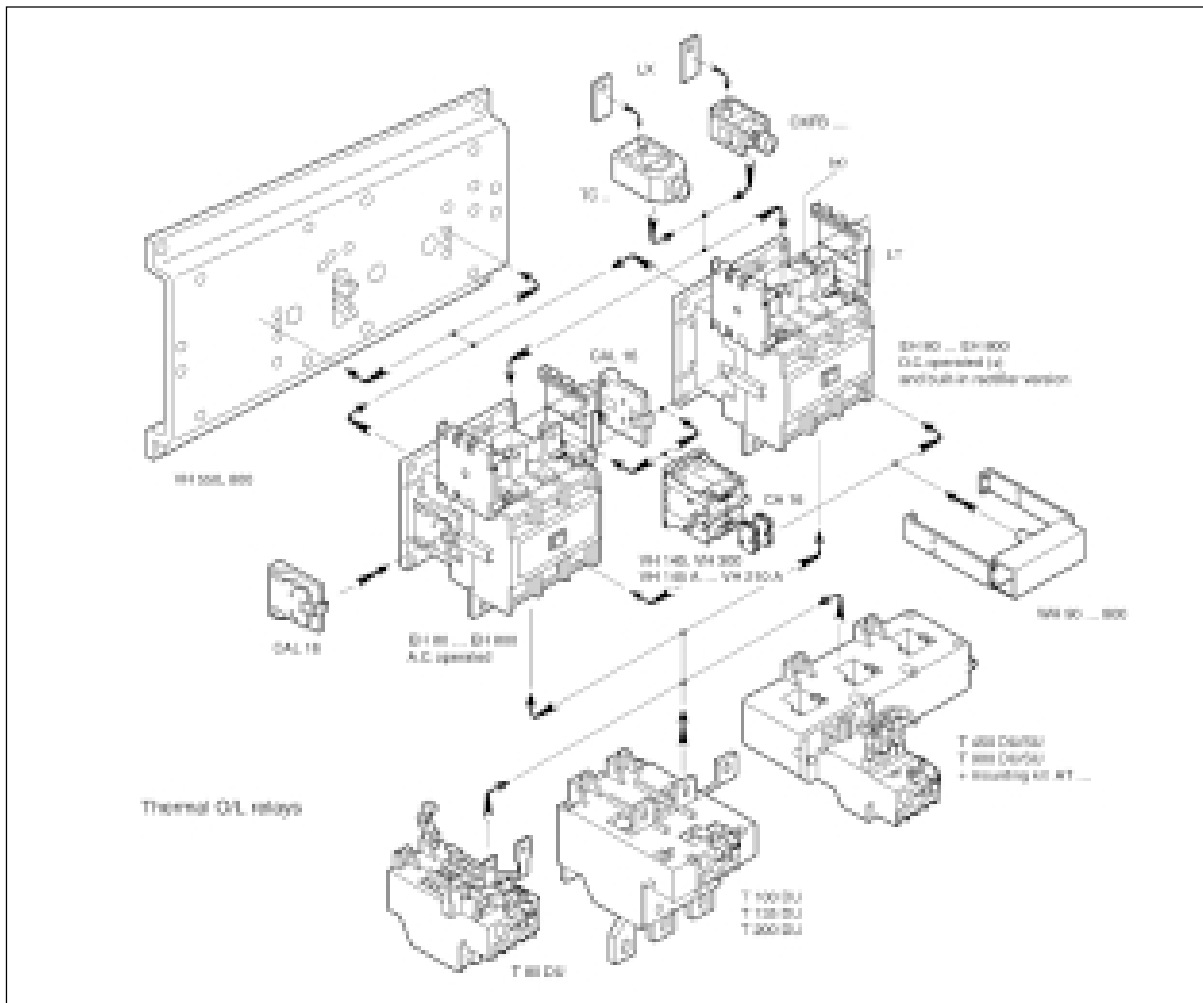


B(E)40 ... B(E) 75

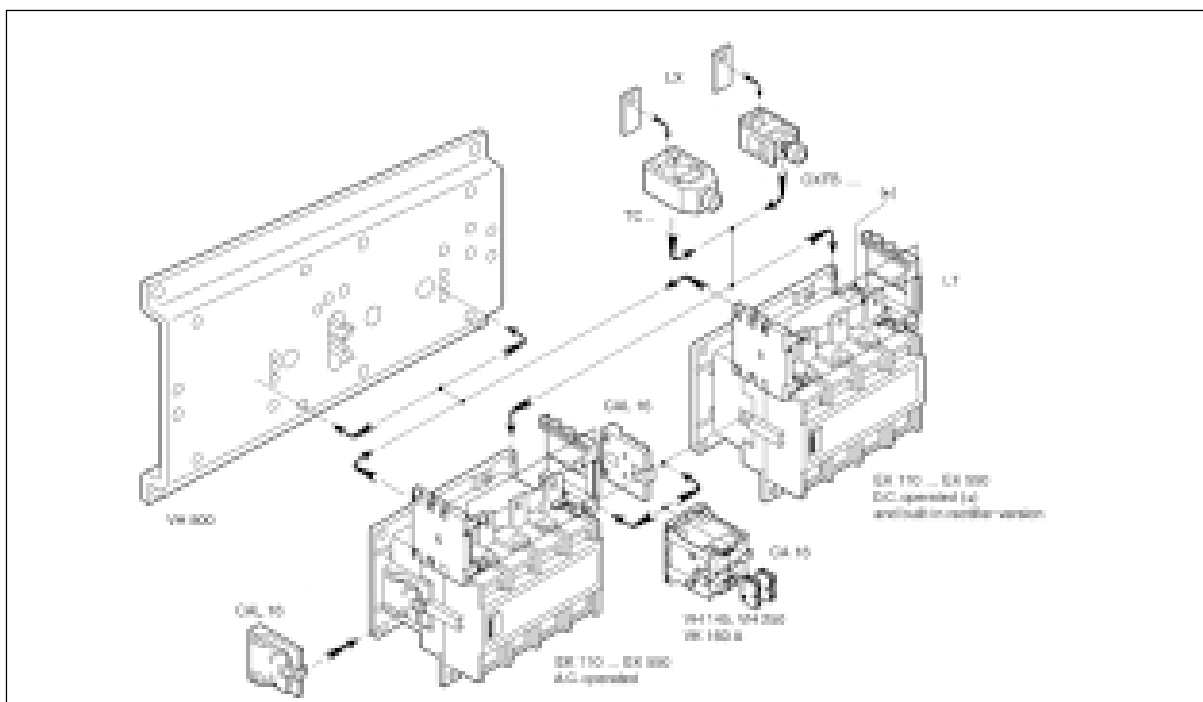


Air Break Contactors
Conforms to IEC 60947-4
Accessories

EH 80 ... EH 800



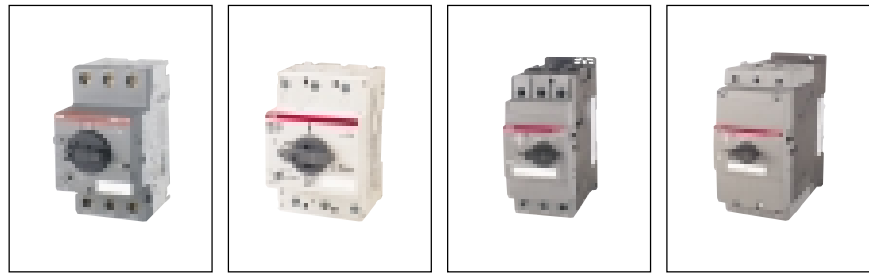
EK 110 ... EK 550



Manual Motor Starters

Type MS

Conforms to IEC 60947-4



Manual motor starter	Type	MS 116	MS 325	MS 450	MS 495/497
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General technical data

Disconnection characteristics (to IEC/CN 60947-1)		yes	–	yes	yes	yes	yes
Mechanical service life in operations		100.000	100.000	100.000	50.000	50.000	50.000
Permissible ambient temperature							
- open	°C	– 20 ... + 55/70	– 25 ... + 55	– 25 ... + 55	– 20 ... + 60/70	– 20 ... + 60/70	– 20 ... + 60/70
- encapsulated (in protective housing)	°C	on request	– 25 ... + 40	– 25 ... + 40	– 20 ... + 35	– 20 ... + 35	– 20 ... + 35
- storage temperature	°C	– 50 ... + 80	– 50 ... + 80	– 50 ... + 80	– 50 ... + 80	– 50 ... + 80	– 50 ... + 80
Temperature compensation					with	with	with
Mounting position					any	any	any
Permissible altitude	m	3000	3000	3000	2000	2000	2000
Permissible resistance to vibrations (IEC 68-2-27)		10-150 Hz Amplitude 5 g	10-150 Hz Amplitude 5 g	10-150 Hz Amplitude 5 g	on request	on request	on request
Permissible resistance to shocks-sinusoidal shock (IEC 68-2-27)		25 g (11 ms)	15 g (11 ms)	15 g (11 ms)	on request	on request	on request
Rated insulation voltage U_i to EN 60947 to CSA / U_L / NEMA	V AC V AC	690 600	690 600	690 600	690 600	690 600	690 600
Rated operating voltage U_e up to	V	690 AC/440 DC	690 AC/440 DC	690 AC/440 DC	690 AC/440 DC	690 AC/440 DC	690 AC/440 DC
Rated impulse strength U_{imp}	kV	6	6	6	6	6	6
Rated continuous thermal current I_{th}	A	16	25	50	50	100	100
Rated operating current I_e / AC 3 max. @ 415 V A		16	25	50	50	100	100
Rated frequency	Hz	50 / 60					
Rated current ranges I_e (number of ranges)	A	0.1...16 (11)	0.1 ... 25 (14)	0.1 ... 25 (14)	11 ... 50 (7)	11 ... 50 (7)	28 ... 100 (6)
Device for phase failure protection		with	with	with	with	with	with
Electromagnetic trips Response value set ex-works		9.6 ... 14.4 x I_n	7.5 ... 12 I_n (1) 9 ... 14 I_n (2) 10 ... 15 I_n (3) 12.5 ... 17.5 I_n (4)	7.5 ... 12 I_n (1) 9 ... 14 I_n (2) 10 ... 15 I_n (3) 12.5 ... 17.5 I_n (4)	10.4 I_n ... 15.5 I_n	10.4 I_n ... 15.5 I_n	10.4 I_n ... 15.5 I_n

Note:

- MS116 – handle type OHB2AJM, shaft OXS5x180, auxiliary contact HKF1-11 (front mounting), HK1-11 (lateral attachment) and SK1-11 signal contact for lateral attachment
- MS225/325 – handle type OHB2AJM, shaft OXS5x180, auxiliary contact HK-11 (lateral attachment) and SK-11 signal contact for lateral attachment
- MS450/495 – handle type OHB2AJM, shaft OXS5x180, auxiliary contact HK4-11 (front mounting), HKS4-11 (lateral attachment) and SK4-11 signal contact for lateral attachment

- Current ranges 0.16 to 0.63 A
- Current ranges 1 to 2.5 A
- Current ranges 4 to 6.3 A
- Current ranges 9 to 25 A

Manual Motor Starters

Type MS

Conforms to IEC 60947-4

Short-circuit protection MS 116, setting ranges, short-circuit strength and max. back-up fuses

Setting ranges	from A	to A	Maximum rated current of the short-circuit fuses if $I_{cc} > I_{cs}$ (1)											
			at 230 V AC		at 400/415 V AC		at 440 V AC		at 500 V AC		at 690 V AC			
			I_{cs} kA	gL, aM A	I_{cs} kA	gL, aM A	I_{cs} kA	gL, aM A	I_{cs} kA	gL, aM A	I_{cs} kA	gL, aM A		
Fuse types: Diazed, I.v.h.b.c., utilisation categories: gL, aM (VDE), gL/gG (IEC)														
	0.1 ... 0.16	0.16 ... 0.25	Short-circuit capacity until 50 kA no backup fuse required	Short-circuit capacity until 50 kA no backup fuse required	on request	on request	Short-circuit capacity until 50 kA no backup fuse required		Short-circuit capacity until 50 kA no backup fuse required		Short-circuit capacity until 50 kA no backup fuse required			
	0.25 ... 0.4	0.4 ... 0.63					30	25	10	25				
	1.0 ... 1.6	1.6 ... 2.5					5	63						
	2.5 ... 4.0	4.0 ... 6.3					2	63						
	4.0 ... 6.3	6.3 ... 10.0					2	63						
	10.0 ... 16.0						2	63						

Short-circuit protection MS 325, setting ranges, short-circuit strength and max. back-up fuses

Setting ranges	from A	to A	Maximum rated current of the short-circuit fuses if $I_{cc} > I_{cs}$ (1)									
			at 230 V AC		at 400/415 V AC		at 440 V AC		at 500 V AC		at 690 V AC	
			I_{cs} kA	gL, aM A	I_{cs} kA	gL, aM A	I_{cs} kA	gL, aM A	I_{cs} kA	gL, aM A	I_{cs} kA	gL, aM A
Fuse types: Diazed, I.v.h.b.c., utilisation categories: gL, aM (VDE), gL/gG (IEC)												
	0.1 ... 0.16	0.16 ... 1.6	Short-circuit proof No back-up fuse required up to $I_{cc} = 50$ kA									
	1.6 ... 2.5	2.5 ... 4.0										
	4.0 ... 6.3	6.3 ... 9.0										
	9.0 ... 12.5	12.5 ... 16.0			45	80	27	80	4.5	50		
	16.0 ... 20.0	20.0 ... 25.0			40	100	25	100	4	50		
					35	100	22	100	3.5	50		
					30	125	20	125	3	50		

Short-circuit protection MS 450, setting ranges, short-circuit strength and max. back-up fuses

Setting ranges	in A	Maximum rated current of the short-circuit fuses if $I_{cu} > I_{cu}$ (1)																										
		230 V AC			400/415 V AC			440 V AC			500 V AC			690 V AC														
		I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A												
	11 ... 16	Short-circuit-proof No back-up fuse required up to $I_{cc} = 100$ kA																										
	14 ... 20																25	50	100	25	50	100	6	12	63	3	5	63
	18 ... 25																25	50	125	25	50	100	6	12	80	3	5	63
	22 ... 32																25	50	125	15	30	100	6	12	80	3	5	63
	28 ... 40																25	50	125	15	30	125	5	10	100	2	4	63
	36 ... 45																25	50	160	15	30	125	5	10	100	2	4	63
	36 ... 50																25	50	160	15	30	125	5	10	100	2	4	63
																	25	50	160	15	30	125	5	10	100	2	4	80

Short-circuit protection MS 495, setting ranges, short-circuit strength and max. back-up fuses

Setting ranges	in A	Maximum rated current of the short-circuit fuses if $I_{cu} > I_{cu}$ (1)																										
		230 V AC			400/415 V AC			440 V AC			500 V AC			690 V AC														
		I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A												
	28 ... 40	Short-circuit-proof No back-up fuse required up to $I_{cc} = 100$ kA																										
	36 ... 50																25	50	125	20	40	125	6	12	100	6	3	63
	45 ... 63																25	50	125	20	40	125	6	12	100	6	3	80
	57 ... 75																25	50	160	20	40	160	6	12	100	6	3	80
	70 ... 90																25	50	160	20	40	160	4	8	125	5	3	100
	80 ... 100																25	50	160	20	40	160	4	8	125	5	3	125

Short-circuit protection MS 497, setting ranges, short-circuit strength and max. back-up fuses

Setting ranges	in A	Maximum rated current of the short-circuit fuses if $I_{cu} > I_{cu}$ (1)																									
		230 V AC			400/415 V AC			440 V AC			500 V AC			690 V AC													
		I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A	I_{cs} in kA	I_{cu} in kA	gL, gG in A											
	11 ... 16	Short-circuit-proof No back-up fuse required up to $I_{cc} = 100$ kA																									
	14 ... 20																25	50	100	15	30	80	7	15	63		
	18 ... 25																25	50	100	15	30	80	7	15	63		
	22 ... 32																25	50	100	15	30	80	7	15	63		
	28 ... 40																25	50	125	11	22	100	7	15	63		
	36 ... 50																25	50	160	9	18	160	6	12	80		
	45 ... 63																25	50	160	7.5	15	160	5	10	100		
	57 ... 75																25	50	200	7.5	15	160	4	7.5	100		
	70 ... 90																25	50	200	5	10	160	3	6	125		
	80 ... 100																25	50	200	5	10	160	3	6	160		

(1) I_{cs} = Rated service short-circuit breaking capacity, I_{cu} = Rated ultimate short-circuit breaking capacity, I_{cc} = Prospective short-circuit current at installation location.
 $I_{cs} = I_{cu}$ in the case of MS 325 and MS 116.

Soft Starter PSS...PST range Conforms to IEC60947-4-2

ABB presents a range of softstarters for smooth and controlled starting and stopping operations. These are used to avoid rough and jerky motor starts, high starting currents and torques, high current and torque peaks. Crushers, conveyor belts, fans, compressors and pumps are typical examples of applications that would benefit from using an ABB softstarters.

ABB Softstarters cover the whole motor current range from 3 to 1810 A. The total solid-state concept with no moving contacts in the main circuit is an ideal solution for applications with many starts per hour. ABB Softstarters are compact and very easy to install and set up.

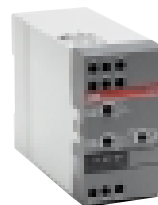


ABB Softstarter - Easy Solution

ABB offers the following range of Softstarters:

The Compact range - PSS 03...25

- Rated current range (Ie) 3 up to 25A
- Wide main voltage range (Ue) 230-600V
- Wide control voltage ranges (Uc) 24...110 VAC/DC & 110... 220 VAC



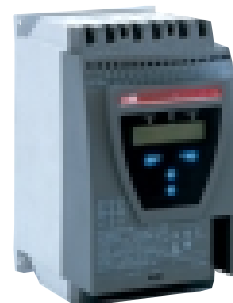
The Flexible range - PSS 18...300

- Rated current range (Ie) 18 up to 515A
- Wide main voltage ranges (Ue) 200-500V / 400-690V
- Wide supply voltage ranges (Us) 110-120V (50/60Hz) OR 220-240V (50/60Hz)
- Service factor 115%
- Main connections In-line and inside delta
- Current limit Available with external CT
- Relay outputs Top of Ramp & Fault



The Advanced range - PST(B) 30...1050

- Rated current range (Ie) 30 up to 1810A
- Wide main voltage ranges (Ue) 208-600V / 400-690V
- Wide supply voltage range (Us) 100 - 250V (50/60Hz)
- Control voltage (Uc) Internal or external 24VDC
- Main connections In-line and inside delta
- Possible methods of control Local keypad, hardware input, bus, (external keypad)



The easy way to advanced functionality...

- Premium soft-starting
- Advanced motor protection features inbuilt
- User-friendly display and keypad
- Flexible communication
- Advanced functionality as standard

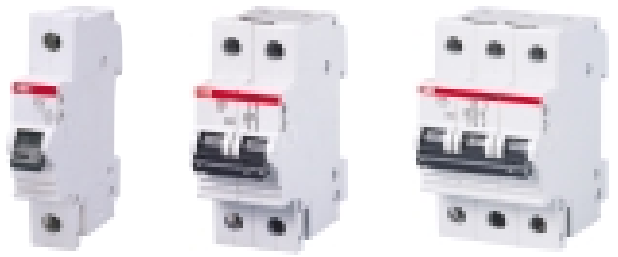
Line Protection Devices

MCB- S270 & S260 series

Conforms to IEC60898, IS8828-10kA and IEC60947-2

ABB- the pioneer in MCB technology brings to you the S270 range based on system pro *M*, a modular system developed by ABB.

The S270 range of MCBs are designed and constructed to guarantee maximum operating safety, increased flexibility, speedy installation and superior aesthetics.



Technical Characteristics

Standards	IS8828 / IEC60898 and IEC60947/2 (for K & Z curve MCB)
Breaking capacity	10kA
Tripping characteristics	B, C, D, K & Z curve
Dimensions of single pole	90x17.5x68 (HxWxD)
Terminals	IP20, housing material with the maximum self-extinguishing degree (V0 level with 1.6 mm thickness)
No. of poles	1, 2, 3, 4, 1+NA, 3+NA
Rated current I_n [A]	0.5...63
Rated voltage U_n [V]	Single pole: 230 / 400 V~, Multi-pole 400 V~
Max. operating voltage U_{Bmax} [V]	AC: $U_n + 10\%$ acc. to UL 1077 and CSA 22.2: 480V~ DC: 1-pole 60 V~, 2-pole 110 V~
Min. operating voltage U_{Bmin} [V]	12 ~, 12~
Terminal size	25 sq. mm
Mechanical life	20,000 operations
Service life at rated load	$I_n < 32$ A: 20 000 operations $I_n \geq 32$ A: 10 000 operations
Tripping mechanism	Trip free mechanism
Connections	Box terminals on top and combi box terminals on bottom, safe against unintentional touch acc. to DIN VDE 0106 part 100. Suitable for solid or flexible conductors from 0.75 mm ² to 25 mm ² (max.16 mm ² when a max. 3mm busbar is connected; from 0,75mm ² with casing and from 1.5 mm ² without)
Storage temperature [°C]	$T_{max} + 70^{\circ}$, $T_{min} - 40^{\circ}$
Ambient temperature [°C]	$T_{max} + 55^{\circ}$, $T_{min} - 25^{\circ}$
Higher rating of MCBs	80A and 100A
Energy limitation	Class 3 limitation
Watt loss	Low watt loss per pole

Accessories for MCB

Description	Type	Reference
Aux. contact block	1NO+1NC	S2H11
Aux. contact block	2NC	S2H02
Aux. contact block	2NO	S2H20
Shunt trip mechanism	12-64AC 12-110DC	S2-A1
Shunt trip mechanism	125-415AC 200DC	S2-A2
Under voltage tripping mechanism	(24 VAC/DC)	S2-UA 24
Under voltage tripping mechanism	(48 VAC/DC)	S2-UA 48
Under voltage tripping mechanism	(110 VAC/DC)	S2-UA 110
Under voltage tripping mechanism	(220 VAC/DC)	S2-UA 220
Under voltage tripping mechanism	(380 VAC/DC)	S2-UA 380
Signalling contact + Auxiliary contact		S2-S/H
Padlock adaptor		SA1
Padlock adaptor with lock and key		SA3



Line Protection Devices

Isolators – E240 & E270 Series

Conditional Short Circuit Capacity 10kA for E240 and 25kA for E270 acc. to IEC 60947-3

Product range

- 16 – 125 A, 1, 2, 3 & 4 pole version
- AC 23 duty for 80A & 100A
- AC 22 duty upto 63A & for 125A

Salient features

- Combined box terminals make it possible to connect individual conductors and busbars simultaneously
- Captive screws with recessed/slotted head
- Quick fasteners which are easily accessible, detachable from below



Timers, Twilight Switches, Photo Sensors

Product range

- Electromechanical, daily programme with / without battery backup (Analogue type)
- Digital time switches daily / weekly programme with standby battery
- Twilight switch with sensor



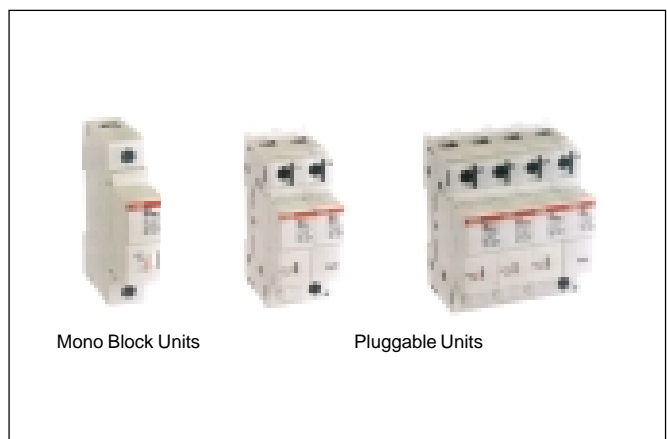
Description	Type Reference
Electro mechanical, daily programme without battery backup (Analogue type)	ATS-1
Electro mechanical, daily programme with battery backup (Analogue type)	ATS-1R
Electro mechanical, weekly programme with battery backup 200 hours (Analogue type)	ATS-7R
Digital time switches, daily programme with standby battery (3 years) 1 channel	DTT-1/1
Digital time switches, weekly programme standby battery (3 years) 1 channel	DTT-7/1
Digital time switches, weekly programme with standby battery (3 years) 2 channel	DTT-7/2
Twilight switch with sensor	TWS-1
Spare sensor	LS-1

Surge Protection Devices

ABB's technologically advanced SPDs are used to protect the equipment or connected devices from lightning and overvoltage surges. These devices are used to limit transient overvoltages and diverts surge currents harmlessly to the ground.

Salient Features

- Safety reserve indication
- Type I, II & III and telecom & data line SPD's as per IEC61312
- Maximum current discharge from 15 to 100 kA
- Single pole, single phase+neutral & 3 phase +neutral
- Operating voltage 75 to 660 VAC
- Common + differential mode protections in a single module



Line Protection Devices

Residual Current-operated Devices (RCDs)

RCCBs – F360/ F370 range

Conforms to IEC61008

The ABB range of RCCBs make use of the well proven principle of utilising core balance transformers with permanent magnet trip devices. These fault tripping devices are highly sensitive. They are able to detect earth fault current and disconnect within the shortest time period. As such, the risk of fire hazards and electric shocks is largely minimised.

'AC' type RCCBs are used for protection against electric shock, direct and indirect contact, fire hazards including protection against the occurrence of electrically ignited fire due to earth fault current

'A' type RCCB are used for people & equipment protection on disturbed network against electrocution & fire

'AP' Type RCCB are used for equipment protection by avoiding tripping from operational & atmospheric discharges

Salient Features

- 16 – 63A
- Tripping range 0.5 ... 1 . I_{Δn}
- Rated sensitivity 30, 100, 300 mA
- Standards: IEC 61008, EN 61008



- Conditional short circuit current - 6kA
- Type: AC/A/AP
- Higher rating RCCBs - 80A, 100A
- No. of poles: 2 pole- single phase, 4 pole- three phase
- Mounting position: Any direction
- Electrical life: 10,000 operations
- Mechanical life: 20,000 operations
- Dimension (mm): Type F360 90x68x35 (HxDxW) / (2P)/ W:70(4P)

RCBOs – DS971 & DS674 range

Conforms to IEC61009- 10kA

ABB's wide range of products include the 1-pole + Neutral DS971 and 4-pole DS674 range of residual current-operated circuit breakers with over-current protection (RCBOs). These RCBOs are factory-assembled MCB / RCCB combinations which trip both in the case of an earth leakage and overload / short circuit.

'AC' type RCBOs can be used for protection of domestic appliances such as electrical water heaters, air-conditioners, ovens and other power circuits.

'A' type RCBO are used for people & equipment protection on disturbed network against electrocution & fire

'AP' Type RCBO are used for equipment protection avoiding tripping from operational & atmosphere discharges

Salient Features

- 16 – 63 A: Suitable for 230/ 400 V
- Tripping range 0.5 ... 1 . I_{Δn}
- Rated sensitivity 30, 100, 300 mA
- Standards: IEC 61009 / EN 61009
- Type: AC/A/AP
- No. of poles: 1P+N, 4P



- Rated breaking capacity: 10kA
- Thermomagnetic release characteristic: C
- Electrical life: 10,000 operations
- Mechanical life: 20,000 operations
- Terminal size [mm²]: 16/16, 25/16, 25/25
- Dimensions [mm]:
 - Type: DS971 83x70x35.6 (HxDxW)
 - Type: DS674 94x68x105 (HxDxW) (25A)
 - Type: DS674 94x68x123 (HxDxW) (32A & 40A)
 - Type: DS674 94x68x140 (HxDxW) (50A & 63A)

Line Protection Devices Distribution Boards - S series

ABB offers a wide range of Distribution Boards to suit all the modern installations of domestic, commercial or industrial applications.

Blending aesthetics, functionality and safety, the S-series of ABB Distribution Boards are manufactured with precision out of high quality CRCA steel sheets. These Distribution Boards undergo a seven-tank phosphating process and powder coating to ensure an anti-rust conditioning, superior finish and lasting strength.

These Distribution Boards are available in Ivory (RAL 9010) colour. The S-series of ABB Distribution Boards are universal mounting type, hence can be flush or wall mounted. These Distribution Boards are provided with top and bottom removable gland plates with adequate number of knockouts, which enable easy installation and connection of conduits of all sizes (upto 36mm dia knockout).



Product Range

ACP

ABS thermo-plastic Acrylic Consumer Panel (ACP) with provision for incomer 2 pole (MCB / Isolator / RCD) and single phase outgoing. Suitable for flush mounting.

SHC

Horizontal single phase consumer unit with provision for incomer 2 pole (MCB / Isolator / RCD) and single phase outgoing. Suitable for surface and wall-mounting.

SHDB

Horizontal three phase distribution board with provision for incomer 8 pole (MCB / Isolator / RCD) and single phase outgoings.

SVDB

Vertical per-phase Isolation Distribution Board with provision for 8 pole (MCB / Isolator / RCD) incomer and provision for 2 pole (MCB / Isolator / RCD) sub-incomers with single phase outgoing.

SHPPI

Horizontal per-phase Isolation Distribution Board with provision for 8 pole (MCB / Isolator / RCD) as incomer and 2 pole (MCB / Isolator / RCD) sub-incomers with single phase as part of the outgoings.

SVFL

Total flexibility as per site needs – configuration as per your choice of incomer & outgoings. Supply bus bars needs to be selected.

SVTDB

Vertical three phase Distribution Board with provision for 8 pole (MCB / Isolator / RCD) incoming with three phase and single phase (TP/SP) outgoings, complete with insulated busbar arrangement.

SPS

Phase selector Distribution Boards with provision of mounting phase selector switches.

S7SEG

Seven segment Distribution Board with phase segregation and separation between incoming and outgoing with provision for 8P incomer (MCB / Isolator / RCD) and 5P sub-incomers (MCB / Isolator / RCD) with single phase outgoings with complete wire sets.

SEN

Metal enclosures, universal mounting suitable for DP, FP and 6 pole arrangement

SGK

Plug socket boards for single phase and three phase applications up to 63A (can be supplied completely with plug and socket)



Electrical Wiring Accessories Classiq Lumina

ABB offers the best in class Electrical Wiring Accessories to suit every domestic and commercial application. They are made from high quality, UV resistant engineering plastics. These products offer state-of-the-art design to suit different environment and add aesthetic value to decor.

The ergonomically designed super-slim plates come with luminous strip indicators that glow in the dark. The range has been designed for high durability, world-class aesthetics and trouble-free operation and is presented in a variety of colours and designs to suit individual preferences.

The comprehensive array of Electrical Wiring Accessories ranges from switches, sockets and support accessories like regulators, data communication outlets and dimmers. ABB also offers state-of-the-art building management systems like ABB i-bus® EIB.

Features

- Ergonomically designed Switches
- Made from high quality, UV resistant engineering plastics
- Long full-length indicator for identification in the dark
- Bigger size Bell Push for special taste and blending with special décor
- Chamfered edges to avoid dust accumulation
- Extra slim plates (only 4 mm thick), but strong & flexible



Range

Switches: 6A-32A switches with and without indicators

Sockets: 6A-16A sockets and multi-pin international socket in 2 module

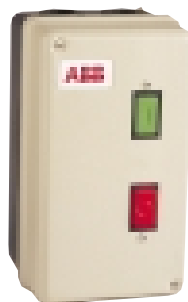
Support accessories: Fan regulators, dimmers, communication outlets

Mounting plate: 1module-16 module

Other Products

Direct On Line Starters

DOL starter type MB is designed to cater to both agricultural and industrial markets. Starters have the following features which make it suitable



for local conditions.

- Wide band coil to take care of voltage fluctuation.
- Accurate protection on overload.
- Built-in single phasing protection.
- Facility for remote operation.
- Available in open starter version.
- Confirming to IS 13947 (Part 4): 1993.
- Indication available for relay trip.

Range: Up to 10 HP

Coil Voltage: 200-240V
260-415V
300-415V

Star Delta Starters

Star Delta starter type SDB is designed to cater to both agricultural and industrial markets. Starters have following features which make it suitable for local conditions.



- Wide band coil to take care of voltage fluctuation.
- Accurate protection on overload.
- Built-in single phasing protection.
- Facility for remote operation.
- Confirming to IS 13947 (Part 4): 1993.
- Electronic timers which prevents short circuits during changeover.
- Starters are complete with all internal wiring terminated to terminal block.

Range: Up to 250 HP

R. SANGHAVI MERCANTILE PVT. LTD.
KARANJIA BUILDING, GIRGAON ROAD,
DHOBI TALAO, MUMBAI - 400 002.
CELL: +91 93230 92384