

## CONTACTORS & OVERLOAD RELAYS



*Switch on  
to the Best*





# Introduction

Salzer was established in 1985 with German Collaboration for Rotary switches to bring to the Indian Industry world class technology in Low voltage switchgear Products, coupled with dependability and excellence in service, to the delight of all end users.

We seek to understand the requirements of our clients and provide them the perfect electrical solution. All our ongoing developmental activities for innovative and value-added products are driven by this sense of responsibility.

As an ongoing development Salzer now INTRODUCES CONTACTORS AND OVERLOAD RELAY to the Indian and Global market.

S.No	Product	Page No
1	<b>Standard Contactors - Non Reversing &amp; Reversing</b>	
2	SC Technical Specifications	
3	SC Accessories	
4	SC Ordering Code	
5	SC Non - Reversing Contactor Circuit Diagrams	
6	SC Electrical Life in Utilization Category	
7	SC Dimension Details	
8	<b>Mini Contactors</b>	
9	MC Mini Control Relays	
10	MC Technical Specifications	
11	MC Accessories	
12	MC Ordering Code	
13	MC Dimension Details	
14	<b>Bimetallic Overload Relay</b>	
15	OLR Technical Specifications	
16	OLR Trip Characteristics & Circuit Diagrams	
17	OLR Dimension Details	
18	OLR Ordering Code	

## Standard Contactors - Non Reversing (SC)

SC series contactors are ideal for motors, actuator, solenoid and other power switching applications, carries  $\text{UL}$ , IEC and CE markings which makes them suitable anywhere in the world .

### Features

- Compact size – Four (4) frames rating from 9A to 105A.
- High fault short circuit rating of 100kA @ 600V with Class J Fuses.
- 4 Terminal Coils on all SC Series AC/DC Contactors for control application flexibility.
- 50A to 105A DC operated devices feature electronic coil control.
- BR2 Series Overload Relays direct mount onto SC Series 9-25A Non - Reversing Contactors, reducing installation time and space.
- Removable / replaceable ID Marker for SC Series Contactors and Front Mounted Auxiliaries (SCFA series) Device identification marker for labeling contactors and front mounted auxiliary contacts simplifies trouble shooting in panels with many contactors.
- Snap on front mounted auxiliary contacts can be installed without the use of tools for lower installed cost.
- Side Mounted Auxiliaries(SCSA series) and Electrical & Mechanical Interlock (SCMI & SCMEI series) can be installed without using any tools on to SC / RC Series Contactors.
- Markings and labels high visibility for ease of troubleshooting and maintenance.
- Environmentally friendly contacts are cadmium free and non-metallic materials are asbestos, halogen and cadmium free.
- Dual IEC and NEMA terminal markings for ease of wiring anywhere in the world.
- 35mm DIN rail mounting for all the contactors from 9A to 105A for fast and easy installation and removal or panel mounting for more secure installation in high shock and vibration applications.
- IP20 guarded terminals prevent accidental contact with live parts.
- Combination head terminal screws allow the use of straight, Phillips or posidrive screwdrivers. Allen head screws on 50A through 105A contactors make it easy to apply the proper terminal tightening torque for secure conductor connections.
- Single circuit are available and it can be purchased on your need.




### Unique Product Features



#### 4 TERMINAL COILS

4 terminal coils on 9A – 105A AC and DC operated contactors are easily accessible on contactor and overload relay assemblies or contactor and motor protection circuit breaker assemblies. The control circuit can be wired from the line side or the load side of the contactor, whichever is most convenient for the installation. Control circuit wire runs can be minimised, and the devices can be easily substituted in your existing equipment without disturbing or changing your control wires. So no matter what components are being used, SC series Contactors can be easily and quickly wired, reducing your labour and installation costs.

## Standard Contactors - Reversing (RC)

RC series contactors are ideal for Reversing motors in applications where panel space is a premium and device modularity is required to satisfy virtually any application requirement carries   and  which makes them suitable anywhere in the world.

A common mechanical interlock, power wiring modules and IP 20 guarded terminals with dual terminal marking and shared accessories will help reduce your total installed cost and enhance the features and performance of your equipment.

### Features

- High fault short circuit rating of 100kA @ 600V with Class J Fuses.
- BR2 Series Overload Relays direct mount onto RC Series 9 – 25A Reversing Contactors, reducing installation time and space.
- MP Series Motor Protection Circuit Breakers direct mount onto RC Series 9-40A Reversing AC/DC Contactors AC and DC operating coils for control circuit application flexibility. 50A to 80A DC operated devices featured electronic coil control.
- Environmentally friendly contacts are cadmium free and non-metallic materials are asbestos, halogen and cadmium free.
- IP20 guarded terminal accidental contacts from live parts.
- Dual IEC and NEMA terminal markings for ease of wiring anywhere in the world.
- Devices identification marker for labeling contactors and front mounted auxiliary contacts simplifies trouble shooting in panels with many contactors.
- Power wiring modules provide reliable, rigid interconnections between the forward and reverse contactors.
- Combination head terminal screws allow the use of straight, phillips or posidrive screwdrivers.
- Allen head screws on 50A through 80A contactors make it easy to apply the proper terminal tightening torque for secure conductor connections.
- Snap-on front mounted auxiliary contacts install without the use of tools for lower installed cost.
- Single circuit are available and it can be purchased on your need.

### Unique Product Features



#### 4 TERMINAL COILS

RC series Reversing Contactors feature a single side mounted electrical and mechanical or mechanical only interlock that is used for the whole range of contactors, enabling a 9A contactor to be interlocked with a 105A contactor. The side mounted interlock doesn't increase the depth of the contactor and doesn't prevent front mounted auxiliary contacts from being added to either the forward or reverse contactors. Contactors are physically secured together with a dovetail bracket that installs from the bottom of the contactor – so it can't fall out when it is installed on a DIN rail or on a panel, even in high vibration applications.

## Technical Specifications

		SC009	SC012	SC018	SC025	SC032	SC040	SC050	SC065	SC080	SC095	SC105	
Electrical General	Units												
Rated operating frequency	Hz	50 ~ 60											
Impedence per pole	m.Ω	2.35	2.35	2.41	1.65	1.28	0.95	0.85	0.86	0.86	0.76	0.76	
Power dissipation per pole													
AC - 1	W	1.47	1.47	2.46	3.34	4.6	3.42	6.89	10.4	10.4	14.89	14.89	
AC - 3	W	0.19	0.34	0.78	1.03	1.31	1.52	2.12	3.63	5.5	6.86	8.37	
Rated coil frequency		AC: 50Hz, 60Hz, 50/60Hz DC and DC/AC : 50/60Hz											
<b>IEC RATING</b>													
Rated Insulation voltage, Ui	V	1000											
Rated Impulse voltage withstand, Uimp	KV	6	6	6	6	6	6	8	8	8	8	8	
Rated operating voltage, Ue	V	690					1000						
Rated thermal current, Ith for Ambient Temperature < 55 C	A	25	25	45	45	60	60	90	110	110	140	140	
<b>Making Capacity</b>	A	300	300	300	450	550	550	1000	1000	1000	1280	1280	
<b>Breaking Capacity</b>													
Ue ≤ 400V	A	250	250	250	350	450	450	920	920	920	1050	1050	
Ue = 500V	A	250	250	250	350	450	450	920	920	920	1050	1050	
Ue = 690V	A	130	130	130	170	205	780	780	780	780	950	950	
<b>AC-1 Operating Current, Ie</b>													
At 55°C	A	25.0	25.0	45.0	45.0	60.0	60.0	90.0	110.0	110.0	140.0	140.0	
At 70°C	A	20.0	20.0	32.0	32.0	48.0	48.0	72.0	88.0	88.0	110.0	110.0	
<b>AC-3 Operating Current, Ie</b>													
220 ~ 240V	A	9.0	12.0	18.0	25.0	32.0	40.0	50.0	65.0	80.0	95.0	105.0	
380 ~ 400V	A	9.0	12.0	18.0	25.0	32.0	40.0	50.0	65.0	80.0	95.0	105.0	
415 ~ 440V	A	9.0	12.0	18.0	25.0	32.0	40.0	50.0	65.0	80.0	95.0	105.0	
500V	A	7.5	10.5	14.0	19.0	24.0	32.0	38.0	55.0	63.0	79.0	85.0	
660 ~ 690V	A	7.0	9.0	13.0	15.0	22.0	25.0	34.0	44.0	48.0	60.0	80.0	
<b>AC-3 OPERATING POWER, Pe</b>													
220 ~ 240V	kW	2.2	3.0	4.5	6.5	9.2	11.0	15.0	18.5	22.0	25.0	30.0	
380 ~ 400V	kW	4.0	5.5	7.5	12.5	15.0	18.5	22.0	30.0	40.0	45.0	55.0	
415 ~ 440V	kW	4.5	6.5	9.2	12.5	15.0	22.0	30.0	37.0	45.0	55.0	59.0	
500V	kW	4.5	6.5	10.0	12.5	15.0	25.0	30.0	40.0	45.0	55.0	59.0	
660 ~ 690V	kW	5.5	7.5	11.0	12.5	18.5	25.0	30.0	45.0	45.0	55.0	65.0	
<b>AC-4 Operating Current, Ie</b>													
220 ~ 240V	A	7.5	10.0	15.0	20.8	26.7	33.3	41.7	54.2	66.7	79.2	87.5	
380 ~ 400V	A	7.5	10.0	15.0	20.8	26.7	33.3	41.7	54.2	66.7	79.2	87.5	
415 ~ 440V	A	7.5	10.0	15.0	20.8	26.7	33.3	41.7	54.2	66.7	79.2	87.5	
500V	A	6.3	8.8	11.7	15.8	20.0	26.7	31.7	45.8	52.5	65.8	70.8	
660 ~ 690V	A	5.8	7.5	10.8	12.5	18.3	20.8	28.3	36.7	40.0	50.0	66.7	

## Technical Specifications

		SC009	SC012	SC018	SC025	SC032	SC040	SC050	SC065	SC080	SC095	SC105
Electrical General	Units											
<b>AC-4 Operating Power, Pe</b>												
220 ~ 240V	kW	1.5	2.2	4.0	5.5	5.5	7.5	11.0	15.0	18.5	22.0	22.0
380 ~ 400V	kW	3.0	4.0	5.5	7.5	11.0	15.0	22.0	22.0	37.0	37.0	45.0
415 ~ 440V	kW	3.0	4.0	5.5	7.5	11.0	15.0	22.0	22.0	37.0	37.0	45.0
500V	kW	3.0	4.0	5.5	7.5	11.0	15.0	18.5	30.0	30.0	45.0	45.0
660 ~ 690V	kW	4.0	5.5	7.5	7.5	15.0	18.5	22.0	30.0	37.0	45.0	55.0
<b>AC-4 Operating Current Ie @ 200,000 Operations</b>												
220 ~ 240V	A	2.7	3.6	5.5	7.6	9.7	12.1	15.2	19.7	24.2	28.8	31.8
380 ~ 400V	A	2.7	3.6	5.5	7.6	9.7	12.1	15.2	19.7	24.2	28.8	31.8
415 ~ 440V	A	2.7	3.6	5.5	7.6	9.7	12.1	15.2	19.7	24.2	28.8	31.8
500V	A	2.3	3.2	4.2	5.8	7.3	9.7	11.5	16.7	19.1	23.9	25.8
660 ~ 690V	A	2.1	2.7	3.9	4.5	6.7	7.6	10.3	13.3	14.5	18.2	24.2
<b>AC-4 Operating Power Pe @ 200,000 Operations</b>												
220 ~ 240V	kW	0.55	0.75	1.1	1.5	2.2	3.0	4.0	4.0	5.5	7.5	7.5
380 ~ 400V	kW	1.1	1.5	2.2	3.0	4.0	5.5	5.5	7.5	11.0	11.0	15.0
415 ~ 440V	kW	1.1	1.5	2.2	3.0	4.0	5.5	5.5	7.5	11.0	11.0	15.0
500V	kW	1.1	1.5	2.2	3.0	4.0	5.5	5.5	7.5	11.0	15.0	15.0
660 ~ 690V	kW	1.5	1.5	3.0	3.0	5.5	5.5	7.5	11.0	11.0	15.0	22.0
<b>Short Circuit Coordination</b>												
Short Circuit Current Rating	kA			5						10		
Type "1" gL/gG	A	50	50	63	63	100	125	200	200	200	250	250
Type "2" gL/gG	A	25	35	35	50	63	80	100	125	125	160	200
<b>Rated Short Time Current, ICW</b>												
1 second	A	455	455	570	630	1010	1265	1580	2530	2530	3300	3300
5 seconds	A	205	205	254	280	450	450	710	1130	1130	1485	1485
10 seconds	A	144	144	180	200	320	400	500	800	800	1050	1050
30 seconds	A	85	85	104	115	185	230	290	460	460	600	600
1 minute	A	60	60	74	80	130	165	205	325	325	430	430
3 minutes	A	35	35	46	50	90	100	120	185	185	250	250
<b>Maximum Electrical Switching Rate</b>												
AC - 1	Ops./hr.	1200	1200	1200	1200	1200	1200	1200	1200	1200	600	600
AC - 3	Ops./hr.	1200	1200	1200	1200	1200	1200	1200	1200	1200	600	600
AC - 4	Ops./hr.	360	360	360	360	360	200	200	200	200	200	200
<b>Electrical Endurance, AC - 3 at Maximum rated 3 Phase Operating Power @ 400V</b>												
	Ops./mill.	1.6	1.8	1.3	1.4	1.3	1.3	1.2	1.4	1.2	1.2	1.0

## Technical Specifications

		SC009	SC012	SC018	SC025	SC032	SC040	SC050	SC065	SC080	SC095	SC105	
Electrical General	Units												
<b>UL Rating</b>													
General Purpose Current Rating	A	25	25	32	32	60	60	90	110	110	140	140	
<b>Rated 1 Phase Operating Current, Ie</b>													
115V	A	9.8	13.8	16.0	24.0	34.0	34.0	34.0	56.0	80.0	80.0	100.0	
230V	A	10.0	12.0	17.0	17.0	28.0	28.0	40.0	40.0	50.0	68.0	88.0	
<b>Rated 1 Phase Operating Power, Pe</b>													
115V	HP	1/2	3/4	1	2	3	3	3	5	7 1/2	7 1/2	10	
230V	HP	1 1/2	2	3	3	5	5	7 1/2	10	15	15	20	
<b>Rated 3 Phase Operating Current, Ie</b>													
200V	A	11.0	11.0	17.5	25.3	32.2	32.2	48.3	62.1	62.1	78.2	92.0	
230V	A	9.6	9.6	15.2	22.0	28.0	42.0	42.0	54.0	68.0	80.0	104.0	
460V	A	7.6	11.0	14.0	21.0	27.0	40.0	52.0	65.0	65.0	77.0	96.0	
575V	A	9.0	11.0	17.0	17.0	27.0	27.0	41.0	52.0	62.0	77.0	77.0	
<b>Rated 3 Phase Operating Power, Pe</b>													
200V	HP	3.0	3.0	5.0	7 1/2	10.0	10.0	15.0	20.0	20.0	25.0	30.0	
230V	HP	3.0	3.0	5.0	7 1/2	10.0	15.0	15.0	20.0	25.0	30.0	40.0	
460V	HP	5.0	7 1/2	10.0	15.0	20.0	30.0	40.0	50.0	50.0	60.0	75.0	
575V	HP	7 1/2	10.0	15.0	15.0	25.0	25.0	40.0	50.0	60.0	75.0	75.0	
<b>SCCRs</b>													
<b>Standard Fault Test</b>													
Short Circuit Current Rating	kA	5					10						
Maximum Fuse Size	A	30	30	60	60	60	60	100	125	150	175	200	
<b>High Fault Test</b>													
Short Circuit Current Rating	kA	100											
Maximum Fuse Size	A	25	25	40	40	50	60	90	100	125	150	175	
<b>Electrical Endurance</b>													
@Maximum rated 3 Phase Operating Power	Ops. (mill.)	1.8	2.0	1.6	1.6	1.5	1.5	1.6	1.8	1.5	1.5	1.0	
<b>Coil Characteristics</b>													
Rated Insulation Voltage, Ui	V	1000											
<b>Operating Limits 50Hz, 60Hz, 50/60Hz</b>													
Operating	xUc	0.80 ~ 1.10											
Pick - up	xUc	0.60 ~ 0.80					0.65 ~ 0.80						
Sealed	xUc	0.35 ~ 0.55					0.40 ~ 0.60						
DC													
Operating	xUc	0.80 ~ 1.10											
Pickup	xUc	0.45 ~ 0.65				0.45 ~ 0.75			0.70 ~ 0.80				
Sealed	xUc	0.15 ~ 0.30				0.15 ~ 0.30			0.40 ~ 0.60				



## Technical Specifications

Electrical General	Units	SC009	SC012	SC018	SC025	SC032	SC040	SC050	SC065	SC080	SC095	SC105
<b>Coil Consumption</b>												
<b>50Hz, 60Hz, 50/60Hz</b>												
Pick - up	VA		70				98			255		
Hold - in	VA		7				9			16		
<b>DC</b>												
Pick - up	W		5.5				180			340		
Hold - in	W		5.5				2.2			6.5		
<b>Operating Times</b>												
<b>AC</b>												
Pick - up	msec		8 ~ 20				10 ~ 19			15 ~ 30		
Drop - out	msec		6 ~ 13				5 ~ 25			9 ~ 15		
<b>DC</b>												
Pick - up												
Drop - out	msec		7 ~ 12				30 ~ 65			55 ~ 60		
Power Dissipation	W		2.6				4.3					
<b>50Hz,60Hz,50/60Hz</b>												
<b>Power factor</b>												
Closed	cos φ		0.33				0.28			0.26		
Open	cos φ		0.84				0.73			0.54		
<b>Mechanical</b>												
Mechanical Endurance	Ops (mill.)						10					
Maximum Mechanical switching rate	Ops/hr						9000.0					
<b>Environmental</b>												
Ambient Operating Temperature							-25 to +55°C (-13 to +131°F)					
Ambient Storage Temperature							-55 to +80°C (-67 to +176°F)					
<b>Construction</b>												
Pollution Degree												
Ingress protection							3					
Main Terminals							IP20			IP20*		
Coil Terminals							IP20					
Auxiliary Terminals							IP20					
Weight	Kg	0.295	0.295	0.295	0.295	0.52	0.52	1.105	1.12	1.13	1.45	1.47
	Lbs	0.65	0.65	0.65	0.65	1.15	1.19	2.44	2.47	2.49	3.2	3.24
RoHS Compliance							Yes					
<b>Construction Conductor cross sections</b>												
<b>Main terminal capacity</b>												
Solid stranded without end sleeve	mm <sup>2</sup>		2 X 0.5 ~ 6				2 X 1 ~ 14				2 X 1 ~ 34	
AWG Wire	AWG		2 X 20 ~ 10				2 X 18 ~ 6					
Recommended Strip length	mm		8.5				10				13	15
	in											
Tightening Torque	lb*in											
	Nm											
Screw Driver			Philips nr.2				Allen 4mm					

\* Note : With conductors connected

## Electrical Specifications

	Units	Built-in Auxiliary	SCFA, SCSA
<b>Electrical General</b>			
Minimum Switching Capacity		5mA @ 17V	
Electrical Endurance	Ops.(mill.)	1	
Mechanical Endurance	Ops.(mill.)	15	
Non-Overlap Time	msec.	1.5	
Insulation Resistance	m.Ω	>10	
<b>IEC Ratings</b>			
Rated Insulation Voltage, $U_i$	V	1000	
Rated Operating Voltage, $U_e$	V	690	
Rated Thermal Current, $I_{th}$ for Ambient Temperature < 55 °C	A	16	10
<b>Making Capacity, <math>U_e \leq 400V</math>, AC - 15</b>			
$U_e \leq 400V$ 50/60Hz	A	250	90
$U_e \leq 220V$ DC	A	250	90
<b>Breaking Capacity, <math>U_e \leq 400V</math>, AC - 15</b>			
$U_e \leq 400V$ 50/60Hz	A	250	60
$U_e \leq 220V$ DC	A	2	0.95
<b>AC - 15</b>			
110 ~ 120V	A	10	6
220 ~ 240V	A	10	6
380 ~ 400V	A	6	4
415 ~ 440V	A	5	3.5
500V	A	4	2.5
600 ~ 690V	A	2.5	1.5
<b>DC - 13</b>			
24V	A	6	6
48V	A	4	4
110V	A	2	2
220 ~ 240V	A	0.7	0.7
440V	A	0.3	0.3
<b>Short Circuit Coordination</b>			
$gL/gG$	A	10	10
<b>UL Ratings</b>			
Rated Operating Voltage	V	600	
<b>Pilot Duty Rating</b>			
AC		A600	
DC		P600	Q600
<b>Environmental</b>			
Ambient Operating Temperature		-25 to +55 °C (-13 to +131 °F)	
Ambient Storage Temperature		-55 to +80 °C (-67 to +176 °F)	
<b>Construction</b>			
<b>Terminal Capacity</b>			
AWG Wire	AWG	2 X 18 ~ 12 / 1 X 18 ~ 10	
Solid, Stranded & Finely Stranded Without End Sleeve	mm <sup>2</sup>	2 X 0.8 ~ 2.5 / 1 X 0.8 ~ 6	
Tightening Torque	lb*in	10	
	Nm	1.13	
ROHS Compliance		Yes	

Accessories

Front Mounted Auxiliary Contacts



Front mounted auxiliary contacts feature IP20 guarded terminals to protect against accidental contact with live parts. The device identification marker simplifies trouble shooting in panels with many contactors. These contacts snap-on and install without the use of tools.

Code	Contact Configuration	Connection Diagram
SCFA10	1 Normaly Open	-3,NO -4
SCFA01	1 Normaly Closed	-1,NC -2
SCFA10EM	1 Normaly Open Early Make	-7,NO -8
SCFA01DB	1 Normaly Closed Delayed Break	-5,NC -6

Maximum Number of Front or Side Mounted Auxiliary Contacts	
Contactora	Maximum Number
SC009,SC012,SC018,SC025	4
SC032,SC040	6
SC050,SC065,SC080,SC095,SC105	8

Side Mounted Auxiliary Contact



Side mounted auxiliary contact feature IP20 guarded terminals to protect against accidental contact with live parts.

Code	Contact Configuration	Connection Diagram
SCSA11	1 Normaly Open & 1 Normaly Closed	NO 13 EP NC 21 ZE 14 EP 22 TE
SCSA20	2 Normaly Open	NO 13 EP NO 23 PE 14 EP 24 EE
SCSA11X	1 Normaly Open & 1 Normaly Closed*	NO 53 EP NC 61 ZE 54 ER 62 TE
SCSA20X	2 Normaly Open*	NO 53 EP NO 63 PE 54 ER 64 EE

Note: For use with SCSA11 or SCSA20 when more than one side mounted auxiliary contact module is installed on the same side of the contactora.

## Interlocks

### Mechanical Interlock



Side mounted mechanical interlock for use with reversing contactors, reversing starters, two speed starters and star-delta starters. The single interlock can be used with all size contactors from 9A-105A, Preventing the forward and reverse contactors from being energised at the same time.

### Electrical & Mechanical Interlock

Electrical / Mechanical interlock for reversing contactors has the same features as the mechanical interlock but also has two normally closed auxiliaries built into the unit for electrical interlocking, eliminating the need for two normally closed auxiliary contacts and the Mechanical Interlock. The result of integrating the normally closed auxiliary contact is decreased width of reversing contactors and more available auxiliary contact locations.

Code	Description
SCMI	Side Mounted Mechanical Interlock
SCMEI	Side Mounted Electrical / Mechanical Interlock

## Wiring Modules



Reversing contactors power wiring modules make field assembly of reversing contactors easy. Line and load side over molded copper bus bar conductors ensure error free installation and make a rigid assembly with a mechanical interlock (SCMI) or electrical / mechanical interlock (SCMEI).

Code	For Use With Contactors
SCRWS25	SC009,SC012,SC018,SC025
SCRWS40	SC032,SC040
SCRWS80	SC050,SC065,SC080

## Surge Suppressors



Coil mounted surge suppressors protect sensitive electronic components in control circuits from damaging line voltage spikes.

RC Surge Suppressor			
Code	Voltage Range		For Use With Contactor
SCRCS2J	24 ~ 48V AC		SC009, SC012, SC018, SC025, SC032, SC040
SCRCS2AH	50 ~ 127V AC		SC009, SC012, SC018, SC025, SC032, SC040
SCRCS2M	130 ~ 250V AC		SC009, SC012, SC018, SC025, SC032, SC040
SCRCS5J	24 ~ 48V AC		SC050, SC065, SC080, SC095, SC105
SCRCS5AH	50 ~ 127V AC		SC050, SC065, SC080, SC095, SC105
SCRCS5M	130 ~ 250V AC		SC050, SC065, SC080, SC095, SC105
Diode Surge Suppressor			
Code	Voltage Range		For Use With Contactor
SCDST	12 ~ 600V DC		SC009, SC012, SC018 SC025, SC032, SC040 SC050, SC065, SC080 SC095, SC105

## Operating Coils



Coil Voltage																		
AC Coil Voltage																		
Voltage	12	24	48	110	120	208	220	230	240	277	380	400	400~415	440	480	500	550	600
50Hz	✓	✓	✓	✓			✓				✓	✓	✓	✓		✓	✓	
60Hz	✓	✓	✓		✓	✓			✓	✓					✓			✓
50/60Hz	✓	✓	✓	✓	✓		✓	✓	✓			✓		✓				
DC Coil Voltage																		
Voltage	12	24	24 ~ 28	48	42 ~ 50	110	125	110 ~ 130	208 ~ 250	250								
SC009 to SC040	✓	✓		✓		✓	✓			✓								
SC050 to SC105			✓		✓			✓			✓	✓						

## Accessories for Non-Reversing & Reversing Contactors

The complete range of SC Series Non-Reversing Contactors and RC Series Reversing Contactors share common accessories including single circuit front mounted auxiliary contacts, two circuit side mounted auxiliary contacts, a single electrical/mechanical or mechanical interlock, and coil mounted surge suppressors.

Designing starter assemblies and panels is easy - you don't have to remember which auxiliary is required for each contactor they all work together.

Installation is easy too - once you learn how to install each accessory, it's always the same no matter what contactor it's being installed on. If simple design and assembly isn't enough - you'll also reduce your inventory and maximize its flexibility, because unique accessories are not required for each size contactor.



Ordering Code

Non Reversing contactor - Standard contactor 9A to 105A

I	II	III	IV	V	VI	VII	VIII	IX																																																
Contactor Type	Current Rating	Poles	Normally Open Poles	Built in Auxiliary Contacts	Coil voltage type AC/DC	Coil voltage	Frequency	Additional feature																																																
<p><b>Example</b></p> <p style="text-align: center;"><b>SC 009 P 30 22 A 110 F WW</b></p>																																																								
<p>I - Contactor Type</p> <p>SC - Standard Contactor RC - Standard Contactor</p>								<p>IX</p> <p>With Power wires for RC (Reversing Contactors)</p>																																																
<p>II - Current Rating</p> <p>009 - 9A 012 - 12A 018 - 18A 025 - 25A 032 - 32A 040 - 40A 050 - 50A 065 - 65A 080 - 80A 105 - 105A</p>								<p>VIII - Frequency</p> <p>F - 50 Hz, S - 60 Hz B - 50/60Hz</p>																																																
<p>III - Poles</p> <p>Main Poles</p>								<p>VII - Coil Voltage</p> <table border="1"> <thead> <tr> <th colspan="2">AC</th> <th colspan="2">DC</th> </tr> </thead> <tbody> <tr><td>024</td><td>24</td><td>024</td><td>24</td></tr> <tr><td>042</td><td>42</td><td>048</td><td>48</td></tr> <tr><td>048</td><td>48</td><td>110</td><td>110</td></tr> <tr><td><b>110</b></td><td><b>110</b></td><td>220</td><td>220</td></tr> <tr><td>220</td><td>220</td><td></td><td></td></tr> <tr><td>240</td><td>240</td><td></td><td></td></tr> <tr><td>360</td><td>360</td><td></td><td></td></tr> <tr><td>380</td><td>380</td><td></td><td></td></tr> <tr><td>415</td><td>415</td><td></td><td></td></tr> <tr><td>440</td><td>440</td><td></td><td></td></tr> <tr><td>525</td><td>525</td><td></td><td></td></tr> </tbody> </table>	AC		DC		024	24	024	24	042	42	048	48	048	48	110	110	<b>110</b>	<b>110</b>	220	220	220	220			240	240			360	360			380	380			415	415			440	440			525	525		
AC		DC																																																						
024	24	024	24																																																					
042	42	048	48																																																					
048	48	110	110																																																					
<b>110</b>	<b>110</b>	220	220																																																					
220	220																																																							
240	240																																																							
360	360																																																							
380	380																																																							
415	415																																																							
440	440																																																							
525	525																																																							
<p>IV - Normally Open Poles</p> <p>30 - 3 NO (Normally Open)</p>								<p>VI - Coil Voltage Type</p> <p>A - AC Coil D - DC Coil</p>																																																
<p>V - Built in Auxiliary</p> <p>2NO + 2 NC Auxiliary Pole 10 - 1 Normally Open 01 - 1 Normally Closed 00 - Aux not provided For 32A - 105A Please mention 00 Aux Not provided</p>																																																								

Note : RC Contactors available upto 80 Amps only

## Ordering Code - Accessories

### Side mounted accessories

Ordering Informations	
Description	Contact configuration
SCFA	10 or 01

Example : SCFA10EM

SCSA - Standard contactor side mounted auxiliary

10 - 1 normally open contact | 01 - 1 normally closed contact

20 - 2 normally open contact | 11 - 1 normally open & 1 normally closed

\* Additional side mounted Acc is to be mounted on same side of contactor

### Interlocks

Ordering Informations	
Description	
SCMI / SCMEI	

Example : SCMEI

SCMI - Standard contactor side mechanical interlock

SCMEI - Standard contactor electrical & mechanical interlock with 2 NC aux

### Front mounted accessories

Ordering Informations		
Description	Contact configuration	Standard/Early make / Delay break
SCFA	10 or 01	Blank / EM / DB

Example : SCFA10EM

SCFA - Standard contactor front mounted auxiliary

10 - normally open contact | 01 - normally closed contact

Blank - Standard | EM - Early make | DB - Delay break

### Wiring module

Ordering Informations		
I	II	III
SC	RWS	25 or 40 or 80

Example : SCRWS25

I - Main destination : SC - Standard contactor

II - Type : RWS - Reversing wiring module

III - Contact range : 25 - SC009 to SC025 , 40 - SC032 to SC040, 80 - SC050 to SC080

### Surge suppressor

Ordering Informations			
I	II	III	IV
SC	RCS or DS	2 or 5	J or AH or M or T

Example : SCRCS2AH

I - Main destination : SC - Standard contactor

II - Type : RCS - Resistor capacitor type | DS - Diode type

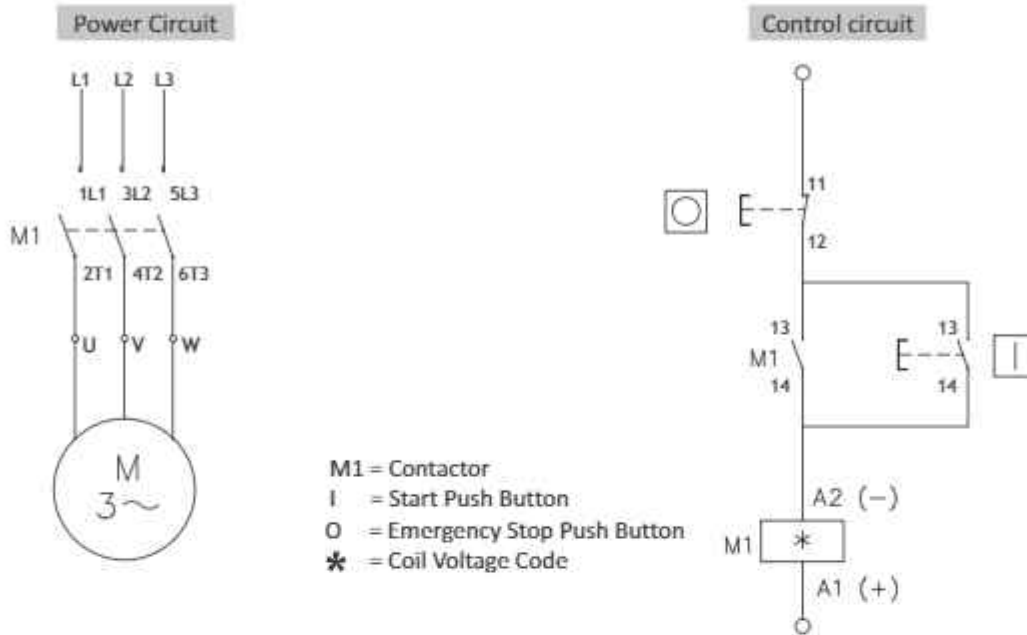
III - Contact range : 2 - SC009 to SC040 contactor | 5 - SC050 to SC105 contactor

IV - Voltage range : J - 24 ~ 48V AC | AH - 50 ~ 127V AC

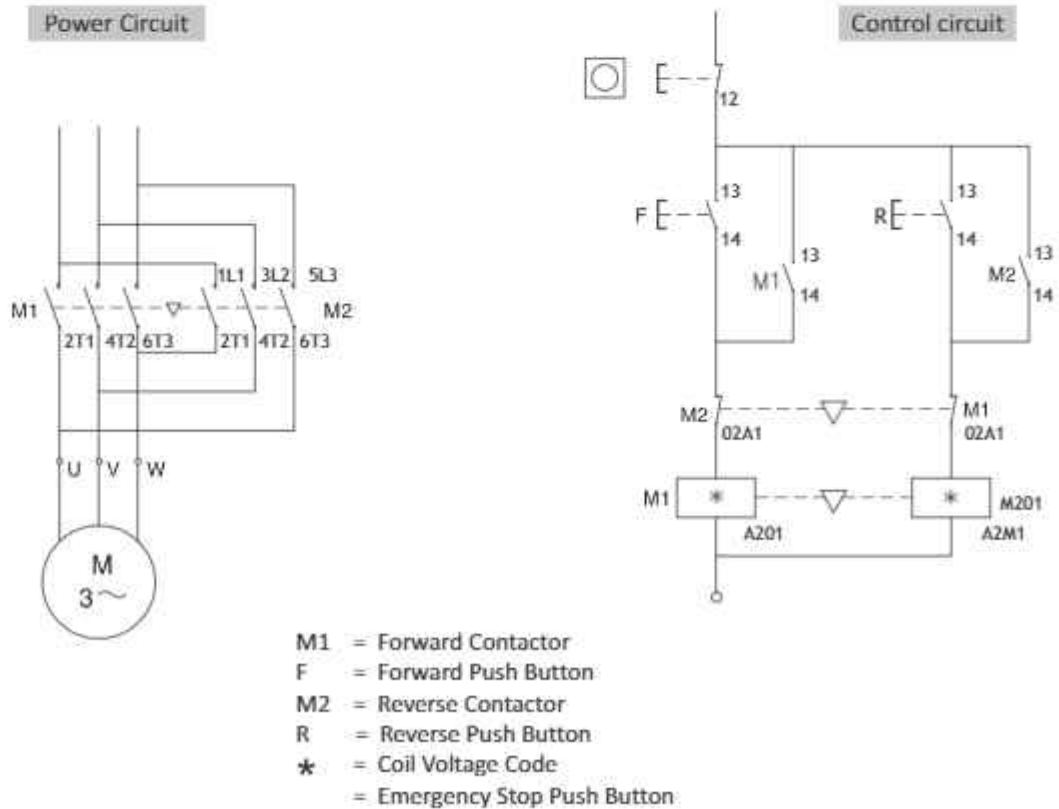
M - 130 ~ 250V AC | T - 12 ~ 600V DC



## SC Non - Reversing Contactor circuit Diagrams



## RC Reversing Contactor circuit Diagrams



## Electrical Life In Utilization Category

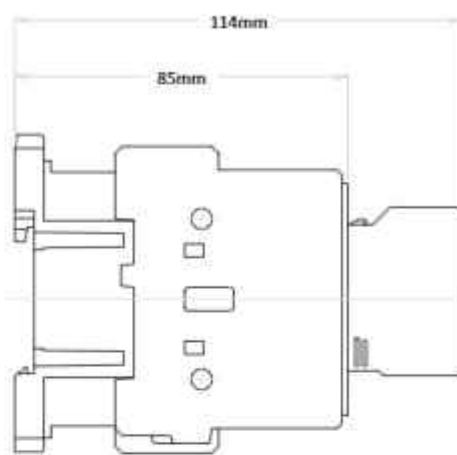
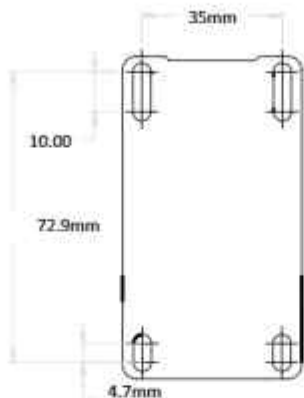
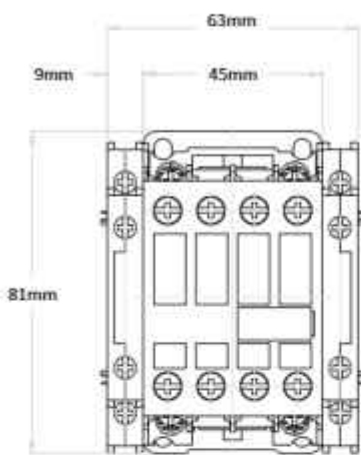
To find a Contactor's Estimated Life:

1. Identify the Utilization Category of the Application.
2. Refer to the chart For the Applicable Utilization category.
3. Locate the Intersection of the Life-load Curve For the Contactor Selected with the Application Breaking Current ( $I_e$ ) on the Horizontal Axis of the Chart.
4. Read the estimated Contactor Life From the Vertical Axis of the Chart.

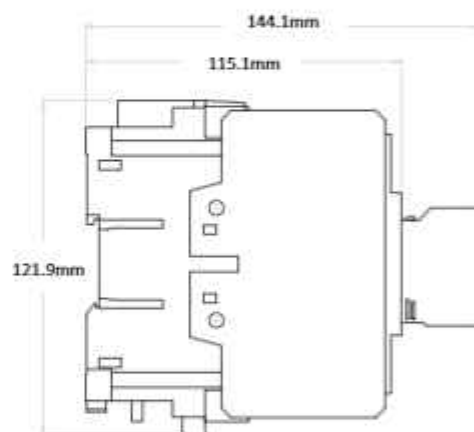
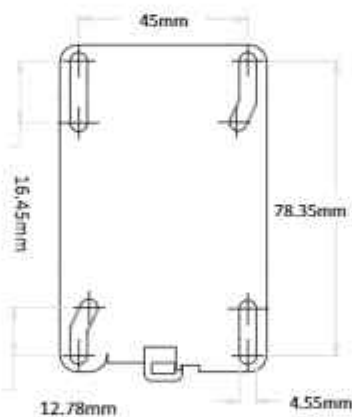
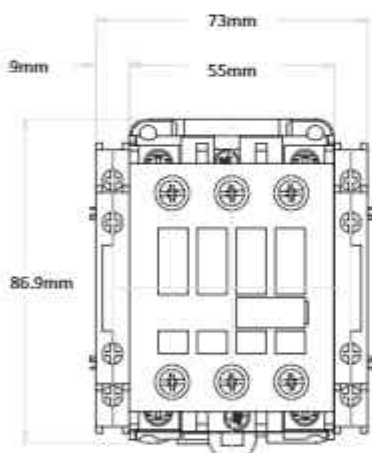
The Life -load curves are based on tests in accordance with IEC 60947-4-1. Many Conditions of an actual application effect contact life such as the environment and duty cycle, therefore, the actual contact life may vary from the life Indicated by the curves shown here.

3 Pole Non-Reversing Contactors - AC Coils

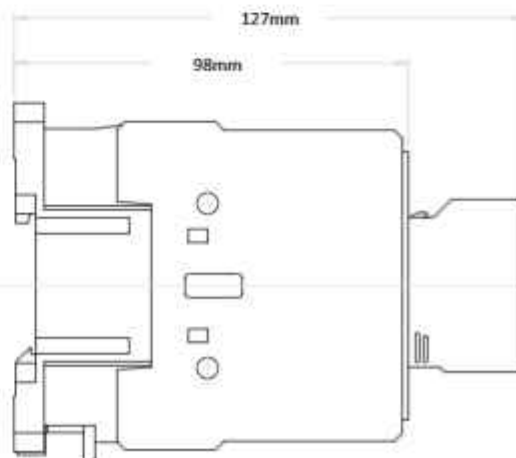
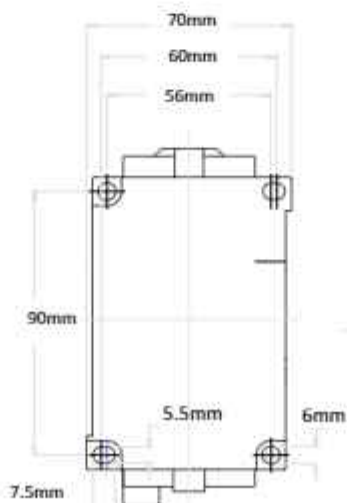
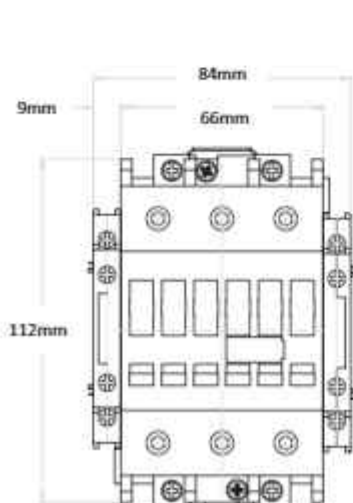
SC009, SC012, SC018 & SC025



SC32 & SC040

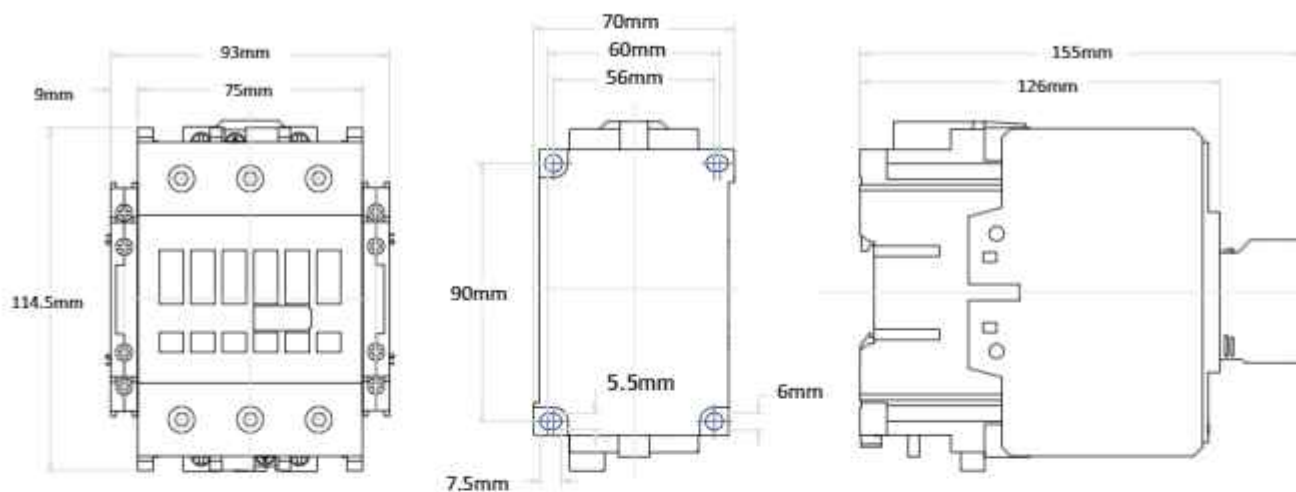


SC050, SC065, SC080



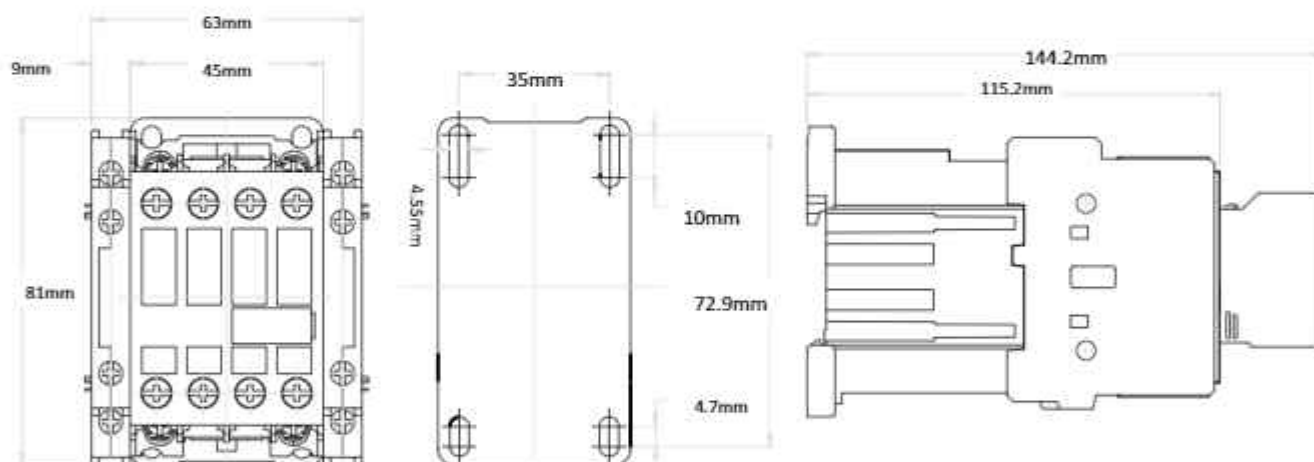
### 3 Pole Non-Reversing Contactors - AC Coils (Cont.)

SC095 & SC105

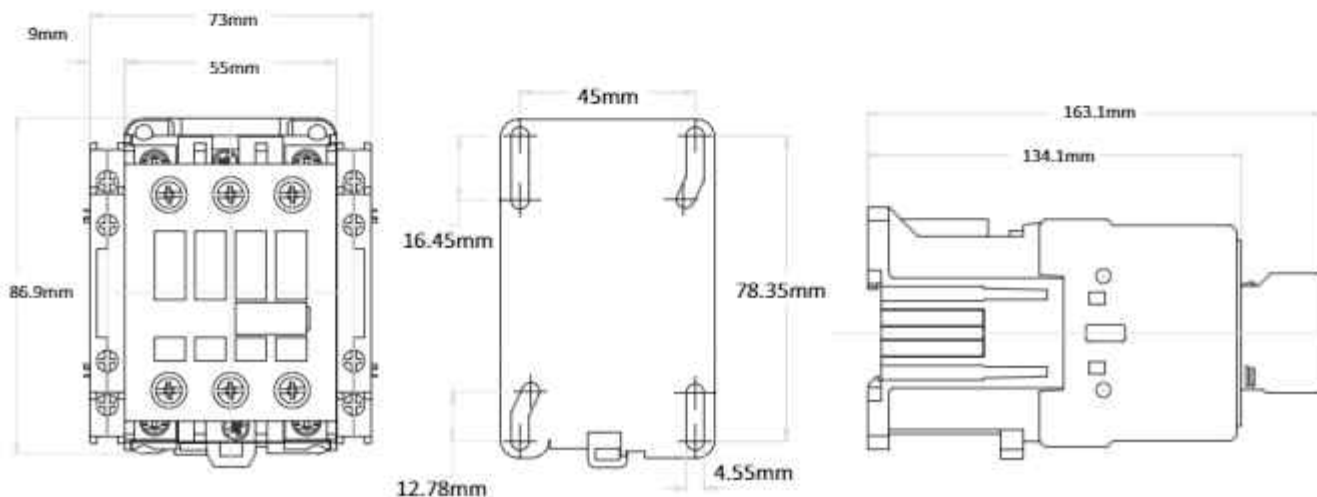


### 3 Pole Non-Reversing Contactors - DC Coils

SC009, SC012, SC018 & SC025

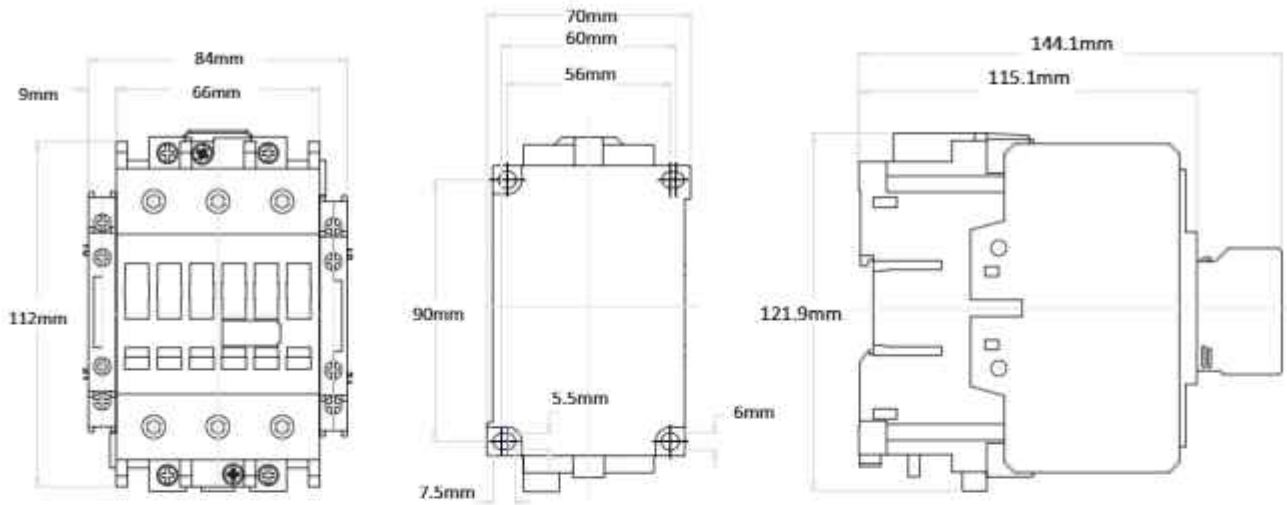


SC032, SC040

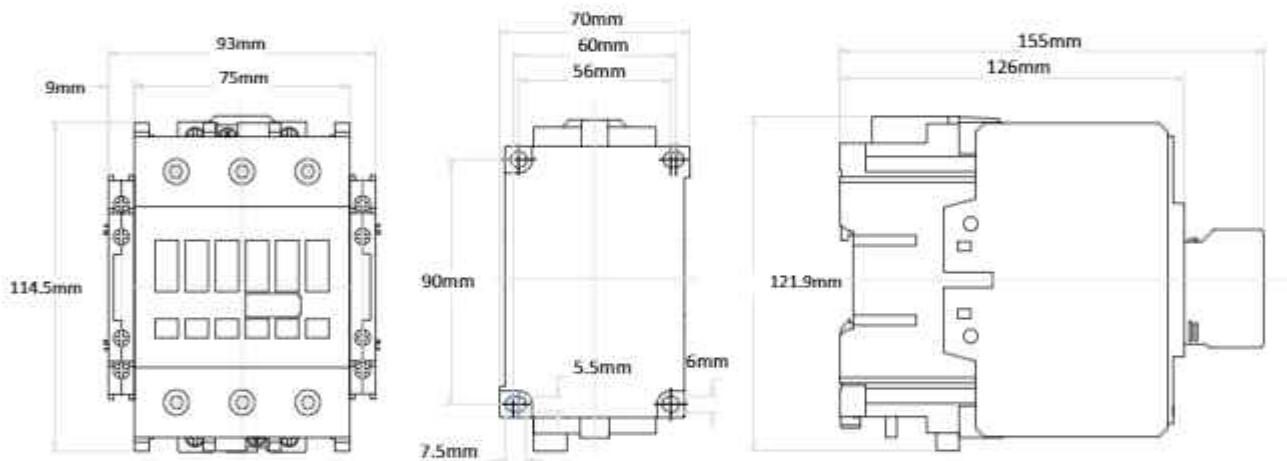


### 3 Pole Non-Reversing Contactors - DC Coils (Cont.)

SC050, SC065 & SC080

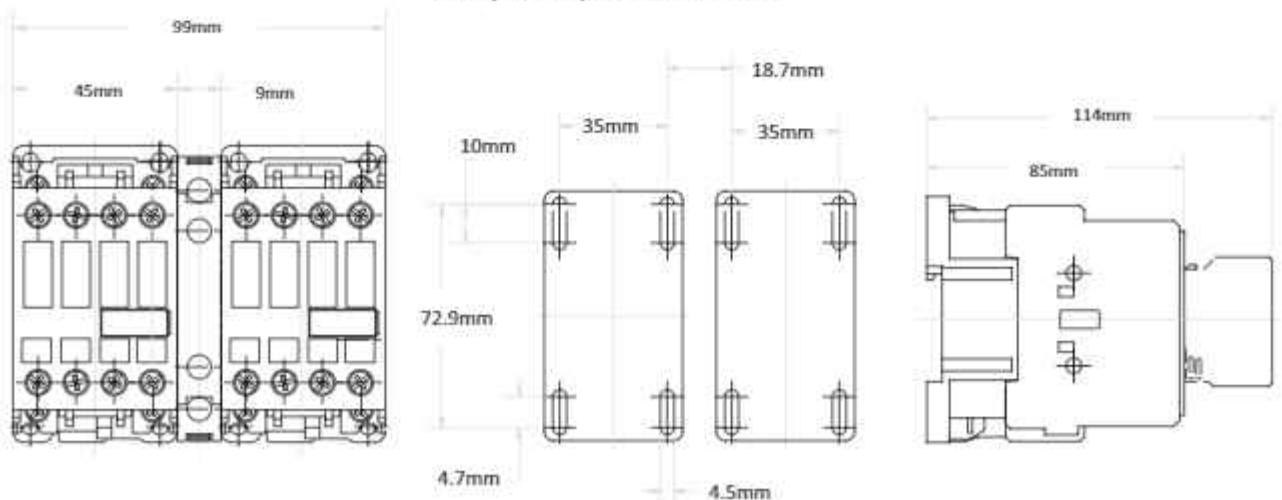


SC095 & SC105



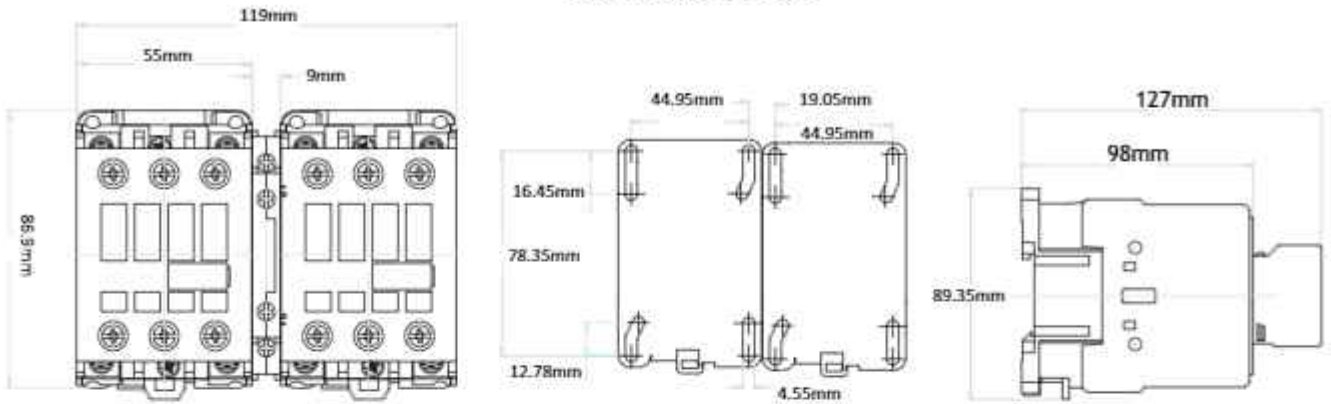
### 3 Pole Contactors with Electrical / Mechanical Interlock - AC Coils

SC09, SC012, SC018 & SC025

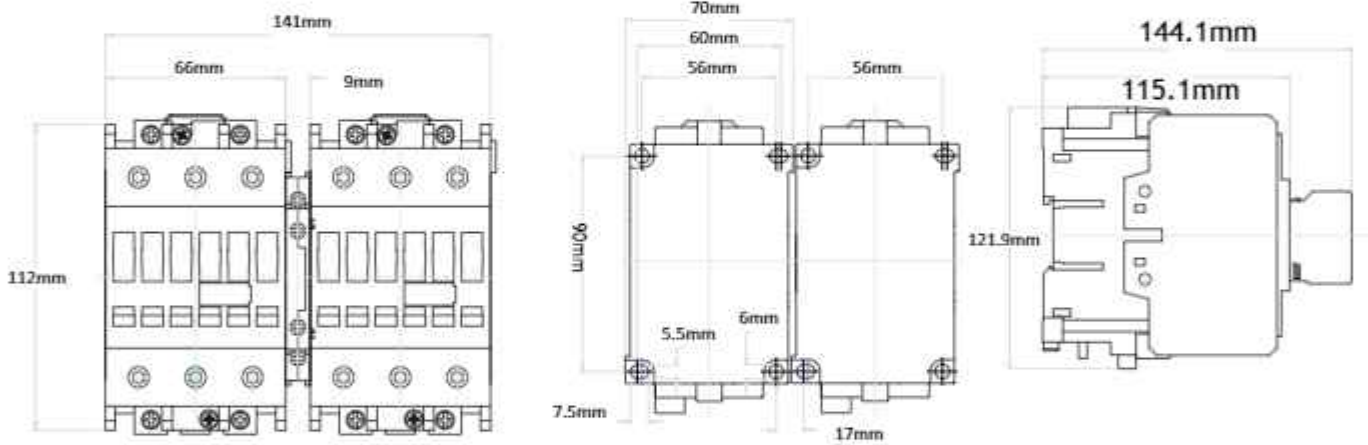


3 Pole Contactors with Electrical / Mechanical Interlock - AC Coils (Cont.)

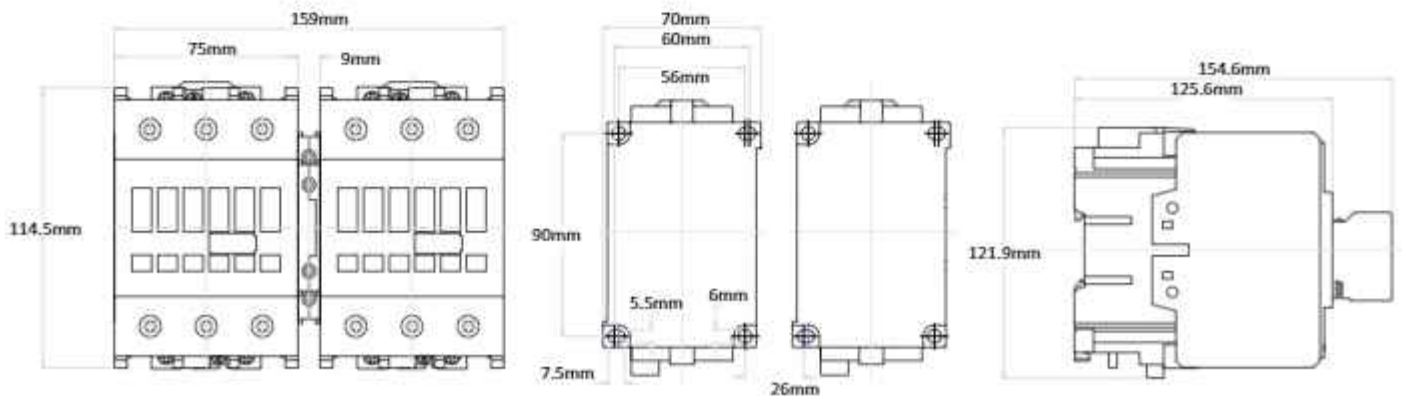
SC050, SC065 & SC080



SC032 & SC040

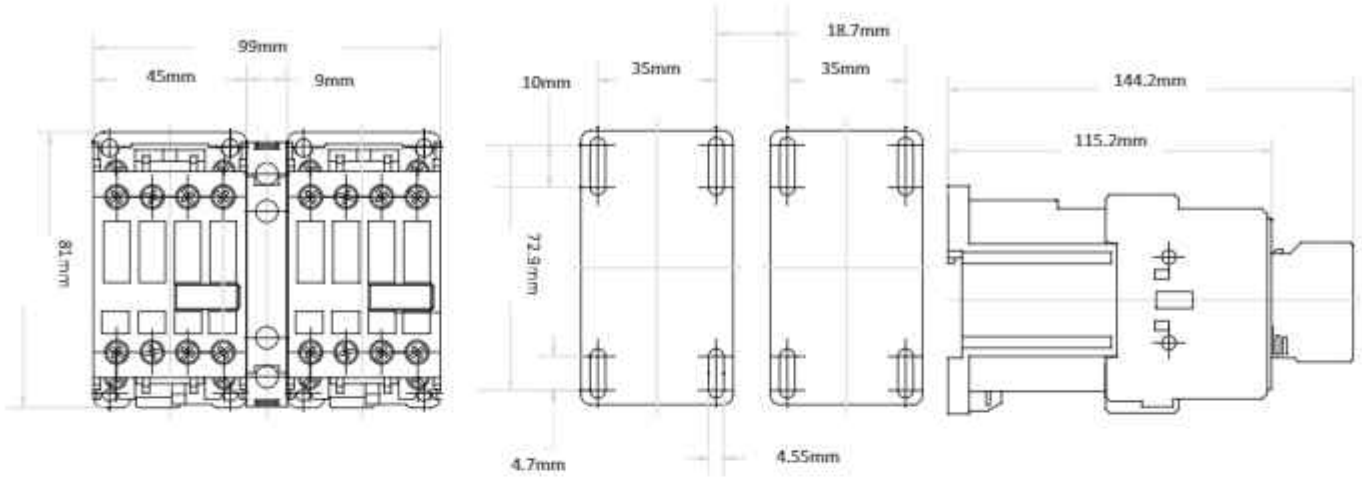


SC095 & SC105

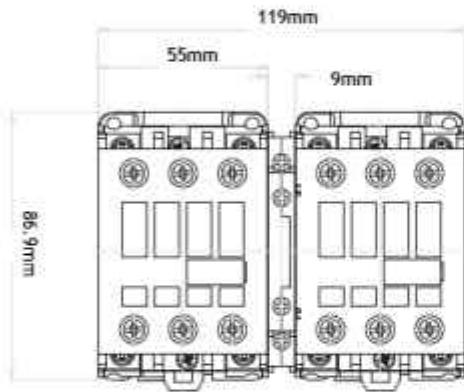


3 Pole Contactors with Electrical / Mechanical Interlock - DC Coils

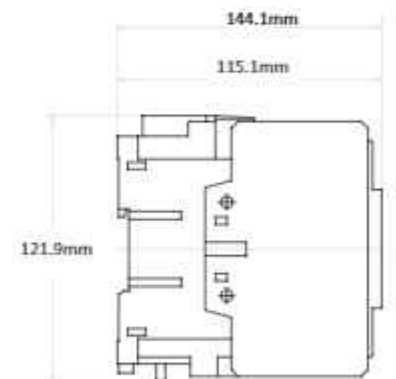
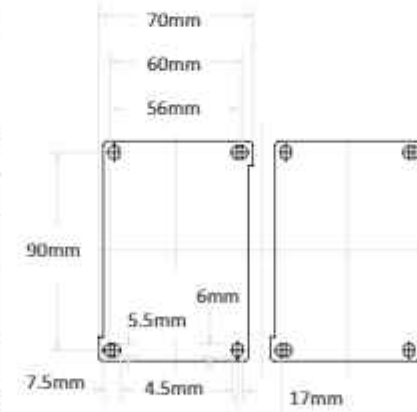
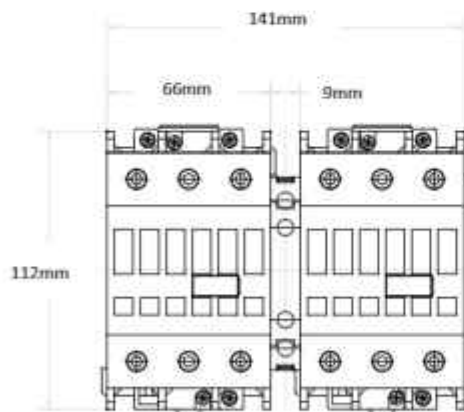
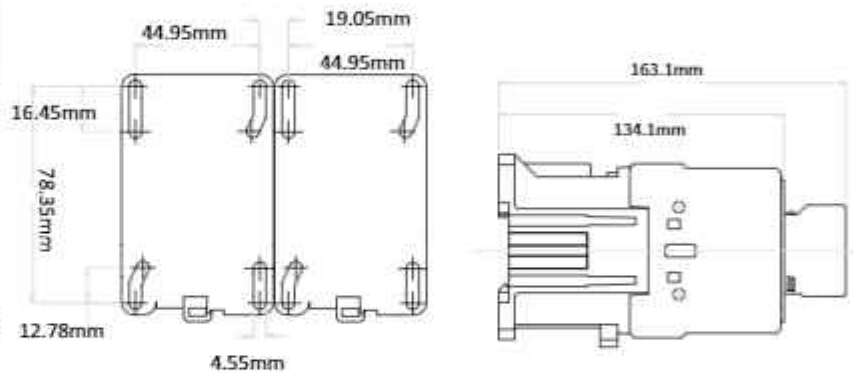
SC09, SC012, SC018 & SC025



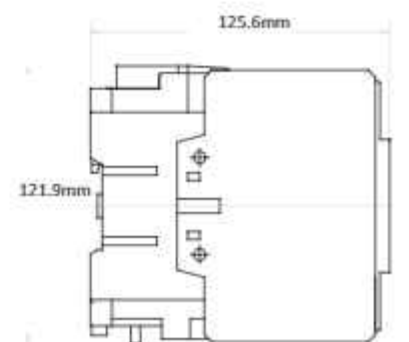
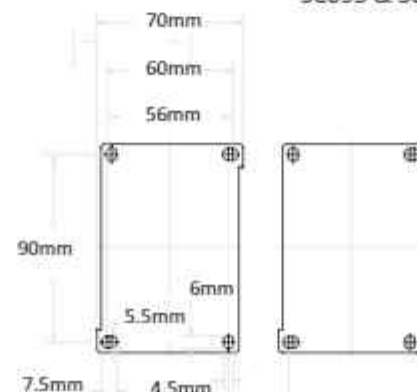
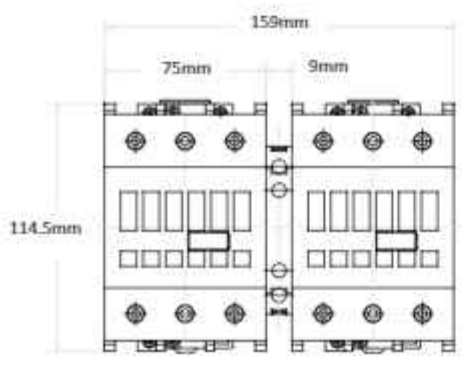
SC032 & SC040



SC050, SC065 & SC080



SC095 & SC105



26mm

# Mini Contactors





## Mini Contactors and Control Relays

Salzer Mini Contactors and Control Relays are compact family of control devices for switching motors and other logic control circuits. MR Series Mini Reversing Contactors are ideal for reversing motors in applications where panel space is a premium and device modularity is required to satisfy virtually any application requirement. Common accessories enable the devices to be customized for each application. For motor overload protection, Overload Relays can be directly mounted to mini contactors.



### Product features include

- High fault short circuit rating of 100kA @ 600V with Class J Fuses.
- Removable / replaceable ID Marker for MC Series Contactors and CR Series Control Relay, Device identification marker for labeling contactors and front mounted auxiliary contacts simplifies trouble shooting in panels with many contactors.
- MP Series Motor Protection Circuit Breakers direct mount onto MR Series Reversing AC/DC Contactors.
- Markings and labels, high visibility label for ease of troubleshooting and maintenance
- Compact size – one frame size for devices rated up to 16A.
- AC and DC operating coils for control circuit application flexibility – device is the same physical size with an AC or DC coil.
- Modular design and common snap-on accessories are easily installed without the use of tools, lowering assembly and installation costs.
- Front Mounted auxiliary contacts and surge suppressors install directly on top of the single front mounted mechanical interlock when used with our Mini reversing contactor.
- Miniature contactors compatible with directly mounted BR1 series overload Relays with current ratings from 0.28 to 17A.
- Over load relays are Class 10 with selectable manual or automatic reset, and provide phase loss sensitivity.
- IP20 guarded terminals with dual terminal markings prevent accidental contact with live parts.
- Device identification marker for labelling the contactor or control relay simplifies trouble shooting in panels with many devices.
- Universal ratings and markings: A, kW and HP rating as well as applicable 3rd party certification markings.
- 35mm DIN rail mounting for fast and easy installation and removal without the use of tools, panel mounting for more secure installation in high shock and vibration applications. Mini Non-Reversing contactors and Control Relays feature printed circuit board mounting with an accessory link module.
- Control relay includes bifurcated contacts rated 16A, AC-1, A600, and Q600 for high switching applications upto 600V.
- Four pole control relay with NO and NC contact configuration.

## Mini Non-Reversing Contactors



Auxiliary Contact Configuration		Coil Voltage									
Code	Description	AC Coil Voltage									
		Voltage	24	48	110	120	230	240	400	480	600
10	1 Normally Open (Integral Right Side Mounted)	50Hz			✓						
		60Hz				✓		✓		✓	✓
		50/60Hz	✓	✓			✓		✓		
01	1 Normally Closed (Integral Right Side Mounted)	DC Coil Voltage									
		Voltage	12	24	110	125	250				
			✓	✓	✓	✓	✓				

### Mini Non-Reversing Contactors (3 Normally open Poles)

Ratings for Switching AC Motors - AC-3													
Code	Max. I <sub>e</sub> (A)	KW						HP					
		3 Phase						1 Phase			3 Phase		
		AC-3	AC-1	220/240V	380/400V	415/440V	500V	660/690V	115V	230V	200V	230V	460V
MC007P30	7	18	2.2	3	3.7	4	4	1/3	3/4	1-1/2	1-1/2	5	5
MC009P30	9	20	2.2	4	4.5	4.5	4.5	1/3	1	2	3	5	7-1/2
MC012P30	12	22	3	5.5	5.5	5.5	5.5	1/2	2	3	3	7-1/2	7-1/2
MC016P30	16	22	4.5	7.5	7.5	7.5	7.5	1	2	3	5	10	10

## Mini Reversing Contactors



Options		Coil Voltage									
Code	Description	AC Coil Voltage									
		Voltage	24	48	110	120	230	240	400	480	600
(Blank)	Without Wiring Module	50Hz			✓						
		60Hz				✓		✓		✓	✓
		50/60Hz	✓	✓			✓		✓		
WW	With Wiring Module	DC Coil Voltage									
		Voltage	12	24	110	125	250				
			✓	✓	✓	✓	✓				

### Mini Reversing Contactors (3 Normally open Poles)

Ratings for Switching AC Motors - AC-3													
Code	Max. I <sub>e</sub> (A)	KW						HP					
		3 Phase						1 Phase			3 Phase		
		AC-3	AC-1	220/240V	380/400V	415/440V	500V	660/690V	115V	230V	200V	230V	460V
MR007P30	7	18	2.2	3	3.7	4	4	1/3	3/4	1-1/2	1-1/2	5	5
MR009P30	9	20	2.2	4	4.5	4.5	4.5	1/3	1	2	3	5	7-1/2
MR012P30	12	22	3	5.5	5.5	5.5	5.5	1/2	2	3	3	7-1/2	7-1/2
MR016P30	16	22	4.5	7.5	7.5	7.5	7.5	1	2	3	5	10	10

### Auxiliary Contact Configuration

Code	Description
02	2 Normally Closed
42	4 Normally Open (2 NO on Forward Contactor and 2 NO on Reverse Contactor) and 2 normally Closed (1 NC on Forward Contactor and 1 NC on Reverse Contactor)

### Unique Product Feature



The Printed Circuit Board Link Module installs directly on the Terminals of mini contactors and control relays enabling them to be directly mounted on an electronic printed circuit board. The module is rated 16A AC-3 and 22A AC-1 to take full advantage of the maximum switching capability of the mini contactor and control relay.



The insulated, wiring modules provide error free interconnections for reversing the power poles, and provide the electrical interlock through the integrated normally closed auxiliary contacts.

### Mini Control Relays



#### Mini Control Relays

Code	Description	Contact Ratings
CR016P00	Four Pole Control Relay	16A AC~1, A600,Q600

#### Contact Configuration

Code	Description
22	2 NO and 2 NC
31	3 NO and 1 NC
40	4 NO
13	1 NO and 3 NC
04	4 NC

#### Coil Voltage

##### AC Coil Voltage

Voltage	24	48	110	120	230	240	400	480	600
50Hz			✓					✓	
60Hz				✓		✓		✓	✓
50/60Hz	✓	✓			✓		✓		

##### DC Coil Voltage

Voltage	12	24	110	125	250
	✓	✓	✓	✓	✓

## Electrical Specifications - IEC

Electrical General		MC 007	MC 009	MC 012	MC 016
	Units	25 ~ 400			
Rated Operating Frequency		AC: 50Hz, 60Hz, 50/60Hz & DC			
<b>IEC RATINGS</b>					
Rated Insulation Voltage, $U_i$	V			690	
Rated Impulse Voltage withstand, $U_{imp}$	KV			4	
Rated Operating Voltage, $U_e$	V			690	
Rated Thermal Current, $I_{th}$ for Ambient Temperature $< 55^{\circ}C$	A	18	20	22	22
<b>Making Capacity</b>	A	70	90	120	160
<b>Breaking Capacity</b>					
$U_e < 400V$	A	50	72	96	128
$U_e = 500V$	A	50	72	96	128
$U_e = 690V$	A	35	54	72	96
<b>AC-1 Operating Current, <math>I_e</math></b>					
At $55^{\circ}C$		18.0	20.0	22.0	22.0
At $70^{\circ}C$		14.4	16.0	17.6	17.6
<b>AC - 3 Operating Current, <math>I_e</math></b>					
220 ~ 240V	A	7.0	9.0	12.0	16.0
380 ~ 400V	A	7.0	9.0	12.0	16.0
415 ~ 440V	A	7.0	9.0	12.0	16.0
500V	A	6.5	7.5	8.8	13.0
660 ~ 690V	A	4.9	6.0	6.6	9.7
<b>AC - 3 Operating Power, <math>P_e</math></b>					
220 ~ 240V	KW	2.2	2.2	3.0	4.5
380 ~ 400V	KW	3.0	4.0	5.5	7.5
415 ~ 440V	KW	3.7	4.5	5.5	7.5
500V	KW	4.0	4.5	5.5	7.5
660 ~ 690V	KW	4.0	4.5	5.5	7.5
<b>AC - 4 Operating Current, <math>I_e</math></b>					
220 ~ 240V	A	5.8	7.5	10.0	13.3
380 ~ 400V	A	5.8	7.5	10.0	13.3
415 ~ 440V	A	5.8	7.5	10.0	13.3
500V	A	5.4	6.3	7.3	10.8
660 ~ 690V	A	4.1	5.0	5.5	8.1
<b>AC - 4 Operating Power, <math>P_e</math></b>					
220 ~ 240V	KW	1.1	1.5	2.2	3.0
380 ~ 400V	KW	2.2	3.0	4.0	5.5
415 ~ 440V	KW	2.2	3.0	4.0	5.5
500V	KW	3.0	3.0	4.0	5.5
660 ~ 690V	KW	3.0	4.0	4.0	5.5
<b>AC - 4 Operating Current, <math>I_e</math> @ 200,000 Operations</b>					
220 ~ 240V	A	2.1	2.7	3.6	4.8
380 ~ 400V	A	2.1	2.7	3.6	4.8
415 ~ 440V	A	2.1	2.7	3.6	4.8
500V	A	2.0	2.3	2.7	3.9
660 ~ 690V	A	1.5	1.8	2.0	2.9

## Electrical Specifications - IEC

Electrical General		MC 007	MC 009	MC 012	MC 016
	Units				
<b>AC - 4 Operating Power, Pe @ 200,000 Operations</b>					
220 ~ 240V	KW	0.37	0.55	0.75	1.1
380 ~ 400V	KW	0.75	1.1	1.5	1.5
415 ~ 440V					
500V	KW	0.75	1.1	1.1	2.2
660 ~ 690V	KW	0.75	1.1	1.1	2.2
<b>Maximum Electrical Switching Rate</b>					
AC - 1	Ops./Hr.		300		
AC - 3	Ops./Hr.		600		
AC - 4	Ops./Hr.		300		
Electrical Endurance, AC -3 at Maximum Rated 3 Phase Operating Power (@ 400V)	Ops. (mill.)	1.4	1.3	1.2	1.1
<b>Short Circuit Coordination</b>					
Type "1" gL/gG	KA		5		
Type "1" gL/gG	A	35	35	35	35
Type "2" gL/gG	A	20	20	25	25

## Mini Contactor Specification (UL)

	Units	MC 007	MC 009	MC 012	MC 016
<b>UL Ratings</b>					
General Purpose Current Rating	A	18	20	22	22
Rated 1 Phase Operating Current, Ie					
115V	A	7.2	7.2	9.8	16.0
230V	A	6.9	8.0	12.0	12.0
Rated 1 Phase Operating Power, Pe					
115V	Hp	1/3	1/3	1/2	1
230V	Hp	3/4	1	2	2
Rated 3 Phase Operating Current, Ie					
200V	A	6.9	7.8	11.0	11.0
230V	A	6.0	6.8	9.6	9.6
460V	A	7.6	7.6	11.0	14.0
575V	A	6.1	9.0	9.0	11.0
Rated 3 Phase Operating Power, Pe					
200V	Hp	1 1/2	2	3	3
230V	Hp	1 1/2	3	3	5
460V	Hp	5	5	7 1/2	10.0
575V	Hp	5	7 1/2	7 1/2	10
<b>SCCR</b>					
Standard Fault (5KA) Fuse Size	A	30	30	30	40
High Fault (100KA) Fuse Size	A	15	15	20	25
<b>Electrical Endurance</b>					
@ Maximum Rated 3 Phase Operating Power (400V)	Ops.(mill.)	1.4	1.3	1.2	1.1
<b>Coil Characteristics</b>					
Rated Insulation Voltage, Ui	V		690		
<b>Operating Limits</b>					
50Hz, 60Hz, 50/60Hz					
Operating	xUc		0.8 ~ 1.1		
Pick-Up	xUc		0.40 ~ 0.76		
Sealed	xUc		0.25 ~ 0.65		
<b>DC</b>					
Operating	xUc		0.8 ~ 1.1		
Pick-Up	xUc		0.40 ~ 0.7		
Sealed	xUc		0.15 ~ 0.4		
<b>Coil Consumption</b>					
50Hz, 60Hz, 50/60Hz					
Pick-Up	W		16		
Hold-In	W		2 ~ 4		
<b>DC</b>					
Pick-Up	VA		1.74 ~ 2.5		
Hold-In	VA		1.74 ~ 2.5		
<b>Operating Times</b>					
AC					
Pick-Up	msec.		8 - 20		
Drop-Out	msec.		6 - 13		
DC					
Pick-Up	msec.		35 ~ 45		
Drop-Out	msec.		7 ~ 13		
<b>Power Dissipation</b>					
50Hz, 60Hz, 50/60Hz	W		3		
<b>Power Factor</b>					
	cos		0.27		
Closed	cos		0.8		
Open					
<b>Mechanical</b>					
Mechanical Endurance			10		
	Ops.(mill.)				
Maximum Mechanical Switching Rate	Ops./Hr.		2000		

## Mini Contactor Specification (UL)

	Units	MC 007	MC 009	MC 012	MC 016
<b>Environmental</b>					
Ambient Operating Temperature			-25 to +55°C (-13 to +131°F)		
Ambient Storage Temperature			-55 to +80°C (-67 to +176°F)		
<b>Construction</b>					
<b>Ingress Protection</b>					
Main Circuits			IP20		
Control Circuit Terminations			IP20		
Weight	Kg.		0.18		
	lbs.		0.4		
<b>Terminal Capacity</b>					
AWG Wire	AWG		2 X 20 ~ 14		
Solid	mm <sup>2</sup>		1 X 0.5 ~ 2.0		
Stranded	mm <sup>2</sup>		1 X 0.5 ~ 2.0		
Tightening Torque	Nm		1 ~ 1.2		
	lb*in		8.8 ~ 10.6		

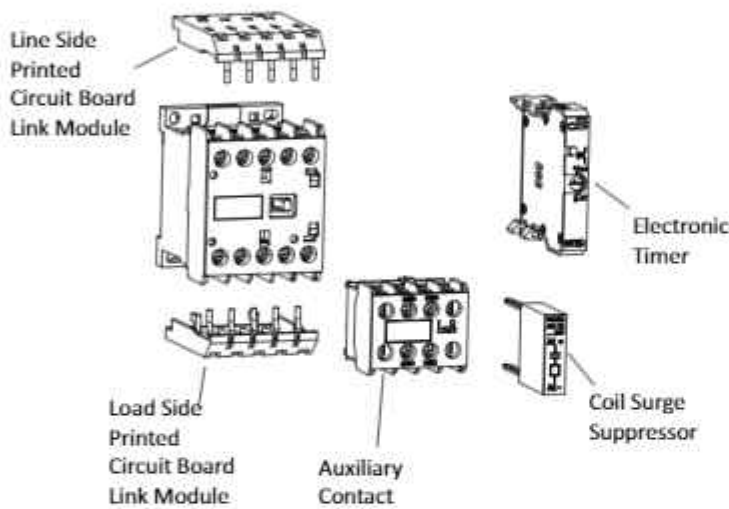
## Auxiliary Contact Specifications (IEC)

		Built-in Auxiliary	MCFA, CRFA
<b>IEC RATINGS</b>			
Rated insulation Voltage, Ui	V	690	
Rated Operating Voltage, Ue	V	690	
AC-1 Ratings @ 230V (C16 only)	A	16	
Rated Thermal Current, Ith for Ambient Temperature < 55°C	A	10	-
Making Capacity, Ue < 400V, AC-15	A	10 X Ie (AC-15)	10
Breaking Capacity, Ue < 400V, AC-15	A	10 X Ie (AC-15)	30.0
<b>AC-15</b>			
< 240V	A	10.0	
380 ~ 400V	A	6.0	10.0
415 ~ 440V	A	5.0	5.0
500V	A	4.0	5.0
660 ~ 690V	A	2.0	4.0
<b>DC-13</b>			
24V	A	6.0	
48V	A	4.0	1.5
60V	A	1.5	-
110V	A	0.7	0.5
220 ~ 240V	A	0.35	0.4
<b>Short Circuit Coordination</b>			
gL/gG	A	10	
<b>UL Ratings</b>			
Rated Voltage, Ue	V	600	
Pilot Duty Rating			
Electrical Endurance	AC	A600	
	DC	Q600	
	Ops.(mill.)	1.0	
<b>Mechanical</b>			
	Units		
Mechanical Endurance	Ops.(mill.)	10	
<b>Environmental</b>			
Ambient Operating Temperature			-25 to +55°C (-13 to +131°F)
Ambient Storage Temperature			-55 to +80°C (-67 to +176°F)
<b>Construction</b>			
<b>Terminal Capacity</b>			
AWG Wire	AWG		2 X 20 ~ 14
Solid	mm <sup>2</sup>		1 X 0.5 ~ 2.0
Stranded	mm <sup>2</sup>		1 X 0.5 ~ 2.0
Tightening Torque	Nm		1 ~ 1.2
	lb*in		8.8 ~ 10.6

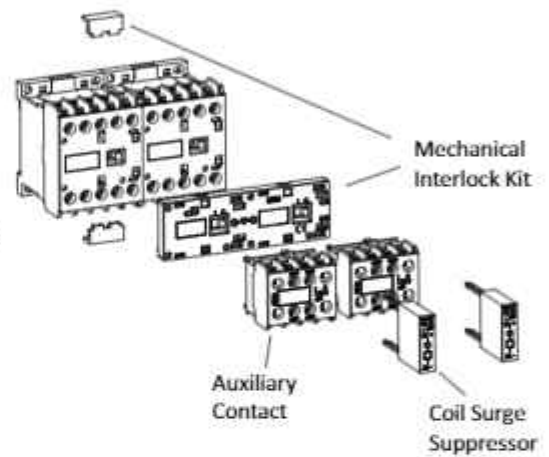
## Accessories for Mini Contactors and Control Relays

The complete range of Mini Contactors and Control Relays share common accessories including auxiliary contacts, mechanical interlock, electronic timers, reversing wiring modules, surge suppressors and a printed circuit board link module. Designing starter assemblies and panels is easy – you don't have to remember which auxiliary is required for each contactor or control relay, they all work together. Installation is easy too – once you learn how to install each accessory, it's always the same no matter what contactor or control relay it's being installed on. If simple design and assembly isn't enough – you'll also reduce your inventory and maximize its flexibility, because unique accessories are not required for each size contactor or control relay.

### Mini Contactors & Control Relays



### Reversing Mini Contactors





## Auxiliary Contacts



Front mounted auxiliary contact modules feature IP20 guarded terminals to protect against accidental contact with live parts. The modules are available in 2 and 4 circuit configurations. The device identification marker simplifies trouble shooting in panels with many devices. These modules snap on and install without the use of tools.

Contact Configuration				Contact Configuration			
Code	No	NC	For Use With Contactors	Code	No	NC	For Use With Contactors
MCFA20	2	0	MC007 MC009 MC012 MC016	CRFA20	2	0	CR016
MCFA11	1	1		CRFA11	1	1	
MCFA02	0	2		CRFA02	0	2	
MCFA40	4	0		CRFA40	4	0	
MCFA22	2	2		CRFA22	2	2	
MCFA04	0	4		CRFA04	0	4	
MCFA31	3	1		CRFA31	3	1	
MCFA13	1	3		CRFA13	1	3	

Maximum Number of Front Mounted Auxiliary Contacts	
Coil Specification	Maximum Number
AC Coils : 110V/50Hz, 120V/60Hz, 480V/60Hz, 600V/60Hz	Up to four additional poles
DC Coils : 12V, 24V, 110V, 125V, 250V	Up to two additional poles

## Printed Circuit Board Link Module



The printed circuit board module enables mini contactors and control relays to be mounted directly on electronic printed circuit boards. The module is rated 16A AC-3 and 22A AC-1.

Printed Circuit Board Link Module	
Code	Description
MCPCLM	Printed Circuit Board Link Module

## Wiring Modules



Reversing contactor power wiring modules make field assembly of reversing contactors easy.

Wiring Module	
Code	For use with Contactors
MCRWM16	MC007, MC009, MC012, MC016
LIS	Line Side
LDS	Load Side

## Electronic Timers



Right side mounted electronic timers are available in On-Delay and off-Delay configurations with timing ranges up to 30 seconds. The modules install without the use of tools, and can be used in conjunction with all other accessories.

Electronic Timers			
Code	Function	Timing Range(Seecs.)	Voltage
MCETN03V240	On-Delay	0.3 ~ 3	24 ~ 240V AC/DC
MCETN10V240		1 ~ 10	
MCETN30V240		3 ~ 30	
MCETF03V060	Off-Delay	0.3 ~ 3	24 ~ 60V AC/DC
MCETF10V060		1 ~ 10	
MCETF30V060		3 ~ 30	
MCETF03V240	Off-Delay	0.3 ~ 3	100 ~ 240V AC/DC
MCETF10V240		1 ~ 10	
MCETF30V240		3 ~ 30	

## Mechanical interlock



Our front mounted mechanical interlock is for reversing contactors. The interlock prevents the forward and reverse contactors from being actuated at the same time. Auxiliary contact modules, surge suppressors, and timers can be used in conjunction with the mechanical interlock.

Mechanical Interlock	
Code	Description
MCFMI	Front Mounted Mechanical Interlock

## Surge Suppressors



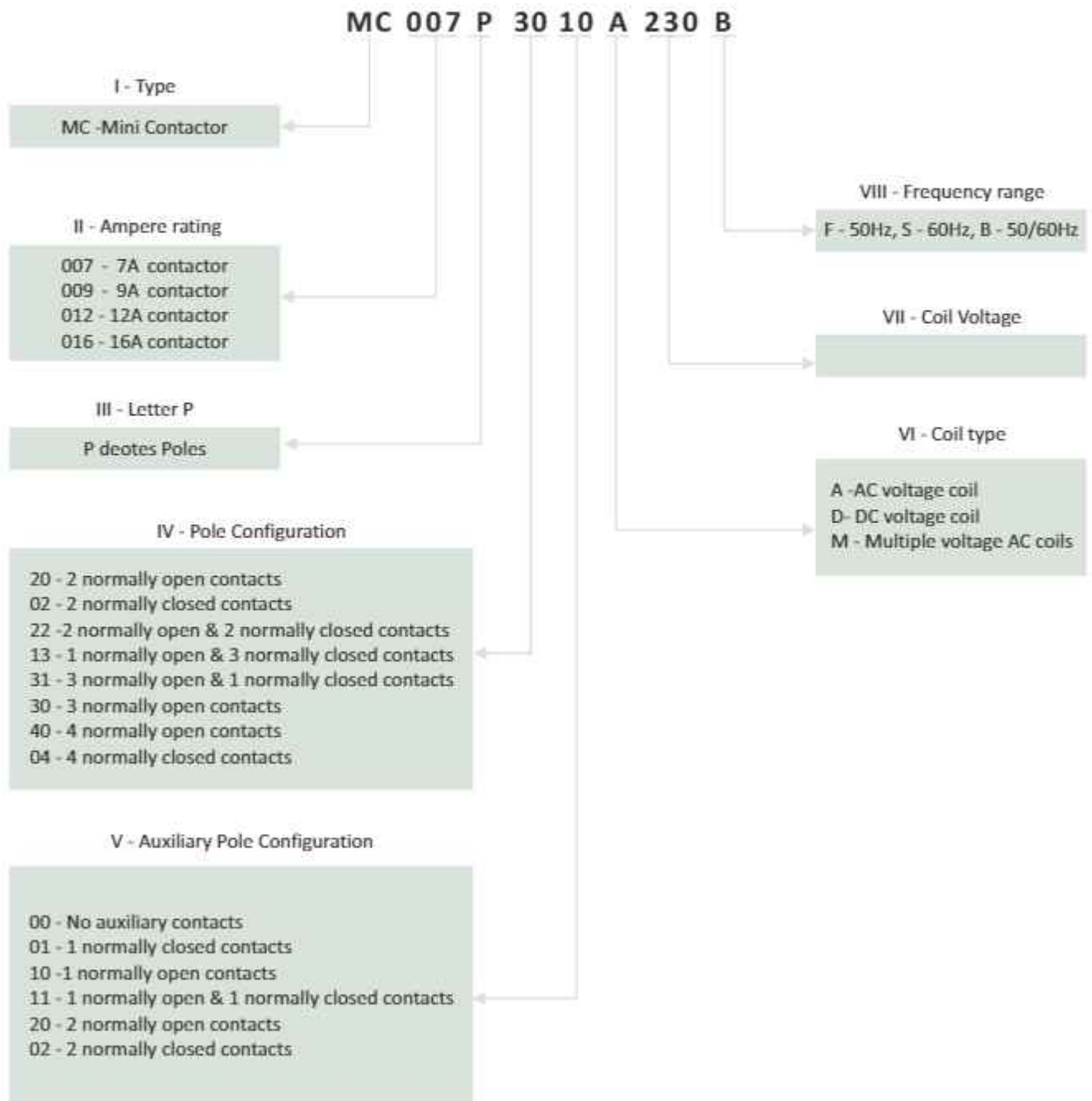
Front mounted surge suppressors protect sensitive electronic components from damaging line voltage spikes. The modules install without the use of tools, and can be used in conjunction with all other accessories.

Surge Suppressors		
Code	Voltage Range	Type
MCRCA024B	12 ~ 24V 50/60Hz	RC
MCRCA048B	24 ~ 48V 50/60Hz	
MCRCA127B	50 ~ 127V 50/60Hz	
MCRCA250B	130 ~ 250V 50/60Hz	
MCRCA380B	275 ~ 380V 50/60Hz	
MCRCA510B	400 ~ 510V 50/60Hz	
MCVSAD048	12 ~ 48VAC/12 ~ 60VDC	Varistor
MCVSAD127	50 ~ 127VAC/60 ~ 180VDC	
MCVSAD250	130 ~ 250VAC/180 ~ 300VDC	
MCVSAD380	277 ~ 380VAC/380 ~ 510VDC	
MCVSAD510	400 ~ 510VAC	
MCDSD600	12 ~ 600VDC	Diode

Ordering Code

Non - reversing contactors

Ordering Informations							
I	II	III	IV	V	VI	VII	VIII
MC	007, 009, 012, 016	P	22, 31, 40, 13, 04	00, 01, 10, 11, 20, 02	A or D or M	XXX	F or S or B

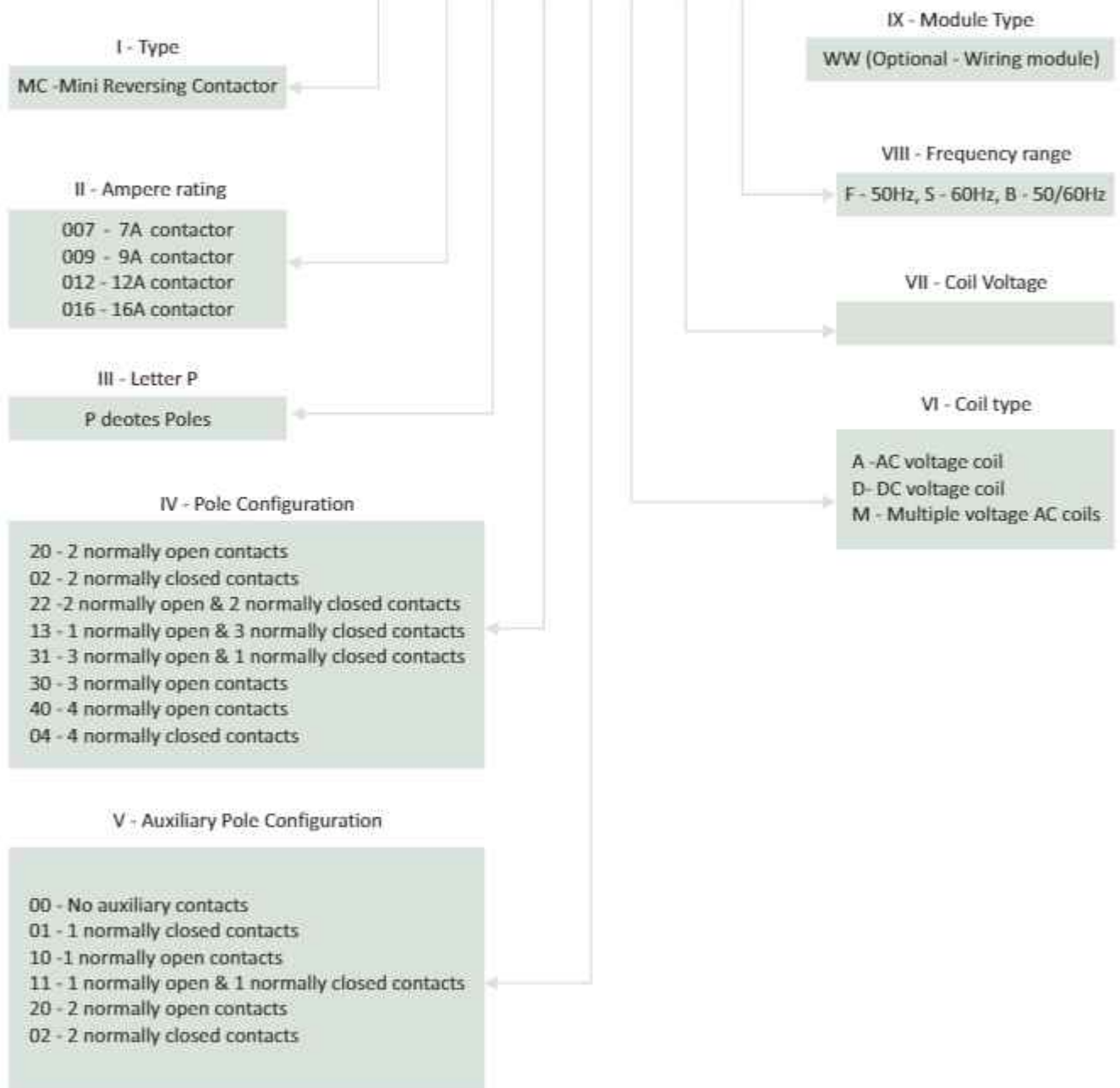


Ordering Code

Reversing contactors

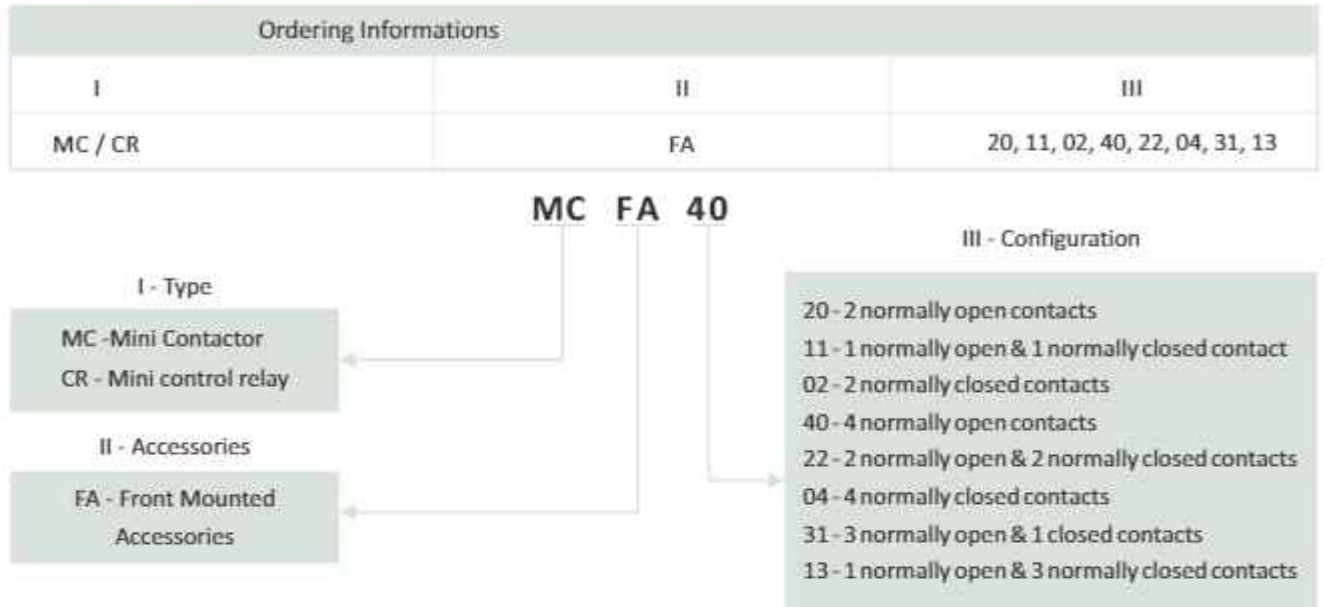
Ordering Informations									
I	II	III	IV	V	VI	VII	VIII	IX	
MR	007, 009, 012, 016	P	20, 02, 22, 13, 31, 30, 40, 04	00, 001, 10, 11, 20, 02	A or D or M	XXX	F or S or B	WW	

**MR 009 P 30 10 A 230 B**

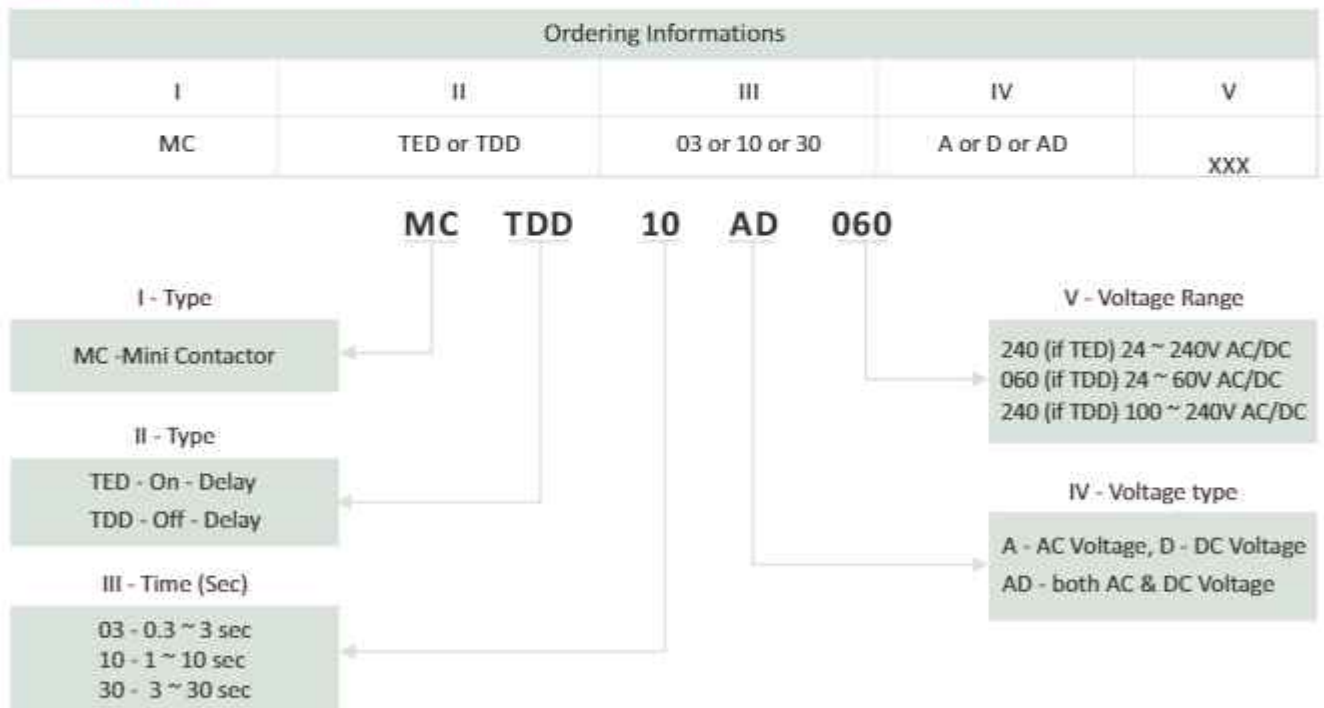


## Ordering Code - Accessories

### Auxiliary contact



### Electronic timer

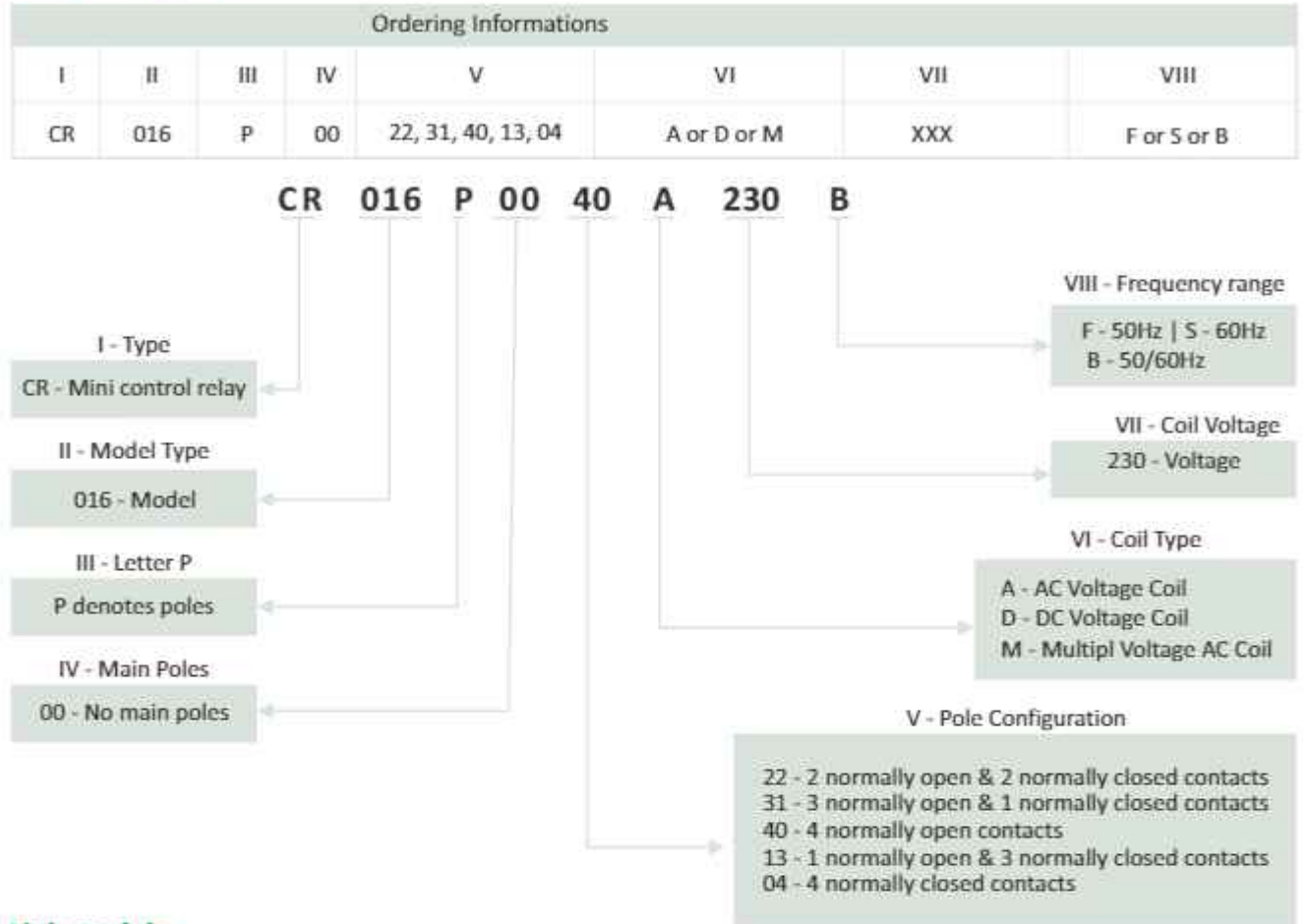


### Mechanical interlock



## Ordering Code - Accessories

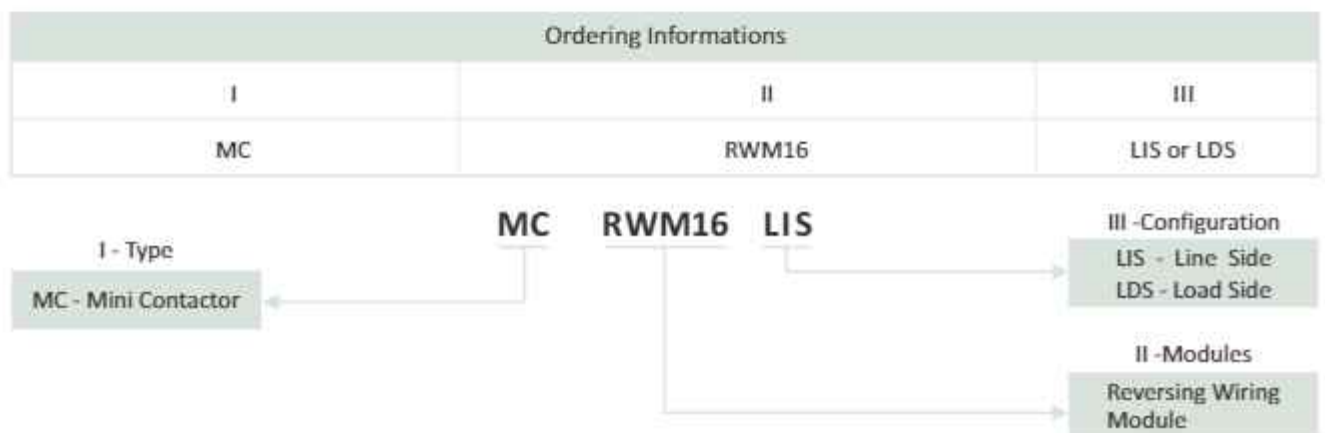
### Mini control relay



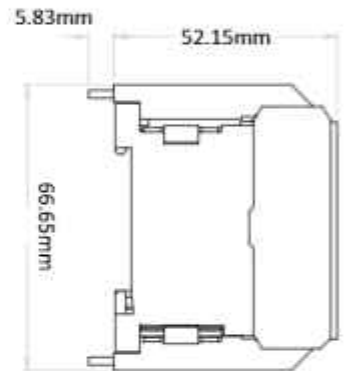
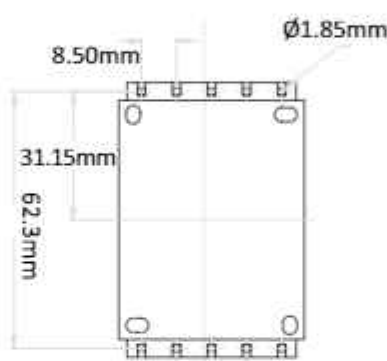
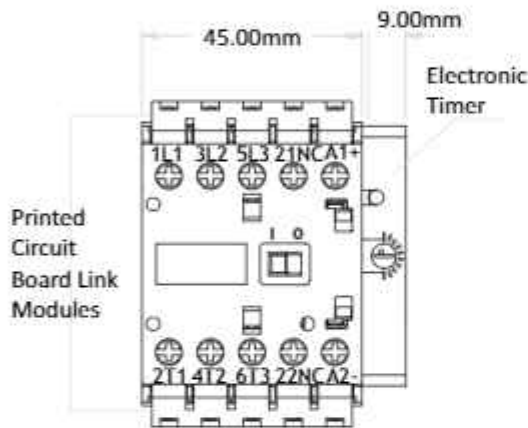
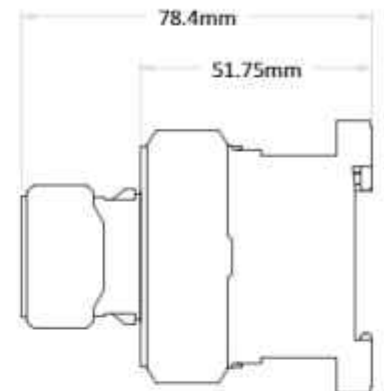
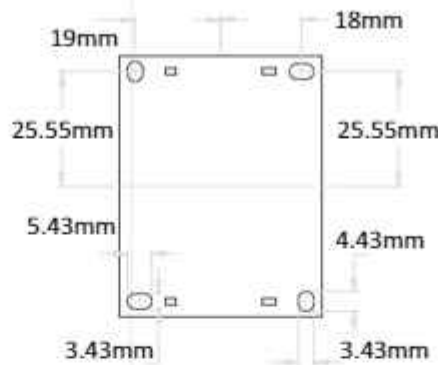
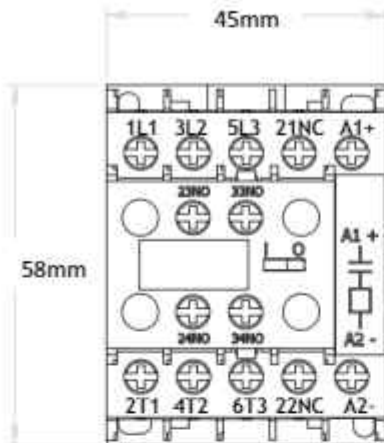
### Link module



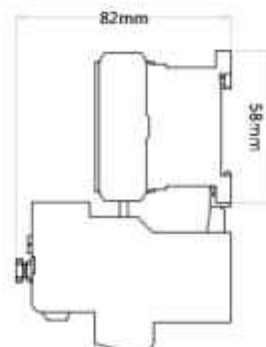
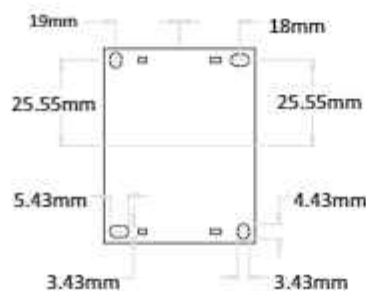
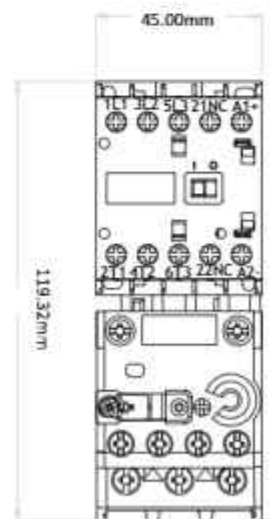
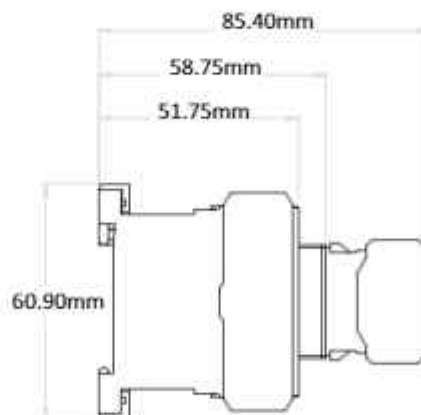
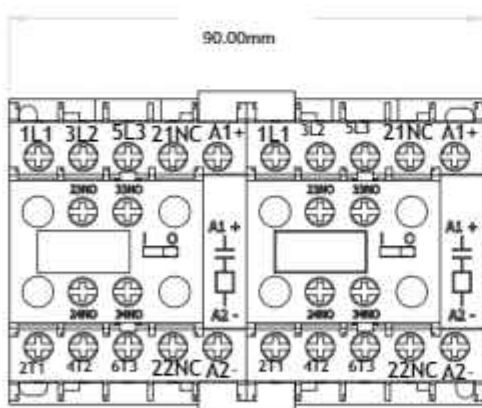
### Wiring module



Mini Non-reversing Contactor & Control Relay With Auxiliary Contacts & Surge Suppressor



Mini Reversing Contactor & Control Relay With Auxiliary Contacts & Surge Suppressor



# OVERLOAD RELAY





## Bimetallic Overload Relays



Our Series BR Bimetallic Overload Relays are available in five frame sizes for motor full load currents from 0.28 ~ 112A.

Overload Relay Type	
Code	Description
BR	Bimetallic Overload Relay

Overload Relay Frame Size and Current Adjustment Range		
Code	Installs On Contactor	Current Adjustment Range
BR1L40	MC007, MC009, MC012, MC016	0.28 ~ 0.4
BR1L63	MC007, MC009, MC012, MC016	0.4 ~ 0.63
BR1L80	MC007, MC009, MC012, MC016	0.56 ~ 0.8
BR1M12	MC007, MC009, MC012, MC016	0.8 ~ 1.2
BR1M18	MC007, MC009, MC012, MC016	1.2 ~ 1.8
BR1M28	MC007, MC009, MC012, MC016	1.8 ~ 2.8
BR1M40	MC007, MC009, MC012, MC016	2.8 ~ 4.0
BR1M63	MC007, MC009, MC012, MC016	4.0 ~ 6.3
BR1M80	MC007, MC009, MC012, MC016	5.6 ~ 8.0
BR1H10	MC007, MC009, MC012, MC016	7.0 ~ 10.0
BR1H12	MC007, MC009, MC012, MC016	8.0 ~ 12.5
BR1H15	MC007, MC009, MC012, MC016	10 ~ 15
BR1H17	MC007, MC009, MC012, MC016	11 ~ 17
BR2L40	SC009, SC012, SC018, SC025, SC032, SC040	0.28 ~ 0.4
BR2L63	SC009, SC012, SC018, SC025, SC032, SC040	0.4 ~ 0.63
BR2L80	SC009, SC012, SC018, SC025, SC032, SC040	0.56 ~ 0.8
BR2M12	SC009, SC012, SC018, SC025, SC032, SC040	0.8 ~ 1.2
BR2M18	SC009, SC012, SC018, SC025, SC032, SC040	1.2 ~ 1.8
BR2M28	SC009, SC012, SC018, SC025, SC032, SC040	1.8 ~ 2.8
BR2M40	SC009, SC012, SC018, SC025, SC032, SC040	2.8 ~ 4.0
BR2M63	SC009, SC012, SC018, SC025, SC032, SC040	4.0 ~ 6.3
BR2M80	SC009, SC012, SC018, SC025, SC032, SC040	5.6 ~ 8.0
BR2H10	SC009, SC012, SC018, SC025, SC032, SC040	7.0 ~ 10.0
BR2H12	SC009, SC012, SC018, SC025, SC032, SC040	8 ~ 12.5
BR2H15	SC009, SC012, SC018, SC025, SC032, SC040	10 ~ 15
BR2H17	SC009, SC012, SC018, SC025, SC032, SC040	11 ~ 17
BR2H23	SC009, SC012, SC018, SC025, SC032, SC040	15 ~ 23
BR2H32	SC009, SC012, SC018, SC025, SC032, SC040	22 ~ 32
BR3H40	SC032, SC040	25 ~ 40
BR4H50	SC050, SC065, SC080	32 ~ 50
BR4H57	SC050, SC065, SC080	40 ~ 57
BR4H63	SC050, SC065, SC080	50 ~ 63
BR4H70	SC050, SC065, SC080	57 ~ 70
BR5H80	SC095, SC105	63 ~ 80
BR5H97	SC095, SC105	75 ~ 97
BR5X11	SC095, SC105	90 ~ 112

## Bimetallic Overload Relays

Salzer BR Series Bimetallic Overload Relays provide thermal Trip Class 10 overload protection for single and three phase motors, and phase loss protection for three phase motors. Other features like IP20 guarded terminals with dual terminal markings, integral stop button, and direct mounting will help you to reduce your total installed costs and enhance the features and performance of your equipment.



### Features

- BR1 series Overload Relays for use with MC Series Mini Contactors.
- BR1 series Overload Relays include integral connection to auxiliary and coil terminations for ease of wiring during installation when installed on MC Series Mini Contactors.
- BR1 series Overload Relays share the same great features and benefits of the larger frame sizes.
- Trip Class 10 for reliable and accurate protection against overload conditions.
- Single phase sensitivity to protect motors against damaging phase loss conditions.
- Direct mounting to all contactors, including BR1 Overload Relays for use with Series MC Mini Contactors.
- IP20 guarded terminals prevent accidental contact with live parts.
- Combination head terminal screws allow the use of straight, phillips or posidrive screwdrivers.
- Stop button for convenient and economical control circuit wiring.
- Ambient temperature compensation ensures reliable motor protection even in high temperature environments.

### Unique Product Feature



A - Automatic Reset Only  
 AUTO - Automatic Reset and Test  
 H - Manual Reset Only  
 HAND - Manual Reset and Test

Salzer BR Series Bimetallic Overload Relays feature a multi-function reset button enabling the user to select the reset mode—manual or automatic and whether or not to enable the test function. When the reset button is pressed, with the reset function enabled, the Normally Open (NO) contact closes and the Normally Closed (NC) contact opens to verify the control circuit functionality. In addition, the NC contact can be used in a “Stop” circuit. With the test function disabled, the NO and NC contacts do not change state when the reset button is pressed—preventing unauthorized personnel from operating the control circuit. Multiple functions in a single device help you to reduce inventory and customize the overload relay operation to provide the performance and features you need for your specific application.

## Technical Specifications

	Units	BR1	BR2	BR3	BR4	BR5
<b>Environmental</b>						
Current setting range	A	0.28 ~ 17	0.28 ~ 32	25 ~ 40	32 ~ 70	63 ~ 112
Operating Frequency	Hz			0 ~ 400		
Power Dissipation per pole	W	0.9 ~ 1.4	1.3 ~ 2.0	1.3 ~ 2.0	1.9 ~ 4.8	3 ~ 4.8
<b>IEC Ratings</b>						
<b>Main Circuits</b>						
Rated Insulation Voltage, $U_i$	V			690		
Rated Impulse Voltage withstand, $U_{imp}$	KV			6		
Rated Operating Voltage, $U_e$	VAC			690		
Maximum Rated Operating Current, $I_e$	A	17	32	40	70	112
Short Circuit Current, $I_e$	A			5Ka		
Maximum fuse size in type "1" gL/gG	A	60	90	125	200	275
Maximum fuse size in type "2" gL/gG	A	35	63	90	175	250
<b>Control Circuits</b>						
Rated Insulation Voltage, $U_i$	V			690		
Rated Operating Current, $I_e$						
<b>AC-15</b>						
24V	A			4		
48V	A			3.5		
60V	A			3.5		
110~120V	A			3.00		
220~240V	A			2.00		
400~415V	A			1.50		
500V	A			0.50		
660~690V	A			0.30		
<b>DC-13</b>						
24V	A			1.00		
48V	A			0.50		
60V	A			0.50		
110V	A			0.25		
220V	A			0.10		
250V	A			0.10		
Short Circuit Coordination gL/gG	A			6		
<b>UL Ratings</b>						
Main Circuits	VAC			600		
Rated Operating Voltage, $U_e$	KA					
<b>Short Circuit Coordination</b>						
Standard Fault Current	KA			5		10
Maximum Fuse Size*	A	60	90	90	175	250
High Fault Current	A	30	60	60	100	150
Maximum Fuse Size*						
<b>Control Circuits</b>						
Pilot Duting Rating	AC				C600	
	DC				R300	

\*Varies by current settings range of overload relay.

## Technical Specifications

	Units	BR1	BR2	BR3	BR4	BR5
<b>Environmental</b>						
Ambient Storage Temperature				-25 to +60°C ( -13 to 140°F)		
Impedance per pole				-40 to +70°C ( -40 to 158°F)		
<b>Construction</b>						
Number of Poles				3		
Trip Class				10		
Pollution Degree				3		
<b>Ingress Protection</b>						
Main Circuit Terminals	IP20					
Control Circuit Terminals	IP20					
<b>Weight</b>						
	Kg.	0.15	0.15	0.31	0.31	0.37
	lbs.	0.33	0.33	0.68	0.68	0.82
<b>Conductor Size</b>						
Main Circuit Terminals	AWG	14 ~ 6	14 ~ 6	18 ~ 2	18 ~ 2	8 ~ 1/0
UL / CSA	mm <sup>2</sup>	2.5 ~ 16	2.5 ~ 16	1 ~ 35	1 ~ 35	10 ~ 15
Solid	mm <sup>2</sup>	2.5 ~ 16	2.5 ~ 16	1 ~ 35	1 ~ 35	10 ~ 15
Stranded	mm <sup>2</sup>	2.5 ~ 16	2.5 ~ 16	1 ~ 35	1 ~ 35	10 ~ 15
Fine Stranded	Nm	1.4 ~ 2.3	1.4 ~ 2.3	4 ~ 6	4 ~ 6	14 ~ 26
Terminal Torque	lb.in.	12.4 ~ 20.4	12.4 ~ 20.4	35 ~ 53	35 ~ 53	44.3 ~ 57.5
<b>Control Circuits</b>						
UL/CSA	AWG			2 X 18 ~ 12		
Solid	mm <sup>2</sup>			2 X 1 ~ 40		
Stranded	mm <sup>2</sup>			2 X 1 ~ 40		
Fine Stranded	mm <sup>2</sup>			2 X 1 ~ 40		
Terminal Torque	Nm			1.12		
	lb.in.			10		
ROHS Compliance				Yes		

\*Varies by current settings range of overload relay.

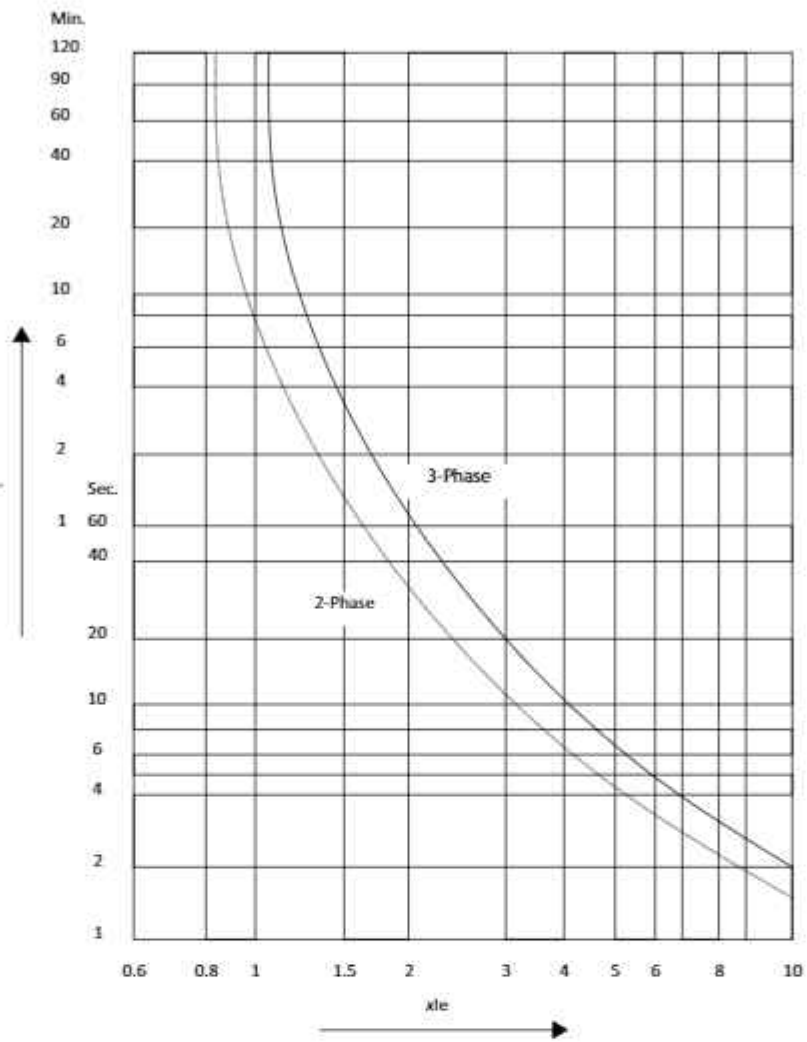
## Separate Mounting Adapters



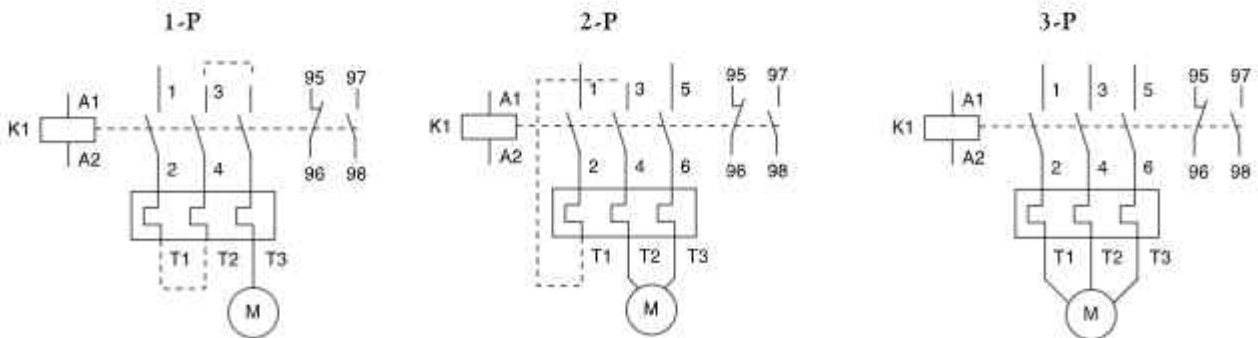
Separate mounting adapters enables Series BR Overload Relays to be installed separately from a contactor on a 35mm DIN rail or with fixing screws to a panel.

Separate Mounting Adapters	
Code	For use with
BR5MA2	BR2 Overload Relays
BR5MA4	BR3 & BR4 Overload Relays
BR5MA5	BR5 Overload Relays

## Bimetallic Overload Relay Trip Characteristics

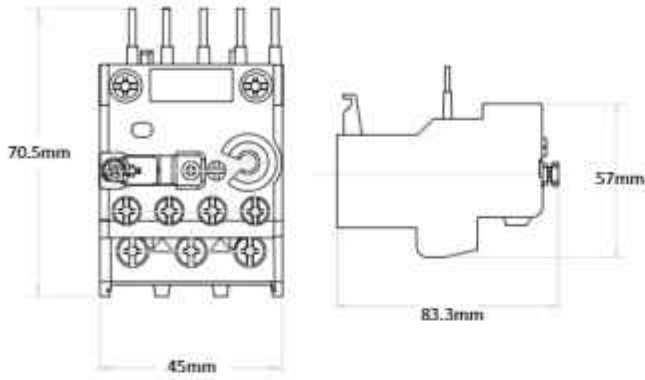


## Circuit Diagrams

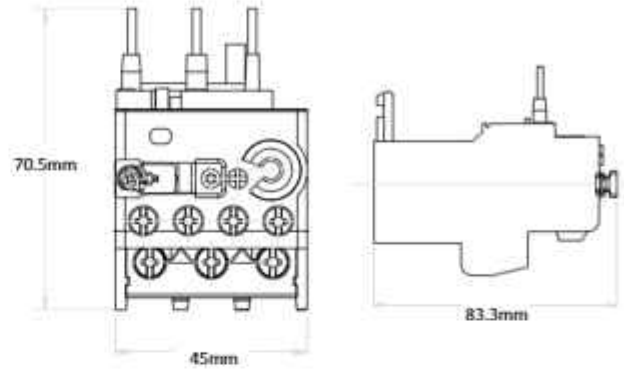


BR Series Bimetallic Overload Relays

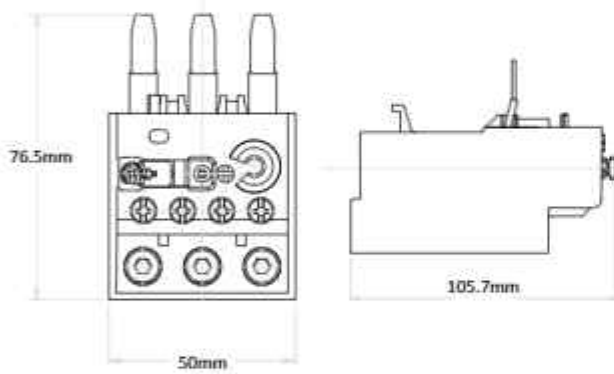
BR 1



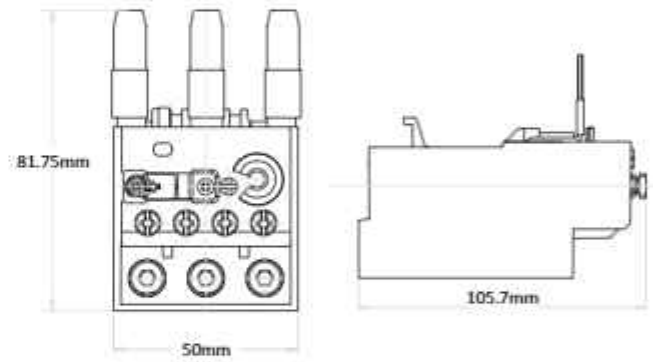
BR 2



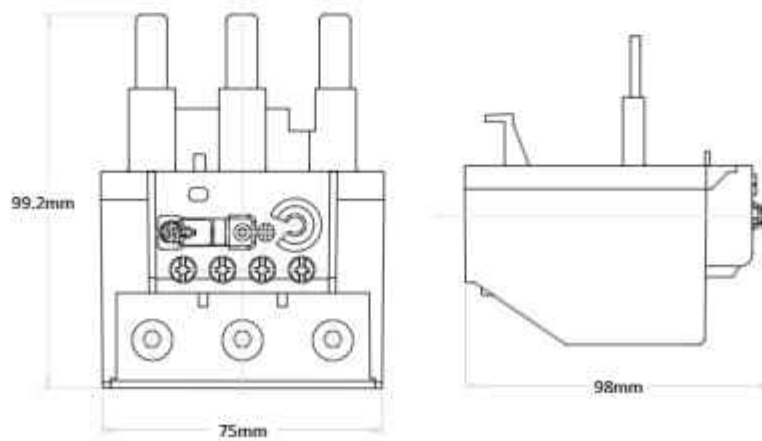
BR 3



BR 4

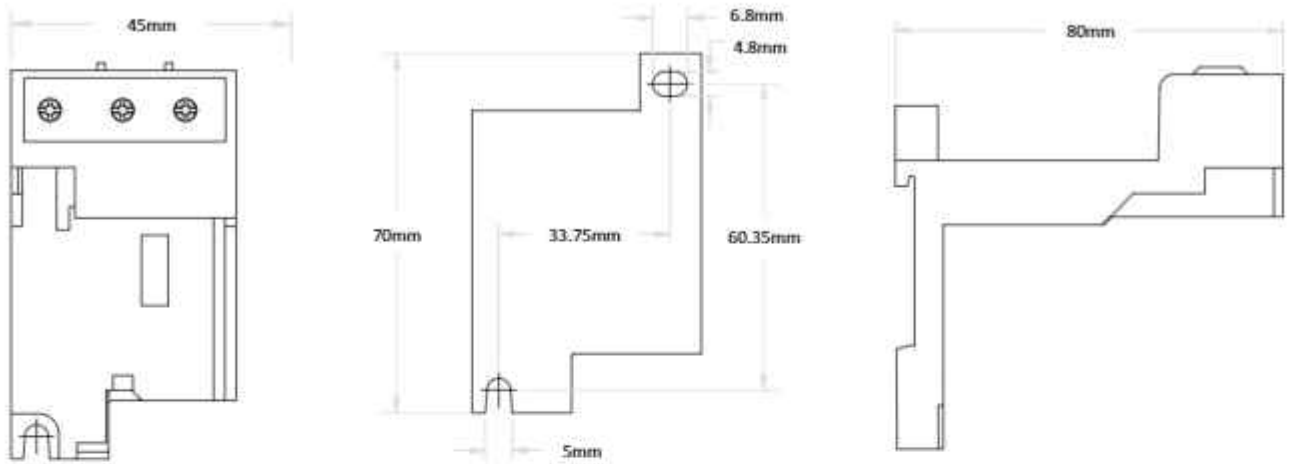


BR 5

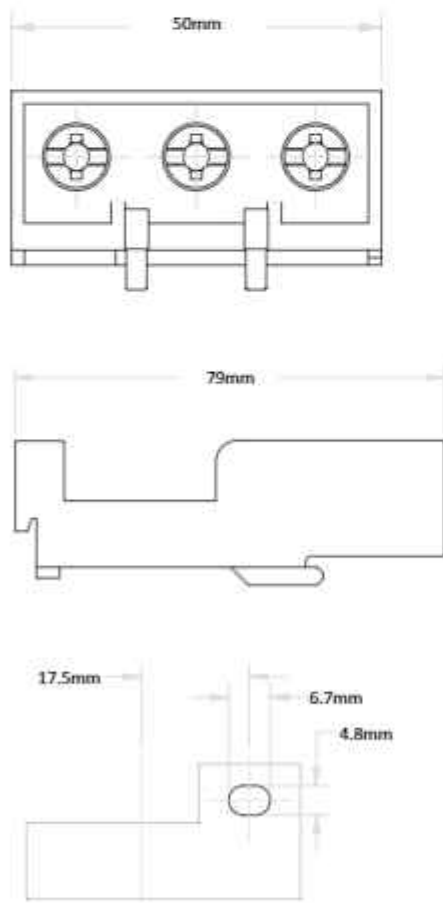


## BR Series Separate Mounting Adapters

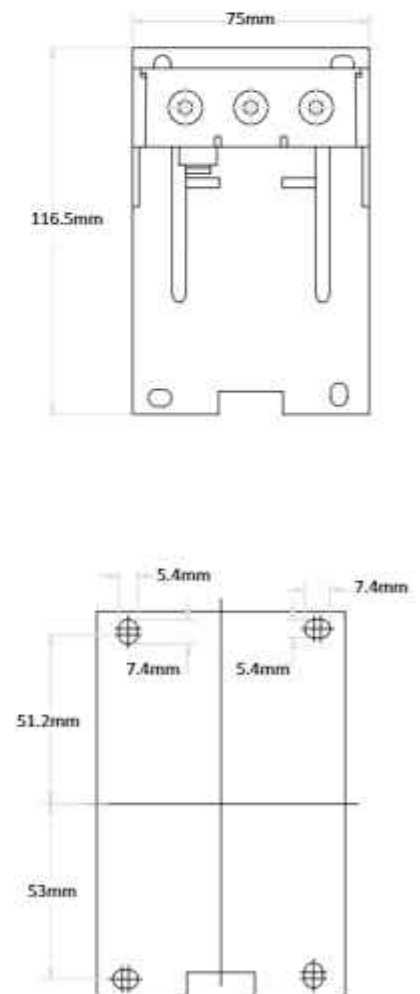
BRSMA2 Separate Mounting Adapter for use with BR2



BRSMA4 Separate Mounting Adapter for use with BR3 & BR4



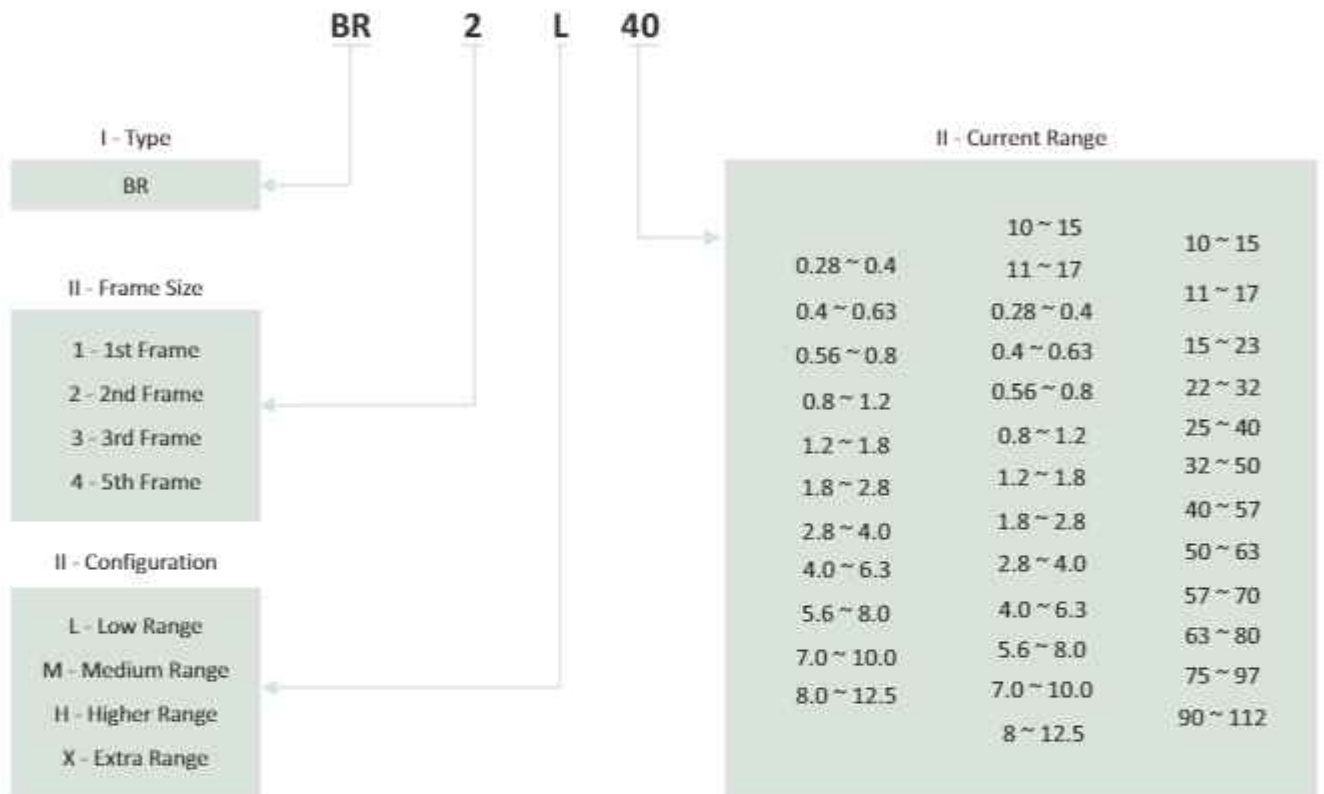
BRSMA5 Separate Mounting Adapter for use with BR5



## Ordering Code

### Overload relay

Ordering Informations			
I	II	III	IV
Type	Frame Size	Configuration	Current Range



### OLR Mounting Adapter

Ordering Informations	
I	II
BRSMA	Relay Frame







## **Salzer Electronics Limited**

Samichettipalayam, Jothi Puram Post, Coimbatore 641047. INDIA

Tel : +91-422- 4233600 | Fax : +91-422-2692170

e-mail : [sales@salzergroup.com](mailto:sales@salzergroup.com)

[www.salzergroup.com](http://www.salzergroup.com)