L&T SWITCHGEAR
SAFE & SURE

Compact Contactors & Thermal Overload Relays

Type MX

LARSEN & TOUBRO
It's all about Imagineering

About us

Larsen & Toubro is a technology-driven USD 7 billion company that infuses engineering with imagination. The Company offers a wide range of advanced solutions in the field of Engineering, Construction, Electrical & Electronics, Machinery and Information Technology.

L&T Switchgear, which forms part of the Electrical & Automation business, is India's largest manufacturer of low voltage switchgear, with the scale, sophistication and range to meet global benchmarks. With over four decades of experience in this field, the Company today enjoys a leadership position in the Indian market with growing presence in international markets.

It offers a complete range of products including controlgear, powergear, motor starters, energy meters, wires and host of other accessories. Most of our product lines conform to international standards, carry CE marking and are KEMA certified.

Larsen & Toubro Limited (L&T) is India's largest manufacturer of low voltage switchgear, offering a wide range of products and solutions for a variety of original equipment manufactures, panel builders, contractors and end users.

Switchgear Factory, Mumbai

Compact Contactors & Thermal Overload Relays - Type MX

Comfort

- Designed for tropical conditions as per IS, IEC, EN standards
- Total solution for motor applications (AC-3) up to 5.5 kW / 12 A at 415 V, 50 Hz
- Suitable for controlling electromagnetic loads (AC-15) up to 4 A at 415 V, 50 Hz
- Contactor relays are available with all contact combinations (4 NO to 4 NC)
- Robust product to operate in extreme temperature conditions -5° to +55°C
- Protection against direct finger contact from front
- All round safety due to use of FR grade of insulating material
- Enclosed construction
- In built surge suppressor for DC coil

Compact

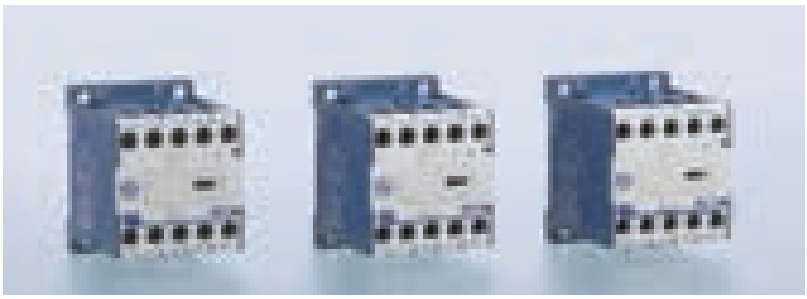
- Higher performance in less space; resulting in compact control system
- No additional foot print required for putting add-on accessories e.g. auxiliary contact block, surge suppressor
- Same overall dimensions for both AC & DC control
- No additional for fixing MX-R0 thermal overload relay

Convenience

- Suitable for industrial as well as commercial installation
- Common accessories for entire range
- Front “ON” and “ OFF” indication
- Alpha-neumeric terminal markings
- Faster assembly of accessories due to snap on fitment
- Base as well as DIN rail mounting facility

Technical Data

Power Contactor

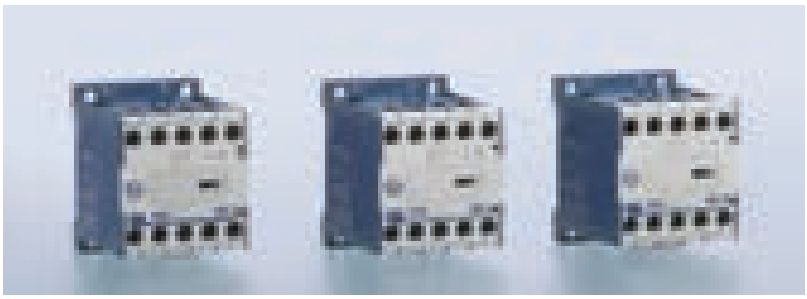


Type Designation for AC / DC Control		Units	MX 6 / 6 DC	MX 9 / 9 DC	MX 12 / 12 DC
Catalogue No. for AC control			CS94012 / 3	CS94014 / 5	CS94016 / 7
Catalogue No. for DC control			CS94021 / 2	CS94023 / 4	CS94025 / 6
Environment					
Conforming to standards			IS 13947-4-1, IEC 60947-4-1, EN 60947-4-1		
Rated insulation voltage, Ui		V	690		
Service temperature		^{0}C	-5^0 to +55^0		
Degree of protection			Protection against direct finger contact from front		
Terminal reference			EN 50005 and EN 50012		
Tightening torque		Nm	0.8		
Power Contacts					
No. of main poles			3		
Conventional thermal current, Ith		A	20		
Rated current at 415 V, 50 Hz	Utilization category AC-1	A	20		
	Utilization category AC-3	A / kW	6 / 3	9 / 4	12 / 5.5
Making capacity at 415 V, 50 Hz		A	10 Ie (AC-3)		
Breaking capacity at 415 V, 50 Hz		A	8 Ie (AC-3)		
Short-circuit protection	gG fuse at 415 V, 50 Hz	A	20		
Electrical durability (AC-3)		Million	1	0.8	0.6
Frequency of operation at Uc	Utilization category AC-1	Opn / hr	300		
	Utilization category AC-3		750		
Main terminal capacity	Solid conductors	mm^2	2 x 2.5		
	Multi-stranded conductors		2 x 2.5		
Auxiliary Contacts					
No. of built-in auxiliary contact			1 NO or 1 NC		
Conventional thermal current, Ith	Utilization category AC-15	A	10		
Rated current at 415 V, 50 Hz	gG fuse at 415 V, 50 Hz	A	4		
Short-circuit protection		A	10		
Electrical durability (AC-15) at 415 V, 50 Hz		Million	1.5		
Minimum non-overlapping distance		mm	0.5		
Maximum frequency of operation at Uc (AC-15)		Opn / hr	1000		
Auxiliary terminal capacity	Solid conductors	mm^2	2 x 2.5		
	Multi-stranded conductors		2 x 2.5		

CS94012 / 14 / 16 / 21 / 23 / 25 are 3 Main + 1 NO auxiliary contact
CS94013 / 15 / 17 / 22 / 24 / 26 are 3 Main + 1 NC auxiliary contact

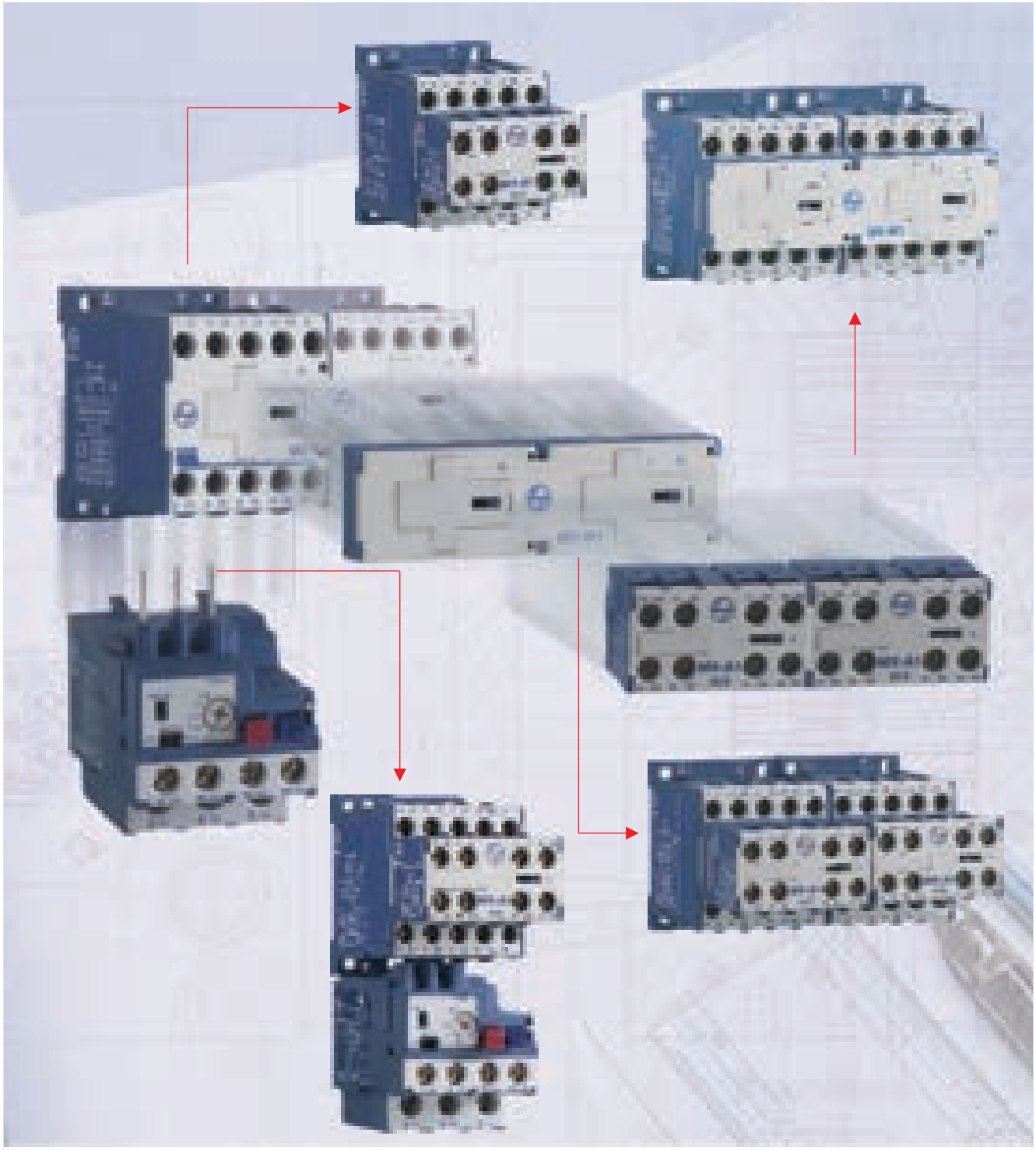
Technical Data

Contactor Relay



Type Designation for AC / DC Control		Units	MX 0 / MX 0 DC				
Catalogue No. for AC control			CS94018	CS94019	CS94020	CS94041	CS94042
Catalogue No. for DC control			CS94027	CS94028	CS94029	CS94043	CS94044
Contact combination			40E	31E	22E	13E	04E
Environment							
Conforming to standards			IS 13947-5-1, IEC 60947-5-1, EN 60947-5-1				
Rated insulation voltage, Ui		V	690				
Service temperature		°C	-5° to +55°				
Degree of protection			Protection against direct finger contact from front				
Terminal reference			EN 50005 and EN 50011				
Tightening torque		Nm	0.8				
Contacts							
No. of poles			4				
Contact details			4NO	3NO+1NC	2NO+2NC	1NO+3NC	4NC
Conventional thermal current, Ith		A	10				
Rated current at 415 V, 50 Hz	Utilization category AC-15	A	4				
Short-circuit protection	gG fuse at 415 V, 50 Hz	A	10				
Electrical durability (AC-15) at 415 V, 50 Hz		Million	1.5				
Minimum non-overlapping distance		mm	0.5				
Maximum frequency of operation at Uc for AC-15		Opn / hr	1000				
Terminal capacity	Solid conductors	mm^2	2 x 2.5				
	Multi-stranded conductors		2 x 2.5				
Control Circuit For Power Contactor & Contactor Relay							
Coil voltage			AC		DC		
Standard Coil voltage Uc, at 50 Hz		V	24, 110, 240, 415		24, 110, 220		
Average consumption at Uc, 50 Hz	Pick up	VA	26		2.8		
	Hold on	VA	4.5		2.8		
		W	1.2		2.8		
Limits of operation	Pick up	(% Uc)	80 - 110		80 - 110		
	Drop off	(%Uc)	20 - 65		10 - 65		
Operating time at Uc, 50 Hz	Between coil energisation and:						
	- Opening of NC contacts	ms	5...20		5...25		
	- Closing of NO contacts		10...25		10...30		
	Between coil de-energisation and:						
	- Opening of NO contacts	ms	10...25		10...30		
	- Closing of NC contacts		15...30		15...35		
		Million	10		10		
Mechanical durability		Opn / hr	9000		9000		
Maximum frequency of operation at Uc							

Accessories

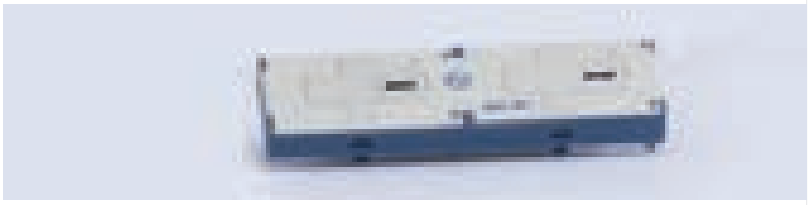


Technical Data

Auxiliary Contact Block

Type Designation	Units	MX-A1							
Catalogue No.		CS94030	CS94031	CS94032	CS94033	CS94034	CS94035	CS94036	CS94037
Contact combination		20E	11E	02E	40E	31E	22E	13E	04E
Environment									
Conforming to standards		IS 13947-5-1, IEC 60947-5-1, EN 60947-5-1							
Rated insulation voltage, Ui	V	690							
Service temperature	°C	-5° to +55°							
Degree of protection		Protection against direct finger contact from front							
Tightening torque	Nm	0.8							
Contacts									
No. of poles		2				4			
Contact details		2NO	1NO+1NC	2NC	4NO	3NO+1NC	2NO+2NC	1NO+3NC	4NC
Conventional thermal current, Ith	A	10							
Rated current at 415 V, 50 Hz Utilization category AC-15	A	3							
Short-circuit protection gG fuse at 415 V, 50 Hz	A	10							
Electrical durability (AC-15) at 415 V, 50 Hz	Million	1							
Minimum overlapping distance	mm	0.5							
Maximum frequency of operation at Uc for (AC-15)	Opn / hr	1000							
Terminal capacity — Solid conductors	mm^2	2 x 2.5							
Terminal capacity — Multi-stranded conductors	mm^2	2 x 2.5							

Mechanical Interlock



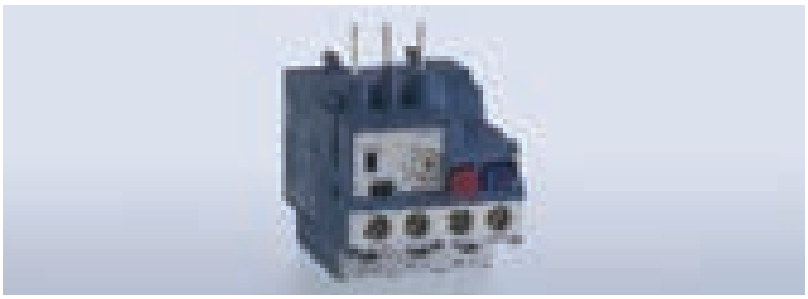
Type designation		MX-M1
Catalogue No.		CS94038

Surge Suppressor

Type designation		MX-S1
Catalogue No.		CS94039
Suitable coil voltage at 50 Hz	V	24-48; 110-240; 360-415

Technical Data

Thermal Overload Relay



Type Designation		Units	MX-R0	
Catalogue No.			ST94074	
Environment				
Current Range		A	Range	Ordering Suffix
			0.1 - 0.16	OOBO
			0.16 - 0.24	OODO
			0.22 - 0.33	OOEO
			0.3 - 0.45	OOGO
			0.45 - 0.67	OOHO
			0.67 - 1.0	OOKO
			1.0 - 1.5	OOMO
			1.4 - 2.1	OONO
			1.8 - 2.7	OOPO
			2.4 - 3.6	OOQO
			3.5 - 5	OOSO
			4 - 6	OOTO
			5.5 - 8.5	OOUO
			8.5 - 12.5	OOVO
Rated insulation voltage, Ui		V	690	
Rated impulse voltage, Uimp		kV	6	
Service temperature		^{0}C	-5^{0} to +55^{0}	
Contacts				
Rated operational current for AC-15 utilisation category at 50 Hz	24 V		6	
	110 V		5	
	220 V	A	3	
	380 / 415 V		2	
	500 V		2	
Tripping class			10	
Maximum frequency of operation		Opn / hr	30	
Main terminal capacity (Lug)		mm^{2}	10	
Auxiliary terminal capacity (Wires)		mm^{2}	2 x 2.5	
Mounting			Direct	
Off / Reset			1 Off and Reset	
Built-in contacts			1 NO and 1 NC	

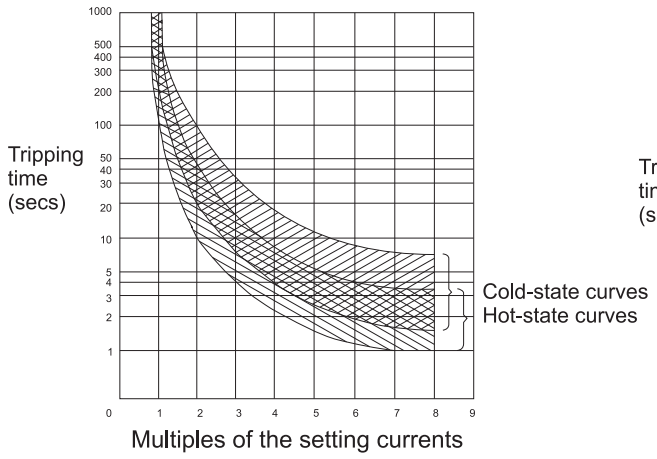
Technical Data

Relay Selection Chart

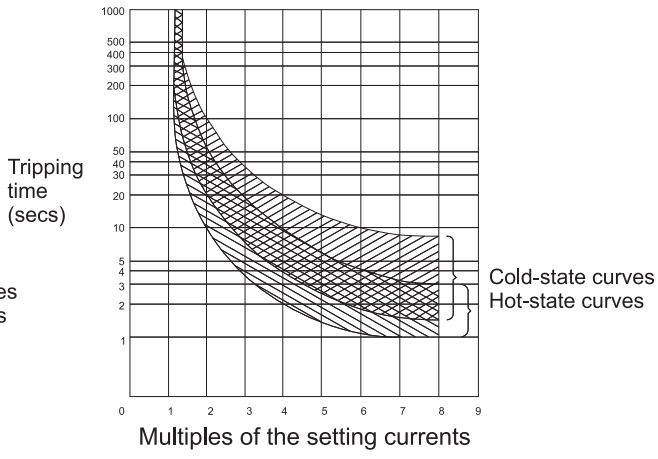
Range	Back-up fuse	Contactor
0.1 - 0.16	2	MX 6
0.16 - 0.24	2	MX 6
0.22 - 0.33	2	MX 6
0.3 - 0.45	2	MX 6
0.45 - 0.67	2	MX 6
0.67 - 1.0	2	MX 6
1.0 - 1.5	2	MX 6
1.4 - 2.1	4	MX 6
1.8 - 2.7	4	MX 6
2.4 - 3.6	4	MX 6
3.5 - 5	6	MX 6
4 - 6	8	MX 6
5.5 - 8.5	10	MX 9
8.5 - 12.5	16	MX 12

Protection Characteristics

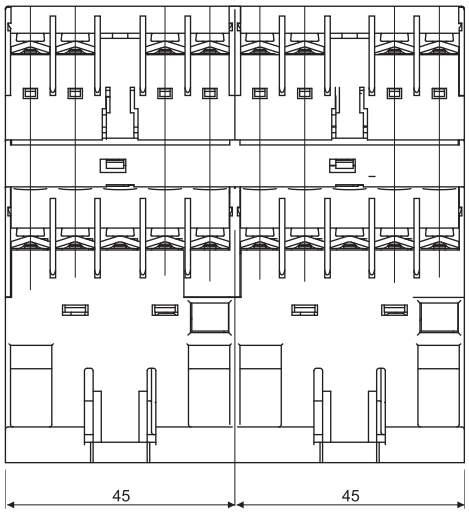
Single-phase

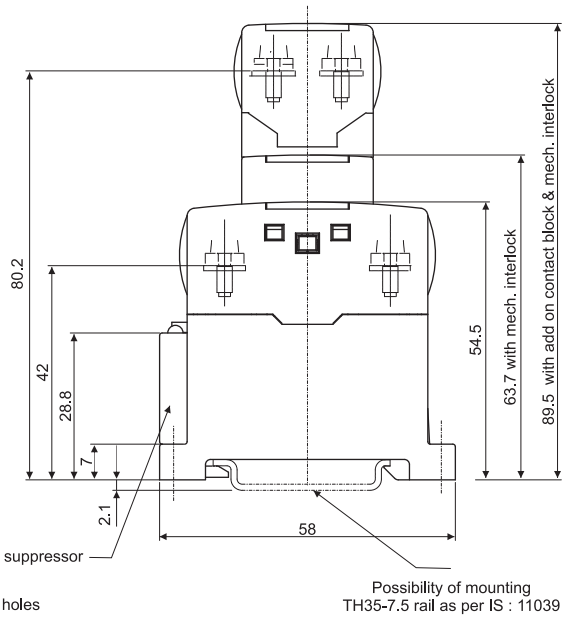


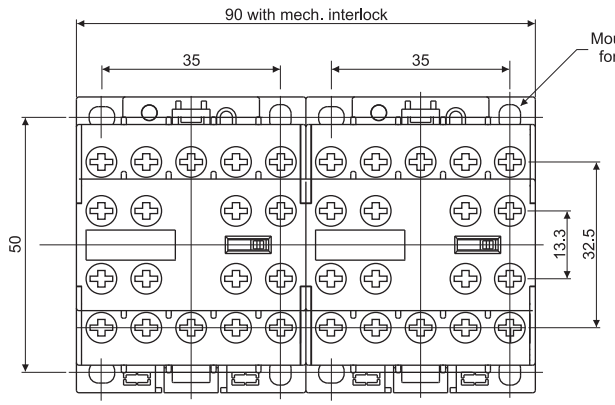
Three-phase

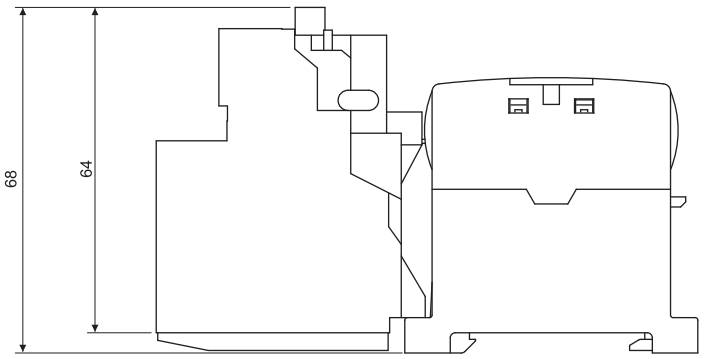


Overall Dimensions



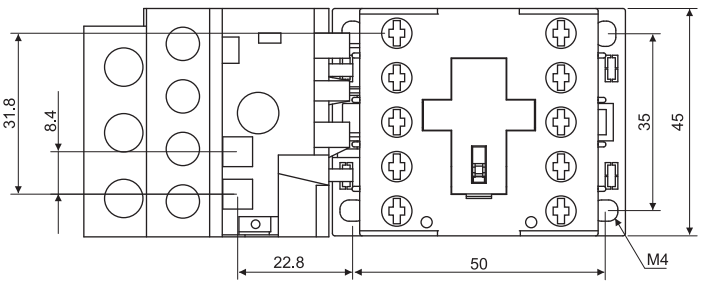






Weight (gm)

Type	AC control	DC control
Power Contactor	180	230
Contactor Relay		



All dimensions are in mm.