

Compact Contactors & Thermal Overload Relays

Type MX

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, U _i		V	690		
Service temperature		°C	-5° to +55°		
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, I _{th}		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 I _e (AC-3)		
Breaking capacity at 415 V, 50 Hz		A	8 I _e (AC-3)		
Short-circuit protection		gG fuse at 415 V, 50 Hz	A		
Electrical durability (AC-3)		Million	1	0.8	0.6
Frequency of operation at U _c	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, I _{th}		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 U _c (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

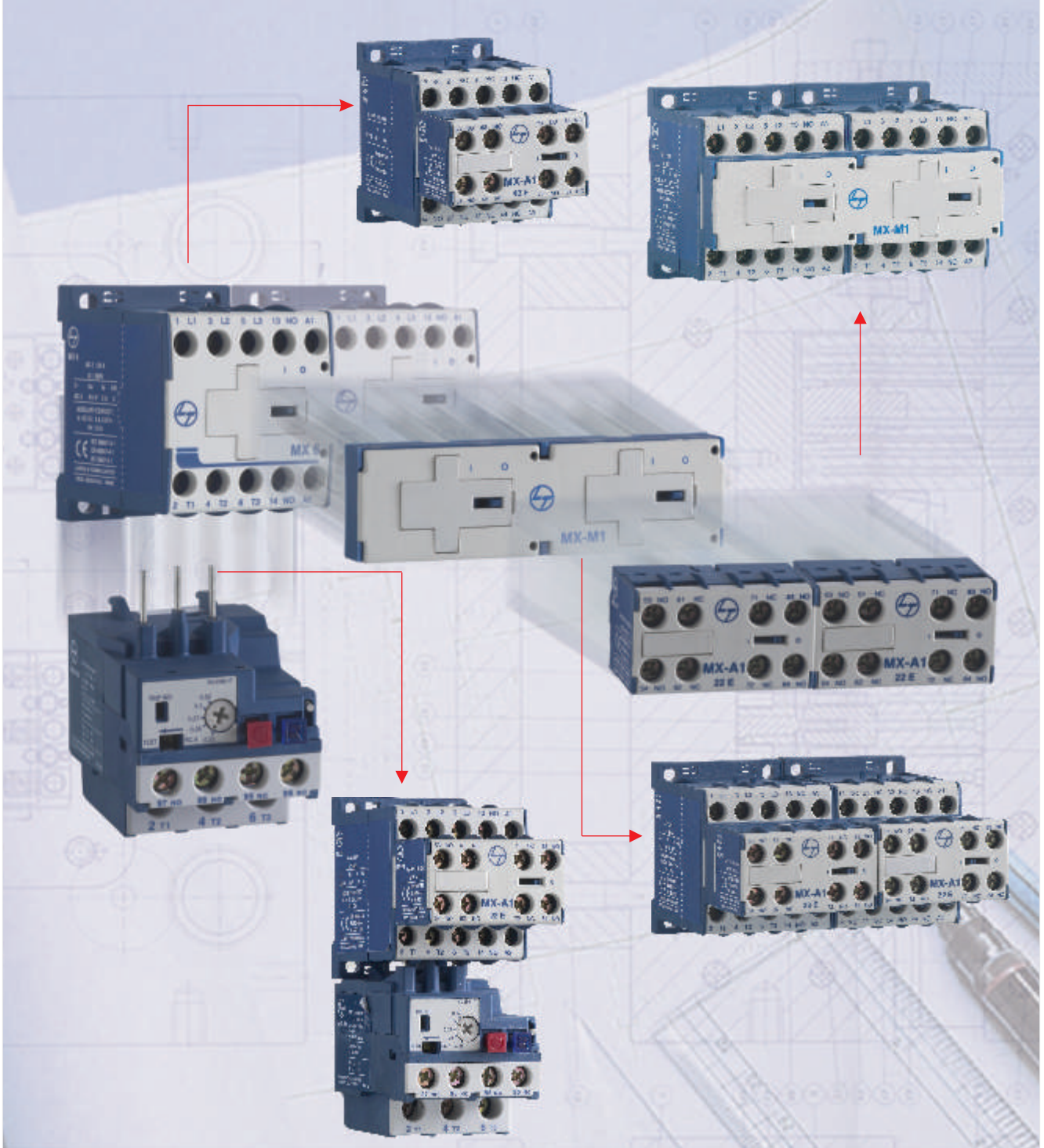
Technical Data

Contacting 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, U _i		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, I _{th}		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 U _c for AC-15		Opn / hr	1000				
Terminal capacity		Solid conductors	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 U _c , at 50 Hz		V	24, 110, 240, 415		24, 110, 220		
Average consumption at U _c , 50 Hz		Pick up	VA		26		
		Hold on	VA		4.5		
			W		1.2		
Limits of operation		Pick up	(% U _c)		80 - 110		
		Drop off	(%U _c)		20 - 65		
Operating time at U _c , 50 Hz		Between coil energisation and:					
		- Opening of NC contacts		ms		5...20	
		- Closing of NO contacts		ms		10...25	
		Between coil de-energisation and:					
- Opening of NO contacts		ms		10...25		10...30	
- Closing of NC contacts		ms		15...30		15...35	
		Million		10		10	
Mechanical durability		Opn / hr		9000		9000	
Maximum frequency of operation at U _c							

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, I _{th}		A	10							
Rated current at 415 V, 50 Hz		A	3							
Utilization category AC-15										
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 U _c for (AC-15)		Opn / hr	1000							
Terminal capacity		mm ²	Solid conductors				2 x 2.5			
			Multi-stranded conductors				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



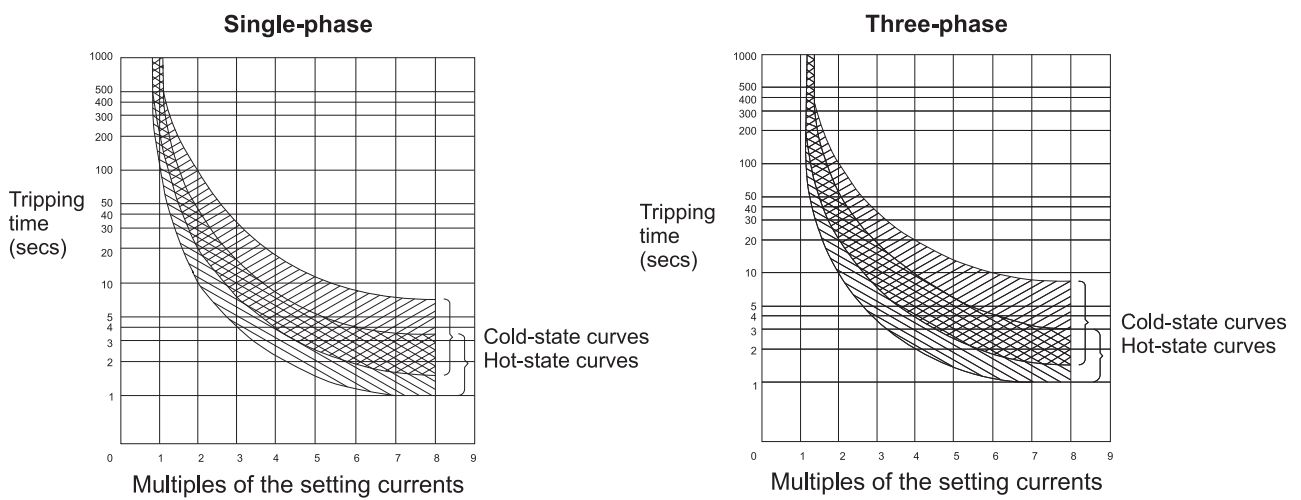
Type Designation		Units	MX-R0
Catalogue No.			ST94074
Environment			
Current Range	A	Range	Ordering Suffix
		0.1 - 0.16	OOBO
		0.16 - 0.24	OODO
		0.22 - 0.33	OOEO
		0.3 - 0.45	OOGO
		0.45 - 0.67	OOHO
		0.67 - 1.0	OOKO
		1.0 - 1.5	OOMO
		1.4 - 2.1	OONO
		1.8 - 2.7	OOPO
		2.4 - 3.6	OOQO
		3.5 - 5	OOSO
		4 - 6	OOTO
		5.5 - 8.5	OOUO
8.5 - 12.5	OOVO		
Rated insulation voltage, U_i		V	690
Rated impulse voltage, U_{imp}		kV	6
Service temperature		°C	-5° to +55°
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

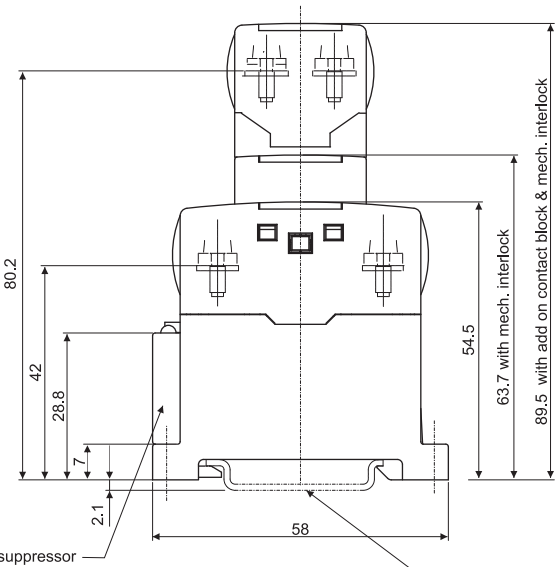
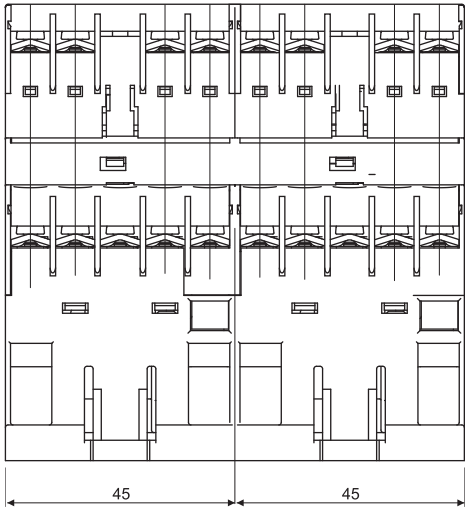
Relay Selection Chart

Range	Back-up fuse	Contactors
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

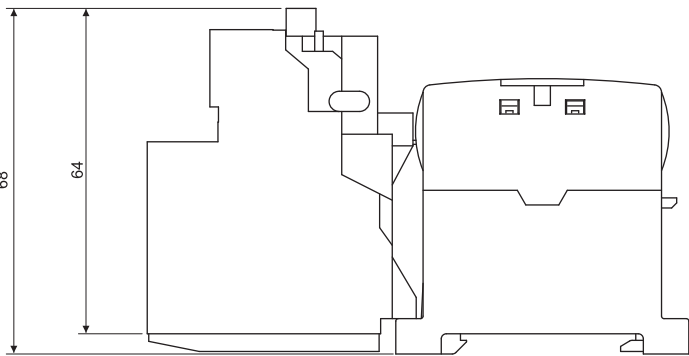
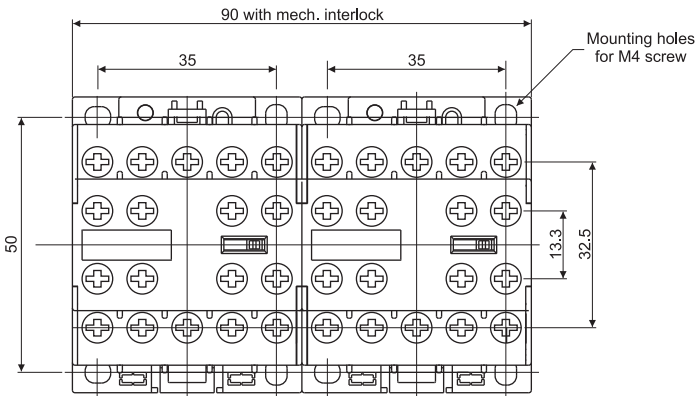


Overall Dimensions



Surge suppressor

Possibility of mounting TH35-7.5 rail as per IS : 11039



Weight (gm)

Type	AC control	DC control
Power Contactor	180	230
Contactor Relay		

