	<h3>Bulletin 140M Motor Protection Circuit Breakers</h3> <ul style="list-style-type: none"> • Current Range 0.1...630 A • UL Listed for Motor Loads <ul style="list-style-type: none"> – Short Circuit Protection – Overload Protection • Visible Trip Indication • High Current Limiting • High Switching Capacity <p>The Bulletin 140M Motor Protection Circuit Breakers provide short circuit and overload protection for individual motor loads. Factory-installed internal accessories make installation and wiring easy.</p>	<h3>Table of Contents</h3> <p>Product Selection — Motor Protection Circuit Breakers..... 2-8</p> <p>Approximate Dimensions..... 2-51</p> <h3>Standards Compliance</h3> <p>IEC/EN 60947-1, -2, -4-1, -5-1 IEC/EN 60204-1 CSA, C22.2 No.14 UL 508 UL 489 (I-, J-, L-Frame)</p> <h3>Certifications</h3> <p>CE Marked cULus Listed (File No. E54612, NLRV(7); E205542, NKJH(7); E197878, DIVQ(7);) CCC CSA Certified ATEX</p>
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General Information

Motor Protection Circuit Breakers may provide the following protective and control functions.

- Disconnect for Motor Branch Circuit
- Branch-Circuit, Short-Circuit Protection (Magnetic Protection)
- Overload Protection (Thermal Protection)
- Switching (Manual)

In North America, electrical codes require that an individual Motor Branch Circuit be protected by a UL/CSA Listed Fuse, Circuit Breaker or Self-Protected Combination Motor Controller.

140M-C, D and F Frames:

The 140M-C, D and F frame Motor Protection Circuit Breakers may have 2 cULus Listings – as Manual, Self-Protected Combination Motor Controllers and as Manual Motor Controllers (with optional approvals for Motor Disconnect and Group Installation).

When UL/CSA listed as Manual, Self-Protected Combination Motor Controllers, the 140M Motor Protection Circuit Breakers provide all of the necessary NEC/CEC requirements for the protection and control of individual Motor Branch Circuits without additional protective devices.

At some higher voltages and currents (particularly at 600V), a few of the 140M-C, D and F frame devices are only UL/CSA Listed as Manual Motor Controllers (with optional approvals for Motor Disconnect and Group Installation). In NEC/CEC Group Installations, these devices must be applied per the appropriate rules which require the use of an upstream Branch-Circuit, Short-Circuit Protective Device (BCPD). See the table on page 2-18 for the specific ratings of each Motor Protection Circuit Breaker.

140-CMN Frame:

The 140-CMN frame Motor Protection Circuit Breakers are UL Listed/CSA Certified as Manual Motor Controllers (with optional approvals for Motor Disconnect and Group Installation). In NEC/CEC Group Installations, these devices must be applied per the appropriate rules which require the use of an upstream Branch-Circuit, Short-Circuit Protective Device (BCPD). See the table on page 2-18 for the specific ratings of each Motor Protection Circuit Breaker.

140M-I, J and L Frames:

The 140M-I, J and L frame Motor Protection Circuit Breakers are cULus Listed as Circuit Breakers as shown in the table on page 2-9. In these cases, the 140M Motor Protection Circuit Breakers provide all of the necessary NEC/CEC requirements for the protection and control of individual Motor Branch Circuits without additional protective devices.

For further details on the proper application of Motor Protection Circuit Breakers, please see the diagrams on the following pages.

Motor Protection Circuit Breakers

Catalog Number Explanation

Cat. No. Explanation

Examples given in this section are for reference purposes. This basic explanation should not be used for product selection; not all combinations will produce a valid catalog number.

140M - **C** - **2** - **E** - **A63** - **KN** - **CC** - **GJ**
a *b* *c* *d* *e* *f* *g* *h*

2

a

Bulletin Number	
Code	Description
140M	Motor Protection Circuit Breakers (MPCBs)

c

Interrupting Rating / Breaking Capacity	
Code	Description
2	Normal Break
8	High Break

f, g, h

Factory-Installed Options

f

Miscellaneous See page 2-36

b

Frame Size and Rating	
Code	Description
C	32 A
D	32 A
F	45 A
I	205 A
J	250 A
L	400 A and 600 A

d

Protection Type	
Code	Description
E	Adj Thermal/ Fixed Mag (13...14 x I_n)
T	Adj Thermal / Fixed Mag (16...20 x I_n)

g

Aux/Trip Contacts See page 2-36

h

UV and Shunt Trips See page 2-36











e

Current Range		
Code	Description	Example
A	A = .10	A16 = 0.16
B	B = 1.0	B16 = 1.6
C	C = 10	C16 = 16
D	D = 100	D16 = 160
E	E = 1000	E16 = 1600



Motor Protection Circuit Breakers and Motor Circuit Protectors

Accessories

	Description		For Use With	Cat. No.
	Anti-Tamper Shield Provides protection against inadvertent adjustment of the current setting	10 pcs/pkg	140M-C, D, F	140M-C-CA
	Lockable Twist Knob • For one padlock 4...6 mm (3/16 in.) Ø shackle • Can be locked in OFF position	Black	140M-C, D, F; 140U-D	140M-C-KN1
		Red/Yellow		140M-C-KRY1
	Locking Tag • Padlock attachment to the lockable handles • Up to three padlocks 4...8 mm (5/16 in.) Ø shackle		140M-C-KN1, 140M-C-KRY1	140M-C-M3
	Padlockable Operating Knob • Accepts 8 mm (5/16 in.) Ø padlock shackle — up to three padlocks • Permits padlocking in the off position	Black	140-CMN	140-KN
		Red/Yellow		140-KRY
	Door Coupling Handle • For 3 padlocks 4...8 mm (5/16 in.) in diameter • IP66 Protection/Type 1, 4, 4X, 12 • Interlock override capability • Can be modified for locking in ON position • Ships with coupling — order extension shaft and legend plate separately • Mounting depth (front of DIN Rail to front of enclosure door): - 140M-C: 105.5 mm ± 5 mm (4.15 in. ± 3/16 in.) - 140M-D: 114.5 mm ± 5 mm (4.5 in. ± 3/16 in.) - 140M-F: 137.1 mm ± 5 mm (5.4 in. ± 3/16 in.) - 140-CMN: 169 mm +/- 5 mm (6.7 in. +/- 3/16 in.)	Black	140M-C, D, F	140M-C-DN66
		Red/Yellow	140-CMN	140M-C-DRY66
	Legend Plate • Marking: "Hauptschalter" and "Main Switch" • Marking: "Not-Aus" and "Emergency Off"		140-CMN	140-C-CDRY66
			140-CMN	140-C-DFCN
	Extension Shaft Cut to required length for mounting depth (front of DIN Rail to front of enclosure door): - 140M-C: 117...338 mm (4.6...13.3 in.) - 140M-D: 126...347 mm (5.0...13.7 in.) - 140M-F: 149...369 mm (5.9...14.5 in.) - 140-CMN: 180...403 mm (7.1...15.9 in.)		140M-C, D, F; 140U-D	140M-C-DS
			140M-C, D, F; 140U-D	140M-C-DSL
	Coupler Included with Cat. Nos. 140M-C-DN66 and 140M-C-DRY66		140M-C, D, F; 140U-D	140M-C-DNC
	IP65 Non-Metallic Enclosure • Knockouts for M20 and M25 fittings • Suitable for flexible cable with internal ground wire or conduit when externally grounded around the outside of the enclosure (no UL/CSA approval)	Black Handle	140M-C	198E-AYTG2
		Red/Yellow Handle	140M-C	198E-AYTJ2
	Screw Adapter • For screw arrangement of a motor protection circuit breaker	10 pcs/pkg	140M-C, D, F; 140U-D	140M-C-N45

Motor Protection Circuit Breakers and Motor Circuit Protectors

Modifications

140M Factory Modifications (Open)

Note: For modifications add (option code _) for desired features to cat. no. Available in North America only.

f

Miscellaneous		
Code	Description	Frame Size
KN(1)	Black Lockable Knob	C, D, F, CMN
KRY(1)	Red/Yellow Lockable Knob	C, D, F, CMN
TE(1)	Spacing Adapter for Self-Protected Starters (Type E)	C, D, F
MT	STD Bus Bar Mount, Top	C, D, F, H, CMN
MU	STD Bus Bar Mount, Universal	J, K, L

g

Aux / Trip Contacts - C, D, F			
1st Code	Description	2nd Code	Description
Bottom Front		Right Side	
X	Placeholder	X	Placeholder
A	1 N.C.	C	1 N.O. + 1 N.C.
B	1 N.O.	D	2 N.O.
C	1 N.O. + 1 N.C.	E	2 N.C.
D	2 N.O.	K	1 N.C. (SC+OL) + 1 N.C. (SC)
E	2 N.C.	L	1 N.O. (SC+OL) + 1 N.O. (SC)
R	1 N.C. + 1 N.O. (SC+OL)	M	1 N.C. (SC+OL) + 1 N.O. (SC)
S	1 N.O. + 1 N.O. (SC+OL)	N	1 N.O. (SC+OL) + 1 N.C. (SC)
		Q	1 N.O. (SC) + 1 N.C. (SC)

g

Aux / Trip Contacts - CMN			
1st Code	Description	2nd Code	Description
Bottom Front		Top Front ‡	
X	Placeholder	X	Placeholder
C	1 N.O. + 1 N.C.	K	1 N.C. (OL) + 1 N.C. (SC)
D	2 N.O.	L	1 N.O. (OL) + 1 NO (SC)
E	2 N.C.	M	1 N.C. (OL) + 1 N.O. (SC)
		N	1 N.O. (OL) + 1 N.C. (SC)

‡ Cannot be combined with option "h".

g

Aux / Trip Contacts - H, J, L			
1st Code	Description	2nd Code	Description
Bottom Front		Right Side	
X	Placeholder	X	Placeholder
		C	1 N.O. + 1 N.C.
		R*	1 N.O. + 1 N.C. (Overload Function)
		F*	2 N.O. + 2 N.C.
		N*	1 N.O. (SC+OL) + 1 N.C. (SC)
		T*	1 N.O. + 1 N.C. and 1 N.O. + 1 N.C. (SC+OL)

* Only available on MCPs.
 * J- and L-Frame MPCB only.

g

Aux / Trip Contacts - I, N			
1st Code	Description	2nd Code	Description
Left Side		Right Side	
X	Placeholder	X	Placeholder
C	1 N.O. + 1 N.C.	C	1 N.O. + 1 N.C.
F	2 N.O. + 2 N.C.	F*	2 N.O. + 2 N.C.
N	1 N.O. (SC+OL) + 1 N.C. (SC)	N*	1 N.O. (SC+OL) + 1 N.C. (SC)
T	1 N.O. + 1 N.C. and 1 N.O. + 1 N.C. (SC+OL)	T*	1 N.O. + 1 N.C. and 1 N.O. + 1 N.C. (SC+OL)

* Only available on MCPs.

h

UV and Shunt Trips - C, D, F			
1st Code	Description	2nd Code	Description
Left Side		Voltage	
G	Undervoltage Trip	J	24V AC, 60 Hz
		K	24V AC, 50 Hz
		D	120V AC, 60 Hz
		C	110V AC, 50 Hz
		H	208V AC, 60 Hz
		F	220...230V AC, 50 Hz
		A	240V AC, 60 Hz
		T	277V AC, 60 Hz
		N	380...400V AC, 50 Hz
		B	480V AC, 60 Hz and 415V AC, 50 Hz
		VC	600V AC, 60 Hz
		M	575V AC, 60 Hz and 500V AC, 50 Hz
		ZR	9V DC
		ZQ	12V DC
		ZJ	24V DC
		ZW	36V DC
	ZY	48V DC	
	ZZ	60V DC	
	ZB	64V DC	
	ZG	72V DC	
	ZE	80V DC	



Motor Protection Circuit Breakers and Motor Circuit Protectors

Specifications

IEC Performance Data, Continued

		Cat. No. 140M-D8E-									Cat. No. 140M-F8E-					
		B25	B40	B63	C10	C16	C20	C25	C29	C32	C10	C16	C20	C25	C32	C45
Rated Operational Current, I_e	[A]	2.5	4.0	6.3	10	16	20	25	29	32	10	16	20	25	32	45
Magnetic Release Current	[A]	33	52	82	130	208	260	325	406	448	130	208	260	325	416	585
Switching of Standard Three-Phase Motors																
AC-3																
230/240V	[kW]	0.37	0.75	1.5	2.2	4.0	5.5	5.5	7.5	7.5	2.2	4.0	5.5	6.3	7.5	13
400/415V	[kW]	0.75	1.5	2.2	4.0	7.5	10	11	13	15	4.0	7.5	10	11	15	22
500V	[kW]	1.1	2.2	3.0	6.3	10	11	15	18.5	20	6.3	10	11	15	20	30
690V	[kW]	1.8	3.0	4.0	7.5	13	17	22	25	25	7.5	13	17	22	30	40
Back-Up Fuses																
gG, gL, only if $I_{cc} \geq I_{cu}$																
230/240V	[A]	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
400/415V	[A]	*	*	*	*	*	100	100	125	125	80	100	100	100	125	125
440/460V	[A]	*	*	*	*	80	100	100	125	125	80	100	100	100	125	125
500V	[A]	*	*	*	*	80	80	80	100	100	80	100	100	100	125	125
690V	[A]	20	35	50	50	63	63	63	80	80	63	80	80	80	100	100
Ultimate Short Circuit Breaking Capacity																
I_{cu}																
230/240V	[kA]	100	100	100	100	100	100	100	65	65	100	100	100	100	100	100
400/415V	[kA]	100	100	100	100	100	100	100	65	50	100	100	100	100	65	65
440/460V	[kA]	100	100	100	100	50	50	50	25	25	65	65	65	65	65	50
500V	[kA]	100	100	100	100	50	50	50	25	25	50	50	50	50	50	50
690V	[kA]	10	10	10	6	6	6	6	6	6	10	10	10	10	10	10
Rated Service Short Circuit Breaking Capacity																
I_{cs}																
230/240V	[kA]	100	100	100	100	100	100	100	50	50	100	100	100	100	100	100
400/415V	[kA]	100	100	100	100	50	25	25	25	25	50	50	50	50	50	50
440/460V	[kA]	100	100	100	100	50	25	25	20	20	50	50	50	50	50	50
500V	[kA]	100	100	100	100	50	25	25	20	20	50	50	50	50	50	50
690V	[kA]	10	10	10	6	4	4	4	4	4	10	10	10	10	6	6

* No back-up fuse required.

General Data

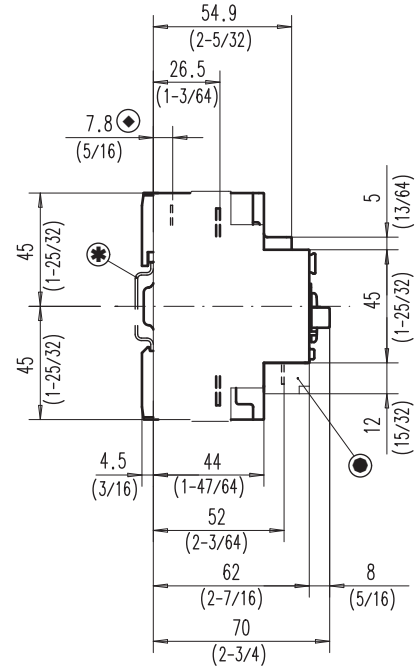
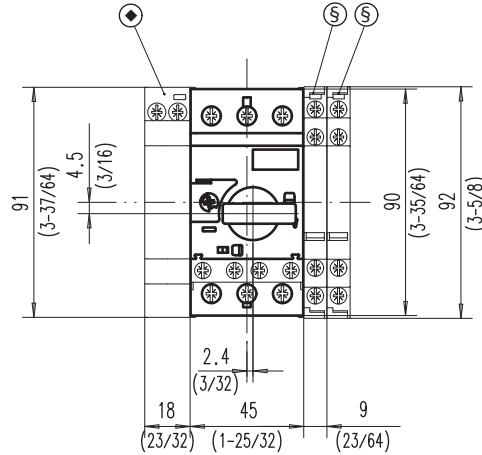
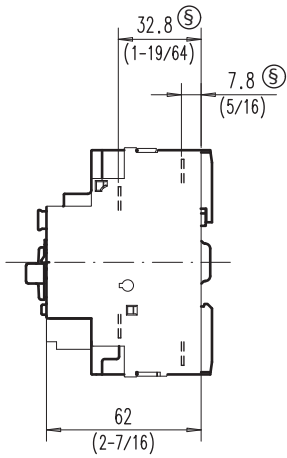
Cat. No.	140M-C	140M-D	140M-F	140-CMN
Rated Insulation Voltage U_i				
IEC, SEV, VDE 0660 [V]	690		690	
UL, CSA [V]	600		600	
Rated Impulse Withstand Voltage U_{imp}				
Pollution degree	3		3	
Main circuits U_{imp} /Overvoltage Category	6 kV/III		6 kV/III	
Auxiliary circuits U_{imp} /Overvoltage Category	6 kV/III		6 kV/III	
Rated Frequency [Hz]	50/60		40...60	
Utilization Category				
IEC 60947-2 (Circuit breaker)	A		A	
IEC 60947-4-1 (Motor starter)	AC-3		AC-3	
Life Span				
Mechanical [operations]	100 000	30 000	30 000	
Electrical (I_e max.) [operations]	100 000	30 000	10 000 (up to 63 A) 5 000 (up to 90 A)	
Switching Frequency [operations/h]	max. 25		max. 20	
Ambient Temperature				
Storage [°C]	-40 ... +80		-25... +80	
Operation [°C]	-25... +60			
Climatic resistance				
Moisture change climate (600068-2-30)	23 °C / 83 % relative humidity and 40 °C / 92 % relative humidity, 56 cycles			
Dry heat (60086-2-2)	100 °C, relative humidity <50 %, 7 days			
Moisture heat (60068-2-3)	40 °C, relative humidity 93 %, 56 days			
Site Altitude [m]	to 2000 N.N.			
Protection Class	IP2X, when wired			
Resistance to Shock , Transport (60068-2-27)	30 g, 11 ms, all axes		30, 11 ms	
Resistance to Vibration , Operation (60068-2-6)	5 g			
Rated Thermal Current I_{th}				
up to 40 °C ambient temperature [A]	0.1...32	1.6...32	6.3...45	16... 90
up to 60 °C ambient temperature [A]	0.1...32	1.6...32	6.3...45	16... 90
Rated Supply Current I_e [A]	0.1...32	1.6...32	6.3...45	16... 90
Dependence on Temperature				
40 °C [A]	no reduction			
50 °C [A]	no reduction			
60 °C [A]	no reduction			
70 °C [A]	15 % current reduction of the upper rated current I_e			
Overload Protection				
Characteristics	IEC 60947-4-1 Motor protection (except Cat. Nos. 140M-C2N, 140M-D8N, 140M-F8N)		IEC 60947	
Ambient Temperature Compensation [°C]	-20 ...+60			
Phase-loss Protection	Differential release			
Trip class	10 (except Cat. Nos. 140M-C2N, 140M-D8N, 140M-F8N) fixed setting		10	
Magnetic Release Release current (+/-20 %)	fixed setting 13...14 x I_e max. (for 140M-C2E, 140M-D8E, 140M-F8E, 140M-C2N, 140M-D8N, 140M-F8N) 16...21 x I_e max. (for 140M-C2T, 140M-D8T, 140M-F8T) I_e max. = maximum values of setting ranges		fixed setting 14 x I_e max.	
Total Power loss P_v				
Circuit Breaker at rated load operating temperature [W]	6...11.5	6...11.6	9...16	33
Main Disconnect Switch Application				
Yes, with accessories				
For utilization outside North America, assemblies (of products) shall comply to the IEC 61439-1 requirements				
Application Conditions				
140M manual motor starters are intended for use in closed areas without hazardous operating conditions such as dust or explosive or corrosive gases. Enclosures of appropriate manner need to be in place to protect devices in such environments.				



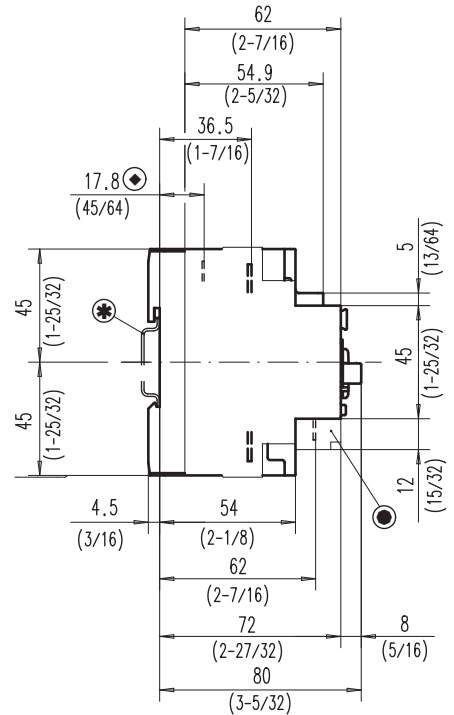
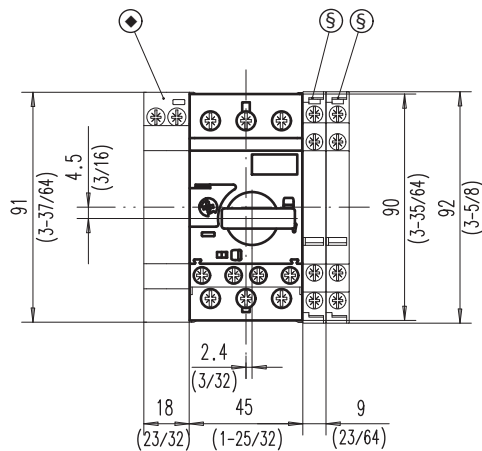
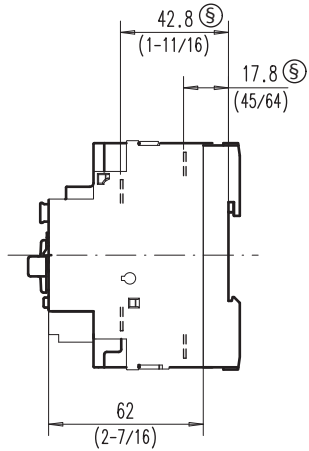
Cat. No. 140M-C, -D, -F

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Cat. No. 140M-C2...



Cat. No. 140M-D8...



- * Mounting on 35 mm DIN Rail
- ◆ Undervoltage/shunt trip
- Auxiliary contact (front mounted)
- § Auxiliary contact (side mounted)