

Manual Motor Starter Specifications

Bulletin Number 140A

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Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.



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IEC Performance Data

		Cat. No. 140A-C2A-...											
		A16	A25	A40	A63	B10	B16	B25	B40	B63	C10	C16	
Rated Operational Current I_e	[A]	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10	16	
Magnetic Release Current	[A]	1.8	2.8	4.4	6.9	11	18	28	44	69	110	176	
Switching of Standard Three-Phase Motors ★													
AC-2, AC-3													
230/240V	[kW]	—	—	—	0.06/0.09	0.12	0.18/0.25	0.37	0.55/0.75	1.1/1.5	2.2	3.0/4.0	
400/415V	[kW]	0.02	0.06	0.09	0.18/0.25	0.25	0.37/0.55	0.75	1.1/1.5	2.2	3.0/4.0	5.5/7.5	
500V	[kW]	—	—	—	0.18	0.25/0.37	0.55/0.75	1.1	1.5/2.2	2.5/3.0	4.0/6.3	7.5/10	
690V	[kW]	—	—	—	0.25	0.37/0.55	0.75/1.1	1.8	2.2/3.0	—	—	—	
Back-Up Fuses													
gG, aM, only if $I_{cc} \geq I_{cu}$													
230/240V	[A]	No fuses required										50	
400/415V	[A]											63	
500V	[A]											63	
690V	[A]								25	35	—	—	—
Ultimate- (I_{cu}) and Rated Service (I_{cs}) Short Circuit Breaking Capacity													
$I_{cu} = I_{cs}$													
230/240V	[kA]	65	65	65	65	65	65	50	50	50	50	3	
400/415V	[kA]	65	65	65	65	65	65	50	10	10	8	6	
500V	[kA]	50	50	50	50	50	50	50	3	10	4.5	4.5	
690V	[kA]	50	50	50	50	50	50	4.5	2	—	—	—	

★ Power ratings: Preferred values according to IEC 60072-1

UL / CSA Performance Data

Manual Motor Controller
(UL 508, CSA C22.2 No.14, for group installation, in combination with a short-circuit protection device)

		Cat. No. 140A-C2A-...										
		A16	A25	A40	A63	B10	B16	B25	B40	B63	C10	C16
Max. short-circuit current												
480V	[kA]	42	42	42	42	42	42	42	18	18	10	5
600V	[kA]	42	42	42	42	42	42	10	5	5	5	5
Motor load												
1-phase												
115V	[Hp]	—	—	—	—	—	—	1/10	1/8	1/4	1/2	1
230V	[Hp]	—	—	—	—	—	1/10	1/6	1/3	3/4	1-1/2	3
3-phase												
200V	[Hp]	—	—	—	—	—	—	1/2	3/4	1-1/2	2	3
230V	[Hp]	—	—	—	—	—	—	3/4	1	2	3	5
460V	[Hp]	—	—	—	—	1/2	1	1-1/2	3	5	7-1/2	10
575V	[Hp]	—	—	—	—	3/4	1	2	3	5	10	15
Maximum rated current of protection device												
	[A]	175										


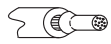


General Data

Cat. No.		140A-C2A
Rated Insulation Voltage U_i		
EN/IEC	[V]	690
UL, CSA	[V]	600
Overvoltage Category / Pollution degree		III / 3
Rated Impulse Withstand Voltage U_{imp}		
Main circuits		6 kV
Auxiliary circuits		6 kV
Rated Frequency	[Hz]	40...60
Life Span		
Mechanical	[operations]	100000
Electrical (I_e max.)	[operations]	50000
Switching Frequency	[operations/h]	max. 30
Ambient Temperature		
Storage	[°C]	- 25...+ 80
Operation	[°C]	- 25...+ 60
Resistance to Climatic Stress		C IV (according to IEC 68)
Moisture/heat resistance		40 °C, 92 %, 56 days
Moisture/change resistance		23 °C, 83 %/40 °C, 93 %, 56 cycles
Site Altitude	[m]	≤ 2000
Protection Class		IP20, when wired
Resistance to Shock, transport	[g]	30 g, 20 ms
Resistance to Vibration		
Frequency range	[Hz]	10...150
in all directions	[g]	7.5
Rated Thermal Current I_{th}		
IEC		
up to 40°C ambient temperature	[A]	0.1...16
up to 60°C ambient temperature	[A]	0.1...16
Rated Supply Current I_e	[A]	0.1...16
Number of setting ranges		11
Dependence on Temperature		
40 °C	[A]	no reduction
50 °C	[A]	
60 °C	[A]	
70 °C	[A]	
Overload Protection		
Characteristics		EN/IEC 60947-4-1 Motor protection
Ambient Temperature Compensation	[°C]	-20...+60
Trip Class		10
Magnetic Release		fixed setting
Release current		11 x I_e max. I_e max. = maximum values of setting ranges
Total Power dissipation		
Manual motor starter at rated load	[W]	7
Main Supply Application		Usable as main supply switch according to EN/IEC 60-204 with corresponding accessories

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Specifications

Bulletin 140A Manual Motor Starter Specifications

Cat. No.		140A-C2A	
Conformity to Standards		IEC 60947-1/-2/-4/-5-1 UL 508; CSA 22.2, Part 1	
Approvals/Markings		CE, cULus Listed	
Terminal Parts		 Pozidriv No. 2/Blade No. 3	
Type of terminals	Screwdriver		
	1 conductor [mm ²]/[AWG]	1...4/No. 16...12	
	2 conductor [mm ²]/[AWG]	1...4/No. 16...12	
	1 conductor [mm ²]/[AWG]	1...6/No. 16...12	
	2 conductor [mm ²]/[AWG]	1...6/No. 16...12	
	1 conductor [mm ²]/[AWG]	1.5...6/No. 16...12	
	2 conductor [mm ²]/[AWG]	1.5...6/No. 16...12	
Tightening torque		[N•m]/[lb•in]	
		2...2.5/18...22	



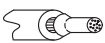


Weights



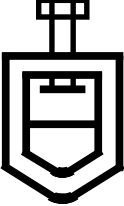
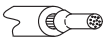


Description	Cat. No.	Weight
Manual Motor Starter	140A-C2A-...	290 g
Auxiliary Contact Blocks for Flush Mounting	140A-C-AEA...	12 g
Auxiliary Contact Blocks for Left-side Mounting	140A-C-ASA...	35 g
Undervoltage Release	140A-C-UX...	104 g
Shunt Release	140A-C-SX...	100 g
Bus Bar Feeder Terminal	140A-C-WT	36 g
Compact Bus Bar	140A-C-W452	42 g
	140A-C-W453	69 g
	140A-C-W454	94 g
	140A-C-W455	119 g
	140A-C-W542	45 g
	140A-C-W543	76 g
	140A-C-W544	104 g
	140A-C-W545	135 g
Blank Space Cover	140A-C-WS	3.3 g
Enclosure for Surface Mounting	140A-C-EA41	250 g
	140A-C-EA55	258 g
Enclosure for Flush Mounting	140A-C-EE41	126 g
	140A-C-EE55	134 g
Button Membrane	140A-C-N55	8 g
Indicator Light	140-L...	10 g
Hut (DIN) rail Adapter	140A-C-N12	16 g
Locking Arrangement	140A-C-M3E	19 g
	140A-C-M3	11 g

		Cat. No. 140A-C-EA41 / -EE41 Enclosure	Cat. No. 140A-C-EA55 / -EE55 Enclosure	Cat. No. 140-L... Indicator light
IP Protection		IP41	IP55 (with seal and protective membrane)	IP54
Ambient Temperature	[°C]	-25...+40	-25...+40	—
Rated Operating Voltage	[V]	—	—	120, 240, 415, 480

		Cat. No. 140A-C-W45... Compact Bus Bar	Cat. No. 140A-C-W54... Compact Bus Bar
Rated Insulation Voltage U_i	[V]	690	690
Rated Thermal Current I_{th}	[A]	63	63

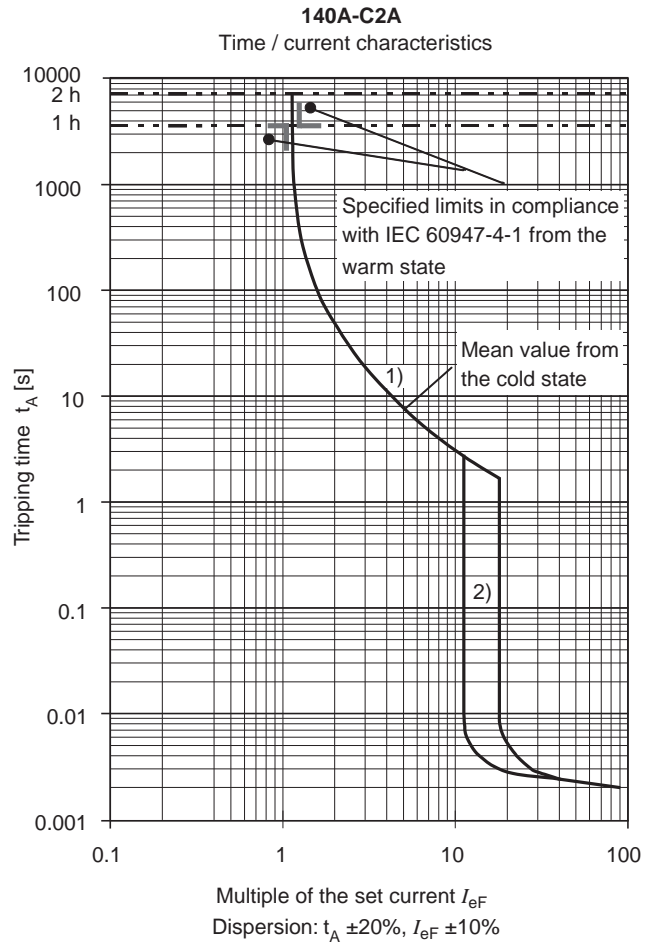
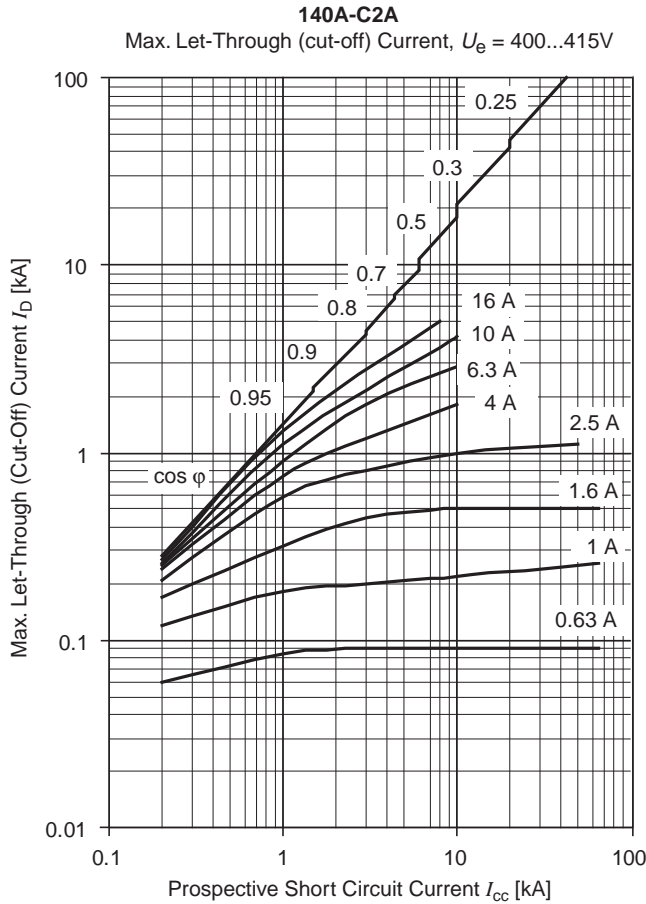
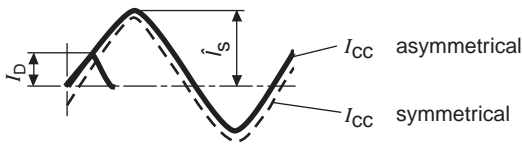
Specifications of Accessories

		Cat. No. 140A-C-AEA... Auxiliary Contact Block for Flush Mounting				Cat. No. 140A-C-ASA... Auxiliary Contact Block for Left-side Mounting				
Rated Thermal Current /Ith										
at 40°C ambient temperature	[A]	6				10				
at 60°C ambient temperature	[A]	4				6				
Contact Class Coordination According to NEMA										
(UL/CSA Standards)	AC	B 600 Standard Pilot Duty				B 600 Standard Pilot Duty				
	DC	R 300 Light Pilot Duty				R 300 Light Pilot Duty				
Back-Up Fuses gG, gL	[A]	16				16				
Rated Supply Current	[V]	230/240	400/415	500	690	230/240	400/415	500	690	
	AC-15	[A]	2	1	0.8	0.5	2	1	0.8	0.5
	DC-13	[V]	24	48	110	220	24	48	110	220
		[A]	2	0.6	0.2	0.1	2	0.6	0.2	0.1
Terminal Parts										
Type of terminals										
Screwdriver		Pozidriv No. 2/Blade No. 3								
	1 conductor	[mm ²]/[AWG]	0.75...2.5/No. 18...14				0.75...2.5/No. 18...14			
	2 conductor	[mm ²]/[AWG]	0.75...2.5/No. 18...14				0.75...2.5/No. 18...14			
	1 conductor	[mm ²]/[AWG]	0.75...4/No. 18...14				0.75...4/No. 18...14			
	2 conductor	[mm ²]/[AWG]	0.75...4/No. 18...14				0.75...4/No. 18...14			
	1 conductor	[mm ²]/[AWG]	0.75...4/No. 18...14				0.75...4/No. 18...14			
	2 conductor	[mm ²]/[AWG]	0.75...4/No. 18...14				0.75...4/No. 18...14			
Tightening torque	[N•m]/[lb•in]	1...1.5/9...13				1...1.5/9...13				

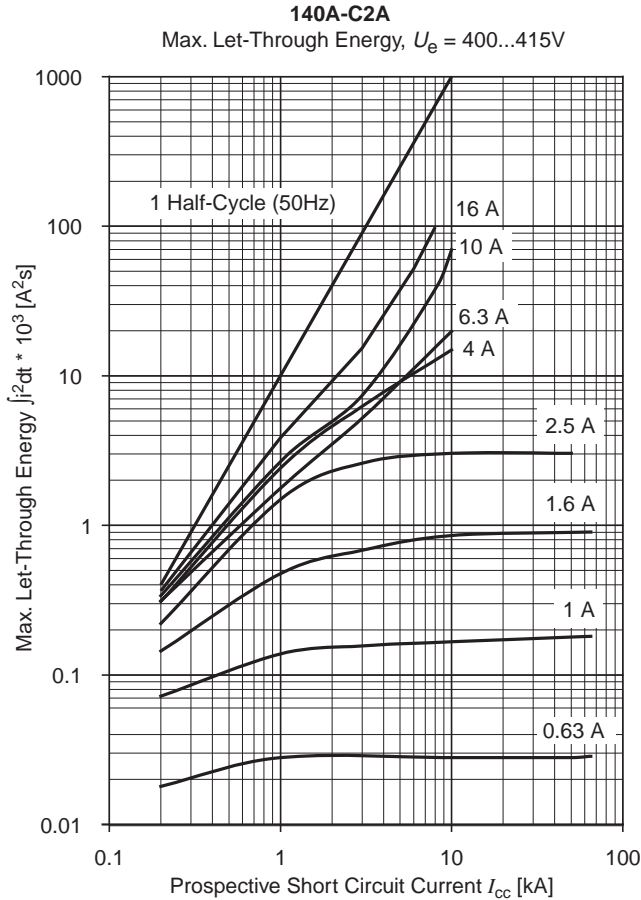
		Cat. No. 140A-C-UX... Undervoltage Release Unit for Right-side Mounting		Cat. No. 140A-C-SX... Shunt Release for Right-side Mounting		Cat. No. 140A-C-WT Supply Block		
Actuating Voltage								
Pull-in		0.8...1.1 x U _s		0.7...1.1 x U _s				
Drop-out		0.7...0.35 x U _s		—				
Rated Control Voltage	min.	12V 50 Hz, 14V 60 Hz		12V 50 Hz, 14V 60 Hz				
	max.	600V 50 Hz		600V 50 Hz				
On-Time		100 %		100 %				
Coil Rating	Pull-in	8.5 VA, 6 W		8.5 VA, 6 W				
	Hold	3 VA, 1.2 W		3 VA, 1.2 W				
Terminal Parts								
Type of terminals								
Screwdriver		Pozidriv No. 2/Blade No. 3		Pozidriv No. 2/Blade No. 3		Pozidriv No. 2/Blade No. 3		
	1 conductor	[mm ²]/[AWG]	0.75...2.5/No. 18...14		0.75...2.5/No. 18...14		4...16/No. 14...6	
	2 conductor	[mm ²]/[AWG]	0.75...2.5/No. 18...14		0.75...2.5/No. 18...14		4...16/No. 14...6	
	1 conductor	[mm ²]/[AWG]	0.75...4/No. 18...14		0.75...4/No. 18...14		4...16/No. 14...6	
	2 conductor	[mm ²]/[AWG]	0.75...4/No. 18...14		0.75...4/No. 18...14		4...16/No. 14...6	
	1 conductor	[mm ²]/[AWG]	0.75...4/No. 18...14		0.75...4/No. 18...14		4...16/No. 14...6	
	2 conductor	[mm ²]/[AWG]	0.75...4/No. 18...14		0.75...4/No. 18...14		4...16/No. 14...6	
Tightening torque	[N•m]/[lb•in]	1...1.5/9...13		1...1.5/9...13		4/36		

Cut-off current

The Bulletin 140A-C2A manual motor starter limits short-circuit current I_{CC} (prospective short-circuit current). I_D is the maximum cut-off current (highest instantaneous value of the limited short-circuit current). This value is indicated in the following diagram as a function of the system short-circuit current.



Correspondingly the maximum forward $i^2 dt$ energy is limited. This value is indicated in the following diagram as a function of the system short-circuit current.



1) Operating Current of Thermal Releases:

The adjustable inverse bimetal trip reliability protects motors against overloads. The curve shows the mean operating current at an ambient temperature of 20 °C starting from cold.

In equipment at operating temperature, release time is less than or equal to release time from the cold state.

2) Operating Current of Magnetic Releases:

Electromagnetic instantaneous releases react at a fixed tripping current.

At the upper thermal release setting, this tripping current is 11 times the set current.

Current To Be Set:

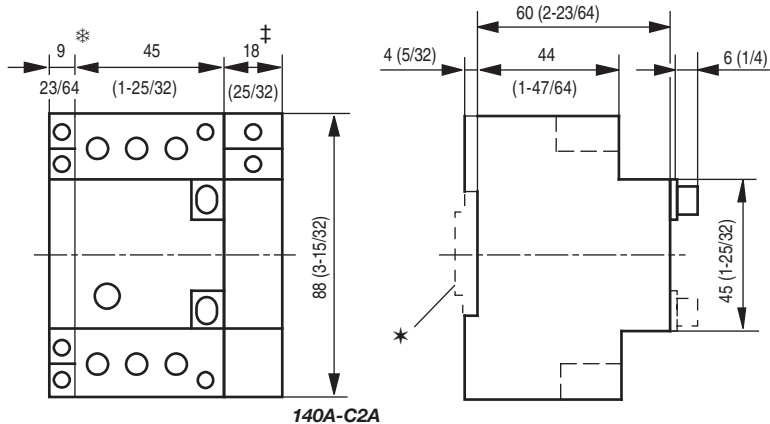
Thermal releases meet the requirements for a thermal release of a starter in accordance with IEC 60947-4-1 f. If a different value is specified (such as reduced I_e in motors with an ambient temperature higher than 40 °C or a site altitude >2000 m above sea level), the rated operating current I_e must be adjusted.

Performance categories per IEC 60947-2:

I_{cu}	Rated short-circuit breaking capacity Operational after completing O-t-CO test sequence		
I_{cs}	Ultimate short-circuit breaking capacity Suitable for normal operation after completing O-t-CO-t-CO test sequence		
	O	= off	
	CO	= restart and off	
	t	= set delay, 3 min	

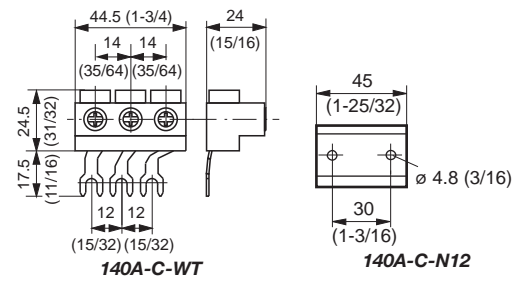
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Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



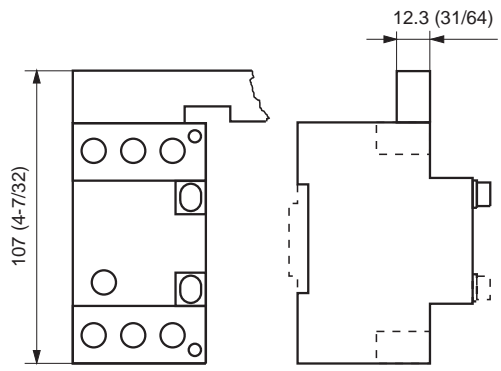
140A-C2A

- ★ Can be mounted on DIN Rail EN 50 022-35
- † Auxiliary contact block for side-mounting of 140A-C-ASA...
- § 140A-C-SX... shunt release or 140A-C-UX... undervoltage release

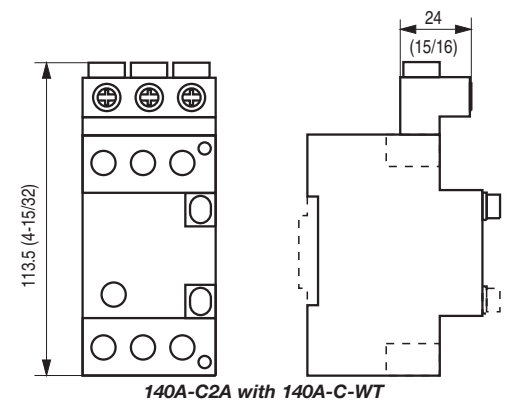


140A-C-WT

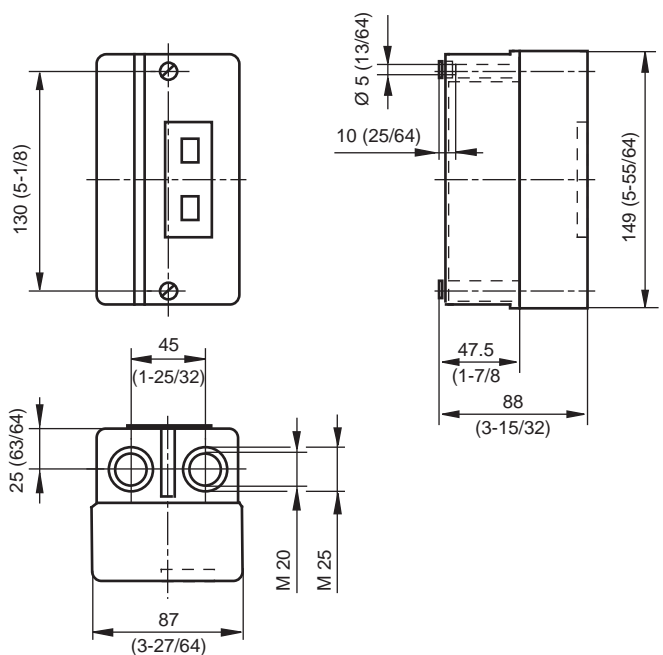
140A-C-N12



140A-C2A with 140A-C-W...

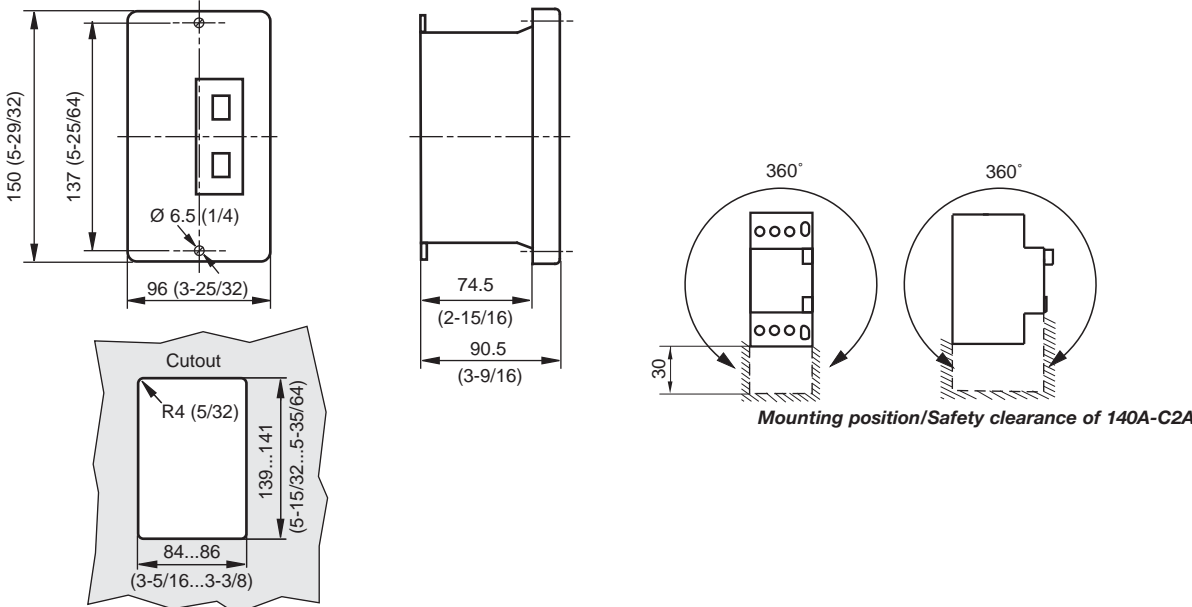


140A-C2A with 140A-C-WT



140A-C-EA41 / -EA55

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



140A-C-EE41 / -EE55

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Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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