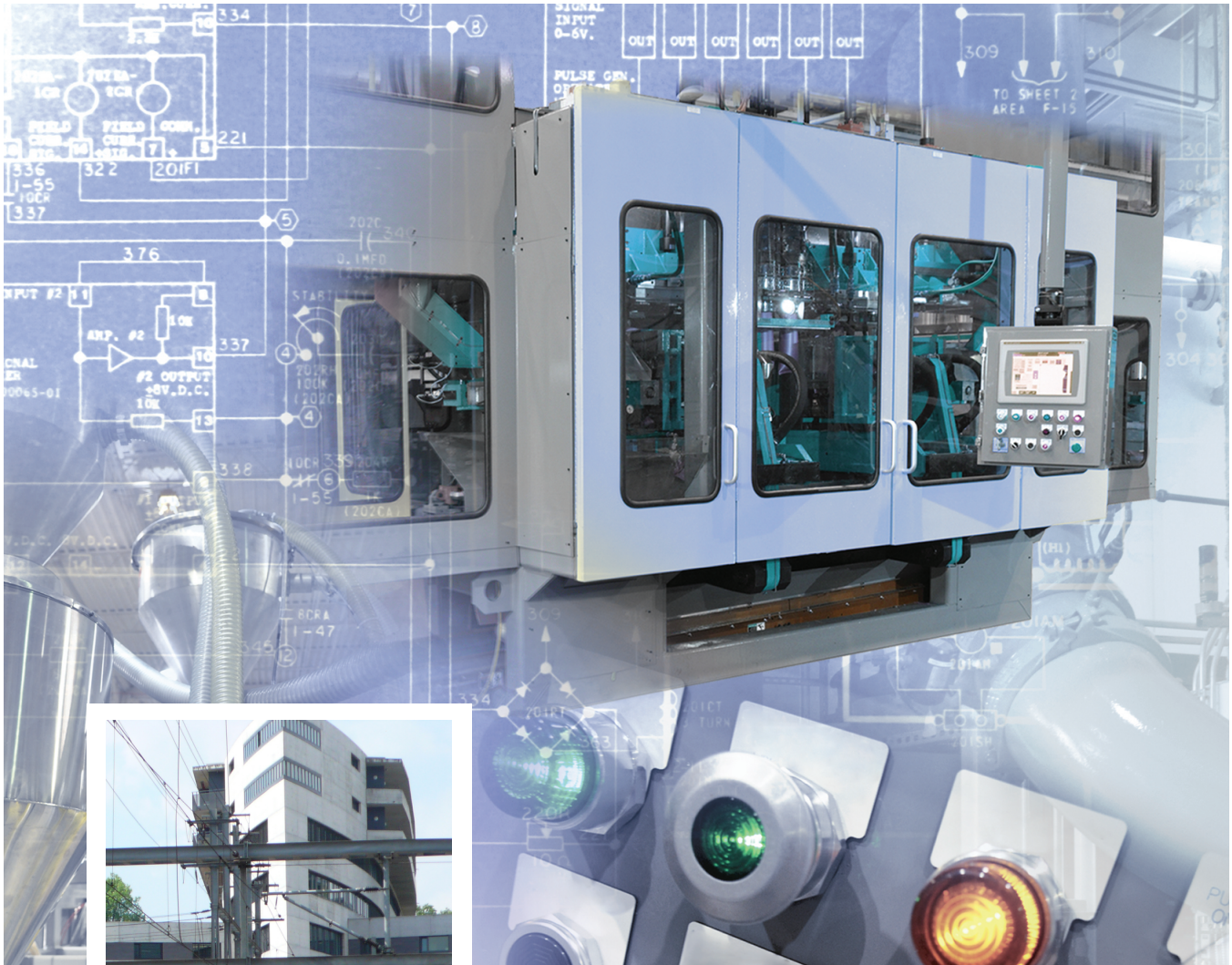


# SWITCHGEAR FOR RAILWAY APPLICATIONS











- Contactors
- Contactor Relays
- Motor Protection Circuit Breakers
- Circuit Breakers
- Bimetallic Overload Relays

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# Electric switchgear for rolling stock application

## What's Inside

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Rolling stock applications put high requirements on electrical protection and switching equipment. Reliable operation in cold Nordic winters, as well as in hot summers, is presumed to transport passengers and goods safely. Switchgear equipment must be able to withstand mechanical stress caused by operational vibrations and shocks, even under aggravated conditions – such as sinking control voltage supply. Rockwell Automation offers a comprehensive selection of electric protection and switching devices for the railway industry, fulfilling the standards for electrical equipment for rolling stock, IEC 60077, IEC 61373, EN 45545 and EN 50121-3-2 where applicable, besides the common low voltage switchgear standards. This document is a selection guide for the application of Allen-Bradley products for rolling stock equipment. Further technical documentation as well as the complete product portfolio can be found on [www.ab.com/catalogs](http://www.ab.com/catalogs).

### Note:

#### 1) AC-1 ratings:

Values in this document are for rolling stock railway applications and derive from AC-1 ratings according IEC60947-4-1 due to the rolling stock 70°C ambient temperature test requirement.

#### 2) Mounting position:

In addition to the allowed mounting position for each product line it is good practise to install electrical switchgear products in a way that the travel direction of its contact system is different from the train travel direction.

#### 3) Coil data:

Coil data and in particular coil pick-up values provided in this document are specific for coil codes listed in this document and for rolling stock applications.

## Package Quantity (PQ)

All products without packaging information are single pack (PQ = 1). Orders must correspond to the multiple of the indicated packaging quantity. Packaging cannot be divided.

## Terms and Conditions

General Terms and Conditions of Sale» can be found in publication «6500(EN) - January 2004». This publication is available as a PDF file (AdobeAcrobat) at: <http://www.rockwellautomation.com/termsandsale>

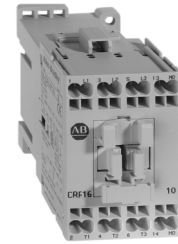
# Contactors — 100-C

## Product Selection



- Compact sizes from 4...55 kW/5...75 Hp (9...97 A)
- Common accessories for all contactor sizes
- Front and side mounting of auxiliary contacts
- Space-saving coil-mounted control modules
- Reversible coil terminations (line or load side)



Cat. No. 100-C



Cat. No. 100-CR

Rated Operational Current $I_e$ [A]		Ratings for Switching AC Motors — AC-2, AC-3, AC-4										Auxiliary Contacts		Cat. No.
		3-Phase kW (50 Hz)				3-Phase Hp (60 Hz)								
		230V	400V/415V	500V	690V	1-Phase		3-Phase						
AC-3	AC-1					115V	230V	200V	230V	460V	575V	N.O.	N.C.	
<b>Screw Terminals</b>														
9	27	3	4	4	4	1/2	1-1/2	2	2	5	7-1/2	1	0	100-C09⊗10
												0	1	100-C09⊗01
12	27	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	1	0	100-C12⊗10
												0	1	100-C12⊗01
16	27	5.5	7.5	7.5	7.5	1	3	5	5	10	15	1	0	100-C16⊗10
												0	1	100-C16⊗01
23	27	7.5	11	13	10	2	3	5	7-1/2	15	15	1	0	100-C23⊗10
												0	1	100-C23⊗01
30	51	10	15	15	15	2	5	7-1/2	10	20	25	0	0	100-C30⊗00
37	51	11	18.5/20	20	18.5	3	5	10	10	25	30	0	0	100-C37⊗00
43	63	13	22	25	22	3	7-1/2	10	15	30	30	0	0	100-C43⊗00
55	63	15	30	30	22	5	10	15	20	40	40	0	0	100-C55⊗00
60	85	18.5	32	37	32	5	10	15	20	40	50	0	0	100-C60⊗00
72	85	22	40	45	40	5	15	20	25	50	60	0	0	100-C72⊗00
85	85	25	45	55	45	7-1/2	15	25	30	60	60	0	0	100-C85⊗00
97	97	30	55	55	55	10	20	30	30	75	75	0	0	100-C97⊗00
<b>Spring Clamp Terminals</b>														
9	21	3	4	4	4	1/2	1-1/2	2	2	5	7-1/2	1	0	100-CR09⊗10
												0	1	100-CR09⊗01
12	21	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	1	0	100-CR12⊗10
												0	1	100-CR12⊗01
16	21	5.5	7.5	7.5	7.5	1	3	5	5	10	15	1	0	100-CR16⊗10
												0	1	100-CR16⊗01

### ⊗ Coil Voltage Code

The Cat. No. as listed is incomplete. Select a coil voltage code from the table below to complete the Cat. No.

Example: 24V DC electronic coil; Cat. No. **100-C09⊗10** becomes Cat. No. **100-C09EJ10**.

DC Control for 100-C09...-C55	
Code	Description
EJ	24V DC electronic coil
EW	36-48V DC electronic coil <sup>(1)</sup>
EY	72V DC electronic coil <sup>(1)</sup>
ED	110V DC electronic coil <sup>(1)</sup>





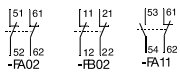

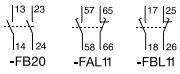
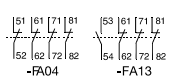
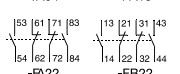
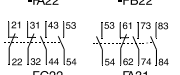
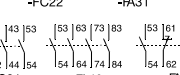

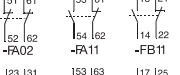
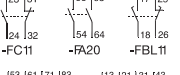
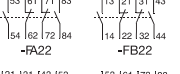






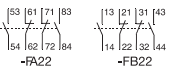
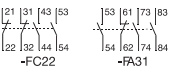
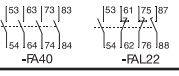










DC Control for 100-C60...-C97	
Code	Description
DJ	24V DC with integrated diode
DG	72V DC with integrated diode
DD	110V DC with integrated diode

AC Control for 100-C09...-C23	
Code	Description
KF	230V 50/60 Hz

















(1) Not available with spring clamp terminals.

## Accessories

### Auxiliary Contacts — 100-C / 100-CR




	Description	 		Connection Diagrams	For Use With	Standard Auxiliary Contact	Bifurcated Auxiliary Contact	
		N.O.	N.C.			Cat. No.	Cat. No.	
<b>Screw Terminals</b>								
  <p><b>Auxiliary Contact Blocks for Front Mounting</b></p> <ul style="list-style-type: none"> <li>2- and 4-pole</li> <li>Quick and easy mounting without tools</li> <li>Electronic-compatible contacts down to 17V, 5 mA</li> <li>Mechanically linked performance between N.O. and N.C. poles and to the main contactor poles (except for L types)</li> <li>Models with equal function with several terminal numbering choices</li> <li>1L = Late break N.C./early make N.O.</li> <li>Bifurcated version for switching down to 5V, 3 mA also available</li> </ul>		0	2		100-C	100-FA02	100-FAB02	
	C30⊗00...C97⊗00		1	1		100-C	100-FA11	100-FAB11
	C30⊗00...C97⊗00		2	0		100-C	100-FA20	100-FAB20
	C09⊗10...C23⊗10		1L	1L		C30⊗00...C97⊗00	100-FAL11	—
	C30⊗00...C97⊗00		0	4		100-C	100-FA04	100-FAB04
	100-C		1	3		100-C	100-FA13	100-FAB13
	100-C		2	2		100-C	100-FA22	100-FAB22
	C30⊗00...C97⊗00		3	1		C30⊗00...C97⊗00	100-FB22	100-FBB22
	C09⊗10...C23⊗10		4	0		C09⊗10...C23⊗10	100-FC22	100-FCB22
	100-C		1+1L	1+1L		100-C	100-FA31	100-FAB31
	C09⊗10...C23⊗10					C09⊗10...C23⊗10	100-FC31	100-FCB31
	100-C					100-C	100-FA40	100-FAB40
	100-C					100-C	100-FAL22	—
	<b>Spring Clamp Terminals</b>							
  <p><b>Auxiliary Contact Blocks for Front Mounting</b></p> <ul style="list-style-type: none"> <li>2- and 4-pole</li> <li>Quick and easy mounting without tools</li> <li>Electronic-compatible contacts down to 17V, 5 mA</li> <li>Mechanically linked performance between N.O. and N.C. poles and to the main contactor poles (except for L types)</li> <li>Models with equal function with several terminal numbering choices</li> <li>1L = Late break N.C./early make N.O.</li> </ul>		0	2		100-CR	100-CRFA02	—	
		1	1			100-CRFA11	—	
		2	0			100-CRFB11	—	
		1L	1L			100-CRFC11	—	
		2	2			100-CRFA20	—	
		3	1		100-CRFB22	—		
		4	0		100-CRFA31	—		
		1+1L	1+1L		100-CRFA40	—		
						100-CRFB22	—	
						100-CRFA31	—	
					100-CRFA40	—		
					100-CRFA22	—		
					100-CRFB22	—		
					100-CRFA31	—		
					100-CRFA40	—		
					100-CRFA22	—		

### Auxiliary Contacts — 100-C

	Description			Connection Diagrams	For Use With	Cat. No.
		N.O.	N.C.			
 <p><b>Auxiliary Contact Blocks for Side Mounting without Sequence Terminal Designations</b></p> <ul style="list-style-type: none"> <li>• 1- and 2-pole</li> <li>• Two-way numbering for right or left mounting on the contactor</li> <li>• Quick and easy mounting without tools</li> <li>• Electronic-compatible contacts down to 17V, 10 mA</li> <li>• Mirror contact performance to the main contactor poles</li> <li>• 1L = Late break N.C./early make N.O.</li> </ul>	0	1			100-C	<b>100-SA01</b>
	1	0	-SA01	-SA10	100-C	<b>100-SA10</b>
	0	2			100-C	<b>100-SA02</b>
	1	1	-SA0	-SA11	100-C	<b>100-SA11</b>
	2	0			100-C	<b>100-SA20</b>
	1L	1L	-SA20	-SA11	100-C	<b>100-SAL11</b>
 <p><b>Auxiliary Contact Blocks for Side Mounting with Sequence Terminal Designations</b></p> <ul style="list-style-type: none"> <li>• 1- and 2-pole</li> <li>• Two-way numbering for right or left mounting on the contactor</li> <li>• Quick and easy mounting without tools</li> <li>• Electronic-compatible contacts down to 17V, 10 mA</li> <li>• Mirror contact performance to the main contactor poles</li> <li>• 1L = Late break N.C./early make N.O.</li> </ul>	0	1			100-C	<b>100-SB01</b>
	1	0	-SB01	-SB10	100-C <sup>(1)</sup>	<b>100-SB10</b>
	0	2			100-C <sup>(1)</sup>	<b>100-SB02</b>
	1	1	-SB02	-SB11	100-C <sup>(1)</sup>	<b>100-SB11</b>
	2	0			100-C <sup>(1)</sup>	<b>100-SB20</b>
	1L	1L	-SB20	-SBL11	100-C <sup>(1)</sup>	<b>100-SBL11</b>

(1) Double numbering — Left-side mounting only is recommended for Cat. No. **100-C09...100-C23** due to double numbering.

## Control Modules — 100-C

	Description	Connection Diagrams	For Use With	Cat. No.
	<b>Pneumatic Timing Modules</b> <sup>(1)</sup> • Pneumatic timing element contacts switch after the delay time. The contacts on the main control relay continue to operate without delay.	<b>On-Delay</b> 0.3...30 s Range	100-C	<b>100-FPTA30</b>
		2...180 s Range		<b>100-FPTA180</b>
		<b>Off-Delay</b> 0.3...30 s Range	100-C	<b>100-FPTB30</b>
		2...180 s Range		<b>100-FPTB180</b>
	<b>Mechanical Interlocks</b> • For interlocking of two contactors. • Common interlock for 100-C contactor sizes • Interlocking of different sizes possible • Mechanical and electrical interlocking possible in one module by means of integrated auxiliary contacts • 9 mm dovetail connector included	Mechanical only, without auxiliary contacts	100-C	<b>100-MCA00</b>
		Mechanical/ electrical interlock with 2 N.C. auxiliary contacts	100-C	<b>100-MCA02</b>
	<b>Mechanical Latch</b> • Following contactor latching, the contactor coil is immediately de-energized (off) by the N.C. auxiliary contact (65-66). • Electrical or manual release • 1 N.O. + 1 N.C. auxiliary contacts • Suitable for 100-C contactor sizes, 9...97 A	Maximum command duration 0.03...10 s	100-C	<b>100-FL11</b> ⊗


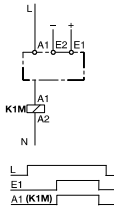







(1) 100-FPT... with max. one side mounted auxiliary contact block 100-S...

### ⊗ Coil Voltage Code

The Cat. No. as listed is incomplete. Select a coil voltage code from the table below to complete the Cat. No.  
 Example: 230V, 50/60 Hz; Cat. No. **100-FL11**⊗ becomes Cat. No. **100-FL11KF**.

AC Control for 100-FL11__	
Code	Description
KF	230V 50/60 Hz

Control Modules — 100-C / 100-CR

	Description	Voltage Range	Connection Diagrams	For Use With	Cat. No.					
	<b>DC Interface (Electronic)</b> <ul style="list-style-type: none"> <li>Interface between the DC control signal (PLC) and the AC operating mechanism of the contactor</li> <li>Requires no additional surge suppression on the relay coils</li> </ul>	Input: 12V DC Output: 110...240V AC		100-C with AC coils 110...240V AC	<b>100-JE12</b>					
		Input: 24V DC Output: 110...240V AC			<b>100-JE</b>					
		Input: 48V DC Output: 110...240V AC			<b>100-JE48</b>					
<b>Screw Terminals</b>										
	<b>Surge Suppressors</b> <ul style="list-style-type: none"> <li>For limitation of coil switching transients</li> <li>Plug-in, coil mounted</li> <li>Suitable for 100-C contactor sizes, 9...97 A</li> <li>RC and varistor versions</li> </ul>	<b>RC Module</b> AC operating mechanism	24...48V AC, 50/60 Hz		100-C with AC coils	<b>100-FSC48</b>				
			110...280V AC, 50/60 Hz			<b>100-FSC280</b>				
			380...480V AC, 50/60 Hz			<b>100-FSC480</b>				
		<b>Varistor Module</b> AC/DC operating mechanism	12...55V AC/ 12...77V DC		100-C with AC coils	<b>100-FSV55</b>				
			56...136V AC/ 78...180V DC			<b>100-FSV136</b>				
			137...277V AC/ 181...350V DC			<b>100-FSV277</b>				
			278...575V AC			<b>100-FSV575</b>				
			<b>Spring Clamp Terminals</b>							
						<b>Surge Suppressors</b> <ul style="list-style-type: none"> <li>For limitation of coil switching transients</li> <li>Plug-in, coil mounted</li> <li>Suitable for 100-C contactor sizes, 9...97 A</li> <li>RC, varistor and diode versions</li> </ul>	<b>RC Module</b> AC operating mechanism	24...48V AC, 50/60 Hz		100-CR
110...280V AC, 50/60 Hz	<b>100-CRFSC280</b>									
380...480V AC, 50/60 Hz	<b>100-CRFSC480</b>									
<b>Varistor Module</b> AC/DC operating mechanism	12...55V AC/ 12...77V DC			100-CR	<b>100-CRFV55</b>					
	56...136V AC/ 78...180V DC				<b>100-CRFV136</b>					
	137...277V AC/ 181...350V DC				<b>100-CRFV277</b>					
	278...575V AC				<b>100-CRFV575</b>					
<b>Diode Module</b> DC operating mechanism	12...250V DC			100-CR	<b>100-CRFD250</b>					

## Specifications

### Standards Compliance — 100-C

IEC/EN 60947-1, 60947-4-1, 60947-5-1  
 UL 60947-1, 60947-4-1, 60947-5-1  
 CAN / CSA-C22.2 No. 60947-1, No. 60947-4-1, No. 60947-5-1  
 IEC/EN 60077  
 IEC/EN 61373  
 EN 45545  
 EN 50121-3-2 for 24, 36-48, 72 and 110 V DC electronic coil

### Coil Data

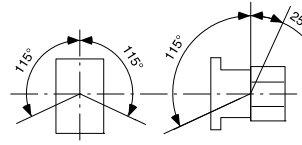
			100-C / 104-C											
			09	12	16	23	30	37	43	55	60	72	85	97
<b>Operating Limits</b>														
AC 50/60 Hz	pick-up	[x U <sub>s</sub> ]	0.7...1.25											
	dropout	[x U <sub>s</sub> ]	0.3...0.6											
DC (conventional)	pick-up	[x U <sub>s</sub> ]	—						0.7...1.25					
	dropout	[x U <sub>s</sub> ]	—						0.1...0.6					
DC (electronic)	pick-up	[x U <sub>s</sub> ]	0.7...1.25						—					
	dropout	[x U <sub>s</sub> ]	0.4						—					
<b>Coil Consumption</b>														
AC 50 Hz, 60 Hz, 50/60 Hz	pick-up	[VA/W]	75/55			105/65			135/95		235/120		400/240	
	hold-in	[VA/W]	9.5/2.7			12.3/3.1			13.3/3.3		19/6.5		24/9	
DC (conventional)	pick-up	[W]	—			—			—		200		325	
	hold-in	[W]	—			—			—		4.5		5.5	
DC (electronic) Coil code EJ	pick-up (avg/peak)	[W]	10/17						16/25		—		—	
	hold-in	[W]	1.7						2.5		—		—	
DC (electronic) Coil codes EW, EY	pick-up (avg/peak)	[W]	10/17						16/25		—		—	
	hold-in	[W]	1.7/1.9						2.5/2.7		—		—	
Coil code ED	pick-up (avg/peak)	[W]	12/19						16/26		—		—	
	hold-in	[W]	2.0/2.1						2.7/2.8		—		—	
<b>Operating Times</b>														
AC	closing delay	[ms]	15...30						20...40		20...40			
	opening delay	[ms]	10...60						10...60		20...40			
AC with RC module	opening delay	[ms]	10...60						10...60		20...40			
DC (conventional)	closing delay	[ms]	—						20...40		20...40			
	opening delay	[ms]	—						—		—			
DC with integ. diode	opening delay	[ms]	—						20...35		20...35			
DC (electronic)	closing delay	[ms]	25...50						—		—			
	opening delay	[ms]	25...50						—		—			
Max. Ripple			± 15 %						—		—			
Min. OFF time		[ms]	50						—		—			



Device Combinations in Accordance with IEC 60947-1 / -4-1 and IEC 60077

Table valid for: AC/DC = 0.7...1.25 x U<sub>s</sub>, T<sub>amb.</sub> = -40...+70 °C

Mounting position with accessories (for AC and DC contactors)



Auxiliary Contact Blocks for Side Mounting		Contactors 100-C (AC and DC Control)						100-C43_⊗00 100-C55_⊗00 100-C60_⊗00 100-C72_⊗00 100-C85_⊗00 100-C97_⊗00
		Control voltage code as per selection table	100-C09_⊗10 100-C12_⊗10 100-C16_⊗10	100-C09_⊗01 100-C12_⊗01 100-C16_⊗01	100-C23_⊗10	100-C23_⊗01	100-C30_⊗00 100-C37_⊗00	
	<b>Circuit Diagram</b>	24V DC, 36-48V DC, 72V DC, 110V DC, 230V 50/60 Hz <sup>(1)</sup>						
No. of Auxiliary Contacts Without Auxiliary Contact Block			10 + 00 = 10	01 + 00 = 01	10 + 00 = 10	01 + 00 = 01	00 + 00 = 00	00 + 00 = 00
100-SA01			10 + 01 = 11	01 + 01 = 02	10 + 01 = 11	01 + 01 = 02	00 + 01 = 01	00 + 01 = 01
100-SA10			10 + 10 = 20	01 + 10 = 11	10 + 10 = 20	01 + 10 = 11	00 + 10 = 10	00 + 10 = 10
100-SA02			10 + 02 = 12	01 + 02 = 03	10 + 02 = 12	01 + 02 = 03	00 + 02 = 02	00 + 02 = 02
100-SA11			10 + 11 = 21	01 + 11 = 12	10 + 11 = 21	01 + 11 = 12	00 + 11 = 11	00 + 11 = 11
100-SA20			10 + 20 = 30	01 + 20 = 21	10 + 20 = 30	01 + 20 = 21	00 + 20 = 20	00 + 20 = 20
100-SAL11			10 + L11 = L21	01 + L11 = L12	10 + L11 = L21	01 + L11 = L12	00 + L11 = L11	00 + L11 = L11
100-SB01			10 + 01 = 11	01 + 01 = 02	10 + 01 = 11	01 + 01 = 02	00 + 01 = 01	00 + 01 = 01
100-SB10			10 + 10 = 20	01 + 10 = 11	10 + 10 = 20	01 + 10 = 11	00 + 10 = 10 <sup>(2)</sup>	00 + 10 = 10 <sup>(2)</sup>
100-SB02			10 + 02 = 12	01 + 02 = 03	10 + 02 = 12	01 + 02 = 03	00 + 02 = 02 <sup>(2)</sup>	00 + 02 = 02 <sup>(2)</sup>
100-SB11			10 + 11 = 21	01 + 11 = 12	10 + 11 = 21	01 + 11 = 12	00 + 11 = 11 <sup>(2)</sup>	00 + 11 = 11 <sup>(2)</sup>
100-SB20			10 + 20 = 30	01 + 20 = 21	10 + 20 = 30	01 + 20 = 21	00 + 20 = 20 <sup>(2)</sup>	00 + 20 = 20 <sup>(2)</sup>
100-SBL11			10 + L11 = L21	01 + L11 = L12	10 + L11 = L21	01 + L11 = L12	00 + L11 = L11 <sup>(2)</sup>	00 + L11 = L11 <sup>(2)</sup>

(1) 230V 50/60 Hz only 100-C09...-C23

(2) Double numbering - Left-side only is recommended for 100-C09\*\*...100-C23\*\* due to double numbering

Table applicable for screwless products (code R), e.g. 100-CR09⊗10

Auxiliary Contact Blocks for Front Mounting		Contactors 100-C (AC and DC Control)						
		Control voltage code as per selection table	100-C09_⊗10 100-C12_⊗10 100-C16_⊗10	100-C09_⊗01 100-C12_⊗01 100-C16_⊗01	100-C23_⊗10	100-C23_⊗01	100-C30_⊗00 100-C37_⊗00	100-C43_⊗00 100-C55_⊗00 100-C60_⊗00 100-C72_⊗00 100-C85_⊗00 100-C97_⊗00
	<b>Circuit Diagram</b>	<b>24V DC, 36-48V DC, 72V DC, 110V DC, 230V 50/60 Hz<sup>(1)</sup></b>						
No. of Auxiliary Contacts Without Auxiliary Contact Block			10 + 00 = 10	01 + 00 = 01	10 + 00 = 10	01 + 00 = 01	00 + 00 = 00	00 + 00 = 00
100-FA02, 100-FAB02			10 + 02 = 12	01 + 02 = 03	10 + 02 = 12	01 + 02 = 03	(2)	(2)
100-FB02, 100-FBB02			(2)	(2)	(2)	(2)	00 + 02 = 02	00 + 02 = 02
100-FA11, 100-FAB11			10 + 11 = 21	01 + 11 = 12	10 + 11 = 21	01 + 11 = 12	(2)	(2)
100-FB11, 100-FBB11			(2)	(2)	(2)	(2)	00 + 11 = 11	00 + 11 = 11
100-FC11, 100-FCB11			10 + 11 = 21	01 + 11 = 12	10 + 11 = 21	01 + 11 = 12	(2)	(2)
100-FA20, 100-FAB20			10 + 20 = 30	01 + 20 = 21	10 + 20 = 30	01 + 20 = 21	(2)	(2)
100-FB20, 100-FBB20			(2)	(2)	(2)	(2)	00 + 20 = 20	00 + 20 = 20
100-FAL11			(2)	(2)	(2)	(2)	00 + L11 = L11	00 + L11 = L11
100-FBL11			(2)	(2)	(2)	(2)	00 + L11 = L11	00 + L11 = L11
100-FA04, 100-FAB04			10 + 04 = 14	—	10 + 04 = 14	—	00 + 04 = 04 <sup>(3)</sup>	00 + 04 = 04 <sup>(4)</sup>
100-FA13, 100-FAB13			10 + 13 = 23	01 + 13 = 14	10 + 13 = 23	01 + 13 = 14	00 + 13 = 13	00 + 13 = 13
100-FA22, 100-FAB22			(2)	(2)	(2)	(2)	00 + 22 = 22	00 + 22 = 22
100-FB22, 100-FBB22			(2)	(2)	(2)	(2)	00 + 22 = 22	00 + 22 = 22
100-FC22, 100-FCB22			10 + 22 = 32	01 + 22 = 23	10 + 22 = 32	01 + 22 = 23	(2)	(2)
100-FA31, 100-FAB31			(2)	(2)	(2)	(2)	00 + 31 = 31	00 + 31 = 31
100-FC31, 100-FCB31			10 + 31 = 41	01 + 31 = 32	10 + 31 = 41	01 + 31 = 32	(2)	(2)
100-FA40, 100-FAB40			10 + 40 = 50	01 + 40 = 41	10 + 40 = 50	01 + 40 = 41	00 + 40 = 40	00 + 40 = 40
100-FAL22			10 + L22 = L32	01 + L22 = L23	10 + L22 = L32	01 + L22 = L23	00 + L22 = L22	00 + L22 = L22

(1) 230V 50/60 Hz only 100-C09...-C23  
 (2) Combination possible but not recommended, due to repeating or not consecutive sequence numbering  
 (3) not allowed for control voltage 24V DC  
 (4) not allowed for control voltage 72V DC and 110V DC

Table applicable for screwless products (code R), e.g. 100-CR09⊗10

# Miniature Contactors — 100-K

## Product Selection

- Compact size
- Full-voltage non-reversing and reversing contactors
- 5, 9, and 12 A contactors rated at 690V
- IP2X finger protection
- Optional integrated surge suppressor
- Compatible with Bulletin 193-K bimetallic overload relay
- Mirror contacts per IEC 60947-4-1 and mechanically linked contacts per IEC 60947-5-1 on main unit



Cat. No. 100-K



Cat. No. 100-KR

### 3-Pole Contactors

Rated Operational Current I <sub>e</sub> [A]		Ratings for Switching AC Motors — AC-2, AC-3										Auxiliary Contacts		Pkg. Qty. <sup>(1)</sup>	Cat. No.
		3-Phase kW (50 Hz)				3-Phase Hp (60 Hz)						N.O.	N.C.		
		230V	400V/415V	500V	690V	1-Phase		3-Phase							
115V	230V					200V	230V	460V	575V						
AC-3	AC-1	Screw Terminals													
5	13.5	1.5	2.2	2.2	2.2	1/2	1	1-1/2	1-1/2	3	3	1	0	1	100-K05⊗10
												0	1	1	100-K05⊗01
9	13.5	3	4	4	4	1/2	1-1/2	2	2	5	5	1	0	1	100-K09⊗10
												0	1	1	100-K09⊗01
12	13.5	3	5.5	5.5	5.5	3/4	2	3	3	7-1/2	7-1/2	1	0	1	100-K12⊗10
												0	1	1	100-K12⊗01
Spring Clamp Terminals															
5	9	1.5	2.2	2.2	2.2	1/3	3/4	1-1/2	1-1/2	3	3	1	0	1	100-KR05⊗10
												0	1	1	100-KR05⊗01
9	9	2.2	4	4	4	1/3	1	2	2	5	5	1	0	1	100-KR09⊗10
												0	1	1	100-KR09⊗01

### 4-Pole Contactors

Rated Operational Current I <sub>e</sub> [A]		Ratings for Switching AC Motors — AC-2, AC-3										Auxiliary Contacts		Pkg. Qty. <sup>(1)</sup>	Cat. No.
		3-Phase kW (50 Hz)				3-Phase Hp (60 Hz)						N.O.	N.C.		
		230V	400V/415V	500V	690V	1-Phase		3-Phase							
115V	230V					200V	230V	460V	575V						
AC-3	AC-1	Screw Terminals													
5	13.5	1.5	2.2	2.2	2.2	1/2	1	1-1/2	1-1/2	3	3	1	0	1	100-K05⊗400
												0	1	1	100-K05⊗300
												1	0	1	100-K05⊗200
9	13.5	3	4	4	4	1/2	1-1/2	2	2	5	5	0	1	1	100-K09⊗400
												1	0	1	100-K09⊗300
												0	1	1	100-K09⊗200
12	13.5	3	5.5	5.5	5.5	3/4	2	3	3	7-1/2	7-1/2	1	0	1	100-K12⊗400
												0	1	1	100-K12⊗300
												0	1	1	100-K12⊗200

(1) May be ordered in package quantities of 20. Add letter M to the end of the cat. no. Example: **100-K09ZJ400M**.






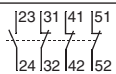
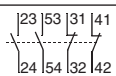
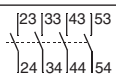


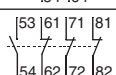
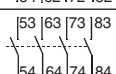



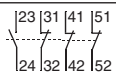
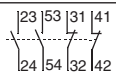
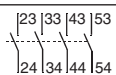


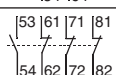
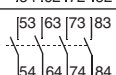
#### ⊗ Coil Voltage Code

The Cat. No. as listed is incomplete. Select a coil voltage code from the table below to complete the Cat. No.  
 Example: 24V DC; Cat. No. **100-K09⊗10** becomes Cat. No. **100-K09ZJ10**.

DC Control for 100-K05...-K12	
Code	Description
ZJ	24V DC
DJ	24V DC with integrated diode
ZG	72V DC (Screwtype only)
ZD	110V DC







## Accessories

### Auxiliary Contact Blocks — 100-K / 100-KR


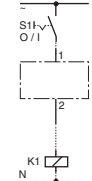
	Description	Connection Diagrams	 		For Use With	Pkg. Qty. <sup>(1)</sup>	Cat. No.
			N.O.	N.C.			
<b>Screw Terminals</b>							
 <p><b>Front-Mounted Auxiliary Contacts</b></p> <ul style="list-style-type: none"> <li>Auxiliary contact blocks</li> <li>2- and 4-pole versions</li> <li>Choice of contact configurations</li> <li>Snap on, no tools required</li> <li>Electronic-compatible bifurcated contacts for signals down to 15V/2 mA</li> <li>Mirror Contact performance per IEC 60947-4-1</li> </ul>		1	1	100-K05...K12	1	<b>100-KFC11</b>	
		2	0	100-K05...K12	1	<b>100-KFC20</b>	
		1	3	100-K05...K12	1	<b>100-KFC13</b>	
		2	2	100-K05...K12	1	<b>100-KFC22</b>	
		4	0	100-K05...K12	1	<b>100-KFC40</b>	
		1	1	100/104-K, 700-K	1	<b>100-KFA11E</b>	
		2	0	100/104-K, 700-K	1	<b>100-KFA20E</b>	
		1	3	100/104-K, 700-K	1	<b>100-KFA13E</b>	
		4	0	100/104-K, 700-K	1	<b>100-KFA40E</b>	
<b>Spring Clamp Terminals</b>							
 <p><b>Front-Mounted Auxiliary Contacts</b></p> <ul style="list-style-type: none"> <li>Auxiliary contact blocks</li> <li>2- and 4-pole versions</li> <li>Choice of contact configurations</li> <li>Snap on, no tools required</li> <li>Electronic-compatible bifurcated contacts for signals down to 15V/2 mA</li> <li>Mirror Contact performance per IEC 60947-4-1</li> </ul>		1	1	100-K	1	<b>100-KRFC11</b>	
		2	0	100-K05...K12	1	<b>100-KRFC20</b>	
		1	3	100-K05...K12	1	<b>100-KRFC13</b>	
		2	2	100-K05...K12	1	<b>100-KRFC22</b>	
		4	0	100-K05...K12	1	<b>100-KRFC40</b>	
		1	1	100/104-K, 700-K	1	<b>100-KRFA11E</b>	
		2	0	100/104-K, 700-K	1	<b>100-KRFA20E</b>	
		1	3	100/104-K, 700-K	1	<b>100-KRFA13E</b>	
		4	0	100/104-K, 700-K	1	<b>100-KRFA40E</b>	

(1) May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. Example: **100-KFC11M**.


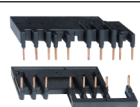
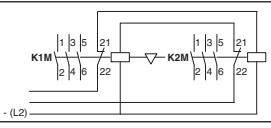


## Control Modules

	Description		Connection Diagrams	For Use With	Pkg. Qty.	Cat. No.	
	<b>Mechanical Interlock</b> <ul style="list-style-type: none"> <li>For interlocking of two adjacent contactors</li> <li>No added width to contactor assembly</li> <li>Front mount plug-in type</li> <li>Optional auxiliary contacts and suppressor modules mount onto the interlock</li> </ul>			100/104-K/-KR, 700-K/-KR	1	<b>100-KMCH</b>	
	<b>Surge Suppressor</b> <ul style="list-style-type: none"> <li>Plug-in type</li> <li>Limits surge voltage on coil drop-off</li> </ul>	RC Suppressor		100/104-K/-KR, 700-K/-KR	1 <sup>(2)</sup>	<b>100-KFSC50</b>	
						1 <sup>(2)</sup>	<b>100-KFSC280</b>
						1 <sup>(2)</sup>	<b>100-KFSC480</b>
			MOV Suppressor		100/104-K/-KR, 700-K/-KR	1 <sup>(2)</sup>	<b>100-KFSV55</b>
						1 <sup>(2)</sup>	<b>100-KFSV136</b>
						1 <sup>(2)</sup>	<b>100-KFSV277</b>
	Diode Suppressor		100/104-K/-KR, 700-K/-KR	1 <sup>(2)</sup>	<b>100-KFSD250</b>		

## Timers — 100-K

	Description		Connection Diagrams	For Use With	Pkg. Qty.	Cat. No.
	<b>Solid-State Timing Element</b> <ul style="list-style-type: none"> <li>110...250V AC or DC</li> <li>Includes 35 mm Hat Rail adapter</li> </ul>	On-Delay, 0.1...3 s		100/104-K, 700-K	10	<b>100-KT3S</b>
		On-Delay, 1...30 s				<b>100-KT30S</b>

## Connecting Components

	Description		For Use With	Pkg. Qty.	Cat. No.
	<b>ECO Connecting Module — 12 A</b> <ul style="list-style-type: none"> <li>For DOL and reversing starters</li> <li>Eco-starters mount on single DIN Rail (140M on DIN Rail)</li> <li>Electrical and mechanical interconnection of 140M and 100-K contactors</li> </ul>	<b>Connects:</b> 140M-C circuit breakers with 100-K contactors	140M-C to 100-K	1 <sup>(2)</sup>	<b>140M-C-PEK12</b>
	<b>Power Wiring Kit</b> <ul style="list-style-type: none"> <li>For Reversing and Star/Delta combinations</li> <li>Star-point bridge not included</li> <li>Min. interruption time 50 ms</li> </ul>		100-K	1	<b>100-KPR</b>
	<b>Feeder Terminal for Compact Bus Bars</b> <ul style="list-style-type: none"> <li>Max. current 34 A</li> </ul>	Supply of compact bus bars	100-K	1	<b>100-KWT</b>
	<b>Three-Phase Compact Bus Bars</b> <ul style="list-style-type: none"> <li>Max. current 34 A</li> </ul>	For 100-K, 5...12 A contactors 45 mm spacing (3 connections) <sup>(1)</sup>	100-K	1	<b>100-KW453</b>
		For 100-K, 5...12 A contactors 45 mm spacing (4 connections) <sup>(1)</sup>	100-K	1	<b>100-KW454</b>

(1) Combinations possible. Example: For 6 contactor connections use one cat. no. 100-KW453 and one cat. no. 100-KW454.

(2) May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. Example: **140M-C-PEK12M**.

## Specifications

### Standards Compliance

IEC/EN 60947-1, 60947-4-1, 60947-5-1  
 UL 60947-1, 60947-4-1, 60947-5-1  
 CAN / CSA-C22.2 No. 60947-1, No. 60947-4-1, No. 60947-5-1  
 IEC/EN 60077  
 IEC/EN 61373  
 EN 45545

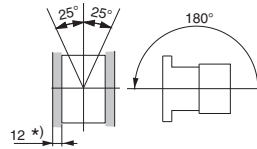
### Coil Data

		100-K		
		05	09	12
Operating Limits				
DC	pick-up	[x Us]	0.7...1.25	
	dropout	[x Us]	0.1...0.6	
Coil Consumption				
DC	pick-up	[W]	cold 3.0, warm 2.6	
	hold-in	[W]	cold 3.0, warm 2.6	
Operating Times				
DC	closing delay	[ms]	18...40	
	opening delay	[ms]	6...12	
DC (with integ. diode)	opening delay	[ms]	8...12	
DC (with external diode)	opening delay	[ms]	35...50	

## Device Combinations in Accordance with IEC 60947-1 / -4-1 and IEC 60077

Table valid for: AC/DC = 0.7...1.25 x U<sub>s</sub>, T<sub>amb.</sub> = -40...+70 °C, mounting position with accessories

### Mounting Position



\*) -Minimum distance to grounded parts or walls

Auxiliary Contact Blocks for Front Mounting		Miniature Contactors 100-K (AC and DC Control)					
		Control voltage code as per selection table	100-K05⊗10 100-K09⊗10 100-K12⊗10	100-K05⊗01 100-K09⊗01 100-K12⊗01	100-K05⊗400 100-K09⊗400 100-K12⊗400	100-K05⊗300 100-K09⊗300 100-K12⊗300	100-K05⊗200 100-K09⊗200 100-K12⊗200
	Circuit Diagram	24V DC 72V DC 110V DC					
No. of Auxiliary Contacts Without Auxiliary Contact Block			10 + 00 = 10	01 + 00 = 01	00 + 00 = 00	00 + 00 = 00	00 + 00 = 00
100-KFA11E			(1)	01 + 11 = 12	(1)	(1)	—
100-KFC11			10 + 11 = 21	(1)	00 + 11 = 11	00 + 11 = 11	—
100-KFA20E			(1)	01 + 20 = 21	(1)	(1)	—
100-KFC20			10 + 20 = 30	(1)	00 + 20 = 20	00 + 20 = 20	—
100-KFC13			10 + 13 = 23 <sup>(2)</sup>	—	00 + 13 = 13 <sup>(2) (3)</sup>	—	—
100-KFC22			10 + 22 = 32 <sup>(2)</sup>	—	00 + 22 = 22 <sup>(2)</sup>	—	—
100-KFA40E			(1)	01 + 40 = 41	(1)	(1)	—
100-KFC40			10 + 40 = 50	(1)	00 + 40 = 40	00 + 40 = 40	—

(1) Combination possible but not recommended, due to repeating or non-consecutive sequence numbering

(2) not allowed for control voltage 24V DC

(3) not allowed for control voltage 72V DC

Table applicable for screwless products (code R), e.g. 100-KR05⊗10

# Contactors Relays — 700-CF

## Product Selection

- Mechanically linked contact performance per IEC 60947-5-1
- Gold plated, bifurcated version for low level switching applications
- Master control relay version rated 15 A (AC-15)



Cat. No. 700-CF



Cat. No. 700-CRF

### 4-Pole AC and DC Coil Voltage (Ratings for 700-CF Only)

AC-12 Ambient temperature 70°C	AC-15							Connection Diagrams	Contacts		Standard Contacts	Gold Plated Bifurcated Contacts	Master Contacts	
	$I_e$ [A]													Cat. No.
$I_{th}$ [A]	24/48V	120V	240V	400V	500V	600V	690V		N.O.	N.C.	Cat. No.	Cat. No. <sup>(1)</sup>	Cat. No. <sup>(1)</sup>	
<b>Screw Terminals</b>														
17	10	10	10	6	2.5	1	1		2	2	700-CF220⊗			
8.5	3	3	3	2	1.2	0.7	0.7					700-CFB220⊗		700-CFM220⊗
17	15	15	15	7.5	5	2	2		3	1	700-CF310⊗			
8.5	3	3	3	2	1.2	0.7	0.7					700-CFB310⊗		700-CFM310⊗
17	15	15	15	7.5	5	2	2		4	0	700-CF400⊗			
17	10	10	10	6	2.5	1	1					700-CFB400⊗		
8.5	3	3	3	2	1.2	0.7	0.7							700-CFM400⊗
17	15	15	15	7.5	5	2	2							700-CFM400⊗
<b>Spring Clamp Terminals</b>														
17	10	10	10	6	2.5	1	1		2	2	700-CRF220⊗			
8.5	3	3	3	2	1.2	0.7	0.7					700-CRFB220⊗		700-CRFM220⊗
17	15	15	15	7.5	5	2	2		3	1	700-CRF310⊗			
8.5	3	3	3	2	1.2	0.7	0.7					700-CRFB310⊗		700-CRFM310⊗
17	15	15	15	7.5	5	2	2		4	0	700-CRF400⊗			
17	10	10	10	6	2.5	1	1					700-CRFB400⊗		
8.5	3	3	3	2	1.2	0.7	0.7							700-CRFM400⊗
17	15	15	15	7.5	5	2	2							700-CRFM400⊗

(1) Ratings for 700-CFB and 700-CFM see page 18

### ⊗ Coil Voltage Codes for AC and DC Control

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.  
Example: Cat. No. 100-CF220⊗ becomes Cat. No. 100-CF220EJ.




























































DC Control	
Code	Description
EJ	24V DC electronic coil
EW	36-48V DC electronic coil <sup>(2)</sup>
EY	72V DC electronic coil <sup>(2)</sup>
ED	110V DC electronic coil <sup>(2)</sup>

AC Control	
Code	Description
KF	230V 50/60 Hz

(2) Not available with spring clamp terminals.




## Accessories

### Auxiliary Contacts — 700-CF / 700-CRF


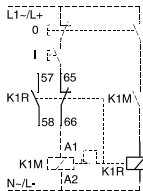
	Description	 		Connection Diagrams	For Use With	Standard Contacts	Bifurcated Contacts			
		N.O.	N.C.			Cat. No.	Cat. No.			
<b>Screw Terminals</b>										
 <p><b>Auxiliary Contact Blocks for Front Mounting</b></p> <ul style="list-style-type: none"> <li>2- and 4-pole</li> <li>Quick and easy mounting without tools</li> <li>Electronic-compatible contacts down to 17V, 5 mA</li> <li>Mechanically linked performance between N.O. and N.C. poles and to the main relay poles (except for L types)</li> </ul>	<ul style="list-style-type: none"> <li>Models with equal function with several terminal numbering choices</li> <li>1L = Late break N.C./early make N.O.</li> <li>Bifurcated version for switching down to 5V, 3 mA</li> </ul>	0	2	 	700-CF	100-FA02	100-FAB02			
		1	1	 		100-FA11	100-FAB11			
		2	0	 		100-FA20	100-FAB20			
		1L	1L	 		100-FAL11	—			
		0	4	 		100-FA04	100-FAB04			
			<ul style="list-style-type: none"> <li>Models with equal function with several terminal numbering choices</li> <li>1L = Late break N.C./early make N.O.</li> <li>Bifurcated version for switching down to 5V, 3 mA</li> </ul>	1		3	 	700-CF	100-FA13	100-FAB13
				2		2	 		100-FA22	100-FAB22
				3		1	 		100-FA31	100-FAB31
				4		0	 		100-FA40	100-FAB40
				1+1L		1+1L	 		100-FAL22	—
<b>Spring Clamp Terminals</b>										
 <p><b>Auxiliary Contact Blocks for Front Mounting</b></p> <ul style="list-style-type: none"> <li>2- and 4-pole</li> <li>Quick and easy mounting without tools</li> <li>Electronic-compatible contacts down to 17V, 5 mA</li> <li>Mechanically linked performance between N.O. and N.C. poles and to the main relay poles (except for L types)</li> </ul>	<ul style="list-style-type: none"> <li>Models with equal function with several terminal numbering choices</li> <li>1L = Late break N.C./early make N.O.</li> </ul>	0	2	  	700-CRF	100-CRFA02	—			
		1	1	  		100-CRFA11	—			
		2	0	  		100-CRFA20	—			
		2	2	  		100-CRFA22	—			
		3	1	  		100-CRFA31	—			
		4	0	  		100-CRFA40	—			
		1+1L	1+1L	  		100-CRFA22	—			
		<b>Side Mounting without Sequence Terminal Designations</b>								
		 <p><b>Auxiliary Contact Blocks for Side Mounting without Sequence Terminal Designations</b></p> <ul style="list-style-type: none"> <li>1- and 2-pole</li> <li>Two-way numbering for right or left mounting on the contactor</li> <li>Quick and easy mounting without tools</li> <li>Electronic-compatible contacts down to 17V, 10 mA</li> <li>Mirror contact performance to the main relay poles</li> <li>1L = Late break N.C./early make N.O.</li> </ul>		0		1	 	700-CF	100-SA01	—
				1		0	 		100-SA10	—
0	2			 	100-SA02	—				
1	1			 	100-SA11	—				
2	0			 	100-SA20	—				
1L	1L			 	100-SAL11	—				



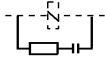

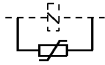
Control Modules — 700-CF / 700-CRF

	Description	Connection Diagrams	Reset Time	Repeat Accuracy	Delay	For Use With	Cat. No.
	<b>Pneumatic Timing Modules ON-Delay</b> <ul style="list-style-type: none"> <li>Pneumatic timing element contacts switch after the delay time.</li> <li>The contacts on the main control relay continue to operate without delay.</li> </ul>		25...90 ms for AC coils, 47...85 ms for DC coils	+/- 10%	0.3...30 s	700-CF <sup>(1)</sup>	100-FPTA30
					1.8...180 s		100-FPTA180
	<b>Pneumatic Timing Modules OFF-Delay</b> <ul style="list-style-type: none"> <li>Pneumatic timing element contacts switch after the delay time.</li> <li>The contacts on the main control relay continue to operate without delay.</li> </ul>				0.3...30 s		100-FPTB30
					1.8...180 s		100-FPTB180

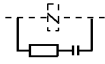

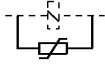
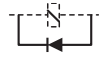
(1) 100-FPT... with max. one side mounted auxiliary contact block 100-S...

	Description	Connection Diagrams	For Use With	Cat. No.
	<b>Mechanical Latch</b> <ul style="list-style-type: none"> <li>Following contactor latching, the contactor coil is immediately deenergized (off) by the N.C. auxiliary contact (65-66).</li> <li>Electrical or manual release</li> <li>1 N.O. + 1 N.C. auxiliary contacts</li> </ul>		700-CF with AC coils or DC electronic coils	100-FL11⊗

Screw Terminals

	Surge Suppressors	RC Module			700-CF with AC coils	100-FSC48 100-FSC280 100-FSC480
		AC operating mechanism	24...48V AC, 50/60 Hz 110...280V AC, 50/60 Hz 380...480V AC, 50/60 Hz			
	<ul style="list-style-type: none"> <li>For limitation of coil switching transients</li> <li>Plug-in, coil mounted</li> <li>Suitable for 100-C and 700-CF</li> <li>RC and varistor versions</li> </ul>	Varistor Module			700-CF	100-FSV55 100-FSV136 100-FSV277 100-FSV575
		AC/DC operating mechanism	12...55V AC / 12...77V DC 56...136V AC / 78...180V DC 137...277V AC / 181...350V DC 278...575V AC			

Spring Clamp Terminals

	Surge Suppressors	RC Module			700-CRF	100-CRFSC48 100-CRFSC280 100-CRFSC480
		AC operating mechanism	24...48V AC, 50/60 Hz 110...280V AC, 50/60 Hz 380...480V AC, 50/60 Hz			
	<ul style="list-style-type: none"> <li>For limitation of coil switching transients</li> <li>Plug-in, coil mounted</li> <li>Suitable for 100-C and 700-CF</li> <li>RC, varistor and diode versions</li> </ul>	Varistor Module			700-CRF	100-CRFSV55 100-CRFSV136 100-CRFSV277 100-CRFSV575
		AC/DC operating mechanism	12...55V AC / 12...77V DC 56...136V AC / 78...180V DC 137...277V AC / 181...350V DC 278...575V AC			
		Diode Module			700-CRF	100-CRFSV575
		DC operating mechanism		12...250V DC		100-CRFSV575

⊗ Coil Voltage Code

The Cat. No. as listed is incomplete. Select a coil voltage code from the table below to complete the Cat. No. Example: 230V, 50/60 Hz; Cat. No. **100-FL11**⊗ becomes Cat. No. **100-FL11KF**.

AC Control for 100-FL11__	
Code	Description
KF	230V 50/60 Hz

## Specifications

### Standards Compliance — 700-CF

IEC/EN 60947-1, 60947-5-1

UL 60947-1, 60947-5-1

CAN / CSA-C22.2 No. 60947-1, No. 60947-5-1

IEC/EN 60077

IEC/EN 61373

EN 45545

EN 50121-3-2 for 24, 36-48, 72 and 110 V DC electronic coils

### General

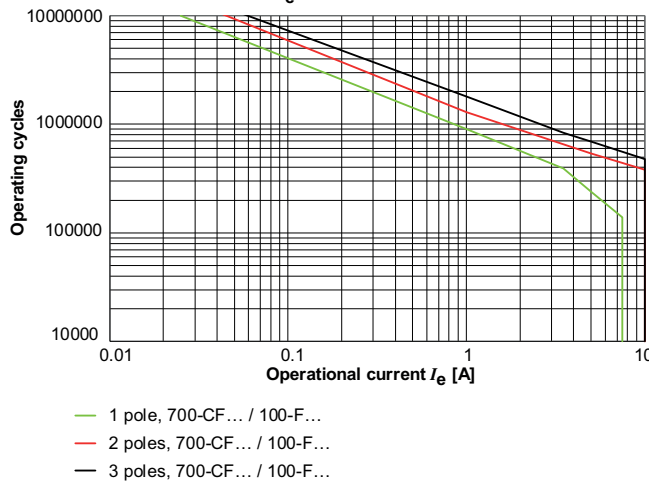
		Main Relay Cat. Nos. 700-CF, 700S-CF	Front Mounted Standard Auxiliary Contacts	Main Relay Cat. No. 700-CFB, 700S-CFB	Master Relay Cat. No. 700-CFM	Front Mounted Bifurcated Auxiliary Contacts	Side-mounted Auxiliary Contacts	
Contact Ratings — NEMA		A600, P600	A600, Q600	A600, Q600	2 x A600, P600	A600, Q600	A600, Q600	
Min. Contact Rating		17V, 10 mA	17V, 5 mA	8V, 5 mA	—	5V, 3 mA	17V, 10 mA	
Contact Ratings — IEC AC-15 (solenoids, contactors) at rated voltage IEC 60947-5-1	24V	10 A	6 A	3 A	15 A	3 A	6 A	
	48V	10 A	6 A	3 A	15 A	3 A	6 A	
	120V	10 A	6 A	3 A	15 A	3 A	6 A	
	240V	10 A	5 A	3 A	15 A	3 A	5 A	
	400V	6 A	3 A	2 A	7.5 A	2 A	3 A	
	480V/500V	2.5 A	1.6 A	1.2 A	5 A	1.2 A	1.6 A	
	600V	1 A	1 A	0.7 A	2 A	0.7 A	1 A	
DC-12 Switching DC Loads L/R < 1 ms, Resistive Loads IEC 60947-5-1	24V	15 A	10 A	6 A	20 A	6 A	6 A	
	48V	10 A	9 A	3.2 A	20 A	3.2 A	3.2 A	
	110V	6 A	3.5 A	1 A	8 A	1 A	1 A	
	220V	1 A	0.7 A	0.5 A	1.5 A	0.5 A	0.5 A	
	440V	0.4 A	0.2 A	0.2 A	0.4 A	0.2 A	0.2 A	
DC-13 IEC 60947-5-1, Solenoids and contactors L/R = 100 ms	24V	5 A	5 A	2.5 A	5 A	2.5 A	5 A	
	48V	3 A	3 A	1.5 A	3 A	1.5 A	2.5 A	
	110V	1.2 A	1.2 A	0.6 A	1.2 A	0.6 A	0.6 A	
	220V	0.6 A	0.6 A	0.3 A	0.6 A	0.3 A	0.3 A	
	440V	0.3 A	0.15 A	0.15 A	0.3 A	0.15 A	0.15 A	
AC-12 (Control of resistive loads) $I_{th}$ [A]	70 °C	690V	17 A	5 A	8.5 A	17 A	5 A	5 A

General

IEC 60947-5-1, DC-13 Switching Ratings Main poles in Series L/R = 100 ms				
		1 pole	2 poles	3 poles
<b>700-CF</b>				
24V DC	[A]	5	—	—
48V DC	[A]	3	—	—
110V DC	[A]	1.2	2.2	3.5
220V DC	[A]	0.6	—	—
440V DC	[A]	0.3	—	—
<b>100-FA</b>				
24V DC	[A]	5	—	—
48V DC	[A]	3	—	—
110V DC	[A]	1.2	1.8	2.5
220V DC	[A]	0.6	—	—
440V DC	[A]	0.15	—	—

DC Switching Ratings Main Poles in Series (Resistive Load at 60 °C)				
		1 pole	2 poles	3 poles
24/48V	[A]	25/20	25	25
125V	[A]	6	25	25
220V	[A]	1.5	8	25
440V	[A]	0.4	1	3

**Control of electromagnetic loads**  
DC: L/R = 15 ms  
 $U_e = 110...125V$  DC



IEC 60947-5-1, DC-13 Switching Ratings <sup>(1)</sup> Main poles in Series L/R = 100 ms				
		1 pole	2 poles	3 poles
<b>700-CF</b>				
110V DC	[A]	2	—	—
<b>100-FA</b>				
110V DC	[A]	2	—	—

(1) Special Switching Cycles:

Number	Cycle Time
50	10 seconds
10	As fast as possible
990	10 seconds
5000	10 seconds

IEC 60947-5-1 Annex C, DC-13 Electrical Life-Load Main poles in Series L/R = 100ms					
		1 pole	2 poles	3 poles	
<b>700-CF</b>					
110V DC	0.3 A [Ops]	1 100 000	—	—	
	0.6 A [Ops]	350 000	—	—	
	1.0 A [Ops]	—	400 000	—	
	1.1 A [Ops]	260 000	—	—	
	2.0 A [Ops]	150 000	—	—	
110V DC	3.5 A [Ops]	—	160 000	200 000	
	<b>100-FA</b>				
	1.0 A [Ops]	—	—	400 000	
	2.0 A [Ops]	150 000	—	—	
	2.5 A [Ops]	—	150 000	230 000	

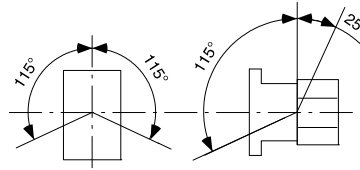
Control Circuit

			700-CF
<b>Operating Limits</b>			
AC 50/60 Hz	pick-up	[x Us]	0.7...1.25
	dropout	[x Us]	0.3...0.6
DC (electronic)	pick-up	[x Us]	0.7...1.25
	dropout	[x Us]	0.4
<b>Coil Consumption</b>			
AC 50 Hz, 60 Hz, 50/60 Hz	pick-up	[VA/W]	70/50
	hold-in	[VA/W]	8/2.6
DC (electronic) Coil code EJ	pick-up (avg/peak)	[W]	10/17
	hold-in	[W]	1.7
DC (electronic) Coil codes EW, EY	pick-up (avg/peak)	[W]	10/17
	hold-in	[W]	1.7/1.9
Coil code ED	pick-up (avg/peak)	[W]	12/19
	hold-in	[W]	2.0/2.1
<b>Operating Times</b>			
AC	closing delay	[ms]	15...30
	opening delay	[ms]	10...60
AC with RC module	opening delay	[ms]	10...60
DC (electronic)	closing delay	[ms]	25...50
	opening delay	[ms]	25...50
Max. Ripple			± 15 %
Min. OFF time		[ms]	50
<b>Latch Attachment Release, 100-FL</b>			
Coil Consumption	AC	[VA/W]	45/40
	DC	[W]	25
Contact Signal Duration		[min./max]	0.03...10 s

## Device Combinations in Accordance with IEC 60947-1 / -4-1 and IEC 60077

Table valid for: AC/DC = 0.7...1.25 x  $U_s$ ,  $T_{amb.} = -40\text{ °C} \dots +70\text{ °C}$ , mounting position with accessories

### Mounting Position (for AC and DC contactor relays)



Auxiliary Contact Blocks for Front Mounting		Contactor Relays 700-CF			
		Control voltage code as per selection table	700-CF220⊗	700-CF310⊗	700-CF400⊗
	<b>Circuit Diagram</b>	<b>24V DC, 36-48V DC, 72V DC, 110V DC, 230V 50/60 Hz</b>			
No. of Auxiliary Contacts Without Auxiliary Contact Block			22E + 00 = 22E	31E + 00 = 31E	40E + 00 = 40E
100-FA02, 100-FAB02			22E + 02E = 24Y	31E + 02E = 33Y	40E + 02E = 42Y
100-FA11, 100-FAB11			22E + 11E = 33Y	31E + 11E = 42Y	40E + 11E = 51Y
100-FA20, 100-FAB20			22E + 20E = 42Y	31E + 20E = 51Y	40E + 20E = 60Y
100-FAL11			22E + 11E = 33Y	31E + 11E = 42Y	40E + 11E = 51Y
100-FA04, 100-FAB04			—	—	40E + 04E = 44Y
100-FA13, 100-FAB13			—	31E + 13E = 44Y	40E + 13E = 53Y
100-FA22, 100-FAB22			22E + 22E = 44Y	31E + 22E = 53Y	40E + 22E = 62Y
100-FA31, 100-FAB31			22E + 31E = 53Y	31E + 31E = 62Y	40E + 31E = 71Y
100-FA40, 100-FAB40			22E + 40E = 62Y	31E + 40E = 71Y	40E + 40E = 80Y
100-FAL22			22E + 22E = 44Y	31E + 22E = 53Y	40E + 22E = 62Y

Table applicable for screwless products (code **R**), e.g. **700-CFR220⊗**

Auxiliary Contact Blocks for Side Mounting		Contactor Relays 700-CF			
		Control voltage code as per selection table	700-CF220⊗	700-CF310⊗	700-CF400⊗
	<b>Circuit Diagram</b>	<b>24V DC, 36-48V DC, 72V DC, 110V DC, 230V 50/60 Hz</b>			
No. of Auxiliary Contacts Without Auxiliary Contact Block			22E + 00 = 22E	31E + 00 = 31E	40E + 00 = 40E
100-SA01			22E + 01E = 23Y	31E + 01E = 32Y	40E + 01E = 41Y
100-SA10			22E + 10E = 32Y	31E + 10E = 41Y	40E + 10E = 50Y
100-SA02			22E + 02E = 24Y	31E + 02E = 33Y	40E + 02E = 42Y
100-SA11			22E + 11E = 33Y	31E + 11E = 42Y	40E + 11E = 51Y
100-SA20			22E + 20E = 42Y	31E + 20E = 51Y	40E + 20E = 60Y
100-SAL11			22E + 11E = 33Y	31E + 11E = 42Y	40E + 11E = 51Y

Table applicable for screwless products (code **R**), e.g. **700-CFR220⊗**

# Miniature Contactor Relays — 700-K

## Product Selection

- IP2X Finger Protection
- Bifurcated contacts for low-level signals
- Optional integrated coil protection diode



Cat. No. 700-K



Cat. No. 700-KR

### 4-Pole AC or DC Coil Voltage

AC-12 Ambient temperature 70°C	AC-15 (B600)							Connection Diagrams	Contacts		Pkg. Qty. <sup>(1)</sup>	Cat. No.
	$I_e$ [A]											
$I_{th}$ [A]	24/48V	120V	240V	400V	500V	600V	690V		N.O.	N.C.		
Screw Terminals												
5	3	3	2	1.2	1	0.6	0.6		4	0	1	700-K40E-⊗
									3	1	1	700-K31Z-⊗
									2	2	1	700-K22Z-⊗
Spring Clamp Terminals												
5	3	3	2	1.2	1	0.6	0.6		4	0	1	700-KR40E-⊗
									3	1	1	700-KR31Z-⊗
									2	2	1	700-KR22Z-⊗

(1) May be ordered in package quantities of 20. Add letter **M** to the end of the cat. no. Example: **700-K40E-ZJM**.





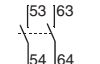
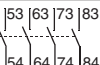

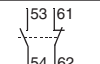
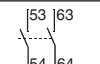
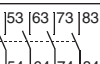
### ⊗ Coil Voltage Code

The Cat. No. as listed is incomplete. Select a coil voltage code from the table below to complete the Cat. No.  
Example: 24V DC; Cat. No. **700-K40E-⊗** becomes Cat. No. **700-K40E-ZJ**.



DC Control for 700-K	
Code	Description
ZJ	24V DC
DJ	24V DC with integrated diode
ZG	72V DC (Screwtype only)
ZD	110V DC

## Accessories

### Auxiliary Contacts Blocks — 700-K / 700-KR

	Description	Connection Diagrams			For Use With	Pkg. Qty. <sup>(1)</sup>	Cat. No.
			N.O.	N.C.			
<b>Screw Terminals</b>							
	<b>Front-mounted auxiliary contacts</b> <ul style="list-style-type: none"> <li>Auxiliary Contact Blocks</li> <li>2- and 4-pole versions</li> <li>Choice of contact configurations</li> <li>Snap on, no tools required</li> <li>Electronic-compatible bifurcated contacts for signals down to 15V/2 mA</li> </ul>		1	1	100/104-K, 700-K	1	<b>100-KFA11E</b>
			2	0	100/104-K, 700-K	1	<b>100-KFA20E</b>
			4	0	100/104-K, 700-K	1	<b>100-KFA40E</b>
<b>Spring Clamp Terminals</b>							
	<b>Front-mounted auxiliary contacts</b> <ul style="list-style-type: none"> <li>Auxiliary Contact Blocks</li> <li>2- and 4-pole versions</li> <li>Choice of contact configurations</li> <li>Snap on, no tools required</li> <li>Electronic-compatible bifurcated contacts for signals down to 15V/2 mA</li> </ul>		1	1	100/104-KR, 700-KR	1	<b>100-KRFA11E</b>
			2	0	100/104-KR, 700-KR	1	<b>100-KRFA20E</b>
			4	0	100/104-KR, 700-KR	1	<b>100-KRFA40E</b>

### Control Modules

	Description	Connection Diagrams	For Use With	Pkg. Qty. <sup>(1)</sup>	Cat. No.
1	<b>100-KFSC280</b>				
1	<b>100-KFSC480</b>				
MOV Suppressor		100/104-K/-KR, 700-K/-KR	1	<b>100-KFSV55</b>	
			1	<b>100-KFSV136</b>	
			1	<b>100-KFSV277</b>	
Diode Suppressor		100/104-K/-KR, 700-K/-KR	1	<b>100-KFSD250</b>	

(1) May be ordered in package quantities of 10. Add letter **M** to the end of the cat. no. Example: **100-KFA11EM**.

# Specifications

## Standards Compliance — 700-K / 700-KR

IEC/EN 60947-1, 60947-5-1  
 UL 60947-1, 60947-5-1  
 CAN / CSA-C22.2 No. 60947-1, No. 60947-5-1  
 IEC/EN 60077, 61373  
 EN 45545

### General

700-K / 700-KR			
<b>AC-12 Rated Thermal Current</b> Ambient temperature 40°C			
$I_{th}$	24...240V	[A]	10
	230...500V	[A]	10
	230...690V	[A]	10
<b>Ambient temperature 70°C</b>			
$I_{th}$	24...240V	[A]	5
	230...500V	[A]	5
	230...690V	[A]	5
<b>AC-15/B600</b> Switching of Solenoids and Contactors			
$I_e$	24V	[A]	3
	48V	[A]	3
	120V	[A]	3
	230V	[A]	2
	240V	[A]	2
	400V	[A]	1.2
	480V	[A]	1
	500V	[A]	1
	600V	[A]	0.6
	690V	[A]	0.6

700-K / 700-KR			
DC-13/Q600			
1 pole	24V	[A]	2.3
	48V	[A]	1
	110V	[A]	0.55
	125V	[A]	0.55
	220V	[A]	0.27
	250V	[A]	0.27
	400V	[A]	0.15
	440V	[A]	0.15
	600V	[A]	0.1

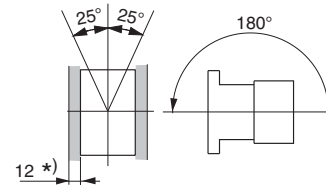
### Coil Data

700-K / 700-KR			
Operating Limits			
DC	pick-up	[x Us]	0.7...1.25
	dropout	[x Us]	0.1...0.6
Coil Consumption			
DC	pick-up	[W]	cold 3.0, warm 2.6
	hold-in	[W]	cold 3.0, warm 2.6
Operating Times			
DC	closing delay	[ms]	18...40
	opening delay	[ms]	6...12
DC (with integ. diode)	opening delay	[ms]	8...12
DC (with external diode)	opening delay	[ms]	35...50

## Device Combinations in Accordance with IEC 60947-1 / -4-1 and IEC 60077

Table valid for: AC/DC = 0.7...1.25 x  $U_s$ ,  $T_{amb.} = -40\text{ °C}...+70\text{ °C}$ ,  
 mounting position with accessories

### Mounting Position



\*) -Minimum distance to grounded parts or walls

Contactor Relays 700-K					
Auxiliary Contact Blocks for Front Mounting	Circuit Diagram	Control voltage code as per selection table	700-K22Z-⊗	700-K31Z-⊗	700-K40E-⊗
		24V DC, 72V DC, 110V DC			
No. of Auxiliary Contacts Without Auxiliary Contact Block			22Z + 00 = 22Z	31Z + 00 = 31Z	40E + 00 = 40E
100-KFA11E			—	31Z + 11E = 42Y	40E + 11E = 51Y
100-KFA20E			—	31Z + 20E = 51Y	40E + 20E = 60Y
100-KFA40E			—	31Z + 40E = 71Y	40E + 40E = 80Y

Table applicable for screwless products (code R), e.g. 700-KR31Z-⊗



# Motor Protection Circuit Breakers — 140M

## Product Selection

- Short Circuit Protection — Standard Magnetic Trip ( $13...14 \times I_e$ )
- Motor Overload Protection — Trip Class 10



Cat. No. 140M-C



Cat. No. 140M-RC



Cat. No. 140M-D



Cat. No. 140M-F

Rated Operational Current ( $I_e$ ) [A]	Motor Current Adjustment Range [A]	Magnetic Trip Current [A]	Max. Short Circuit Current [kA]		Max. 3-phase Hp Ratings <sup>(1)</sup>				Max. kW, 3-Phase — AC-3 <sup>(1)</sup>				Cat. No.
			400V ( $I_{cu}$ )	480V (group motor)	200V	230V	460V	575V	230V	400/415V	500V	690V	
<b>C-Frame with Screw Terminals</b>													
0.16	0.10...0.16	2.1	100	65	—	—	—	—	—	0.02	0.06	0.06	140M-C2E-A16
0.25	0.16...0.25	3.3	100	65	—	—	—	—	—	0.04	0.09	0.09	140M-C2E-A25
0.4	0.25...0.40	5.2	100	65	—	—	—	0.25	0.06	0.09	0.12	0.18	140M-C2E-A40
0.63	0.40...0.63	8.2	100	65	—	—	0.25	0.33	0.09	0.18	0.18	0.25	140M-C2E-A63
1	0.63...1.0	13	100	65	—	—	0.5	0.75	0.18	0.25	0.37	0.55	140M-C2E-B10
1.6	1.0...1.6	21	100	65	0.25	0.33	1	1	0.25	0.55	0.75	1.1	140M-C2E-B16
2.5	1.6...2.5	33	100	65	0.5	0.75	1.5	2	0.37	0.75	1.1	1.8	140M-C2E-B25
4	2.5...4.0	52	100	65	1	1	3	3	0.75	1.5	2.2	3	140M-C2E-B40
6.3	4.0...6.3	82	100	65	1.5	2	5	5	1.5	2.2	3	4	140M-C2E-B63
10	6.3...10	130	100	65	3	3	7.5	10	2.2	4	6.3	7.5	140M-C2E-C10
16	10...16	208	65	30	5	5	10	15	4	7.5	10	13	140M-C2E-C16
20	14.5...20	260	50	30	5	7.5	15	20	5.5	10	11	17	140M-C2E-C20
25	18...25	325	15	25	7.5	7.5	20	20	5.5	11	15	22	140M-C2E-C25
29	24...29	406	15	25	7.5	10	20	25	7.5	13	18.5	25	140M-C2E-C29
32	27...32	448	15	25	7.5	10	25	30	7.5	15	20	25	140M-C2E-C32
<b>D-Frame</b>													
2.5	1.6...2.5	33	100	65	0.5	0.75	1.5	2	0.37	0.75	1.1	1.8	140M-D8E-B25
4	2.5...4.0	52	100	65	1	1	3	3	0.75	1.5	2.2	3	140M-D8E-B40
6.3	4.0...6.3	82	100	65	1.5	2	5	5	1.5	2.2	3	4	140M-D8E-B63
10	6.3...10	130	100	65	3	3	7.5	10	2.2	4	6.3	7.5	140M-D8E-C10
16	10...16	208	100	65	5	5	10	15	4	7.5	10	13	140M-D8E-C16
20	14.5...20	260	100	65	5	7.5	15	20	5.5	10	11	17	140M-D8E-C20
25	18...25	325	65	30	7.5	7.5	20	20	5.5	11	15	22	140M-D8E-C25
29	24...29	406	50	30	7.5	10	20	25	7.5	13	18.5	25	140M-D8E-C29
32	27...32	448	50	30	7.5	10	25	30	7.5	15	20	25	140M-D8E-C32
<b>F-Frame</b>													
10	6.3...10	130	100	65	3	3	7.5	10	2.2	4	6.3	7.5	140M-F8E-C10
16	10...16	208	100	65	5	5	10	15	4	7.5	10	13	140M-F8E-C16
20	14.5...20	260	100	65	5	7.5	15	20	5.5	10	11	17	140M-F8E-C20
25	18...25	325	100	65	7.5	10	20	25	6.3	11	15	22	140M-F8E-C25
32	23...32	416	65	65	7.5	10	25	30	7.5	15	20	30	140M-F8E-C32
45	32...45	585	65	65	10	15	30	40	13	22	30	40	140M-F8E-C45
<b>C-Frame with Spring Clamp Terminals</b>													
0.16	0.10...0.16	2.1	100	65	—	—	—	—	—	0.02	0.06	0.06	140M-RC2E-A16
0.25	0.16...0.25	3.3	100	65	—	—	—	—	—	0.04	0.09	0.09	140M-RC2E-A25
0.4	0.25...0.40	5.2	100	65	—	—	—	0.25	0.06	0.09	0.12	0.18	140M-RC2E-A40
0.63	0.40...0.63	8.2	100	65	—	—	0.25	0.33	0.09	0.18	0.18	0.25	140M-RC2E-A63
1	0.63...1.0	13	100	65	—	—	0.5	0.75	0.18	0.25	0.37	0.55	140M-RC2E-B10
1.6	1.0...1.6	21	100	65	0.25	0.33	1	1	0.25	0.55	0.75	1.1	140M-RC2E-B16
2.5	1.6...2.5	33	100	65	0.5	0.75	1.5	2	0.37	0.75	1.1	1.8	140M-RC2E-B25
4	2.5...4.0	52	100	65	1	1	3	3	0.75	1.5	2.2	3.0	140M-RC2E-B40
6.3	4.0...6.3	82	100	65	1.5	2	5	5	1.5	2.2	3.0	4.0	140M-RC2E-B63
10	6.3...10	130	100	65	3	3	7.5	10	2.2	4.0	6.3	7.5	140M-RC2E-C10
16	10...16	208	65	30	5	5	10	15	4.0	7.5	10	13	140M-RC2E-C16

(1) Horsepower/kW ratings shown in the table above are for reference. The final selection of the MPCB depends on the actual motor full load current.

## High Inrush Motor Protection Circuit Breakers — 140M

- Short Circuit Protection — High Magnetic Trip (Fixed at  $16 \dots 21 \times I_e$ )
- Motor Overload Protection — Trip Class 10



Cat. No. 140M-C



Cat. No. 140M-D




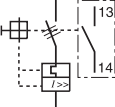
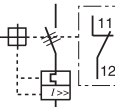

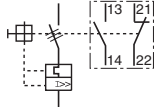
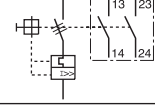
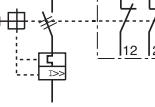

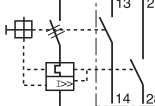
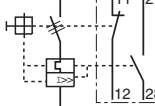
Cat. No. 140M-F

Rated Operational Current ( $I_e$ ) [A]	Motor Current Adjustment Range [A]	Magnetic Trip Current [A]	Max. Short Circuit Current [kA]		Max. 3-phase Hp Ratings <sup>(1)</sup>				Max. kW, 3-Phase — AC-3 <sup>(1)</sup>				Cat. No.
			400V ( $I_{cu}$ )	480V (group motor)	200V	230V	460V	575V	230V	400/415V	500V	690V	
<b>C-Frame</b>													
0.16	0.10...0.16	3.3	100	65	—	—	—	—	—	0.02	0.06	0.06	140M-C2T-A16
0.25	0.16...0.25	5.2	100	65	—	—	—	—	—	0.04	0.09	0.09	140M-C2T-A25
0.4	0.25...0.40	8.2	100	65	—	—	—	0.25	0.06	0.09	0.12	0.18	140M-C2T-A40
0.63	0.40...0.63	13	100	65	—	—	0.25	0.33	0.09	0.18	0.18	0.25	140M-C2T-A63
1	0.63...1.0	21	100	65	—	—	0.5	0.75	0.18	0.25	0.37	0.55	140M-C2T-B10
1.6	1.0...1.6	33	100	65	0.25	0.33	1	1	0.25	0.55	0.75	1.1	140M-C2T-B16
2.5	1.6...2.5	52	100	65	0.5	0.75	1.5	2	0.37	0.75	1.1	1.8	140M-C2T-B25
4	2.5...4	82	100	65	1	1	3	3	0.75	1.5	2.2	3	140M-C2T-B40
6.3	4...6.3	130	100	65	1.5	2	5	5	1.5	2.2	3	4	140M-C2T-B63
10	6.3...10	208	100	30	3	3	7.5	10	2.2	4	6.3	7.5	140M-C2T-C10
16	10...16	260	50	30	5	5	10	15	4	7.5	10	13	140M-C2T-C16
<b>D-Frame</b>													
16	10...16	260	100	65	5	5	10	15	4	7.5	10	13	140M-D8T-C16
20	14.5...20	325	65	30	5	7.5	15	20	5.5	10	11	17	140M-D8T-C20
<b>F-Frame</b>													
25	18...25	416	65	65	7.5	10	20	25	6.3	11	15	22	140M-F8T-C25
32	23...32	585	65	65	7.5	10	25	30	7.5	15	20	30	140M-F8T-C32

(1) Horsepower/kW ratings shown in the table above are for reference. **The final selection of the MPCB depends on the actual motor full load current.**

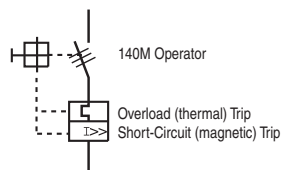
## Accessories

### With Screw Terminals — 140M





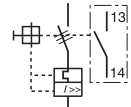
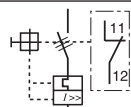
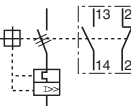
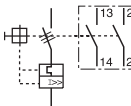

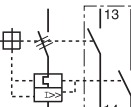
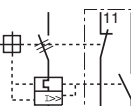
		Description			Term. No.	Description	Connection Diagram (2)	For Use With	Cat. No.
		Operator Position (1)							
		OFF	ON	Tripped					
		0	X	0	13-14	N.O. Aux		140M-C, D, F; 140U-D (UL489 only in combination with 140M-CAFC)	140M-C-AFA10
		X	0	X	11-12	N.C. Aux			140M-C-AFA01
	<b>Front-Mounted Auxiliary Contact</b> • 1-pole or 2-pole • No additional space required • Only 1 per device	0	X	0	13-14	N.O. Aux		140M-C, D, F; 140U-D (UL489 only in combination with 140M-CAFC)	140M-C-AFA11
		X	0	X	21-22	N.C. Aux			140M-C-AFA02
		0	X	0	13-14	N.O. Aux			140M-C-AFA20
		0	X	0	23-24	N.O. Aux			140M-C-AFA02
		X	0	X	11-12	N.C. Aux			140M-C-AFA02
		X	0	X	21-22	N.C. Aux			140M-C-AFA02
	<b>Front-Mounted Trip Contact</b> • 2-pole • Indicates tripping of device • No additional space required	0	X	0	13-14	N.O. Aux		014M-C, D, F; 140U-D (UL489 only in combination with 140M-CAFC)	140M-C-AFAR10A10
		0	0	X	27-28	N.O. Trip (Short-Circuit & Overload)			140M-C-AFAR10A01
		X	0	X	11-12	N.C. Aux			140M-C-AFAR10A01
		0	0	X	27-28	N.O. Trip (Short-Circuit & Overload)			140M-C-AFAR10A01

(1) X = Contact Closed; 0 = Contact Open

(2)

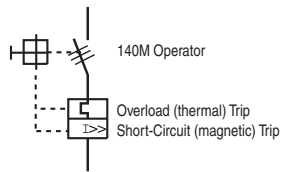


With Spring Clamp Terminals — 140M

		Description					Connection Diagram <sup>(2)</sup>	For Use With	Cat. No.
		Operator Position <sup>(1)</sup>			Term. No.	Description			
		OFF	ON	Tripped					
  									
 <p><b>Front-Mounted Auxiliary Contact</b></p> <ul style="list-style-type: none"> <li>• 1-pole or 2-pole</li> <li>• No additional space required</li> <li>• Only 1 per device</li> </ul>	0	X	0	13-14	N.O. Aux		140M-C, D, F; 140M-RC	<b>140M-RC-AFA10</b>	
	X	0	X	11-12	N.C. Aux			<b>140M-RC-AFA01</b>	
	0	X	0	13-14	N.O. Aux		140M-C, D, F; 140M-RC	<b>140M-RC-AFA11</b>	
	X	0	X	21-22	N.C. Aux				
	0	X	0	13-14	N.O. Aux		140M-RC	<b>140M-RC-AFA20</b>	
	0	X	0	23-24	N.O. Aux				
 <p><b>Front-Mounted Trip Contact</b></p> <ul style="list-style-type: none"> <li>• 2-pole</li> <li>• Indicates tripping of device</li> <li>• No additional space required</li> </ul>	0	X	0	13-14	N.O. Aux		140M-C, D, F; 140M-RC	<b>140M-RC-AFAR10A01</b>	
	0	0	X	27-28	N.O. Trip (Short-Circuit & Overload)				
	X	0	X	11-12	N.C. Aux		140M-RC	<b>140M-RC-AFAR10A10</b>	
	0	0	X	27-28	N.O. Trip (Short-Circuit & Overload)				

(1) X = Contact Closed; 0 = Contact Open

(2)



## Connecting Components — 140M

	Description	For Use With	Cat. No.
	<b>ECO Connecting Module — 12 A</b> <ul style="list-style-type: none"> <li>For DOL and reversing starters</li> <li>Eco-starters mount on single DIN Rail (140M on DIN Rail)</li> <li>Electrical and mechanical interconnection of 140M and 100-K contactors</li> </ul>	140M-C to 100-K	<b>140M-C-PEK12</b>
	<b>ECO Connecting Modules — 25 A</b> <ul style="list-style-type: none"> <li>Eco-starters mount on single DIN Rail (140M on DIN Rail)</li> <li>Electrical and mechanical interconnection of 140M MPCB and 100-C (with AC coils or 24V DC electronic coils) contactors</li> </ul>	140M-C to 100-C09...C23	<b>140M-C-PEC23</b>
		140M-D to 100-C09...C23	<b>140M-D-PEC23</b>
	<b>ECO Connecting Modules — 25 A</b> <ul style="list-style-type: none"> <li>Eco-starters mount on single DIN Rail (100-C on DIN Rail)</li> <li>Electrical and mechanical interconnection of 140M MPCB and 100-C (with conventional DC coils)</li> </ul>	140M-C, 140M-D to 100-C09...C23	<b>140M-C-PEC23A</b>
	<b>Connecting Modules — 25 and 45 A</b> <ul style="list-style-type: none"> <li>Contactor and MPCB MUST BE mounted separately on (2) DIN Rails</li> <li>Electrical interconnection of 140M and 100-C (with AC coils)</li> </ul>	140M-C to 100-C09...C23	<b>140M-C-PNC23</b>
		140M-D to 100-C09...C23	<b>140M-D-PNC23</b>
140M-D to 100-C30...C37		<b>140M-D-PNC37</b>	
140M-F to 100-C30...C37		<b>140M-F-PNC37</b>	
140M-F to 100-C43		<b>140M-F-PNC43</b>	
<b>Coil Modules — 25 A and 45 A</b> <ul style="list-style-type: none"> <li>For use with Bulletin 103T/107T 3-component starters</li> </ul>	140M-C, -D to 100-C09...C23	<b>140M-C-PSC23</b>	
	140M-D, -F to 100-C30...C43	<b>140M-F-PSC43</b>	
	<b>Spacing Adapter</b> <ul style="list-style-type: none"> <li>Required for self-protected combination motor controller (Type E) applications of Bulletin 140M-C, -D, and -F MPCBs. Not for use with bus bars.</li> </ul>	140M-C, -D	<b>140M-C-TE1</b>
		140M-F	<b>140M-F-TE</b>
	<b>Feeder Block for Compact Busbar</b> <ul style="list-style-type: none"> <li>Supply of compact busbars</li> <li>Increases terminal capacity</li> </ul>	140M-C	<b>140M-C-WBE</b>
		140M-F	<b>140M-F-WBE</b>
	<b>Feeder Terminal for Compact Busbar</b> <ul style="list-style-type: none"> <li>For supply of compact busbars</li> <li>Top feed — overlaps compact busbar</li> <li>Meets IEC spacing requirements</li> </ul>	140M-C, -D	<b>140M-C-WTN</b>
	<b>Feeder Terminal for Compact Busbar</b> <ul style="list-style-type: none"> <li>For supply of compact busbars</li> <li>Top feed — overlaps compact busbar</li> <li>Meets UL Type E spacing requirements</li> </ul>	140M-C, -D	<b>140M-C-WTEN</b>
		140M-F	<b>140M-F-WTE</b>
	<b>Three-Phase Compact Busbar for 32 A Motor Protection</b> <ul style="list-style-type: none"> <li>Circuit Breakers — 64 A Max. Continuous Current</li> <li>45 mm spacing</li> <li>For use with front-mounted auxiliary contact</li> </ul>	2 connections	<b>140M-C-W452N</b>
		3 connections	<b>140M-C-W453N</b>
		4 connections	<b>140M-C-W454N</b>
		5 connections	<b>140M-C-W455N</b>
	<b>Three-Phase Compact Busbar for 32 A Motor Protection Circuit Breakers — 64 A Max. Continuous Current</b> <ul style="list-style-type: none"> <li>54 mm spacing</li> <li>For use with side-mounted auxiliary contact</li> </ul>	2 connections	<b>140M-C-W542N</b>
		3 connections	<b>140M-C-W543N</b>
		4 connections	<b>140M-C-W544N</b>
		5 connections	<b>140M-C-W545N</b>
	<b>Three-Phase Compact Busbar for 45 A Motor Protection</b> <ul style="list-style-type: none"> <li>54 mm spacing</li> <li>For use with front-mounted auxiliary contact</li> </ul>	2 connections	<b>140M-F-W542</b>
		3 connections	<b>140M-F-W543</b>
		4 connections	<b>140M-F-W544</b>
	<b>Three-Phase Compact Busbar for 45 A Motor Protection Circuit Breakers — 115 A Max. Continuous Current</b> <ul style="list-style-type: none"> <li>63 mm spacing</li> <li>For use with side-mounted auxiliary contact</li> </ul>	2 connections	<b>140M-F-W632</b>
		3 connections	<b>140M-F-W633</b>
		4 connections	<b>140M-F-W634</b>
	<b>Terminal Cover</b> <ul style="list-style-type: none"> <li>For covering of unused compact bus bar terminals</li> <li>IP2X finger protection</li> <li>Must be ordered in multiples of 10</li> </ul>	140M-C, 140M-D	<b>140M-C-WSN</b>
		140M-F	<b>140M-F-WS</b>
	<b>Top Hat Rail Adapter — 10 mm</b> <ul style="list-style-type: none"> <li>Adjusts the depth of the 140M-C to the 140M-D</li> <li>Allows the use of compact busbars across both frame sizes</li> <li>Must be ordered in multiples of 10</li> </ul>	140M-C	<b>140-KBH2</b>

## Specifications

### Standards Compliance — 140M

IEC/EN 60947-1, 60947-2, 60947-4-1, 60947-5-1

UL 60947-1, 60947-4-1, 60947-5-1

CAN / CSA-C22.2 No. 60947-1, No. 60947-4-1, No. 60947-5-1

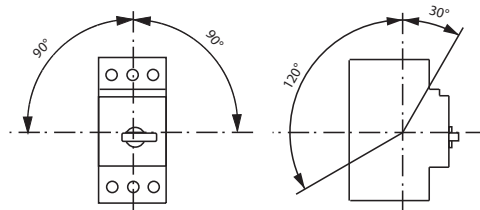
IEC/EN 60204-1

IEC/EN 60077

IEC/EN 61373

EN 45545

### Mounting Position



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

# Circuit Breakers — 140U (30 A, D-Frame)

## Product Selection

- D-Frame 30 A, Fixed Thermal / Fixed Magnetic
- 2-Pole Thermal-Magnetic
- 3-Pole Thermal-Magnetic








Cat. No. 140U-D6D3

Rated Current $I_n$ [A]	Thermal Trip (Fixed) $I_t = I_n$ [A]	Magnetic Trip $I_m =$ [A]	Breaking Capacity (50 Hz) [kA]								Interrupting Rating (60 Hz) [kA]			Cat. No. <sup>(1)</sup>
			230...240V		400...415V		525V		690V		240V AC	480Y/277V AC	600Y/347V AC	
			$I_{cu}$	$I_{cs}$	$I_{cu}$	$I_{cs}$	$I_{cu}$	$I_{cs}$	$I_{cu}$	$I_{cs}$				
<b>2-Pole</b>														
0.5	0.5	$15...20 \times I_n$	100	100	100	65	65	65	50	50	100	100	50	140U-D6D2-A50
1	1	$15...20 \times I_n$	100	100	100	65	65	65	50	50	100	100	50	140U-D6D2-B10
2	2	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D2-B20
3	3	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D2-B30
4	4	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D2-B40
5	5	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D2-B50
6	6	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D2-B60
8	8	$15...20 \times I_n$	100	100	100	65	65	65	10	6	100	100	50	140U-D6D2-B80
10	10	$15...20 \times I_n$	100	100	100	65	65	65	10	6	100	100	50	140U-D6D2-C10
	12	$15...20 \times I_n$	100	100	65	50	65	50	10	6	65	65	25	140U-D6D2-B80
15	15	$15...20 \times I_n$	100	100	65	50	65	50	10	6	65	65	25	140U-D6D2-C10
20	20	$15...20 \times I_n$	100	100	65	50	65	50	10	6	65	65	25	140U-D6D2-C20
25	25	$15...20 \times I_n$	100	100	65	50	65	25	10	6	65	65	25	140U-D6D2-C25
30	30	$15...20 \times I_n$	100	100	65	50	65	25	10	6	65	65	25	140U-D6D2-C30
<b>3-Pole</b>														
0.5	0.5	$15...20 \times I_n$	100	100	100	65	65	65	50	50	100	100	50	140U-D6D3-A50
1	1	$15...20 \times I_n$	100	100	100	65	65	65	50	50	100	100	50	140U-D6D3-B10
2	2	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D3-B20
3	3	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D3-B30
4	4	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D3-B40
5	5	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D3-B50
6	6	$15...20 \times I_n$	100	100	100	65	65	65	18	10	100	100	50	140U-D6D3-B60
8	8	$15...20 \times I_n$	100	100	100	65	65	65	10	6	100	100	50	140U-D6D3-B80
10	10	$15...20 \times I_n$	100	100	100	65	65	65	10	6	100	100	50	140U-D6D3-C10
	12	$15...20 \times I_n$	100	100	65	50	65	50	10	6	65	65	25	140U-D6D3-B80
15	15	$15...20 \times I_n$	100	100	65	50	65	50	10	6	65	65	25	140U-D6D3-C10
20	20	$15...20 \times I_n$	100	100	65	50	65	50	10	6	65	65	25	140U-D6D3-C20
25	25	$15...20 \times I_n$	100	100	65	50	65	25	10	6	65	65	25	140U-D6D3-C25
30	30	$15...20 \times I_n$	100	100	65	50	65	25	10	6	65	65	25	140U-D6D3-C30

(1) Current limiting

## Accessories

### Connecting Components — 140U

	Description		For Use With	Cat. No.
	<b>Load terminal cover</b> <ul style="list-style-type: none"> <li>For UL489 compliance of front mount auxiliary contacts when installed on 140U-D</li> <li>Must be ordered in multiples of 10</li> </ul>	10 pcs/pkg	140M-C-AFA	<b>140M-C-AFC</b>
	<b>Three-Phase Compact Busbar 45 mm spacing</b> <ul style="list-style-type: none"> <li>Compliant with UL489 (UL508 Cat. NMTR) and IEC</li> <li>64 A max. continuous current</li> <li>45 mm spacing</li> </ul>	2 connections	140U-D__3	<b>140U-D-W452</b>
		3 connections	140U-D__3	<b>140U-D-W453</b>
		4 connections	140U-D__3	<b>140U-D-W454</b>
		5 connections	140U-D__3	<b>140U-D-W455</b>
	<b>Feeder Terminal for compact busbar</b> <ul style="list-style-type: none"> <li>Compliant with UL489 (UL508 Cat. NMTR) and IEC</li> <li>64 A max. continuous current</li> </ul>		140U-D-W	<b>140U-D-WTE</b>
	<b>Eco Connection Module — 25 A</b> <ul style="list-style-type: none"> <li>Eco-loadfeeders mount on single DIN Rail (140U on DIN Rail)</li> <li>Electrical and mechanical interconnection of 140U and 100-C (with AC coils or 12V and 24V DC electronic coils) contactors</li> </ul>		140U-D__3 to 100-C09...C23	<b>140U-D-PEC23</b>
	<b>Flexible Wire Module — 32 A</b> <ul style="list-style-type: none"> <li>Contactors and 140U are separately mounted</li> </ul>		140U-D__3 to 100-C09...C43	<b>140U-D-PF</b>

**Note:** See page 29 for additional accessories suitable for Bul. 140U-D circuit breakers.

## Specifications

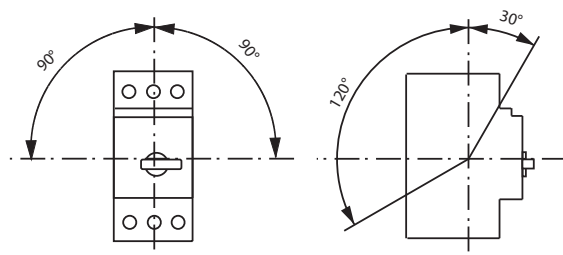
### Standards Compliance — 140U-D

IEC/EN 60947-1, 60947-2, 60947-5-1  
 UL 489  
 CSA C22.2, No. 5  
 EN 45545

### Ratings

HACR

### Mounting Position





# Bimetallic Overload Relays — 193-T1

## Product Selection

- Overload protection trip class 10 / 10A
- Phase loss protection
- Ambient temperature compensation
- Auxiliary contacts (1 N.O. and 1 N.C.)
- Manual/automatic reset mode selectable
- Test function for auxiliary contacts
- Stop button
- Trip indicator
- Optional remote reset solenoid and external reset accessories



Cat. No. 193-T1

For Use With <sup>(1)</sup>	Setting Range [A] <sup>(2)(3)</sup>	Max. Back-up fuse [A]			Cat. No.
		gL/gG		UL Class K5	
		50 kA, 690V AC		5 kA, 600V AC	
		IEC/EN 60947-4-1 Coordination		UL 508	
		Type 1	Type 2		
100-C09...100-C23	0.1...0.16	50	—	1	193-T1AA16
	0.16...0.25	50	—	1	193-T1AA25
	0.25...0.40	50	2	1	193-T1AA40
	0.35...0.50	50	2	2	193-T1AA50
	0.45...0.63	50	2	2	193-T1AA63
	0.55...0.80	50	4	3	193-T1AA80
	0.75...1.0	50	4	3	193-T1AB10
	0.90...1.3	50	6	4	193-T1AB13
	1.1...1.6	50	6	5	193-T1AB16
	1.4...2.0	50	10	8	193-T1AB20
	1.8...2.5	50	16	10	193-T1AB25
	2.3...3.2	50	16	12	193-T1AB32
	2.9...4.0	50	16	15	193-T1AB40
	3.5...4.8	50	16	15	193-T1AB48
4.5...6.3	50	20	20	193-T1AB63	
5.5...7.5	50	25	25	193-T1AB75	
7.2...10	50	25	35	193-T1AC10	
9.0...12.5	50	35	50	193-T1AC12	
100-C12...100-C23	11.3...16	50	35	60	193-T1AC16
100-C16...100-C23	15...20	80	40	80	193-T1AC20
	17.5...21.5	80	50	80	193-T1AC21
100-C23	21...25	80	50	100	193-T1AC25
100-C30...100-C37	15...20	80	40	80	193-T1BC20
	17.5...21.5	80	50	80	193-T1BC21
	21...25	80	50	100	193-T1BC25
	24.5...30	100	63	100	193-T1BC30
	29...36	125	63	125	193-T1BC36
100-C37	33...38	125	63	150	193-T1BC38
100-C43...100-C55	17...25	100	50	100	193-T1CC25
	24.5...36	125	80	125	193-T1CC36
	35...47	160	100	175	193-T1CC47
100-C55	45...60	160	100	175	193-T1CC60
100-C60...100-C97	35...47	160	100	175	193-T1DC47
	45...60	200	125	250 <sup>(4)</sup>	193-T1DC60
100-C72...100-C97	58...75	200	125	300 <sup>(4)</sup>	193-T1DC75
	72...90	250	160	350 <sup>(4)</sup>	193-T1DC90
Separate mounting required (Panel mounted device)	35...47	160	100	175	193-T1DC47P
	45...60	200	125	250 <sup>(4)</sup>	193-T1DC60P
	58...75	200	125	300 <sup>(4)</sup>	193-T1DC75P
	72...90	250	160	350 <sup>(4)</sup>	193-T1DC90P

(1) Bulletin 193-T1 overload relays shall not be used with 100-C09...100-C43 conventional DC coil-controlled contactors. Use electronic controlled DC coil versions.  
 (2) To select the setting range for use in Y-Δ Starters, multiply the rated operating current of the motor by a factor of 0.58.  
 (3) For motors with service factor of 1.15 or greater, use motor nameplate full load current. For motors with service factor of 1.0, use 90% of the motor nameplate full load current.  
 (4) Max. Back-up fuse [A], UL Class K5, 10 kA, 600V AC

# Miniature Bimetallic Overload Relays — 193-K

## Product Selection

- Standard motor protection for AC and DC motors
- Overload protection Trip Class 10A
- Auxiliary switch (1 N.O. and 1 N.C.)
- Phase loss sensitivity
- Manual/Auto reset button
- Test release
- Stop button
- Trip indicator
- Optional remote reset solenoid and external reset accessories



Cat. No. 193-K







Mounts to Contactor	Setting Range <sup>(1) (2)</sup> [A]	Max. Current Rating of Backup Fuse [A]				Cat. No.
		IEC Coordination		UL 508		
		Type 1	Type 2	UL Class K5/RK5, 600V, 5 kA	UL Class CC, J, 600V, 50 kA	
100-K05...100-K12	0.10...0.16	35	1	1	1	193-KA16
	0.16...0.25	35	1	1	1	193-KA25
	0.25...0.40	35	2	1	1	193-KA40
	0.35...0.50	35	2	2	2	193-KA50
	0.45...0.63	35	2	2	2	193-KA63
	0.55...0.80	35	4	3	3	193-KA80
	0.75...1.0	35	4	3	3	193-KB10
	0.9...1.3	35	6	4	4	193-KB13
	1.1...1.6	35	6	5	5	193-KB16
	1.4...2.0	35	10	8	8	193-KB20
	1.8...2.5	35	20	10	10	193-KB25
	2.3...3.2	35	20	12	12	193-KB32
2.9...4.0	35	20	15	15	193-KB40	
3.5...4.8	35	20	15	15	193-KB48	
4.5...6.3	35	20	20	20	193-KB63	
100-K09...100-K12	5.5...7.5	35	20	25	25	193-KB75
	7.2...10.0	35	20	35	30	193-KC10
100-K12	9.0...12.5	35	20	50	30	193-KC12

(1) To select the setting range for use in Y-Δ Starters, multiply the rated operating current of the motor by a factor of 0.58.

(2) For motors with Service Factor of 1.15 or greater, use motor nameplate full load current. For motors with service factor of 1.0, use 90% of the motor nameplate full load current.

## Accessories — 193-T1 / 193-K

### Add-On Modules

	Description	For Use With	Pkg. Quantity <sup>(1)</sup>	Cat. No.
	<b>DIN Rail/Panel Mounting Adapter</b> <ul style="list-style-type: none"> <li>For separate mounting of overload relays</li> <li>Snaps on to 35 mm top hat rail</li> </ul>	193-T1AA, 193-T1AB, 193-T1AC, 193-T1BC	1	<b>193-T1APM</b>
	<b>Screw Adapter</b> <ul style="list-style-type: none"> <li>For screw fixing of the 193-T1APM panel adapter (1 required per adapter)</li> </ul>	193-T1APM	10	<b>140M-C-N45</b>
	<b>Remote Reset Solenoid</b> <ul style="list-style-type: none"> <li>For remote reset of 193-K and 193-T1 overload relays</li> </ul>	193-K, 193-T1 (not for 193-T1DC_P)	1	<b>193-T1R</b> ⊗
	<b>External Reset Button</b> <ul style="list-style-type: none"> <li>For enclosed, through-the-door reset applications.</li> <li>Metal construction, IP66, non-illuminated.</li> <li>Refer to the 800F selection information for additional types.</li> </ul>	193-K, 193-T1	1	<b>800FM-R611</b>
	<b>Reset Rod</b> <ul style="list-style-type: none"> <li>Length 142 mm, adjustable range 141 . . . 159 mm</li> </ul>	193-K, 193-T1	1	<b>800F-ATR08</b>
	<b>Reset Adapter</b> <ul style="list-style-type: none"> <li>Expands the reset target area when using an external reset</li> </ul>	193-K, 193-T1 (not for 193-T1DC_P)	1	<b>193-RA3</b>

(1) Must be ordered in multiples of package quantity.

### ⊗ Coil Voltage Codes for Remote Reset Solenoid

The cat. no. as listed is incomplete. Select a coil voltage code from the table below to complete the cat. no.

Example: Cat. No. **193-T1R**⊗ becomes Cat. No. **193-T1RZJ**.

DC Control	
Code	Description
<b>ZJ</b>	24V DC
<b>ZD</b>	110V DC

AC Control	
Code	Description
<b>KF</b>	220 . . . 240V 50/60 Hz

### Standards Compliance — 193-T1 / 193-K

IEC/EN 60947-1, 60947-4-1, 60947-5-1

UL 60947-1, 60947-4-1, 60947-5-1

CAN / CSA-C22.2 No. 60947-1, No. 60947-4-1, No. 60947-5-1

IEC/EN 60077

IEC/EN 61373

EN 45545

# 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.

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