Allen-Bradley

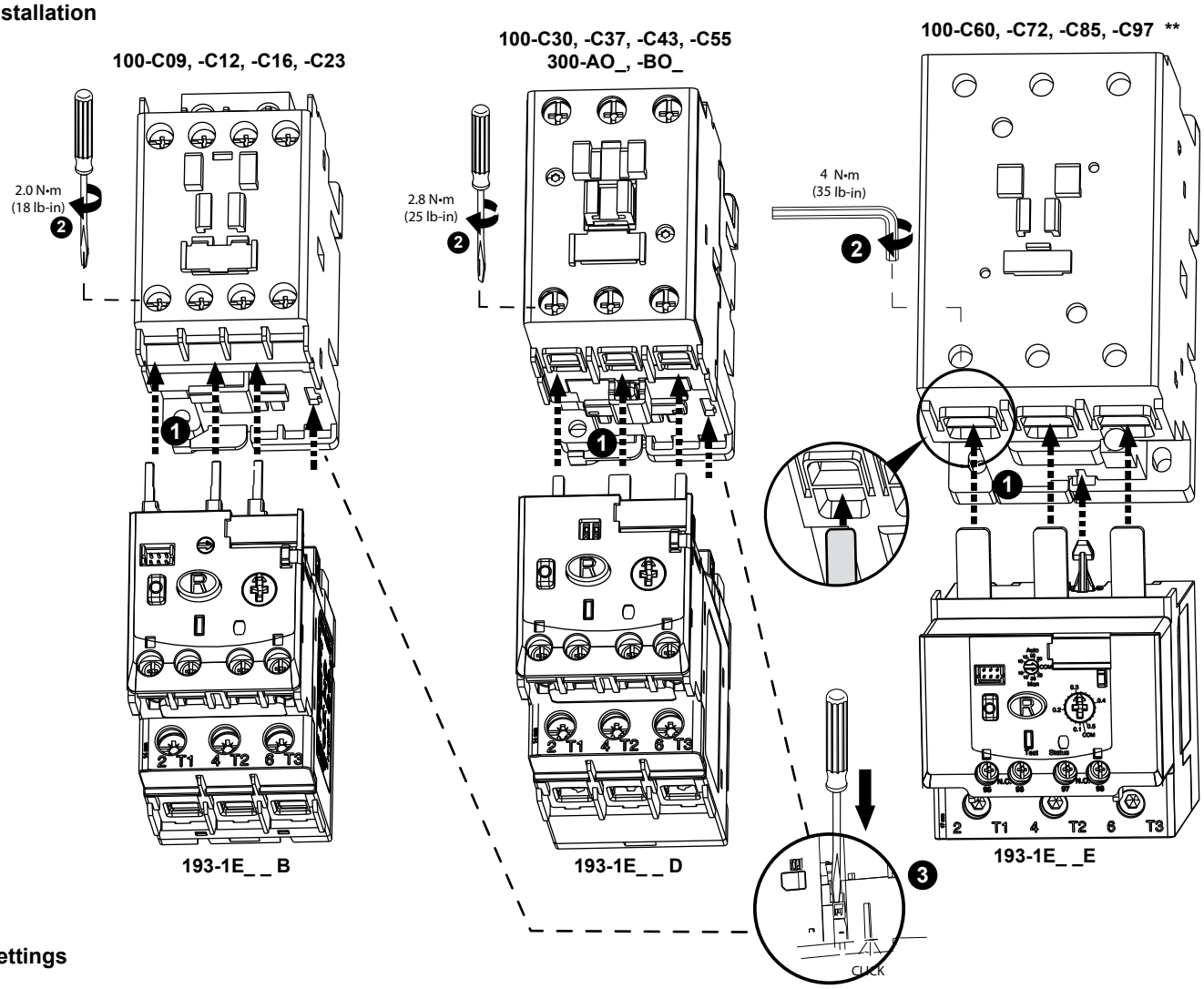
Bulletin 193 E100 Overload Relay Application and Installation

(Cat 193-1E_ _B, 193-1E_ _D, 193-1E_ _E)

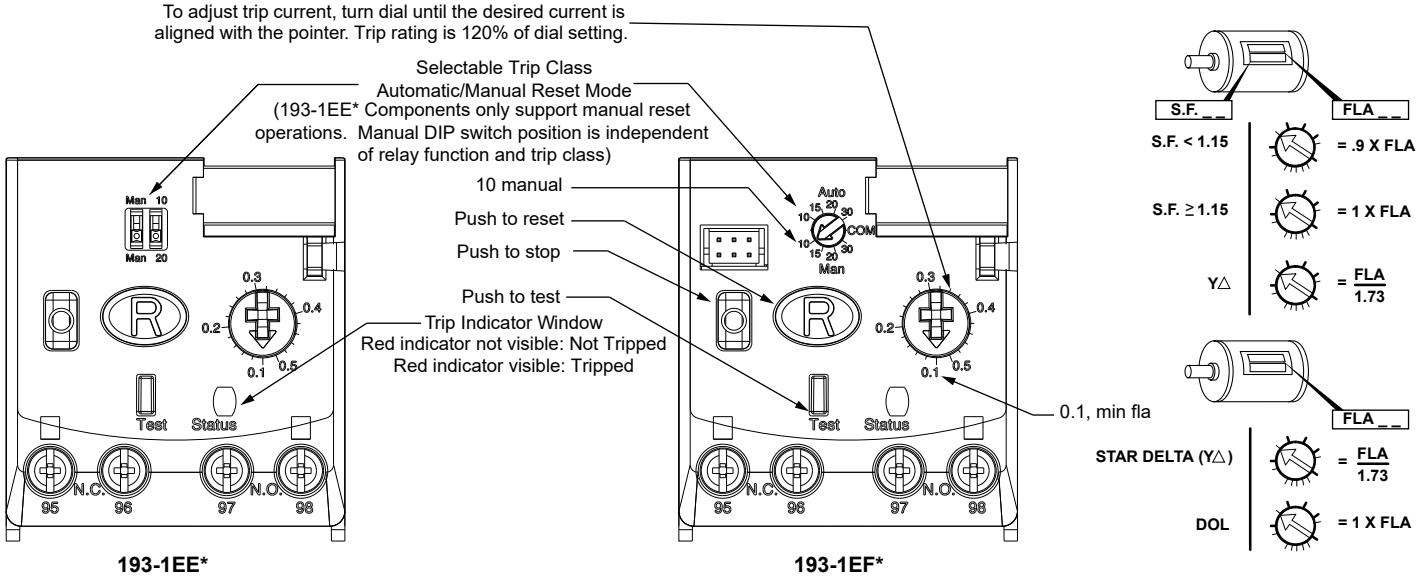
WARNING: To prevent electrical shock, disconnect from power source before installing or servicing. Install in suitable enclosure. Keep free from contaminants. Follow NFPA70E requirements.

WARNING: Do not use automatic reset mode in applications where unexpected automatic restart of the motor can cause injury to persons or damage to equipment.

Installation



Settings



PN-562585 DIR 10004184701 **(Version 04)**
Publication **193-IN081E-EN-E - July 2022**

Main Connections

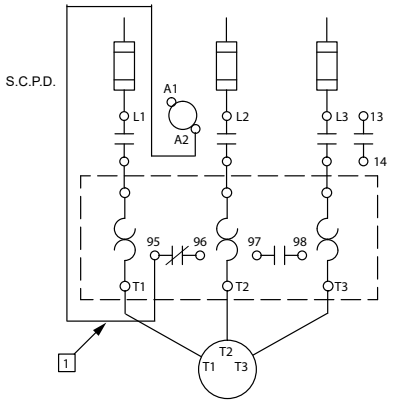
Rated Insulation Voltage (Ui): 690V AC
Rated Operational Voltage (Ue) IEC/UL: 690V AC / 600V AC
Rated Operating Frequency: 50 / 60 Hz

		Control Wiring		Power Wiring					
		All		193-1E__B		193-1E__D		193-1E__E	
Wire Type	Wires	Range	Torque	Range	Torque	Range	Torque	Range	Torque
Flexible Stranded w/ Ferrule	1 Wire	0.75...2.5 mm²	1.4 N•m	2.5...16 mm²	2.5 N•m	2.5...16 mm²	2.5 N•m	4…35 mm²	4.6 N•m
	2 Wires*			2.5...10 mm²	3.4 N•m	2.5...10 mm²	3.6 N•m	4…25 mm²	
Stranded / Solid	1 Wire	0.75...4.0 mm² (18...12 AWG)	1.4 N•m (12 lb-in)	2.5...16 mm² (14...6 AWG)	2.5 N•m (22 lb-in)	2.5...16 mm² (14...6 AWG)	2.5 N•m (22 lb-in)	4…35 mm² (12…1 AWG)	4.6 N•m (40 lb-in)
				25 mm² (4 AWG)	3.4 N•m (30 lb-in)	25 mm² (4 AWG)	3.4 N•m (30 lb-in)		
	2 Wires*			2.5...16 mm² (14...6 AWG)		2.5...16 mm² (14...6 AWG)	3.6 N•m (32 lb-in)	4…35 mm² (12...2 AWG)	

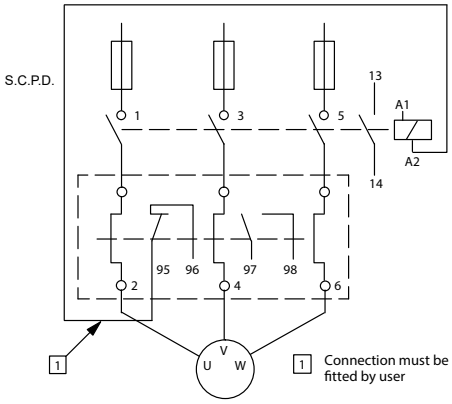
*FOR MULTIPLE CONDUCTOR APPLICATIONS THE SAME SIZE AND STYLE WIRE MUST BE USED.
**100-C60, 100-C72, 100-C85, and 100-C97 CONTACTORS USED WITH THE 193-1E_ _E OVERLOAD RELAY MUST BE USED IN AN ENCLOSURE WITH MINIMUM VOLUME OF 2431 in^3.

Wiring Diagram

3 Phase Full Voltage

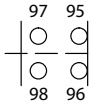
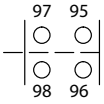
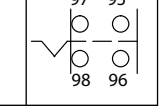


DOL Starter



Contact Status

Contact Ratings: N.O. C600 / N.C. B600 (AC)
N.O. / N.C. R300 (DC)

Normal		Stop Pressed	Test Tripped
95 — 96	Closed	Open	Open
97 — 98	Open	Open	Closed
			

Short Circuit Ratings, per UL60947-4-1 and CSA 22.2 No. 60947-4-1

Table 1: E100 UL Standard Fault Ratings - Type I

Cat No		Amp Range	UL class RK5 Fuse Max (A)	Ckt Bkr Frame Max Amp	600 Vac
193-	1E_AB	0.1-0.5 A	1	---	1kA
	1E_BB	0.2 - 1 A	3	---	
	1E_CB	1 - 5 A	15	140G-H2 (20 A)	5kA
	1E_DB	3.2 - 16.0 A	50	140G-H2 (60 A)	
	1E_EB	5.4-27.0 A	100	140G-H2 (100 A)	
	1E_ED	5.4-27.0 A	100		
	1E_FD	11-55 A	175	140G-J2 (200 A)	
	1E_GE	20-100 A	350	140G-K3 (400 A)	10kA

Table 2: E100 High Fault Ratings, Type I

E100 Overload			Panel Mount Adapter Cat No.	High Fault Rating		Max Fuse Rating
Cat No		Amp Range		Max Available Fault Current	Max Volage	UL class J Fuse Max (A)
193-	1E_AB	0.1-0.5 A	193-1EPB	100 kA	600 V	1
	1E_BB	0.2 - 1 A				3
	1E_CB	1 - 5 A				20
	1E_DB	3.2 - 16.0 A				60
	1E_EB	5.4-27.0 A				100
	1E_ED	5.4-27.0 A	193-1EPD			100
	1E_FD	11-55 A				110
	1E_GE	20-100 A	193-1EPE			225

Table 3: Short Circuit Ratings, Type I, Using 140U D Frame Circuit Breakers

E100 Overload			Contactor	Circuit Breaker 140U-D6D3-	Standard Fault Rating	High Fault Rating	
Cat No		Amp Range			600Y / 347 V	480Y / 277 V	600Y / 347 V
193-	1E_AB	0.1-0.5 A	100-C09	C15 (15A)	1 kA	65 kA	25 kA
	1E_BB	0.2 - 1 A	100-C12	C15 (15A)	1kA		
	1E_CB	1 - 5 A	100-C16	C20 (20A)	5 kA		
	1E_DB	3.2 - 16.0 A	100-C23	C30 (30A)	5 kA		
	1E_EB	5.4-27.0 A		C30 (30A)	5 kA		

Table 4: Type I, High Fault Ratings using 140G Circuit Breakers

E100 Overload			Contactor	Short Circuit Protection Device		Fault Rating	
Cat No		Amp Range	Cat. No.	Ckt Bkr Frame	Max Amp (1)	480 Vac	600 Vac
193-	1E_CB	1-5 A	100-C16, 100-C23	140G-H6	20 A	65 kA	25 kA
	1E_DB	3.2-16 A	100-C16, 100-C23	140G-H6	60 A	65 kA	25 kA
	1E_EB	5.4-27.0 A	100-C16, 100-C23	140G-H6	100 A	65 kA	25 kA
	1E_ED	5.4-27.0 A	100-C30, 100-C37, 100-C43, 100-C55	140G-H6	100 A	65 kA	25 kA
	1E_FD	11-55 A	100-C30, 100-C37, 100-C43, 100-C55	140G-J6	200 A	65 kA	25 kA
	1E_GE	20-100 A	100-C60, 100-C72, 100-C85, 100-C97	140G-K6	400 A	65 kA	35 kA

(1) Selected breaker size shall not exceed 4x starter FLA

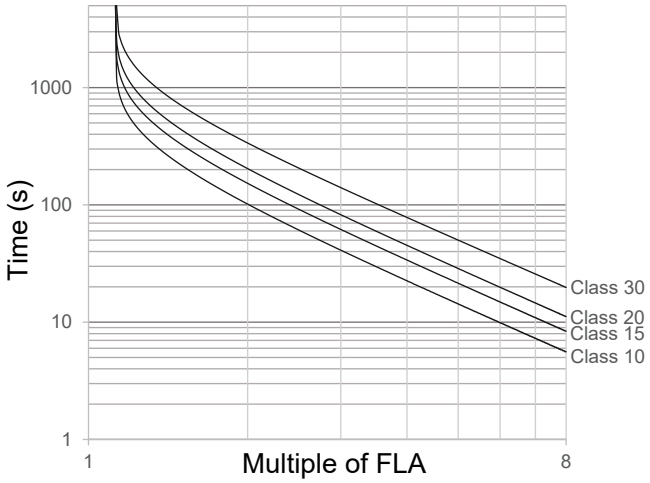
Table 5: Type I and Type II Fuse Coordination with Bul. 100-C contactors per EN/IEC 60947-4-1

E100 Overload			Contactor	Standard Fault, Prospective S. C. current , Ir (kA)	High Fault, Conditional S. C. current , Iq (kA)	Max Voltage (V)	Fuse Type I & II Max Class J or CC (A)
Cat No		Amp Range	Cat. No.				
193-	1E_AB	0.1-0.5 A	100-C09	1	100	600	3
	1E_BB	0.2 - 1 A					6
	1E_CB, 1E_DB	1 - 5 A, 3.2 - 16.0 A	100-C09				15
			100-C12				20
			100-C16				30 (1)
			100-C23				40 (1)
	1E_EB	5.4-27.0 A	100-C09				15
			100-C12				20
			100-C16				30
	1E_EB	5.4-27.0 A	100-C23	3			40
	1E_ED, 1E_FD	5.4-27.0 A, 11-55 A	100-C30				50
			100-C37				50
			100-C43				70
			100-C55				80
	1E_GE	20-100 A	100-C60				80
	1E_GE	20-100 A	100-C72	5			100
			100-C85				150
			100-C97				175

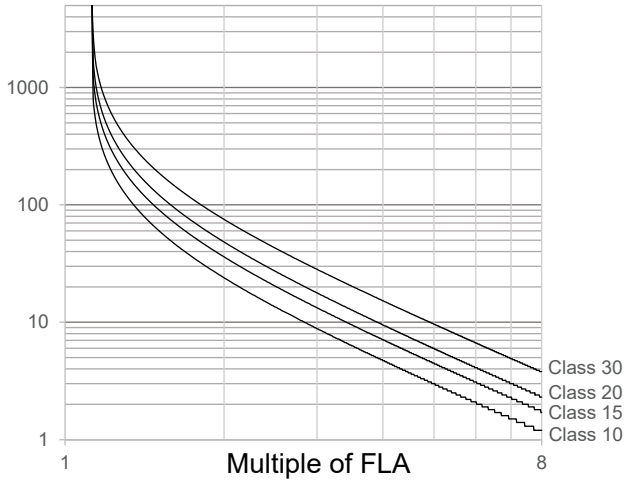
(1) 20A max when used with 1-5A overload

Trip Curves

Cold Trip Curves



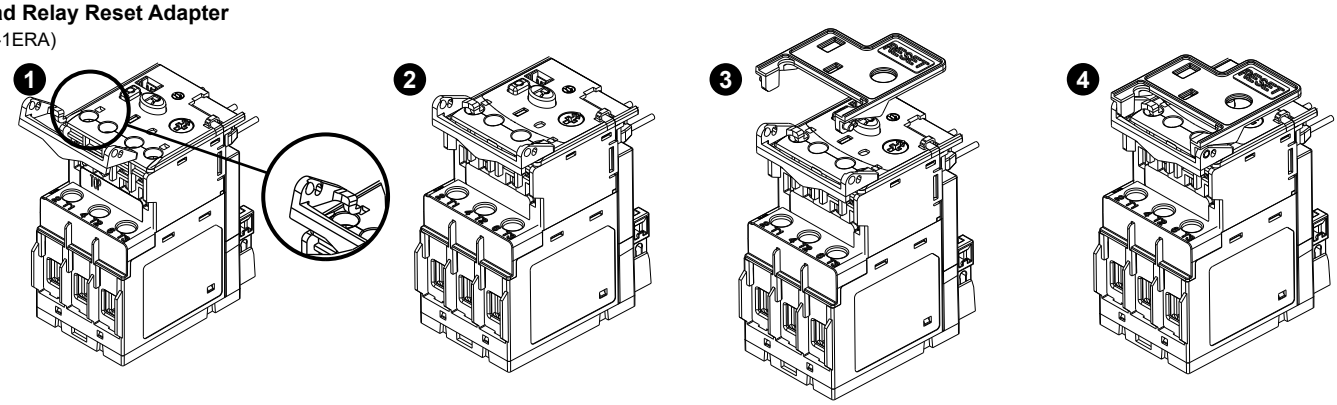
Hot Trip Curves



Accessories

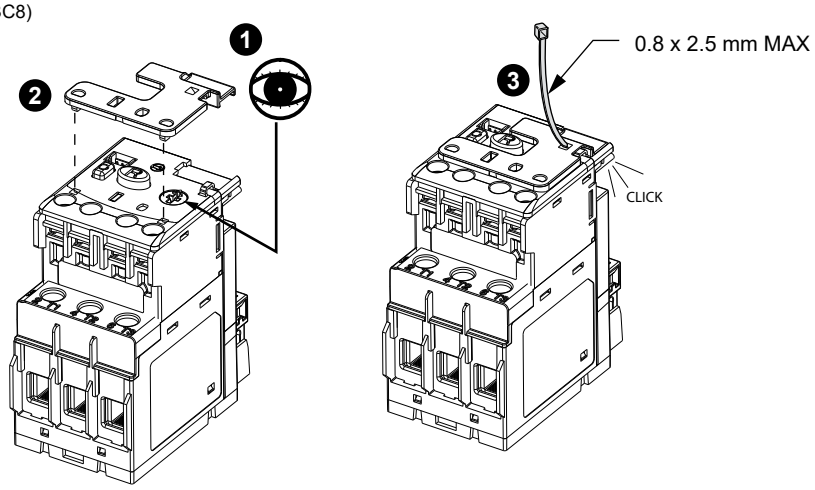
Overload Relay Reset Adapter

(Cat 193-1ERA)



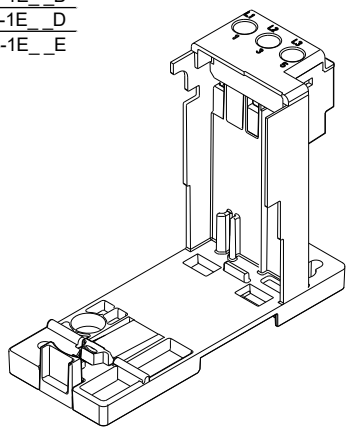
Overload Relay Anti-Tamper Shield

(Cat 193-1BC8)



DIN Rail/Panel Adapter

Cat. No.	For Use With
193-1EPB	193-1E__B
193-1EPD	193-1E__D
193-1EPE	193-1E__E



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Rockwell Otomasyon Ticaret A.Ş., Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400

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AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: 414.382.2000, Fax: (1) 414.382.4444

EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlan 12a, 1831 Diegem, Belgium, Tel: (32) 2663 0600, Fax: (32) 2663 0640

ASIA PACIFIC: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2501846

Publication 193-IN081E-EN-E - July 2022, Supersedes Publication 193-IN081D-EN-E - March 2022

PN-562585

DIR 10004184701 (Version 04)