

**Bulletin 193 E1 PLUS Overload Relay Application and Installation**  
**Application et installation du relais de surcharge Famille 193 E1 PLUS**  
**Überlastrelais Bulletin 193 E1 PLUS, Anwendung und Installation**  
**Aplicación e instalación del relé de sobrecarga, Boletín 193 E1 PLUS**  
**Boletim 193 E1 PLUS Aplicação e Instalação do Relé de Sobrecarga**  
**Applicazione ed installazione dei relè termici Bollettino 193 E1 PLUS**  
**ブレイテン193 E1 PLUS 過負荷継電器の応用と取付け**  
**Bulletin 193 E1 PLUS 过载继电器的使用与安装**

(Cat 193-ED1\_\_ , 193\*-EE\_\_)

**Installation**  
**Instalación**  
**Instalação**  
**Installazione**  
 取付け方法  
 安装



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

**AVERTISSEMENT:** Avant le montage et la mise en service, couper l'alimentation secteur pour éviter toute décharge. Prévoir une mise en coffret ou armoire appropriée. Protéger le produit contre les environnements agressifs. (Vous devez respecter la norme NFPA70E).

**WARNUNG:** Vor Installations- oder Servicearbeiten Stromversorgung zur Vermeidung von elektrischen Unfällen trennen. Die Geräte müssen in einem passenden Gehäuse eingebaut und gegen Verschmutzung geschützt werden. (Befolgen Sie die Anforderungen nach NFPA70E).

**ADVERTENCIA:** Desconéctese de la corriente eléctrica, antes de la instalación o del servicio, a fin de impedir sacudidas eléctricas. Instálelo en una caja apropiada. Manténgalo libre de contaminantes. (Cumpla con los requisitos NFPA70E).

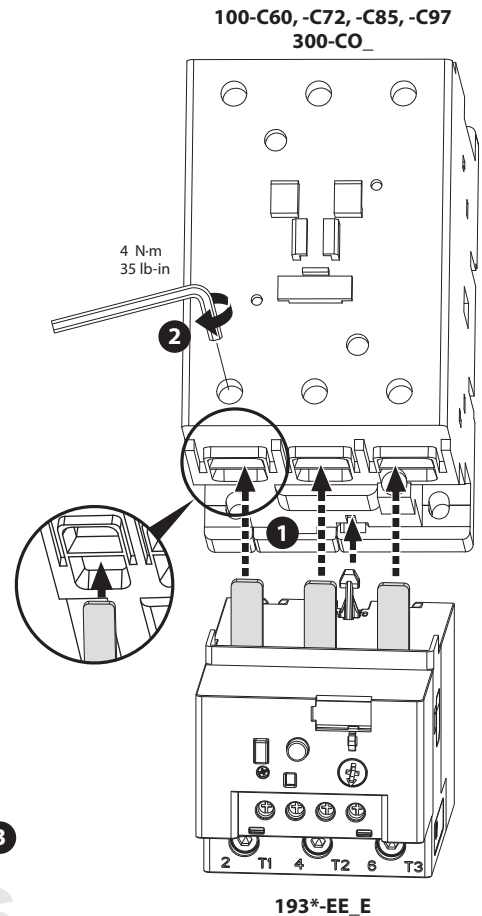
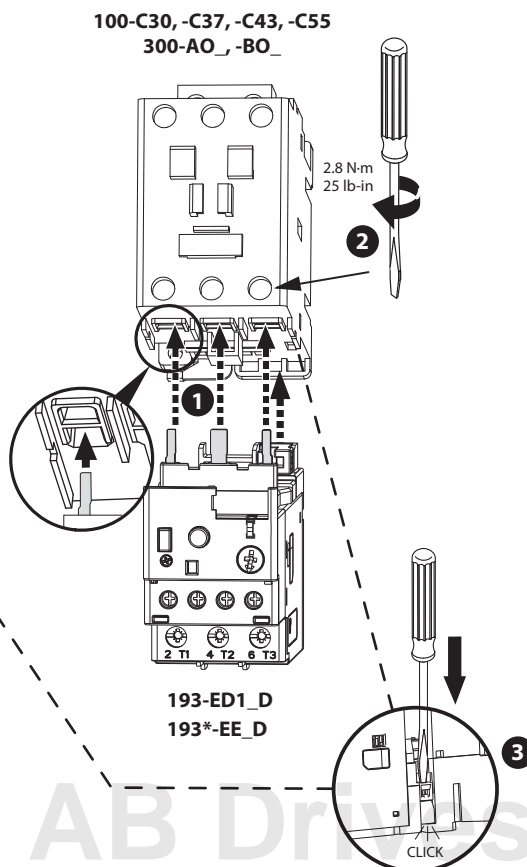
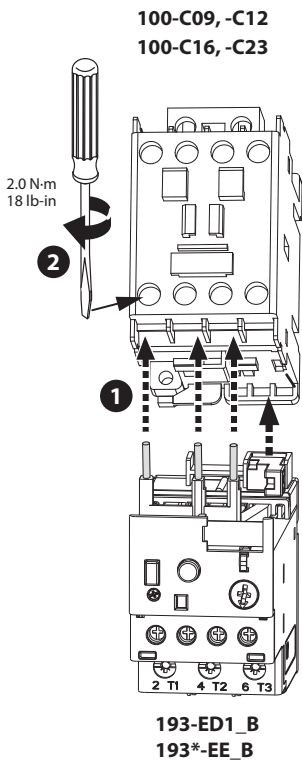
**AVISO:** Para evitar choques, desconectar da corrente elétrica antes de fazer a instalação ou a manutenção. Instalar em caixa apropriada. Manter livre de contaminantes. (Cumpra as exigências da norma NFPA70E).

**AVVERTENZA:** Per prevenire infortuni, togliere tensione prima dell'installazione o manutenzione. Installare in custodia idonea. Tenere lontano da contaminanti. (Seguire i requisiti NFPA70E).

警告: 感電事故防止のため、取付けまたは修理の際は電源から取り外してください。適切なケース内に取り付けてください。また、汚染物質がないことを確認してください。(NFPA70Eの要件に従ってください)

警告: 为了防止触电，在安装或维修之前必须先切断电源。安装在合适的设备箱内。防止接触污染物。(符合NFPA70E要求)

193-E\_\_ = 3 Ø  
 193S-E\_\_ = 1 Ø



**E1 PLUS Features**

**Caractéristiques du E1 PLUS**

**Leistungsmerkmale des E1 PLUS**

**Características del E1 PLUS**

**Características E1 PLUS**

**Funzioni dell'E1 PLUS**

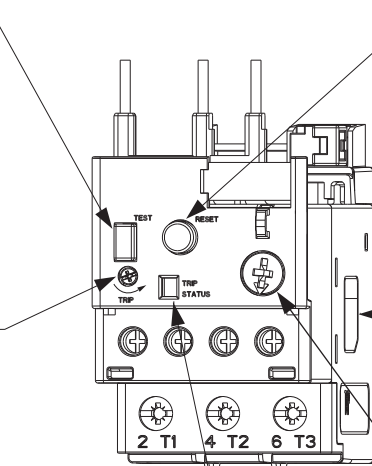
**E1 PLUS の特長**

**E1 PLUS 继电器的特性**

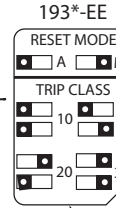
**Push To Test**  
 Enfoncez pour tester  
 Testschalter  
 Presione para probar  
 Pressione para testar  
 Spingere per provare  
 押してテストします。  
 按下按钮进行测试

**Rotate to Manually Trip**  
 Faire pivoter pour déclencher manuellement  
 Für manuelle Auslösung drehen  
 Rotar para disparar manualmente  
 Gire para disparar manualmente  
 Ruotare per intervenire manualmente  
 旋转进行手动设置  
 回転すると手動トリップします。

- **Trip Indicator Window**  
 Yellow indicator not visible: Not Tripped.  
 Yellow indicator visible: Tripped.
- **Fenêtre d'indicateur de déclenchement**  
 Indicateur jaune non visible : pas de déclenchement  
 Indicateur jaune visible : déclenchement
- **Auslösungsanzeigefenster**  
 Gelbe Anzeige nicht sichtbar: keine Auslösung  
 Gelbe Anzeige sichtbar: Auslösung
- **Ventana indicadora de disparo**  
 Indicador amarillo no visible: No disparado  
 Indicador amarillo visible: Disparado



**Push to Reset**  
 Enfoncez pour réinitialiser  
 Nullstellschalter  
 Presione para reiniciar  
 Pressione para religar  
 Premere per reimpostare  
 推込并重新设置  
 押してリセットします。

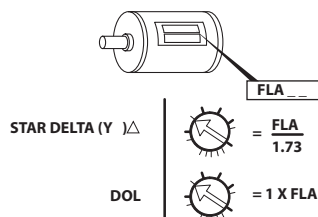
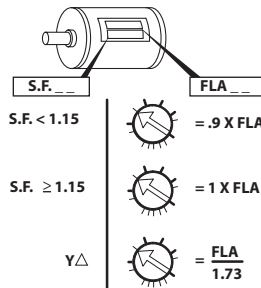
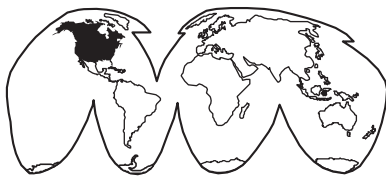


- A = Automatic/Manual Reset Mode**  
 A = Mode de réinitialisation automatique/manuel  
 A = Automatische/Manuelle Nullstellung  
 A = Modo de reinicio automático/manual  
 A = Modo de religação automático/manual  
 A = Modalità reimpostazione automatica/Manuale  
 自动和手动模式  
 A = 自动/手动リセットモード
- M = Manual Reset Mode**  
 M = Mode de réinitialisation manuel  
 M = Manuelle Nullstellung  
 M = Modo de reinicio manual  
 M = Modo de religação manual  
 M = Modalità reimpostazione manuale  
 手动模式  
 M = 手动リセットモード

**Selectable Trip Class**  
 Classe de déclenchement sélectionnable  
 Wählbare Auslösestufen  
 Clase de disparo seleccionable  
 Seleção da classe de disparo  
 Classe di intervento selezionabile  
 選択可能なトリップ種類  
 可选用的跳闸等级

- **Visor de disparo**  
 Se o indicador amarelo não estiver visível: não disparado  
 Se o indicador amarelo estiver visível: disparado
- **Finestra indicatrice di intervento.**  
 Indicatore giallo non visibile: non scattato.  
 Indicatore giallo visibile: scattato.
- **トリップ表示ウィンドウ**  
 黄色インジケータが表示されていない場合 : トリップなし  
 黄色インジケータが表示されている場合 : トリップ済み
- **跳闸指示窗**  
 黄色标记未显示: 没有跳闸  
 黄色标记显示: 已跳闸

- To adjust trip current, turn dial until the desired current is aligned with the ▲ pointer. Trip rating is 120% of dial setting.
- Pour régler l'intensité de déclenchement, tournez le cadran jusqu'à ce que le pointeur ▲ soit sur l'intensité voulue. La valeur nominale de déclenchement est de 120% du réglage cadran.
- Zur Einstellung des Auslösestroms drehen Sie den Schalter, bis der Zeiger ▲ auf die gewünschte Stromstärke zeigt. Der zur Auslösung erforderliche Nennstrom beträgt 120% des eingestellten Wertes.
- Para ajustar la corriente del disparo, gire el dial hasta que la corriente deseada esté alineada con la marca ▲. La capacidad nominal del disparo es el 120% del posicionamiento del dial.
- Para regular a corrente de disparo, gire o disco mostrador até que a corrente desejada esteja alinhada com o indicador ▲. A classe de disparo corresponde a 120% da marcação no mostrador.
- Per regolare la corrente di intervento, ruotare il regolatore fin quando la corrente desiderata non è allineata con il puntatore ▲. Il valore nominale di intervento corrisponde al 120% dell'impostazione del regolatore.
- トリップ電流を調整するには、所定の電流の目盛りが▲印に来るまでダイヤルを回してください。トリップ定格は、ダイヤル設定値の120%です。
- 若欲调节跳闸电流设定，可转动刻度盘，使所需的设定值对准▲箭头。跳闸电流额定值是刻度盘显示值的120%。



**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.  
**AVERTISSEMENT:** N'utilisez pas le mode Remise à zéro automatique dans les applications où un redémarrage automatique inattendu du moteur pourrait provoquer des blessures personnelles ou des dégâts matériels.  
**WARNUNG:** Der automatische Rücksetzmodus darf nicht in Anwendungen verwendet werden, in denen der unerwartete Neustart des Motors zu Personen- oder Sachschäden führen kann.  
**ADVERTENCIA:** No use el modo de reseteo automático en aplicaciones donde el reanque repentino del motor pueda causar lesiones personales o daño equipo.  
**AVISO:** Não utilize o modo de reajuste automático em aplicações nas quais o reinício automático e inesperado do motor possa causar ferimentos às pessoas ou danos ao equipamento.  
**AVVERTENZA:** Non usare la modalità di ripristino automatico in applicazioni dove il riavviamento automatico improvviso del motore può provocare infortuni o danni all'apparecchiatura.

警告：モーターの予期しない自動再スタートによって負傷や機器の破損をまねく恐れのあるような応用では、自動リセット・モードを使用しないでください。

警告：在马达突然自动再起动可能导致人员伤害或设备损坏的地方，切勿采用自动复原模式。

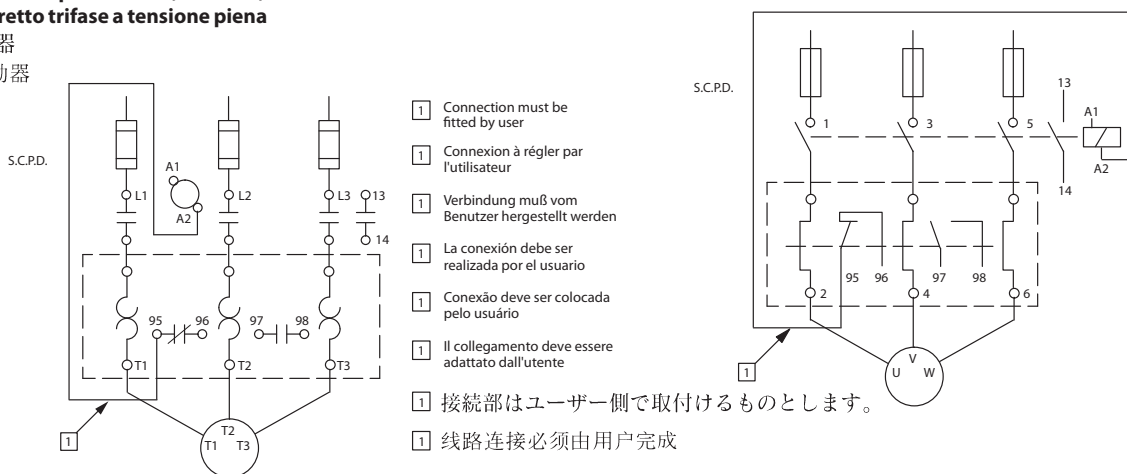
**Contact Status**  
**Etat des contacts**  
**Kontaktstatus**  
**Estado del contacto**

**Situação de contato**  
**Stato dei contatti**  
 接触状態  
 接触状态

Normal		Test	Tripped
95	96	Open	Open
97	98	Open	Closed

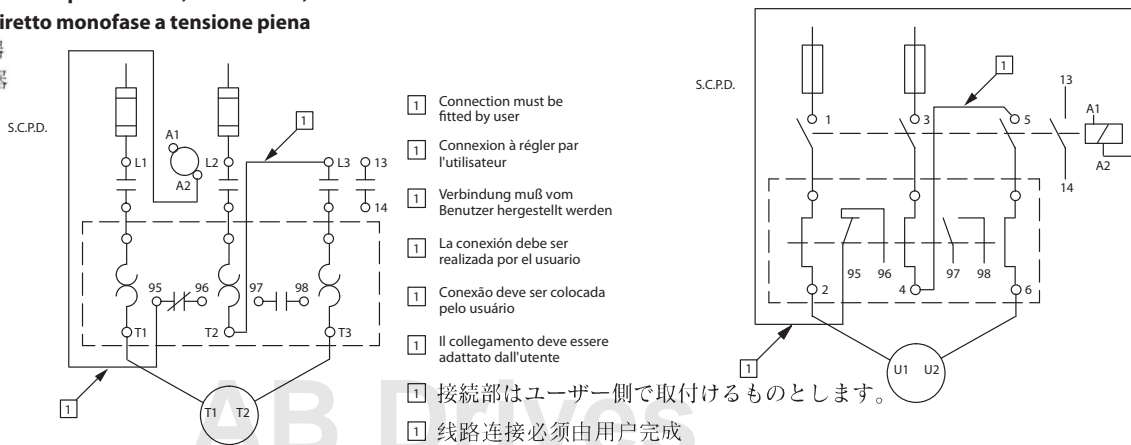
**Wiring Diagram - 3 Phase Full Voltage DOL Starter**  
**Schéma de câblage - Pleine tension triphasée Démarreur DOL (direct en ligne)**  
**Verkabelungsschema - 3-phasiger Vollspannungs-DOL-Motoranlasser**  
**Diagrama de cableado - Arrancador DOL (directo en línea) trifásico de voltaje pleno**  
**Diagrama de circuito - Dispositivo de partida DOL, trifásico, de máxima tensão**  
**Schema elettrico - Avviatore diretto trifase a tensione piena**

配線図 - 3 相全电压 DOL 始動器  
 配线图 - 三相全电压DOL起动机




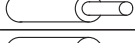
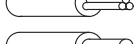
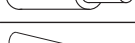


**Wiring Diagram - 1 Phase Full Voltage DOL Starter (1935-\_\_\_)**  
**Schéma de câblage - Pleine tension monophasée Démarreur DOL (direct en ligne)**  
**Verkabelungsschema - 1-phasiger Vollspannungs-DOL-Motoranlasser**  
**Diagrama de cableado - Arrancador DOL (directo en línea) monofásico de voltaje pleno**  
**Diagrama de circuito - Dispositivo de partida DOL, monofásico, de máxima tensão**  
**Schema elettrico - Avviatore diretto monofase a tensione piena**

配線図 - 1 相全电压 DOL 始動器  
 配线图 - 单相全压DOL起动机



Main Connections  
Raccordements Principale  
Hauptanschlüsse  
Collegamenti Principale  
Conexões principais  
Conexiones Principales  
主体连接  
主接続



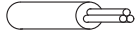
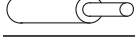
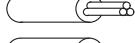
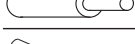


Rated Insulation Voltage (Ui): 690V AC  
Rated Operational Voltage (Ue) IEC/UL: 690V AC/600V AC  
Rated Operating Frequency: 50 / 60 Hz

	193-ED1_B *	193-EE_B *	193-ED1_D *	193-EE_D *	193-EEQD	193-EE_E
Terminal Screw	M5	M5	M5	M5	M5	M8
	1x 2.5 ... 16 mm <sup>2</sup> 2.0 Nm	1x 2.5 ... 16 mm <sup>2</sup> 2.5 Nm	1x 2.5 ... 16 mm <sup>2</sup> 2.5 Nm	1x 2.5 ... 16 mm <sup>2</sup> 2.5 Nm	1x 2.5 ... 16 mm <sup>2</sup> 2.5 Nm	1x 4 ... 50 mm <sup>2</sup> 4.6 Nm
	2x 2.5 ... 10 mm <sup>2</sup> 3.4 Nm	2x 2.5 ... 10 mm <sup>2</sup> 3.4 Nm	2x 2.5 ... 10 mm <sup>2</sup> 3.4 Nm	2x 2.5 ... 10 mm <sup>2</sup> 3.4 Nm	2x 2.5 ... 10 mm <sup>2</sup> 3.4 Nm	2x 4 ... 25 mm <sup>2</sup> 4.6 Nm
	1x 2.5 ... 25 mm <sup>2</sup> 2.0 Nm	1x 2.5 ... 25 mm <sup>2</sup> 2.5 Nm	1x 2.5 ... 25 mm <sup>2</sup> 2.5 Nm	1x 2.5 ... 25 mm <sup>2</sup> 2.5 Nm	1x 2.5 ... 25 mm <sup>2</sup> 2.5 Nm	1x 4 ... 50 mm <sup>2</sup> 4.6 Nm
	2x 2.5 ... 16 mm <sup>2</sup> 3.4 Nm	2x 2.5 ... 16 mm <sup>2</sup> 3.4 Nm	2x 2.5 ... 16 mm <sup>2</sup> 3.4 Nm	2x 2.5 ... 16 mm <sup>2</sup> 3.4 Nm	2x 2.5 ... 16 mm <sup>2</sup> 3.4 Nm	2x 4 ... 35 mm <sup>2</sup> 4.6 Nm
	1x 14... 6 AWG 18 lb-in	1x 14... 6 AWG 22 lb-in	1x 14... 6 AWG 22 lb-in	1x 14... 6 AWG 22 lb-in	1x 14... 4 AWG 30 lb-in	1x 12 ... 1/0 AWG 40 lb-in
	2x 12...6 AWG 30 lb-in	2x 12...6 AWG 32 lb-in	2x 12...6 AWG 32 lb-in	2x 12...6 AWG 32 lb-in	2x 12...6 AWG 30 lb-in	2x 8 ... 2 AWG 40 lb-in
	#2	#2	#2	#2	#2	--
	1 x 6 mm	1 x 6 mm	1 x 6 mm	1 x 6 mm	1 x 6 mm	--
	--	--	--	--	--	4 mm

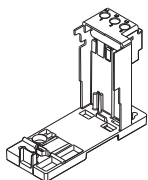
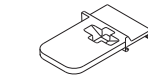

\* FOR MULTIPLE CONDUCTOR APPLICATIONS THE SAME SIZE AND STYLE WIRE MUST BE USED.  
POUR LES APPLICATIONS A CONDUCTEURS MULTIPLES, UTILISEZ UN CABLE DE MEME TAILLE ET DE MEME STYLE.  
BEI VERWENDUNG MEHRERER LEITER MUSS DIESELBE DRAHTSTÄRKE UND DRAHTART VERWENDET WERDEN.  
PER PIÙ CONDUTTORI È NECESSARIO UTILIZZARE LE STESSA DIMENSIONI E TIPI DI CAVO.  
PARA CONDUCTORES DIVERSOS, UTILIZE O MESMO TIPO E TAMANHO DE FIO.  
EN APLICACIONES CON MÚLTIPLES CONDUCTORES DEBE UTILIZARSE CABLE DEL MISMO TAMAÑO Y ESTILO.  
複数の導体を使用する場合は、同じサイズおよび型のワイヤを使用することが必要です。  
对于多种导线应用，必须使用大小和样式都相同的线缆。

Control Connections  
Bornes de Commande  
Steueranschlüsse  
Morsetti di Comando  
Conexões de controle  
Conexiones de Control  
控制连接  
制御接続

Rated Insulation Voltage (Ui): 690V AC  
Rated Operational Voltage (Ue) IEC/UL: 690V AC/600V AC  
Rated Operating Current (Ie): B600 N.O. / N.C.

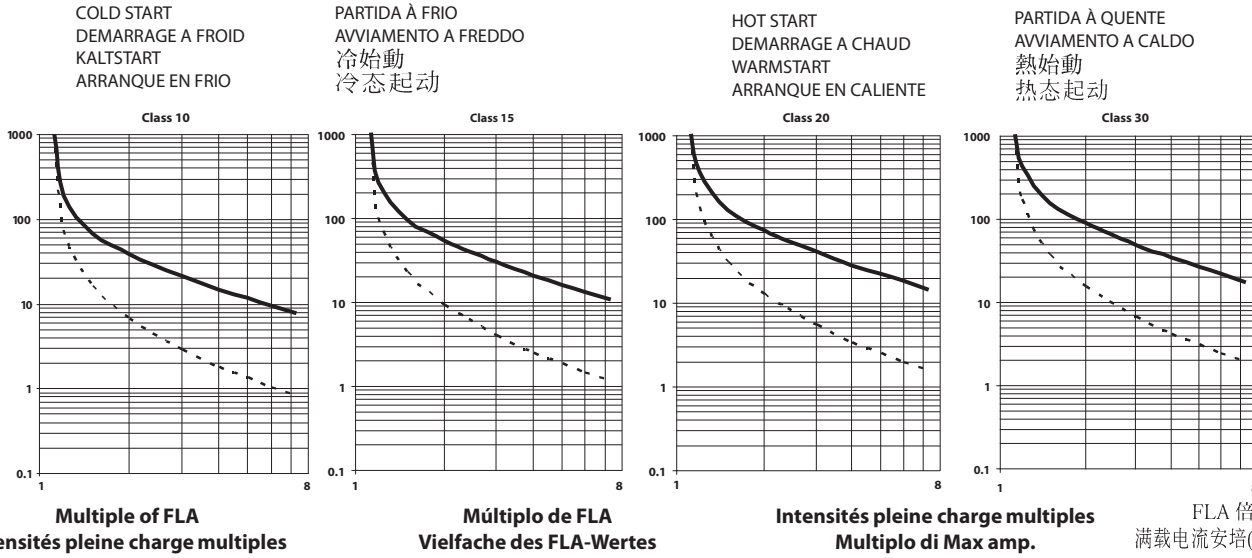
Terminal Screw	M3
	1x 0.5 ... 2.5 mm <sup>2</sup> 0.55 Nm
	2x 0.2 ... 0.75 mm <sup>2</sup> 0.55 Nm
	1x 0.5 ... 4 mm <sup>2</sup> 0.55 Nm
	2x 0.2 ... 1.5 mm <sup>2</sup> 0.55 Nm
	1x 24 ... 10 AWG 5 lb-in
	2x 22 ... 16 AWG 5 lb-in
	#1
	0.6 x 3.5 mm

Accessories  
Accessoires  
Zubehör  
Acessorios  
Accessori  
付属品  
附件

	For Use With	Cat. No.
 DIN Rail/Panel Adapter	193-ED1_B, 193*-EE_B	193-EPB
	193-ED1_D, 193*-EE_D	193-EPD
	193*-EE_E	193-EPE
 Current Adjustment Shield	193-ED1 (all) 193*-EE (all)	193-BC8
 External Reset Adapter	193-ED1 (all) 193*-EE (all)	193-ERA

**Trip Curve**  
**Courbe de déclenchement**  
**Auslösekurve**  
**Curva del disparo**

**Curva de disparo**  
**Curva di intervento**  
**トリップ曲線**  
**跳閘曲線**



**Short Circuit Ratings**

**Table 1 Standard Fault Short Circuit Ratings per UL508 and CSA 22.2 No. 14**

E1 Plus Cat. No.	Max. available fault current (kA)	Max. voltage (V)	S.C.P.D.
193, 193S	ED1AB, ED1BB, EEAB, EEBC, EEDB, EEPB, EERB, EESB, EEQD, EETD	1	Suitable for use with fuses only  Not restricted to fusing only
	ED1CB, ED1DB, ED1EB, ED1ED, ED1FD, EECB, EEDB, EEEB, EEED, EEFD, EEPB, EERB, EESB, EEQD, EETD	5	
	EEEE, EFFE, EEGE, EEUE, EEVE	10	

**Table 3 Short Circuit Ratings per EN 60947-4-1**

E1 Plus Cat. No.	Prospective S.C. current, Ir (kA)	Conditional S.C. current, Iq (kA)	Max. voltage (V)	S.C.P.D.
193,193S	ED1AB, ED1BB, EEAB, EEBC, EEDB, EEPB, EERB, EESB, EEQD, EETD	1	690	Suitable for use with fuses only  Not restricted to fusing only
	ED1CB, ED1DB, EECB, EEDB, EEPB, EERB	1		
	ED1EB, EEEB, ED1ED, ED1FD, EEED, EEFD, EEPB, EERB, EESB, EEQD, EETD	3		
	EEEE, EFFE, EEGE, EEUE, EEVE	5		

**Table 5 Overload relay only, High fault short circuit ratings per UL508 and CSA 22.2 No. 14**

Cat. No.	Max. available fault current (kA)	Max. voltage (V)	UL class RK1 fuse (A)
193, 193S	ED1CB, ED1DB, ED1EB, EECB, EEDB, EEEB, EEPB, EERB, EESB	600	60
	ED1ED, ED1FD, EEED, EEFD, EEQD, EETD		100
	EEEE, EFFE, EEGE, EEUE		200

**Table 6 Type 2 Fuse Selection Table, Class gG and Class aM at Line Voltage of 400V, 50Hz**

[kW]	[A] <sup>1)</sup>	Type gG Rated Current [A]	Type aM Rated Current [A]	Catalog Number	Catalog Number	Current Setting Range [A]	Conditional S.C. Current Iq [kA]
0.06	0.20	2	2	100-C09...	193-EEAB	0.1 - 0.5	50
0.09	0.30	2	2	100-C09...	193-EEAB	0.1 - 0.5	
0.12	0.44	2	2	100-C09...	193-EEAB	0.1 - 0.5	
0.18	0.60	2	2	100-C09...	193-EEBB	0.2 - 1.0	
0.25	0.85	4	2	100-C09...	193-EEBB	0.2 - 1.0	
0.37	1.1	4	2	100-C09...	193-EECB	1.0 - 5.0	
0.55	1.5	4	2	100-C09...	193-EECB	1.0 - 5.0	
0.75	1.9	6	4	100-C09...	193-EECB	1.0 - 5.0	
1.1	2.7	6	4	100-C09...	193-EECB	1.0 - 5.0	
1.5	3.6	6	4	100-C09...	193-EECB	1.0 - 5.0	
2.2	4.9	10	6	100-C09...	193-EEDB	3.2 - 16	
3	6.5	16	10	100-C09...	193-EEDB	3.2 - 16	
4	8.5	20	10	100-C09...	193-EEDB	3.2 - 16	
5.5	11.5	25	16	100-C12...	193-EEDB	3.2 - 16	
7.5	15.5	32	16	100-C16...	193-EEDB	3.2 - 16	
10	20	40	25	100-C23...	193-EEEB	5.4 - 27	
11	22	40	25	100-C23...	193-EEEB	5.4 - 27	
15	29	63	32	100-C30...	193-EEFD	9 - 45	
18.5	35	63	40	100-C37...	193-EEFD	9 - 45	
22	41	80	50	100-C43...	193-EEFD	9 - 45	
30	55	100	63	100-C55...	193-EEQD	11 - 55	
30	55	100	63	100-C60...	193-EEGE	18 - 90	
37	66	125	80	100-C72...	193-EEGE	18 - 90	
45	80	160	100	100-C85...	193-EEVE	18 - 90	
55	97	200	125	100-C97...	193-EEVE	60 - 120	

Recommended fuse sizes based on the following starting conditions:  
 < 3 kW Starting current max. 6 x Motor rated current, Starting time max. 5 s  
 > 3 kW Starting current max. 7 x Motor rated current, Starting time max. 5 s

**Table 2 Type I and Type II Fuse Coordination with Bul. 100-C contactors per EN 60947-4-1**

E1 Plus Cat. No.	Contact. Cat. No.	Max. starter FLC (A)	Prospective S.C. current, Ir (kA)	Conditional S.C. current, Iq (kA)	Max. voltage (V)	Type I Max. Class J or CC fuse (A)	Type II Max. Class J or CC fuse (A)	
193, 193S	ED1AB, EEAB, ED1BB, EEBC	100-C09	0.5	100	600	3	3	
	ED1CB, ED1DB, EECB, EEDB, EEPB, EERB	100-C09	1					
	ED1EB, EEEB, EESB	100-C09	9					3
		100-C12	12					
		100-C16	16					
		100-C23	23					
		100-C30	30					
	ED1ED, ED1FD, EEED, EEFD, EEQD, EETD	100-C09	9					3
		100-C12	12					
		100-C16	16					
		100-C23	23					
		100-C30	30					
	EEEE, EFFE	100-C37	37					5
		100-C43	43					
		100-C55	55					
		100-C60	60					
		100-C72	72					
	EEGE, EEUE	100-C85	85					5
		100-C60	60					
		100-C72	72					
	EEVE	100-C85	85					5
		100-C97	97					

**Table 4 High Fault Short Circuit Ratings, using Fusing, per UL508 and CSA 22.2 No. 14**

E1 Plus Cat. No.	Contact. Cat. No.	Max. starter FLC (A)	Max. available fault current (kA)	Max. voltage (V)	Max. UL Class J or CC fuse, CSA HRCl-J (A)
193, 193S	ED1AB, EEAB, ED1BB, EEBC	100-C09	0.5	100	600
	ED1CB, ED1DB, ED1EB, EECB, EEDB, EEEB, EEPB, EERB, EESB	100-C09	1		
	ED1ED, ED1FD, EEED, EEFD, EEQD, EETD	100-C12	12		
		100-C16	16		
		100-C23	23		
		100-C30	30		
		100-C37	37		
		100-C43	43		
		100-C55	55		
		100-C60	60		
		100-C72	72		
		100-C85	85		
		100-C97	97		

193-EEED or 193-EEFD with 100-C30, 100-C37 or 100-C43 contactor: 480V/65kA; 600V/30kA when protected by Allen-Bradley 140U-H6C3 followed by suffixes CB rated 50A max.

<sup>1)</sup> Typical motor currents according IEC 60947-4-1 Table G.1  
<sup>2)</sup> Incomplete catalog number, add coil and auxiliary contact codes  
<sup>3)</sup> Overload relay 193-ED... with the same current setting range may also be used (up to 45A)

**Table 7 High fault short circuit ratings, using Bul. 140MG, circuit protector, per UL508 and CSA 22.2 No.14**

E1 Plus Cat. No.	Contactor Cat. No.	Max. starter FLC (A)	Max. available fault current (kA)		Circuit Protector Cat. No.	Max. Circuit Protector Current (A)	Minimum Enclosure Size (in.)	
			At 480V	At 600V				
193	ED1ED, ED1FD, EEED, EEFD, EEQD	100-C30	30	65	25	140MG-H8P-C50	50	24x20x8 with two hinges and two multi-turn screw type latches
		100-C37	37	65	25	140MG-H8P-C50	50	
		100-C43	43	65	25	140MG-H8P-C50	50	
	EEEE, EEFE, EEGE, EEVE	100-C60	60	65	25	140MG-H8P-D12	125	
		100-C72	72	65	25	140MG-H8P-D12	125	
		100-C85	85	65	25	140MG-H8P-D12	125	
		100-C97	97	65	25	140MG-H8P-D12	125	

**Table 8 High fault short circuit ratings, using Bul. 140G-H frame, circuit breakers, per UL508 and CSA 22.2 No.14**

E1 Plus Cat. No.	Contactor Cat. No.	Max. starter FLC (A)	Max. available fault current (kA)		Circuit Breaker Cat. No.	Max. Circuit Breaker Current (A)	
			At 480V	At 600V			
193	ED1ED, ED1FD, EEED, EEFD, EEQD	100-C30	30	50	25	140G-H6C3-C50	50
		100-C37	37	50	25	140G-H6C3-C50	50
		100-C43	43	50	25	140G-H6C3-C50	50
	EEEE, EEFE, EEGE, EEVE	100-C60	60	65	25	140G-H6F3-D11	110
		100-C72	72	65	25	140G-H6F3-D11	110
		100-C85	85	65	25	140G-H6F3-D11	110
		100-C97	97	65	25	140G-H6F3-D12	125

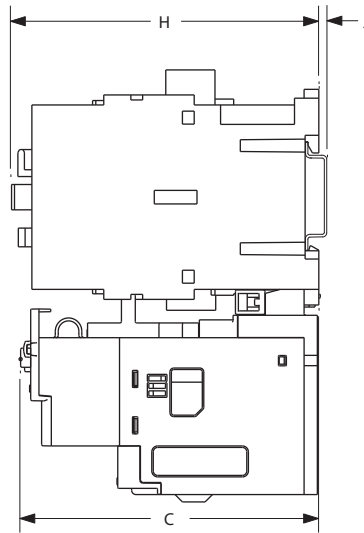
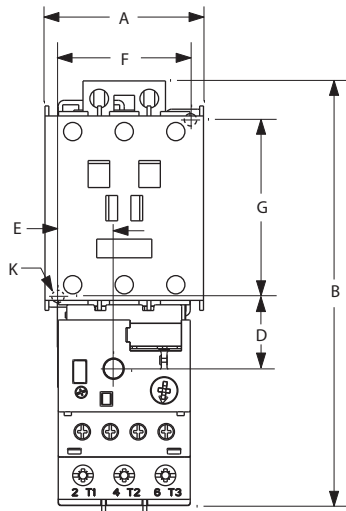
**Table 9 Group installation short circuit ratings**

Catalog Nos. 193/592-EE and ED1 noted below have the following group installation short circuit ratings when used with the specified contactors and branch circuit protection.

Overload Relay	Contactor	Max. Available Fault Current	Max. Voltage	UL Fuse
193 -ED1AB, -ED1BB, -ED1CB, -ED1DB, -ED1EB, -EEAB, -EEBB, -EECB, -EEDB, -EEEB.	100-C09, 100-C12, 100-C16	5,000	480	Class RK5 60 Amp.
193 -ED1AB, -ED1BB, -ED1CB, -ED1DB, -ED1EB, -EEAB, -EEBB, -EECB, -EEDB, -EEEB.	100-C09, 100-C12, 100-C16	30,000	480	Class J 100 Amp

**Table 10 Short circuit ratings, using 140U D Frame circuit breakers, per UL508 and CSA 22.2**

Overload Relay	Contactor	Circuit Breaker Catalog Nos.	Short Circuit Rating
193 -ED1AB, -ED1BB, -ED1CB, -ED1DB, -ED1EB, -EEAB, -EEBB, -EECB, -EEDB, -EEEB.	100-C09, 100-C12, 100-C16, 100-C23	140U-D6D3-A50, -B10, -B20, -B30, -B40, -B50, -B60 -B80, -C10, -C12, -C15, -C20, -C25, -C30	65,000 A. 480Y / 277 VAC
193 -ED1AB, -ED1BB, -ED1CB, -ED1DB, -ED1EB, -EEAB, -EEBB, -EECB, -EEDB, -EEEB.	100-C09, 100-C12, 100-C16, 100-C23	140U-D6D3-A50, -B10, -B20, -B30, -B40, -B50, -B60 -B80, -C10, -C12, -C15, -C20, -C25, -C30	5,000 A. 600Y / 347 VAC
193 -ED1AB, -ED1BB, -ED1CB, -ED1DB, -ED1EB, -EEAB, -EEBB, -EECB, -EEDB, -EEEB.	100-C09, 100-C12, 100-C16, 100-C23	140U-D6D3-A50, -B10, -B20, -B30, -B40, -B50, -B60 -B80, -C10, -C12, -C15, -C20, -C25, -C30	35,000 A. 600Y / 347 VAC



CONTACTOR CAT. NO.	E1 PLUS CAT. NO.		A	B	C	D	E	F	G	H	J	K
100-C09, -C12, -C16, -C23	193-ED1_B, 193*-EE_B	mm (in)	45 (1.76)	146.6 (5.77)	85.2 (3.35)	24.5 (.96)	13.9 (.55)	35 (1.38)	60 (2.36)	86.5 (3.40)	2 (.08)	4.5 (.17)
100-C30, -C37	193-ED1_D, 193*-EE_D	mm (in)	45 (1.76)	146.6 (5.77)	101.2 (3.98)	24.5 (.96)	13.9 (.55)	35 (1.38)	60 (2.36)	104 (4.09)	2 (.08)	4.5 (.17)
100-C43, -C55		mm (in)	54 (2.12)	146.6 (5.77)	101.2 (3.98)	24.5 (.96)	18.4 (.74)	45 (1.77)	60 (2.36)	104 (4.09)	2 (.08)	4.5 (.17)
100-C60, -C72, -C85, -C97	193*-EE_E	mm (in)	72 (2.83)	192 (7.57)	120.4 (4.74)	29 (1.14)	23.8 (.94)	55 (2.16)	100 (3.94)	126 (4.94)	2 (.08)	5.4 (.21)
300-AO_, -BO_	193-ED1_D, 193*-EE_D	mm (in)	45 (1.76)	146.6 (5.77)	101.2 (3.98)	24.5 (.96)	13.9 (.55)	35 (1.38)	60 (2.36)	104 (4.09)	2 (.08)	4.5 (.17)
300-CO_	193*-EE_E	mm (in)	72 (2.83)	192 (7.57)	120.4 (4.74)	29 (1.14)	23.8 (.94)	55 (2.16)	100 (3.94)	126 (4.94)	2 (.08)	5.4 (.21)