

ESSENTIAL COMPONENTS

E1 Plus Side-Mount Modules

Enhancing Your Motor Protection

The Allen-Bradley® Bulletins 193 and 592 E1 Plus electronic overload relays are the industry's first modular self-powered devices. Through the use of optional side-mount modules, functionality of the E1 Plus overload relays can be cost effectively expanded and machine operation and protection enhanced.

Advantages

Compact – Direct mounting to the left side of the current-sensing 193-EE and 592-EE E1 Plus overload relays adds only 18 mm is added to the width.

Simplified Control – The side-mount modules electronically interface with the E1 Plus overload relay so that all control circuit connections are made at the E1 Plus overload relay terminals.

Flexibility – The modular design of the E1 Plus overload relays allows expanded functionality in only those applications where it is required.



Enhanced Protection

Flexibility - The E1 Plus side-mount modules provide adjustable levels of protection, tailored to your application.

Diagnostics – The E1 Plus side-mount module^① monitors the motor current by electronically interfacing to the E1 Plus overload relay's current-sensing circuit. As a result, the side-mount module is able to identify the cause of trip including overload, phase loss, or the added protection function the side-mount module provides.

To help minimize troubleshooting, a status LED on the front of each E1 Plus side-mount module^② provides diagnostic information about the cause of the trip.

Dynamic Inhibit on Start – The E1 Plus side-mount modules^③ contain a unique circuit that monitors for motor starting inrush current. This circuit inhibits a jam or ground fault trip during the motor start period and then arms the jam and/or ground fault trip function after the inrush current falls below 125% of the overload relay full-load current setting. This eliminates the need for additional components like timing relays, simplifying the control circuit.

Integrated Remote Reset

Each E1 Plus side-mount module incorporates circuitry for resetting a tripped E1 Plus overload relay. Actuation of a contact or PLC® output connected at the module's reset terminations will result in a reset signal being transmitted from the module to the E1 Plus overload relay.

① Excluding the Remote Reset side-mount module (Cat. No. 193-ERR)

② Excluding the Series A Jam side-mount module (Cat. No. 193-EJM), the Series A Remote Reset side-mount module (Cat. No. 193-ERR), and the DeviceNet™ side-mount module (Cat. No. 193-EDN)

③ Excluding the Remote Reset side-mount module (Cat. No. 193-ERR) and the PTC side-mount module (Cat. No. 193-EPT)

E1 Plus DeviceNet™ Communication Module

The E1 Plus DeviceNet Communication Side-Mount Module (Cat. No. 193-EDN) provides a cost-effective, seamless deployment of motor starters onto the Integrated Architecture™ as an accessory for the E1 Plus electronic overload relay. The DeviceNet module provides Integrated I/O (2 inputs and 1 output) providing local connection of motor starter-related I/O. The DeviceNet module offers expanded protective functions: overload warning, jam protection, and underload warning. The DeviceNet module also allows access to average motor current (percentage of FLA setting), percentage of thermal capacity usage, device status, trip and warning identification, and trip history, which allows continual monitoring of machine performance.



E1 Plus Remote Reset Module

The Cat. No. 193-ERR Remote Reset Module is available for applications that require remote reset of E1 Plus overload relays after a trip occurs.

E1 Plus Jam Protection Module with Remote Reset

Front-accessible DIP switches offer flexibility to configure the Cat. No. 193-EJM Jam Protection Module's operation to match application requirements. Selections are available for enabling or disabling the jam protection function and remote reset operation. Jam trip level settings are available at 150%, 200%, 300%, and 400% of full load current setting. Trip delay settings of 1/2, 1, 2, and 4 seconds are available to minimize nuisance tripping in applications where intermittent short-duration overloading is permissible.





E1 Plus Ground Fault Module with Remote Reset

Front-accessible DIP switches offer flexibility to configure the Cat. No. 193-EGF Ground Fault Protection Module's operation to match application requirements. Selections are available for enabling or disabling the ground fault protection function and remote reset operation. Ground fault trip level settings are available in four ranges: 20...100 mA (resistive loads only, for motor loads consult factory), 100...500 mA, 0.2...1 A, and 1...5 A. Within each range, the specific ground fault trip level can be set (20%, 35%, 50%, 65%, 80%, 90%, or 100% of the maximum ground fault setting). Trip delay is fixed at 50 ms ± 20 ms.

The Cat. No. 193-EGF Ground Fault Protection Module requires the use of one of the following E1 Plus Ground Fault Sensors, 193-CBCT1, 193-CBCT2, 193-CBCT3, 193-CBCT4 or 193-CBCT5.

E1 Plus Ground Fault/Jam Module with Remote Reset

Front-accessible DIP switches offer flexibility to configure the Cat. No. 193-EGJ Ground Fault / Jam Protection Module's operation to match application requirements. The ground fault selections are the same as the Cat. No. 193-EGF Ground Fault Protection Module. In addition to ground fault, this module offers selectable fixed jam protection. The user can enable or disable jam protection from the DIP switches. The jam protection is fixed at 400% of the full load current setting with a 0.5 second trip delay.

The Cat. No. 193-EGJ Ground Fault/Jam Protection Module requires the use of one of the E1 Plus Ground Fault Sensors Cat. No. 193-CBCT1, 193-CBCT2, 193-CBCT3, 193-CBCT4, or 193-CBCT5.



Ground Fault Sensors

The E1 Plus Ground Fault Sensors (Cat. No. 193-CBCT1 ... 5) are required when using either the 193-EGF Ground Fault Protection Module or the 193-EGJ Ground Fault/Jam Protection Module. The sensors come in five sizes to accommodate a wide range of applications, 20, 40, 65, 85, and 160 mm.

Availability: Cat. Nos. 193-CBCT1 and 193-CBCT2 available now.
Cat. Nos. 193-CBCT3, 193-CBCT4, and 193-CBCT5, consult factory.



E1 Plus PTC Module with Remote Reset

The E1 Plus PTC Side-Mount Module (Cat. No. 193-EPT) provides terminals IT1 and IT2 for the connection of positive temperature coefficient (PTC) thermistor sensors. PTC sensors are commonly embedded in the motor stator windings to monitor winding temperature. When the motor winding temperature reaches the PTC sensor's temperature rating, the PTC sensor's resistance transitions from a low to high value. Since PTC sensors react to actual temperature, enhanced motor protection can be provided to address conditions like obstructed cooling and high ambient temperature. The PTC protection module will trip on a PTC (temperature) fault, a PTC open circuit, or a PTC short circuit.

PRODUCT SELECTION AND SPECIFICATIONS

Function	E1 Plus (Cat. No. 193/592-EE__)	E1 Plus w/Jam SMM (Cat. No. 193-EJM)	E1 Plus w/Ground Fault SMM (Cat. No. 193-EGF) ^②	E1 Plus w/Ground Fault/Jam SMM (Cat. No. 193-EGJ) ^②	E1 Plus w/PTC SMM (Cat. No. 193-EPT)	E1 Plus w/Remote Reset SMM (Cat. No. 193-ERR)
Manual/Automatic Reset	X	X	X	X	X	X
Selectable Trip Class:	10	X	X	X	X	X
	15	X	X	X	X	X
	20	X	X	X	X	X
	30	X	X	X	X	X
Jam Protection On or Off		X		X		
Fixed or Adjustable Trip Level		Adjustable 150/200/300/400%		Fixed @ 400%		
Fixed or Adjustable Trip Delay		Adjustable 0.5/1.0/2.0/4.0 secs.		Fixed @ 0.5 secs.		
Fixed or Adjustable Inhibit		Dynamic Inhibit ^①		Dynamic Inhibit ^①		
Ground Fault Protection			Core-Balanced Ground Fault Protection ^②	Core-Balanced Ground Fault Protection ^②		
On or Off			X	X		
Fixed or Adjustable Trip Level			Adjustable 20 mA...5 A ^③	Adjustable 20 mA...5 A ^③		
Fixed or Adjustable Trip Delay			Fixed @ 50 ms ± 20 ms	Fixed @ 50 ms ± 20 ms		
Fixed or Adjustable Inhibit			Dynamic Inhibit ^①	Dynamic Inhibit ^①		
PTC Protection						
PTC Over Temperature Trip					X	
PTC Open Circuit					X	
PTC Short Circuit					X	
Remote Reset Capability		X	X	X	X	X
Fault Indication			X	X	X	

①Dynamic Inhibit: protective function is enabled after motor current goes above 150% and then falls below 125%

②Requires use of external ground-fault sensor: Cat. No. 193-CBCT1, 193-CBCT2, 193-CBCT3, 193-CBCT4, or 193-CBCT5

③From 20...100 mA resistive loads. For motor loads, consult factory.

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