

# E1 Plus Overload Relay Specifications

Bulletin Numbers 193, 592

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## Summary of Changes

This publication has been reformatted from its original layout.



## Additional Resources

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

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, <a href="http://www.rockwellautomation.com/global/certification/overview.page">http://www.rockwellautomation.com/global/certification/overview.page</a>	Provides declarations of conformity, certificates, and other certification details.

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

## Product Overview

		
Bulletin	193-ED	193-EE
Type	E1 Plus™ Electronic Overload Relay	E1 Plus Electronic Overload Relay
Rated Current (Range)	0.1...45 A	0.1...800 A
NEMA Operating Voltage, Nominal	—	600V
IEC Operating Voltage, Nominal	690V	690/1000V
Overload Type	Electronic Overload	Electronic Overload
Trip Class (Fixed)	10	—
Trip Class (Adjustable)	—	10, 15, 20, 30
Ambient Temperature Compensated		
Reset Type	Manual Only	Automatic and Manual
Adjustment Range	5:1	5:1
Phase Loss	3 s	3 s
Ground (Earth) Fault	—	Optional
Overcurrent (Jam) Detection	—	Optional
Stall Detection	—	—
Underload Detection	—	—
Current Imbalance	—	—
PTC Thermistor Monitoring	—	Optional
Warning Settings	—	—
N.C. Trip Contact		
N.O. Alarm Contact		
No. of Outputs	—	—
No. of Inputs	—	—
ODVA (DeviceNet) Conformance	—	Optional
Variable Frequency Drive (VFD) Compatible	—	—

### Standards Compliance

- IEC/EN 60947-4-1
- IEC/EN 60947-5-1
- CSA 22.2 No. 14
- UL 508

### Certifications

- CE
- cULus Listed
- C-Tick
- CCC

## Features

### Accurate, Reliable Performance

#### *Current measurement-based protection*

While electromechanical overload relays pass motor current through heating elements to provide an indirect simulation of motor heating, the E1 Plus Overload Relay directly measures motor current. Current measurement-based overload protection more accurately models a motor's thermal condition. Furthermore, ambient temperature does not impact the performance of current measurement-based designs over the specified temperature operating range.

#### *Electronic design*

Thermal modeling is performed electronically with precision solid-state components, where at the heart of the E1 Plus Overload Relay is an application-specific integrated circuit (ASIC). The ASIC continually processes motor current data to accurately maintain the time-current status of the motor thermal capacity utilization value.

#### *Thermal memory*

A thermal memory circuit allows the E1 Plus Overload Relay to model the heating and cooling effects of motor on and off periods. This ensures accurate protection for both hot and cold motors.

#### *Enhanced phase loss protection*

A separate phase loss detection circuit incorporated into the E1 Plus Overload Relay allows it to respond quickly to phase loss conditions; typical reaction time is 3 seconds.

### Easy to Select and Apply

#### *Straightforward installation*

The self-powered design means that the E1 Plus Overload Relay installs in the same manner as traditional overload relays. Device setup is accomplished by simply dialing the setting potentiometer to the motor FLA rating. The low energy consumption of the electronic design minimizes temperature rise issues inside control cabinets.

#### *Wide adjustment range*

A wide 5:1 adjustment range results in the need for half as many catalog numbers as the bimetallic alternative in order to cover the same current range. This helps to reduce inventory carrying costs and affords greater installation flexibility for dual voltage machines. Evenly spaced setting tick marks enhance the ease of installation setup.

### Rugged Construction

#### *Over-molded power connections*

The unique line-side over-molded power connections make for a sturdy two-component starter assembly that is unmatched in the industry. The pre-formed power connections allow easy starter assembly—every time.

#### *Current transformers*

The current transformers are secured separately in the overload housing to ensure the greatest degree of resistance to shock and vibration conditions. Varnished laminations ensure consistent performance and provide additional protection against corrosion.