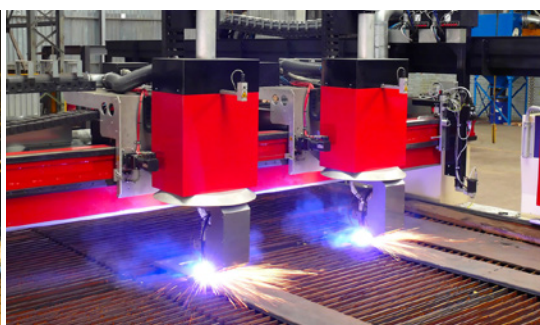


Series CEP9 Advanced Electronic Overload Relays



Choose Series CEP9 overloads for advanced communication and motor protection

- Intelligent motor protection (EtherNet/IP enabled)
- Scalable solution
- Diagnostic Information
- Integrated I/O
- Adjustable trip class 5...30
- Wide current range
- Test/Reset button
- Programmable trip and warning settings
- True RMS current/voltage sensing (50/60 Hz)
- Protection for single- and three-phase motors



The CEP9 Electronic Overload Relay is the next generation electronic overload from Sprecher + Schuh. Its modular design, communication options, diagnostic information, simplified wiring and integration into Logix make this the ideal overload for motor control applications in an automation system. The CEP9 Overload Relay provides flexibility, reduces engineering time and maximizes uptime for important motor starter applications.

Intelligent Motor Protection

- Easy automation system integration
- Network Connectivity
 - Native I/O
 - DeviceLogix™ Technology Enabled
 - Pre-programmed Operating Modes

Modular Design

- For exact application needs
- Wide Current Range
 - Multiple Sensing Capabilities
 - Expansion I/O
 - Operator Interface

Diagnostic Information

- Monitor motor performance
- Voltage, Current and Energy
 - Trip / Warning Histories
 - % Thermal Capacity Utilization
 - Time to Trip
 - Time to Reset
 - Operational Hours
 - Number of Starts
 - Snapshot Log

On Board Features

The newly designed CEP9 Overload Relay has incorporated the newest technologies directly into the device to help simplify installation and configuration. Simplified wiring between the CEP9 overload relay and CA7 contactor ensure easy installation.

On-device settings include network address configuration, restore factory default settings, and enable security settings. CEP9 overloads also include removable terminal blocks, I/O and Operator Station Dual Port EtherNet/IP, and it supports device level ring.



Series CEP9 Features



design for low level (arcing) ground fault detection. Trip and warning settings are adjustable from 20 mA...5.0 A. For devices rated greater than 200 A and for ground fault detection less than 1.0 A, the external core balance current transformer accessory is required. Class I protection is provided as defined by UL1053. The CEP9 Electronic Overload Relay provides a max. trip-inhibit setting, offering flexibility to prevent tripping when the ground fault current magnitude exceeds 6.5 A. This can be useful to

guard against the opening of the controller when the fault current could potentially exceed the controller's interrupting capacity rating.

Note: The CEP9 Electronic Overload Relay is not a Ground Fault Circuit Interrupter for personnel protection as defined in article 100 of the U.S. National Electric Code.

Stall

"Stall" is defined as a condition where the motor is not able to reach full-speed operation in the appropriate amount of time required by the application. This can result in motor overheating as current draw is in excess of the motor's full load current rating. The CEP9 Electronic Overload Relay provides user-adjustable stall protection. The trip setting has a range of 100...600% FLA, and the enable time is adjustable up to 250 seconds.

Jam (Overcurrent)

The CEP9 Electronic Overload Relay can respond quickly to take a motor off-line in the event of a mechanical jam, thereby reducing the potential for damage to the motor and the power transmission components.



Thermal Utilization

The CEP9 Electronic Overload Relay provides overload protection through true RMS current measurement of the individual phase currents of the connected motor. Based on this information, a thermal model that simulates the actual heating of the motor is calculated. Percent of thermal capacity utilization (%TCU) reports this calculated value and can be read via a communications network. An overload trip occurs when the value reaches 100%.

Adjustable Settings

Thermal overload protection setup is accomplished simply by programming the motor's full load current (FLC) rating and the desired trip class (5...30). Programming of the actual values through software programming ensures the accuracy of the protection.

Thermal Memory

The CEP9 Electronic Overload Relay includes a thermal memory circuit designed to approximate the thermal decay for a trip class 20 setting. This means that the thermal model of the connected motor is maintained at all times, even if the supply power is removed.

Reset Modes

This flexibility allows the end-user in the ability to select between manual and automatic reset for an overload trip, allowing for broad application. The point of reset is user adjustable from 1...100% TCU.

Time to Trip

During an overload condition, the CEP9 Electronic Overload Relay provides an estimated time to trip that is accessible via a communications network. This allows corrective action to be taken so that production may continue uninterrupted.

Time to Reset

Following an overload trip, the CEP9 Electronic Overload Relay will not reset until the calculated percentage of thermal capacity utilization falls below the reset level. As this value decays, the time to reset, which is accessible via a communications network, is reported.

Thermal Warning

The CEP9 Electronic Overload Relay provides the capability to alert in the event of an impending overload trip. A thermal warning bit is set in the Warning Status when the calculated percentage of thermal capacity utilization exceeds the programmed thermal warning level, which has a setting range of 0...100% TCU.

Two-Speed Protection

The CEP9 Electronic Overload Relay offers a second FLA setting for 2-speed motor protection. What used to require two separate overload relays - one for each set of motor windings - can now be accomplished with one device. Improved protection is delivered as thermal utilization is maintained in one device during operation in both speeds.

Phase Loss

The CEP9 Electronic Overload Relay offers configurable phase loss protection, allowing the installer to enable or disable the function plus set a time delay setting, adjustable from 0.1...25.0 seconds. The trip level is factory-set at a current imbalance measurement of 100%.

Ground (Earth) Fault

The CEP9 Electronic Overload Relay incorporates zero sequence (core balance) sensing into its



NEW MODULAR DESIGN

The new modular design allows customers to tailor the device to their application.

Communication Module

- EtherNet/IP
- DeviceNet

Control Module

	I/O		I/O and Protection	
	Inputs	Relay Outputs	Inputs	Relay Outputs
Control Voltage				
110-120VAC 50/60Hz	4	3	2	2
220-240VAC 50/60 Hz	4	3	2	2
24VDC	6	3	4	2

Sensing Module

Sensing Options	Current Range
• Voltage /	• 0.5 - 30A
Current /	• 6 - 60A
Ground Fault	• 10 - 100A
• Current /	• 20 - 200A
Ground Fault	
• Current	

Complete CEP9 Overload Relay

Simplified Logix Integration

With simple tools such as Add-On Profiles, Add-On Instructions and Faceplates, users can integrate the CEP9 Overload Relay into Integrated Architecture with ease. Download the pre-programmed and pre-tested tools, copy and paste the desired portions into your project and configure the properties for your specific application.

Trip adjustments include a trip setting adjustable from 50...600% FLA and a trip delay time with a range of 0.1...25.0 seconds. A separate warning setting is adjustable from 50...600% FLA.

Underload (Undercurrent)

A sudden drop in motor current can signal conditions such as:

- Pump cavitation
- Tool breakage
- Belt breakage

For these instances, rapid fault detection can help minimize damage and aid in reducing production downtime.

Additionally, monitoring for an underload event can provide enhanced protection for motors that are coded by the medium handled (e.g., submersible pumps that pump water). Such motors can become overheated despite being underloaded. This can result from an absence or an insufficient amount of the medium (due to clogged filters, closed valves, etc.).

The CEP9 Electronic Overload Relay offers underload trip and warning settings adjustable from 10...100% FLA. The trip function also includes a trip delay time with a range of 0.1...25.0 seconds.

Current Imbalance (Asymmetry)

The CEP9 Electronic Overload Relay offers current imbalance trip and warning settings adjustable from 10...100%. The trip function also includes a trip delay time with a range of 0.1...25.0 seconds.

Remote Trip

The remote trip function allows an external device (e.g., a vibration sensor) to induce the CEP9 Electronic Overload Relay to trip. External device relay contacts are wired to the CEP9 Electronic Overload Relay discrete inputs. These discrete inputs are configurable with an option for assigning the remote trip function.

Current Monitoring Functions

The CEP9 Electronic Overload Relay allows the user to monitor the following operational data over a communications network:

- Individual phase currents — in amperes
- Individual phase currents — as a percentage of motor FLC
- Average current — in amperes
- Average current — as a percentage of motor FLC
- Percentage of thermal capacity utilized
- Current imbalance percentage
- Ground fault current

Status Indicators

The CEP9 Electronic Overload Relay provides the following LED indicators:

- **Power** — This green/red LED indicates the status of the overload relay.
- **TRIP/WARN** — This LED flashes a yellow code under a warning condition and a red code when tripped.

Inputs/Outputs

Inputs allow the connection of such devices as contactor and disconnect auxiliary contacts, pilot devices, limit switches, and float switches. Input status can be monitored

via the network and mapped to a controller's input image table. Inputs are rated 24V DC, 120V AC, or 240V AC and are current sinking. Power for the inputs is sourced separately with convenient customer sources at terminal A1. Relay contact outputs can be controlled via the network or DeviceLogix function blocks for performing such tasks as contactor operation.

Diagnostic Functions

The CEP9 Electronic Overload Relay allows the user to monitor the following diagnostic information over the DeviceNet network:

- Device status
- Trip status
- Warning status
- Time to an overload trip
- Time to reset after an overload
- History of past five trips
- History of positive warnings
- Hours of operation
- Number of starts
- Trip snapshot trip

Test/Reset Button

The Test/Reset button, located on the front of the CEP9 Electronic Overload Relay, allows the user to perform the following:

- **Test** — The trip relay contact will open if the CEP9 Electronic Overload Relay is in an untripped condition and the Test/Reset button is pressed for 2 seconds or longer.
- **Reset** — The trip relay contact will close if the CEP9 Electronic Overload Relay is in a tripped condition, supply voltage is present, and the Test/Reset button is pressed.

Single/Three-Phase Operation

The CEP9 Electronic Overload Relay can be applied to three-phase as well as single-phase applications. A programming parameter is provided for selection between single- and three-phase operation. Straight-through wiring is afforded in both cases.

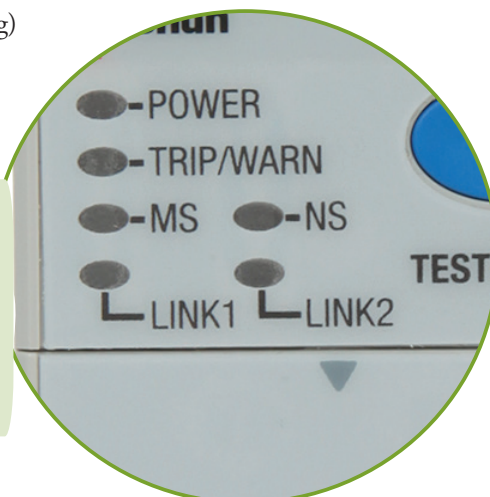
EtherNet/IP Communications

The CEP9 EtherNet/IP communication module has two RJ45 ports that act as an Ethernet switch to support a star, linear, and ring topology and supports the following:

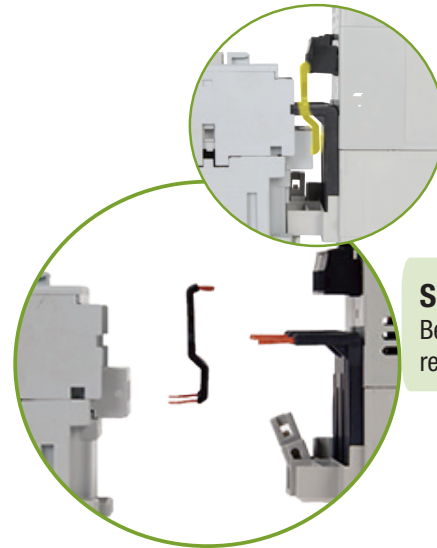
- 2 concurrent Class 1 connections [1 exclusive owner + (1 input only or 1 listen only)]
- 6 simultaneously Class 3 connections (explicit messaging)
- Embedded web server
- SMTP server for trip and warning events
- Embedded EDS file

On-Device Settings

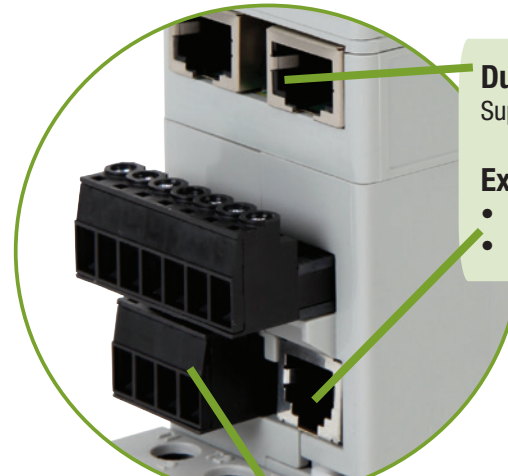
- Network address configuration
- Restore factory default settings
- Enable security settings



FEATURES The newly designed CEP9 Overload Relay has incorporated the newest technology directly into the device to help simplify installation and configuration.



Simplified Wiring
Between CEP9 overload relay and contactor



Dual Port EtherNet/IP
Supports device level ring

Expansion Port
• Expansion I/O
• Operator Station

Removable Terminal Blocks