Overload Relay Choices for Motor Protection

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Protecting your investment is critical to keeping your operations up and running. Prevent unwanted downtime by choosing the right protection for your motor controls. Sprecher + Schuh is proud to offer several options in motor protection. From simple single purpose devices, to varying degrees of selection options and complete factory automation and communication, selecting the right protection is vital to ensuring motor life and longevity. Sprecher + Schuh is here to help protect your investment.





Choices in Overload Relays



CT7N/CT8 Thermal Bimetallic

Key Features:

- Ambient temperature compensation
- Rated for DC and variable frequent drive applications up to 400 Hz
- Optional remote reset solenoid and external reset accessories



CEP7 Solid State

Key Features:

- Current measurement based protection
- Low energy consumption
- Adaptive-mount expansion modules provide adjustable levels of protection



CEP9 Advanced Electronic

Key Features:

- Provides critical motor protection functions
- Communication and diagnostics provide detailed logs and control from relay to motor
- Can simplify control architecture

Feature Comparison

	CT7N/CT8	CEP7	CEP9				
Protection Features							
Overload	 ✓ 	 ✓ 	 ✓ 				
Phase Loss	 ✓ 	 ✓ 	 ✓ 				
Ground Fault		~	 ✓ 				
Current Imbalance			 ✓ 				
Jam		✓	 Image: A set of the set of the				
Over/under Voltage			 ✓ 				
Voltage Imbalance			 ✓ 				
Over/Under Power			 ✓ 				
Diagnostic Features							
% Full Load Amperes		✓	 ✓ 				
% Thermal Capacity Utilization		~	~				
Voltage			 ✓ 				
Power			 ✓ 				
Energy			 ✓ 				
Communication Features							
Ethernet/IP			 ✓ 				
Logix Integration			 ✓ 				
Parameter Configuration			 ✓ 				

Most Motor Failures can be prevented with appropriate protection measures



Bimetallic Thermal Overload Protection

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Series CT7N & CT8





The CT7N bimetallic Class 10 overload relays are designed for use with the CA7 contactors and CAU7 reversing contactors

Ideal Applications

Ideal for light industry and low critical process

- Conveyors, Fans and Pumps
- VFD-controlled motors
- DC motors

Causes of Motor Failure



The most common causes of motor failure are:

- Overloading of the motor
- Unbalanced power or single-phasing
- Over- or undervoltage
- High ambient temperature
- Too many frequent starts
- Rotor/stator/bearing failure
- Contaminants



The most expenditures connected to motor failure:

- Equipment downtime
- Loss of production
- Collateral equipment damage
- Equipment replacement
- Work in progress scrappage
- Overtime for repair crews
- Safety hazard for personnel



The bimetallic thermal overload relays compensate for ambient temperature while providing overload protection and phase-loss sensitivity. They are a cost-effective way to protect your electrical equipment investment.

Reset Modes

- Selectable reset switch – manual or automatic
- Remote reset
 solenoid option



The CT8 bimetallic overload relays are designed for use with the CA8 miniature contactors and CAU8 miniature reversing contactors

Impact of Motor Failure

Solid State Overload Protection



Series CEP7

The solid state design of the CEP7 overload relay, offered in two models, provides ambient temperature compensation, thermal and phase loss protection and a wide 5:1 adjustment range. The CEP7-1EE basic model and CEP7-1EF advanced model also provides various trip class and reset options.

Selectable Trip Class & Reset Mode



CEP7-1EF Advanced Model offers:

- Adaptive-mount Expansion Port provides for
 - Ground fault / Jam
 - Remote Reset
- Allows for Intelli-button options

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CEP7-1EE model shown





5:1 Current RangeWide FLA Range

Model Specifications

	CEP7-1EE_ Basic Models	CEP7-1EF_ Advanced Models
Current Range	0.1100A	0.1100A
Trip Class	10 and 20 Adjustable	1030 Adjustable
Reset Mode	Manual Only	Automatic and Manual
Expansion Port	~	Ground fault / Jam and Remote Reset

Protection Modules for CEP7-1EF Advanced models

Reset Adapter

(Electronic Remote Reset) The Remote Reset/Indication Module is available for applications that require remote reset of CEP7 overload relays after a trip occurs. Side or Contactor mount options.



Ground Fault / Jam Expansion Module

Front-accessible DIP switches offer flexibility to configure the operation to match application requirements. In addition, this module offers selectable jam ϑ ground fault protection. Side or Contactor mount options.



CEP7-1ERR



Mounting Options



Direct Connect

CA7 UL/HP Contactors
CAN7 NEMA Contactors



DIN-Rail / Separate Mount

- Pass-thru model CEP7-1_P
- With DIN-Rail/Panel Adapter





Ideal Applications

Ideal for light to medium industry processes

- Pump and Fan motors
- Sawmills
- Mixers
- Conveyors

Connection Modules

- Enhanced Features for Motor Controllers
- Direct mount to busbar modules

Indication Displays for CEP7-1EF Advanced models

Electronic Reset and Indication Display

Display the status of a CEP7 from the front of a panel and features a reset button. Mounts in a standard 22mm pushbutton cutout.



Plug-in terminal and 22mm Panel Mounting



CEP7-ERID

Indication Display (No Reset)

Displays the status of a CEP7 from the front of a panel. Mounts in a standard 22mm pushbutton cutout. Plug-in terminal and 22mm Panel Mounting



CEP7-1ERIDN

Advanced Electronic Overload Protection



Series CEP9

The CEP9 Advanced Electronic Overload Relay provides a flexible design and advanced intelligence. Real-time diagnostics are transformed into actionable information - maximizing your up-time and protecting your assets.

-POWER -TRIP/WARN -MS -NS TEST/RESET

On-Device Settings

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



Dual Port Ethernet/IP

Supports device level ring



Operator Station

Expansion Modules

Customizable

The optional expansion modules for the CEP9 overload relays allow you to customize the device to your application's specific needs.

Expansion Power

- Supply • 120/240V AC
- 24V DC



Sensing Module The modular design of the CEP9 overload relay allows customers to tailor the device for their application's exact needs.

Communication Module

Control Module

Communication Module

- Ethernet/IP
- Parameter Configuration

Control Module

	I/O		I/O and Protection	
Control Voltage	Inputs	Relay Outputs	Inputs	Relay Outputs
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

- Voltage / Current / Ground Fault

ANALOG 3 IN / 1 OU

- Current / Ground Fault
- **Current Range** • 0.5 - 30A
- 10 100A
 - 20 200A
- Current

- **Expansion Digital** Modules
 - 3 universal inputs/1 output
 - 4 20 mA 0 - 10V •
 - RTD •

 - NTC

Expansion Analog Module

- 3 universal inputs/1 output
- 4 20 mA
- 0 10V
- RTD
- NTC

- 6 60A

Mounting Options



DIN-Rail / Separate Mount





Direct Connect

- CA7 UL/HP Contactors
- CAN7 NEMA Contactors

Simplified Wiring

Between CEP9 overload relay and CA7 contactor

Ideal Applications

Ideal for industrial and critical processes requiring

- Power, voltage and/or current management •
- Advanced motor protection and diagnostics
- Communications
 - Integrated and expandable I/O
- Multiple communication types
- Underload detection and control, such as
 - Submersible pumps; dry run
 - Conveyors; transmission loss



Diagnostic Capabilities

The CEP9 advanced electronic overload relay provides real-time motor diagnostic information to proactively indicate when a motor is having a problem allowing you to efficiently troubleshoot. This information includes:

- Current
- Ground fault current
- Voltage
- Power
- Energy
- % Thermal capacity utilization
- Time to trip
- Time to reset
- Trip history
- Trip snapshot

CEP9 Integrated Web and E-mail server

The communication options of the CEP9 allows users to view this diagnostic information using the following methods:

- Logix add-on profile
- Web browser
- FactoryTalk® View





Expansion Operator Station Operate and diagnose problems remotely with **Diagnostic Station** • Control Station IP65 Type 4 •





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.

22mm Panel Mounting

Usability Comparison

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Bimetallic Series CT7N/CT8

- Selectable reset mode
- Built-in test/reset button
- Manual trip



Solid State Series CEP7

- Multiple trip class options
- Selectable reset modes
- Wide current range
- Additional modules for protection * CEP7-1EF models



Advanced Electronic Series CEP9

- Wide current range
- Advanced performance and diagnostics
- Embedded communications
- Modularity
- Multiple expansion options

Prevent motor failures by protecting your investment

For more information, or to contact your Sprecher + Schuh representative, visit www.sprecherschuh.com