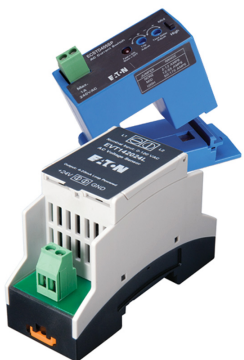


## Power Sensors

Consult the Sensing Solutions Product Guide **PG08301004E** for complete information on these Power Sensor products.



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### Online Publications

For the most current information on all Power Sensors from Eaton's electrical sector, visit [www.eaton.com](http://www.eaton.com)

#### EVT Series VoltageWatch Voltage Sensors



Publication: CA05311013E

##### Overview

Eaton's VoltageWatch™ sensor is a high-performance, true rms sensor for sensing voltage in single- and three-phase installations.

##### Applications

Detect below normal or “brown out” voltage conditions; protect against possible motor overheating

Identify phase-loss conditions by detecting voltage reduction in one or more phases of a three-phase motor

Monitor overvoltage conditions associated with regenerative voltage to help in diagnosing/avoiding motor drive issues

Detect voltage conditions that may cause stress in or damage to soft starter components (SCRs)

##### Product Features

True rms output—allows for use in situations where power supplied is non-sinusoidal

Standard 4–20 mA loop powered output—industry standard output works easily and reliably with existing controllers

Input/output isolation—input and output circuitry is electrically isolated for improved safety

Compact DIN rail mount enclosure—space-saving 35 mm wide enclosure mounts quickly for an attractive installation

##### Voltage Range

120, 240, 480V

##### Approvals

UL  
CE (Pending)  
RoHS Compliant



#### ECS Series CurrentWatch AC Current Switches



Publication: CA05311006E

##### Overview

AC current switches for detecting overcurrent condition.

##### Applications

Electronic proof of flow—current operated switches eliminate the need for multiple pipe or duct penetrations and are more reliable than electro-mechanical pressure or flow switches

Conveyors—detect jams and overloads

Lighting circuits—easier to install and more accurate than photocells

Fans, pumps and heating elements—faster response than temperature sensors

Critical motors

Ancillary equipment

##### Product Features

Universal outputs—NO or NC solid-state switch for control circuits up to 240 Vac/Vdc, compatible with most automation systems

Self-powered—cuts installation and operating costs

Easily adjustable setpoint—increases application flexibility and speeds start-up

Solid- or split-core housings—versions tailored for each type of installation

LED indication—provides quick visual indication of contact status

Built-in mounting feet—simple, two-screw panel mount or attach with optional din-rail mounting kit accessory

##### Current Range

Fixed or adjustable set point, 1–150 A

##### Approvals

UL Listed  
cUL Listed  
cULus  
CE



#### ECSJ Series CurrentWatch AC Current Switches



Publication: CA05311001E

##### Overview

Jumper selectable AC switches with solid-state output.

##### Applications

Electronic proof of flow—current operated switches eliminate the need for multiple pipe or duct penetrations and are more reliable than electro-mechanical pressure or flow switches

Conveyors—detect jams and overloads

Lighting circuits—easier to install and more accurate than photocells

Fans, pumps and heating elements—faster response than temperature sensors

Critical motors

Ancillary equipment

##### Product Features

Choice of NO or NC solid-state outputs—  
1A at 240 Vac  
15A at 120 Vac  
3A at 120 Vac  
0.15A at 30 Vdc, dual contact

Self-powered—cuts installation and operating costs

Easily adjustable setpoint—speeds start-up and reduces inventory

Solid- or split-core housings—choose the appropriate version for your application

LED indication—provides quick visual indication of output contact status

Built-in mounting feet—provide for a secure installation

##### Current Range

Adjustable set point, 1.75–200 A

##### Approvals

UL Listed  
cUL Listed  
cULus  
CE



#### ECS7 Series CurrentWatch AC Current Switches



Publication: CA05311007E

##### Overview

Self-calibrating AC current switch with solid-state outputs.

##### Applications

Conveyors—use current overload models to detect conveyor jams caused by scenarios such as side-by-sides

Electronic proof of flow—more reliable than electro-mechanical pressure or flow switches, with no need for pipe or duct penetrations

Pump protection—provides overload (jams) and underload (suction loss) indication

##### Product Features

Self-powered and self-calibrating—reduces installation costs

Status monitoring, overload and operating window options—choose the operating style that matches your application

Universal output—AC or DC compatibility with any automation system

##### Current Range

Self-calibrating set point, 1.5–150 A

##### Approvals

UL Listed  
cUL Listed  
cULus  
CE



Consult the Sensing Solutions Product Guide, **PG08301004E**, for complete information on sensors, limit switches and machine safety products.

### ECSTD Series CurrentWatch AC Current Switches



**Publication:** CA05311008E

#### Overview

AC current switches with time delay.

#### Applications

Motor protection—serves as an electronic proof-of-operation; detects current draw changes in motors when they encounter problems such as pumps running dry or pending bearing failure; non-intrusive and less expensive to install than differential pressure flow sensors or thermal switches

High inrush or temporary overload current—adjustable start-up/delay timer allows 0–15 second delay to eliminate nuisance trips from high inrush or short overload conditions

#### Product Features

Adjustable start-up/delay timer—field adjustable from 0–15 seconds to eliminate nuisance alarms due to start-up inrush or temporary overcurrent conditions

Choice of NO/NC AC or universal outputs—contact ratings of 1.0A at 240 Vac or universal outputs of 0.15A at 240 Vac/Vdc (NO models) and 0.2A at 135 Vac/Vdc (NC models) for use with most standard motor control systems

Improved ease of installation and use—self-powered, split-core models simplify installation, 1.0A AC rating eliminates need for time delay relay, and status LED provides visual indication of setpoint trip and contact action

#### Current Range

Adjustable set point, 1.5–200 A

#### Approvals

UL Listed  
cUL Listed  
CE



Listed (ECSTD401 and 4025C—No approval)

### ECSD Series CurrentWatch DC Current Switches



**Publication:** CA05311012E

#### Overview

DC switch with solid-state or mechanical relay output.

#### Applications

Electronic proof of flow—current operated switches eliminate the need for multiple pipe or duct penetrations

Welders—Instant indication of equipment status

Large drive motors—provide monitoring for field loss protection

Power supplies—detect and signal over-current condition before equipment damage

UPS—monitors battery output

Ancillary equipment

#### Product Features

Choice of mechanical relay or solid-state outputs—SPDT (Form C) relay, 5.0A at 240 Vac or 30 Vdc

Solid-state, NO, 0.15A at 240 Vac/Vdc

Easily adjustable setpoint—speeds start-up and reduces inventory

Compact, one-piece design—easily fits in crowded control panels

Input isolation—safer than shunt/relay combinations

Adaptive hysteresis—hysteresis is five percent of setpoint, allowing closer control than fixed-hysteresis switches

Solid-core housings

#### Current Range

Varies by model

#### Approvals

UL Listed  
cUL Listed  
CE



Listed Listed

### EAC Series CurrentWatch AC Current Sensors



**Publication:** CA05311004E

#### Overview

AC current sensor with analog outputs and power supply options.

#### Applications

Automation equipment—analog current reading for remote monitoring and software alarms

Data loggers—self-powered sensor helps conserve data logger batteries

Panel meters—simple connection displays power consumption

#### Product Features

Highly accurate—factory matched and calibrated single-piece sensor is more accurate than traditional two-piece, field-installed solutions

Average responding—“average responding” algorithm gives an rms output on pure sine waves, perfect for constant speed (linear) loads

Jumper selectable ranges—the ability to change input ranges reduces inventory and eliminates zero and span

Isolation—output is magnetically isolated from the input for safety and elimination of insertion loss (voltage drop)

#### Current Range

0–200 A

#### Approvals

UL Listed  
cUL Listed  
cULus (except EACP models)  
CE marked (except EACP models)



Listed Listed Listed (EACP models not listed)

### EACR Series CurrentWatch RMS Current Sensors



**Publication:** CA05311005E

#### Overview

True rms AC current sensing with 4–20 mA output.

#### Applications

VFD controlled loads—monitoring Vdc output indicates how the motor and attached load are operating

SCR controlled loads—accurate measurement of phase angle fired or burst fired (time proportioned) SCRs, with faster current measurement than temperature sensors

Switching power supplies and electronic ballasts—true RMS sensing is the most accurate way to measure power supply or ballast input power

#### Product Features

True RMS output—true RMS technology is accurate on distorted waveforms like VFD or SCR outputs

Jumper-selectable ranges—reduces inventory and eliminates zero and span

Isolation—output is magnetically isolated from the input for safety and elimination of insertion loss (voltage drop)

#### Current Range

0–200 A true RMS

#### Approvals

UL Listed  
cUL Listed  
cULus  
CE



Listed Listed Listed

Consult the Sensing Solutions Product Guide, **PG08301004E**, for complete information on sensors, limit switches and machine safety products.

# 53.1

## Power Sensors

### VoltageWatch and CurrentWatch Sensors and Switches

#### EDC Series CurrentWatch DC Current Sensors



Publication: CA05311009E

##### Overview

Current sensing for DC loads up to 300A with analog outputs.

##### Applications

Battery banks—monitors load current, monitors charging current and verifies operation

Transportation—measures traction power or auxiliary loads

Electric heating elements—monitors heater loads with a faster response time than temperature sensors

##### Product Features

Jumper-selectable ranges—reduces inventory and eliminates zero or span pots

Isolation—output is magnetically isolated from the input for safety, also eliminating insertion loss (voltage drop)

Internal power regulation—cuts installation costs and works well, even with unregulated power

Split core design and built-in mounting brackets—makes installation quick and easy

##### Current Range

0–400 A

##### Approvals

UL Listed (Pending)  
CE



#### EGF Series CurrentWatch Ground Fault Sensors



Publication: CA05311002E

##### Overview

Ground fault sensors with solid-state or mechanical relay outputs.

##### Applications

Personnel protection (typically 5 mA)—detects sensitive ground fault conditions, which could cause injury to people, and functions as a sensor and alarm trigger when applied as an input to an overall ground fault protection system

Equipment protection (typically 10 or 30 mA)—for applications where personnel protection is not the primary concern, higher setpoint capability helps eliminate nuisance tripping while still providing adequate ground fault detection to protect machine electronics

##### Product Features

Broad range of options to meet application needs—NO or NC, solid-state or mechanical relays, normally energized or normally de-energized contacts

Setpoint options maximize ease-of-use and application flexibility—field selectable 5, 10 or 30 mA setpoints on the EGF “Tri-set” models make user adjustments fast, sure and convenient

Compatible with standard equipment—application on single- and three-phases systems, ideal for use with shunt trip breakers, and magnetically isolated from monitored circuit and control power

##### Current Range

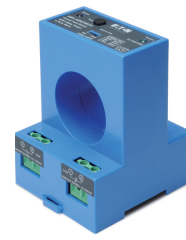
Fixed or adjustable 5/10/30 mA trip

##### Approvals

UL Recognized  
CE



#### EGFL Series CurrentWatch Ground Fault Sensors



Publication: CA05311011E

##### Overview

Ground fault sensors with mechanical relays.

##### Applications

Personnel protection (typically 5 ma)—detects sensitive ground fault conditions, which could cause injury to people

Equipment protection (typically 10 or 30 mA)—for applications where personnel protection is not the primary concern, higher setpoint capability helps eliminate nuisance tripping

Regulatory—meets requirements as stipulated by governmental and industrial regulatory groups for ground fault sensing

##### Product Features

Broad range of options to meet application needs—mechanical relays, normally energized or normally de-energized contacts

Setpoint options maximize ease-of-use and application flexibility—field selectable 5, 10 or 30 mA setpoints on the EGFL “tri-set” models make user adjustments fast, sure and convenient

Compatible with standard equipment—application on single- and three-phase systems, ideal for use with shunt trip breakers, and magnetically isolated from monitored circuit and control power

##### Current Range

Tri-Set Adjustable, 5, 10 or 30 mA

##### Approvals

UL Approved (Pending)  
cULus  
CE



Consult the Sensing Solutions Product Guide, **PG08301004E**, for complete information on sensors, limit switches and machine safety products.