Over/Under Current Sensing ECS Series Current Sensor

- Toroidal Through Hole Wiring
- 0.5...20 A Trip Point
- Adjustable or Factory Fixed Trip Delays
- 10 A SPDT Isolated Output Contacts
- 5% Trip Point Hysteresis (Dead Band)

Description

The ECS Series of Single Phase AC Current Sensors is a universal, overcurrent or undercurrent sensing control. Its built-in toroidal sensor eliminates the inconvenience of installing a stand-alone current transformer. Includes onboard adjustments for current sensing mode, trip point, and trip delay. Detects over or undercurrent events like locked rotor, loss of load, an open heater or lamp load, or proves an operation is taking place or has ended.

Adjustment

Select the desired function, over or under current sensing. Set the trip point and trip delay to approximate settings. Apply power to the ECS and the monitored load. Turn adjustment and watch the LED. LED will light; turn slightly in opposite direction until LED is off. Adjustment can be done while connected to the control circuitry if the trip delay is set at maximum.

Operation

When a fault is sensed throughout the trip delay, the output relay is energized. When the current returns to the normal run condition, the output and the delay are reset. If a fault is sensed and then corrected before the trip delay is completed, the relay will not energize and the trip delay is reset to zero.

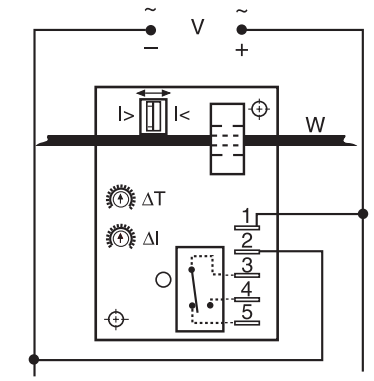
■ Approvals:

Input Voltage	Trip Point Adjustable	Trip Delay Adjustable	Start Up Delay	Part Number
24 V AC	0.5 ... 5 A	0.5 ... 50 s	1 s	ECS20BC
24 V AC	2 ... 20 A	0.5 ... 50 s	1 s	ECS21BC
120 V AC	0.5 ... 5 A	0.5 ... 50 s	1 s	ECS40BC
120 V AC	2 ... 20 A	0.5 ... 50 s	1 s	ECS41BC

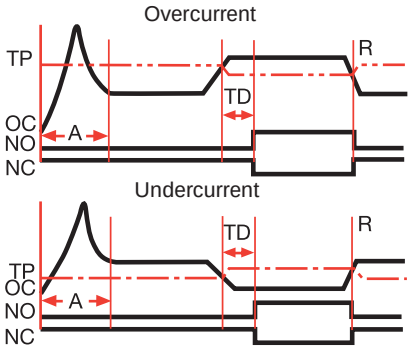
Other Combinations and Delays are Available Including Fixed Set Points, 24 V AC, 230 V AC

Technical Data

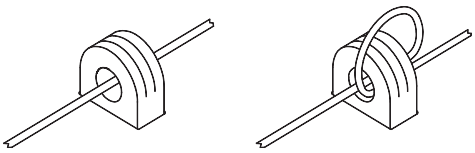
Sensor	
Type	Toroidal, through hole wiring
Mode	Over or undercurrent, switch selectable on the unit or factory fixed
Trip Point Range	0.5 ... 20 A in 2 adjustable ranges or fixed
Tolerance: Adjustable	Guaranteed range
Fixed	0.5 ... 25 A: 0.5 A or +/-5% whichever is less
Maximum Allowable Current	Steady – 50 A turns; Inrush – 300 A turns for 10 s
Trip Point Hysteresis	≅ +/-5%
Trip Point vs. Temperature	+/-5%
Response Time	≤ 75 ms
Frequency	45 ... 500 Hz
Type of Detection	Peak detection
Trip Delay	
Type	Analog
Range: Adjustable	0.150 ... 7 s; 0.5 ... 50 s (Guaranteed ranges)
Factory Fixed	0.08 ... 50 s (+/-10%)
Delay vs. Temperature	+/-15%
Sensing Delay on Startup	Factory fixed 0 ... 6 s +40% ... 0%
Input	
Voltage	24 , 120, or 230 V AC; 12 or 24 V DC
Tolerance 12 V DC & 24 V DC/AC	-15% ... +20%
120 & 230 V AC	-20% ... +10%
Line Frequency	50 ... 60 Hz
Output	
Type	Electromechanical relay
Form	Isolated single pole double throw (SPDT)
Rating	10 A resistive at 240 V AC; 1/4 hp at 125 V AC; 1/2 hp at 250 V AC
Life	Mechanical – 1 x 10^6; Electrical – 1 x 10^5
Protection	
Circuitry	Encapsulated
Isolation Voltage	≥ 2500 V RMS input to output
Insulation Resistance	≥ 100 MΩ
Mechanical	
Mounting	Surface mount with two #6 (M3.5 x 0.6) screws
Termination	0.25 in. (6.35 mm) male quick connect terminals (5)
Humidity	95% relative, non-condensing
Operating/Storage Temperature	-40°C ... +60°C / -40°C ... +85°C
Weight	≅ 6.4 oz (181 g)



Relay contacts are isolated.
Dashed line are internal connections.



V = Voltage W = Insulated Wire Carrying Monitored Current I> = Overcurrent
I< = Undercurrent TP = Trip Point R = Reset
OC = Monitored Current NO = Normally Open Contact NC = Normally Closed Contact
A = Sensing Delay On Start Up TD = Trip Delay

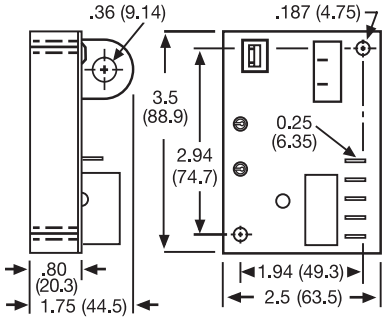


Multiple Turns To Increase Sensitivity

To increase sensitivity, multiple turns may be made through the ECS's toroidal sensor. The trip point range is divided by the number of turns through the toroidal sensor to create a new range.

Using an External Current Transformer (CT)

Select a 2 VA, 0 to 5 A output CT, rated for the current to be monitored. Select ECS adjustment range 0. Pass the CT's secondary wire lead through the ECS's toroid.



Inches (Millimeters)

Accessories

Female quick connect **P/Ns:**
P1015-13 (AWG 10/12)
P1015-64 (AWG 14/16)
P1015-14 (AWG 18/22)

See accessory pages for specifications.