

Installation Instructions

CurrentWatch™ EDC Series Current Sensors

DC Current Sensor, Split Core Housing with Analog Output



WARNING

IN ORDER TO AVOID ELECTRIC SHOCK OR OTHER POSSIBLE INJURY:

- **DO NOT USE THIS PRODUCT FOR HUMAN SAFETY APPLICATIONS. IT WAS NOT DESIGNED, TESTED OR RECOMMENDED FOR THIS USE.**
- **DO NOT USE THIS PRODUCT IN HAZARDOUS LOCATIONS (E.G. EXPLOSIVE ATMOSPHERES). IT WAS NOT DESIGNED, TESTED OR RECOMMENDED FOR THIS USE.**
- **ENSURE THE PRODUCT IS PROPERLY WIRED TO THE CORRECT POWER SUPPLY FOR THE APPLICATION. REFER TO THE SPECIFICATIONS AND WIRING DIAGRAMS IN THIS MANUAL.**

MODELS COVERED IN THIS MANUAL

Catalog Number	Description
EDC205SP	Split Core, 24V AC/DC, 0-5V DC Output, 50/75/100A Range
EDC305SP	Split Core, 24V AC/DC, 0-5V DC Output, 100/150/200A Range
EDC405SP	Split Core, 24V AC/DC, 0-5V DC Output, 150/225/300A Range
EDC210SP	Split Core, 24V AC/DC, 0-10V DC Output, 50/75/100A Range
EDC310SP	Split Core, 24V AC/DC, 0-10V DC Output, 100/150/200A Range
EDC410SP	Split Core, 24V AC/DC, 0-10V DC Output, 150/225/300A Range
EDC2420SP	Split Core, 24V AC/DC, 4-20 mA Output, 50/75/100A Range
EDC3420SP	Split Core, 24V AC/DC, 4-20 mA Output, 100/150/200A Range
EDC4420SP	Split Core, 24V AC/DC, 4-20 mA Output, 150/225/300A Range

INTRODUCTION

The CurrentWatch™ EDC Series combines a hall effect sensor and a signal conditioner into a single, compact package for use in DC current applications up to 300A. The EDC Series has jumper selected current input ranges and industry standard outputs: 4-20 mA, 0-5V DC and 0-10V DC. Split core models provide for quick and easy installation.



Note that this manual only covers split-core versions of the EDC Series. For the solid-core manual, use publication P51926.

Eaton's current sensor family encompasses a broad range of products for cost-effective monitoring, status, and predictive maintenance. Downtime and costly repairs can be avoided by utilizing Eaton's products and technologies in your control systems.

QUICK INSTALL GUIDE

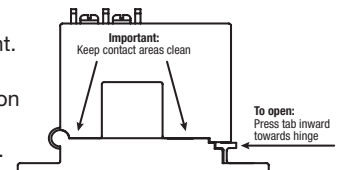
The below steps can be followed to quickly install a CurrentWatch™ EDC Series sensor.

1. Run the wire to be monitored through the aperture, being sure monitored current flow matches arrows on the sensor
2. Mount the sensor to a surface if needed
3. Connect output wiring
 - a. Use up to 14 AWG copper wires, tightening terminals to 4 inch-pounds of torque
 - b. For current output models (4-20 mA), make sure output load is no more than 800 ohms
 - c. For voltage output models (0-5/0-10V DC), make sure output load is at least 10 kilohms
3. Connect power using the appropriate power supply
4. Select range by positioning the Range Jumper

INSTALLATION

Considerations for all EDC Series models...

- Run wire to be monitored through the aperture (opening) of the sensor
- Be sure monitored current flows in the same direction as the arrow on the sensor (the arrow is located just above the hinge, with a plus symbol on the left and a minus symbol on the right)
- These sensors can be located in the same environment as motors, contactors, heaters, pull-boxes and other electrical enclosures
- Mounting can be done in any position or hung directly on a wire with a wire tie
- Be sure to leave at least one inch distance between sensor and other magnetic devices
- Press the tab in the direction shown in the diagram to the right.
- After placing the wire in the aperture, press the hinged portion firmly downward until a click is heard and the tab pops out fully.
- Keep split-core contact areas clean. Silicon grease is factory applied on the mating surfaces to prevent rust and improve performance. Be careful not to allow grit or dirt into the grease in the contact area, particularly on core mating surfaces of split core models. Sensor operation could be impaired if mating surfaces do not have good contact. Check visually before closing.



RANGE SELECTION

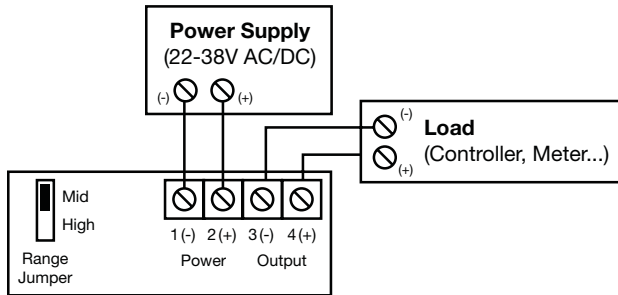
The CurrentWatch™ EDC Series sensors feature field selectable ranges. The ranges are factory calibrated, eliminating time consuming and inaccurate field setting of zero or span.

Setting Range

1. Determine the normal operating amperage of your monitored current
2. Select the range this is equal to or slightly higher than the normal operating amperage
3. Place the Range Jumper in the appropriate position

OUTPUT WIRING

Connect control or monitoring wires to the sensor. Use up to 14 AWG copper wire and tighten terminals to 4 inch-pounds torque.



Connection Notes:

- For current output models, the current loop is powered by the sensor. Maximum loop impedance is 800 ohms.
- For voltage output models, the signal is powered by the sensor. Minimum output load (impedance) is 10 kilohms.
- Deadfront captive screw terminals
- Use 12-22 AWG solid or stranded
- Remove jumper entirely for Low Range operation
- Observe polarity

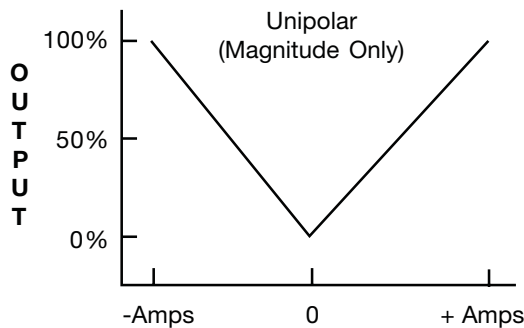
TROUBLESHOOTING

Problem	Solution for Current Output Models (4-20 mA)	Solution for Voltage Output Models (0-5/0-10V DC)
Sensor has no output	Monitored load is not DC or is not on. Check that the monitored load is DC and that it is actually on.	
	Polarity is not properly matched. Check and correct wiring polarity.	
	For split core models, the core contact area may be dirty. Open the sensor and clean the contact area.	
Output signal is too low	The jumper may be set in a range that is too high for current being monitored. Move jumper to the correct range.	
	Power supply is inadequate. Check power supply. Make sure it is of sufficient voltage with all loads at maximum. The current draw of EDC Series sensors is 2.0 VA.	
	Output load is too high. Check output load, being sure it is no more than 800 ohms.	Output load is too low. Check output load, making sure it is at least 10 kilohms.
Output signal is always at maximum	The jumper may be set in a range that is too low for current being sensed. Change the jumper position.	

SPECIFICATIONS

Specification	Value
Power Supply	24V AC/DC (22-38V AC/DC) Power input and output signal are not isolated. Caution: Do not connect Grounded AC Supply to the Output Negative (-), as sensor damage may occur.
Power Consumption	2 VA
Current Ranges	Selectable by Model: 50, 75, 100, 150, 200, 225, 300A
Output Signal	Unipolar: 0-20 mA, 4-20 mA, 0-5V DC or 0-10V DC
Output Polarity	Unipolar: Current Magnitude Only
Response Time	100 ms (90% of Step Change)
Repeatability	1% FS
Frequency Range	DC
Accuracy	1% FS
Linearity	0.75%
Isolation Voltage	3 kV (Monitored Line to Output)
Sensing Aperture	0.85 in. (21.7mm) sq.
Housing	UL94 V0 Flammability Rated
Environmental	Operating Temperature: -4 to +122° F (-20 to +50° C) Humidity: 0-95% RH, Non-Condensing
Temperature Drift	0.01% / Degree C
Approvals	UL 508 Industrial Control Equipment (Pending, USA and Canada) CE Certified

OUTPUT POLARITY



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MODELS COVERED IN THIS MANUAL

Catalog Number	Description
EDC1420SC	Solid Core, 24V AC/DC, 4-20 mA Output, 5/10/20A Range

INTRODUCTION

The CurrentWatch™ EDC Series combines a hall effect sensor and a signal conditioner into a single, compact package for use in DC current applications. The EDC Series has jumper selected current input ranges and an industry standard 4-20 mA output.

Note that this manual only covers solid-core versions of the EDC Series. For the split-core manual, use publication P51927.



Eaton's current sensor family encompasses a broad range of products for cost-effective monitoring, status, and predictive maintenance. Downtime and costly repairs can be avoided by utilizing Eaton's products and technologies in your control systems.

QUICK INSTALL GUIDE

The below steps can be followed to quickly install a CurrentWatch™ EDC Series sensor.

1. Run the wire to be monitored through the aperture, being sure monitored current flow matches arrows on the sensor or as noted on the figure to the right of this page
2. Mount the sensor to a surface if needed
3. Connect output wiring
 - a. Use up to 14 AWG (2.5mm²) copper wires, tightening terminals to 5 inch-pounds (0.6 Nm) of torque
 - b. For current output models, make sure output load is no more than 500 ohms
3. Connect power using the appropriate power supply
4. Select the correct range by positioning the Range Jumper

INSTALLATION

Considerations for all EDC Series models...

- Run wire to be monitored through the aperture (opening) of the sensor
- Care should be taken to ensure current flow is in accordance with any directional arrows on the sensor and as noted in the figure below
- These sensors can be located in the same environment as motors, contactors, heaters, pull-boxes and other electrical enclosures
- Mounting can be done in any position or hung directly on a wire with a wire tie
- For optimal performance, ensure the unit has been energized for a period of 20 minutes prior to sensing operation

RANGE SELECTION

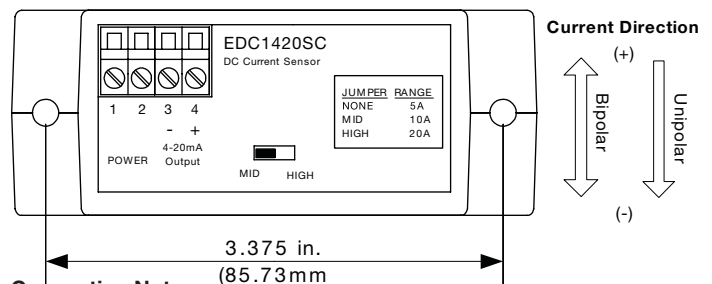
The CurrentWatch™ EDC Series sensors feature field selectable ranges. The ranges are factory calibrated, eliminating time consuming and inaccurate field setting of zero or span.

Setting Range

1. Determine the normal operating amperage of your monitored current
2. Select the range this is equal to or slightly higher than the normal operating amperage
3. Place the Range Jumper in the appropriate position

WIRING AND MOUNTING INFORMATION

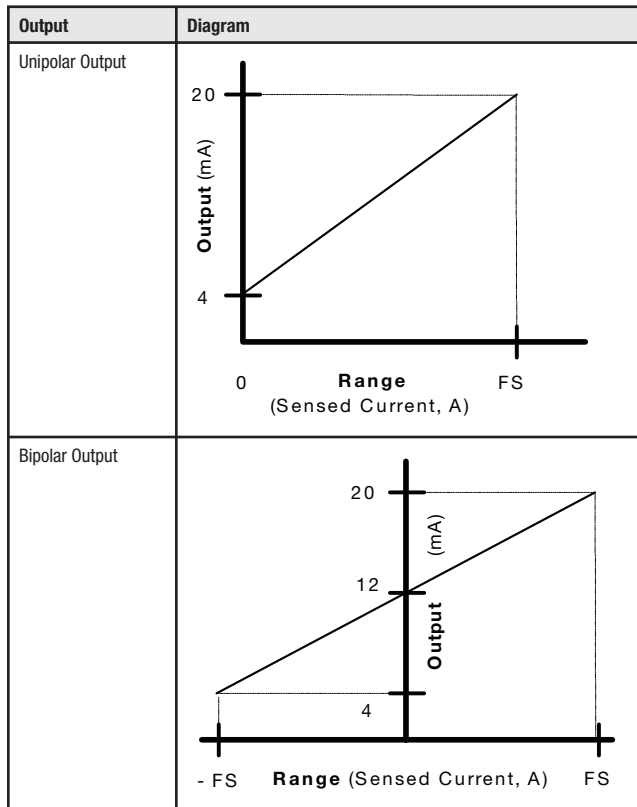
Connect control or monitoring wires to the sensor. Use up to 14 AWG copper wire and tighten terminals to 5 inch-pounds torque.



Connection Notes:

- The current loop is powered by the sensor. Maximum loop impedance is 800 ohms.
- Ensure the direction of the monitored current is the same as the direction shown on the diagram. The unipolar output design will not operate properly if the current is opposite the direction of the arrow.
- Use 26-14 AWG copper wire
- Screw thread is M3 and screw torque is 5 inch-pounds
- Remove jumper entirely for Low Range operation
- Observe polarity

UNIPOLAR VERSUS BIPOLAR OUTPUT



SPECIFICATIONS

Specification	Value
Power Supply	24V AC/DC (22-28V AC/DC) Power input and output signal are not isolated. Caution: Do not connect Grounded AC Supply to the Output Negative (-), as sensor damage may occur.
Power Consumption	2 VA
Current Ranges	Jumper Selectable: 5, 10 or 20A
Output Signal	4-20 mA
Response Time	50 ms (90% of Step Change)
Repeatability	1% FS
Frequency Range	DC
Accuracy	1% FS
Linearity	0.75%
Isolation Voltage	3 kV (Monitored Line to Output)
Sensing Aperture	0.75 in. (19mm) dia.
Housing	UL94 V0 Flammability Rated
Environmental	Operating Temperature: -4 to +122° F (-20 to +50° C) Humidity: 0-95% RH, Non-Condensing
Approvals	UL 508 Industrial Control Equipment (Pending, USA and Canada) CE Certified

TROUBLESHOOTING

Problem	Solution for Current Output Models
Sensor has no output	Monitored load is not DC or is not on. Check that the monitored load is DC and that it is actually on. Polarity is not properly matched. Check and correct wiring polarity.
Output signal is too low	The jumper may be set in a range that is too high for current being monitored. Move jumper to the correct range. Power supply is inadequate. Check power supply. Make sure it is of sufficient voltage with all loads at maximum. The current draw of EDC Series sensors is 2.0 VA. Output load is too high. Check output load, being sure it is no more than 500 ohms.
Output signal is always at maximum	The jumper may be set in a range that is too low for current being sensed. Change the jumper position.