Copeland™ Sentronic 3™ Electronic Oil Pressure Control

The Sentronic 3™ oil pressure safety control replaces mechanical devices, the current Sentronic+™ as well as older versions of the Copeland Sentronic™ oil pressure control. The Sentronic 3 control offers the following features:

**Cap Tube Elimination**
Sentronic 3 continues to add system reliability by removing the traditional cap tube oil pressure controls that are prone to refrigerant leaks.

**Precise Timing**
Insufficient oil pressure time for the compressor is stored and accumulated in the module memory. Once the total time accumulated for bad oil pressure exceeds 120 seconds, the module will shut the compressor off.

**LED Diagnostics**
Sentronic 3 LED codes are designed to match Copeland Sentronic + and Sentronic.

- **LED GREEN**
  Compressor has sufficient oil pressure.

- **LED RED**
  Compressor has experienced insufficient oil pressure and will trip after two minutes.

- **RED/GREEN FLASHING**
  Compressor is experiencing erratic oil pressure indicating a possible system issue

- **NO LIGHT**
  If switch is in the trip state, the module has tripped due to low oil pressure. If switch is in the Reset/On position, the compressor is at the normal off condition.

**Oil Pressure Reset**
When oil pressure is 'good' the latch is in the Reset ON position. If the oil pressure falls below 7-9 psi for over 120 seconds, the switch will default to the Trip OFF position and the compressor will shut off. To restart, move the latch to the Reset ON position. (See Figure 1.)

Note: Moving the latch from Reset ON to Trip OFF and back to Reset ON can also be used to 'jog' the compressor.

**Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oil Pressure</strong></td>
<td></td>
</tr>
<tr>
<td>Cut Out</td>
<td>7-9 PSID</td>
</tr>
<tr>
<td>Cut In</td>
<td>12-14 PSID</td>
</tr>
<tr>
<td><strong>Module</strong></td>
<td></td>
</tr>
<tr>
<td>Time Delay</td>
<td>120 seconds +/- 15 seconds</td>
</tr>
<tr>
<td>Power</td>
<td>120/240V 500VA</td>
</tr>
<tr>
<td><strong>Sensor Switch</strong></td>
<td></td>
</tr>
<tr>
<td>Torque</td>
<td>60-65 ft-lb.</td>
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</tbody>
</table>

**Wiring**
The Sentronic 3 wiring remains the same as previous versions. There are several wiring schemes depending on control circuit components. Sample wiring diagrams are shown on the following page:

- **Diagram (1A)**
  Standard control circuit
- **Diagram (1B)**
  Standard control with added alarm circuit
- **Diagram (1C)**
  Standard control with alarm and current sensing relay circuit
- **Diagram (1D)**
  Standard control with alarm, current sensing relay and separate control voltage

![Sentronic 3 Trip and Reset Switch](image-url)
USE EITHER 120V OR 240V TERMINAL

Diagram 1A

Diagram 1B

Diagram 1C

Diagram 1D

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START-UP QUICK CHECKS

Checking the Sensor

Unplug the sensor and start the compressor. The Sentronic module LED should be red. Simultaneously measure the oil pump pressure vs. crankcase pressure. Monitor the two terminals at the back of the sensor with an ohmmeter. If the differential pressure is below the range of 7 to 9 PSID, the sensor circuit should be open. If the pressure is above 12 to 14 PSID, the sensor circuit should be closed.

The sensor is manufactured with hysteresis between the cut out and cut in pressures. If the sensor is closed the pressure must fall below the cut out threshold before it opens. If the sensor is open the pressure must rise above the cut in threshold before it will close.

Checking the Installed Sentronic 3 Module

• Unplug the sensor, the LED should be solid red.
• The module keeps track of running time without oil for up to 120 seconds and retains this information even when the compressor is powered down. After the module records that the compressor has been powered on for 120 seconds (+/- 15 seconds) without oil, the L-M contact should open and shut off the compressor.

INTERCHANGEABILITY OF SENTRONIC AND SENTRONIC 3 MODULES AND SENSORS

The new Sentronic 3 oil pressure control uses both a new module and a new sensor. The sensors and module can be made compatible with older generation components if the following steps are taken:

Option 1: To use a Sentronic 3 module with a Sentronic sensor, the original Sentronic sensor cable must be wired to the new Sentronic 3 module.

Option 2: To use the Sentronic module with a Sentronic 3 sensor, the new Sentronic 3 sensor cable must be wired to the Sentronic module.

Option 1 - Connecting the Sentronic 3 module to an older Sentronic sensor:

Removing the cable from the old Sentronic module:

1. Disconnect power to the old module.
2. Disconnect the cable from the sensor.
3. Remove the cover from the old module.
4. Remove the two flag connectors from the circuit board (these are the orange and red wires).
5. Using pliers, squeeze the strain relief slots and pull to remove the cable from the module.
6. Remove the old module from the compressor by loosening the two module screw from the bracket. Save these for reuse in the installation of the new module.

Removing the cable from the new Sentronic 3 module:

1. Remove the cover from the Sentronic 3 module.
2. Pull the 2 flag connectors from the circuit board (these are the orange and red wires).
3. Push the tabs in on the strain relief to disengage the harness from the plastic module.
4. Remove the wires from the strain relief and from the module.
Connecting the Sentronic cable to the Sentronic 3 module:

1. Feed the wires into the module through the hole in the bottom of the case and insert the old cable into the strain relief.
2. Leaving enough lead length to reach the quick connects, place the wires in the strain relief bushing and snap the bushing closed.
3. Align the 'D' slot of the strain relief to the plastic housing and snap it into place.
4. Connect the orange and red wires that have flag connectors onto the circuit board spades. (Note: the connections may be interchanged; there is no polarity on these wires.)
5. Replace the cover and tighten the screws.
6. Install the module to the compressor and make wiring and sensor connections per the general instructions.

Option 2 - Connecting the old Sentronic module to a newer Sentronic 3 sensor:

Removing the cable from the new Sentronic 3 module:

1. Remove the cover from the Sentronic 3 module.
2. Pull the 2 flag connectors from the circuit board (these are the orange and red wires).
3. Push the tabs in on the strain relief to disengage the harness from the plastic module.
4. Remove the wires from the strain relief and from the module.

Removing the cable from the Sentronic module:

1. Remove the cover from the old module.
2. To remove the two flag connectors from the circuit board, use pliers to squeeze the strain relief slots and pull to remove the cable from the module.

Connecting the new cable to the old module:

1. Feed the wires into the module through the hole in the bottom of the case.
2. Push the strain relief into position to lock it into place.
3. Connect the two flag connectors to the circuit board. There is no polarity on the leads.
4. Replace the cover.
5. Install the module on the compressor and make wiring and sensor connections per the general instructions.

Sentronic 3 Terminal Strip

- The Sentronic 3 module terminal strip is designed to accept a bare wire end or a spade terminal.
- If a Sentronic 3 module is being retrofitted to a system with spade connections, the spade may be clipped off and ¼" of the wire end stripped. Or, one leg of the spade may be clipped off for insertion into the terminal strip.