CS-325 Current Switches

The CS-325 series of AC current switches are solid-state switches that activate a contact closure whenever the monitored primary circuit current exceeds a pre-set level. All models include a multi-turn adjustment to set the trip threshold to the desired value.

They monitor up to 200 Amps and feature jumper selectable ranges. All models are CSA certified or UL approved and CE approved.

Features

- Self-powered and no insertion loss
- True digital switching and no leakage
- Small compact size
- Jumper-selectable ranges
- Easy field adjustment
- Input / Output isolation via current transformer
- Solid-state reliability
- With or without snubber circuit

Model Type

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-325</td>
<td>Adjustable Setpoint Solid Core Current Switch 1..200A with 250Vac Triac Output, Snubber Circuit Fitted</td>
</tr>
<tr>
<td>CS-325-NS</td>
<td>Adjustable Setpoint Solid Core Current Switch 1..200A with 250Vac Triac Output, No Snubber Circuit</td>
</tr>
<tr>
<td>CS-DIN</td>
<td>DIN-rail Mounting Clip Set</td>
</tr>
</tbody>
</table>

Technical Data

- Output Type: Triac
- Switching Voltage: 250Vac 1A Triac
- Setpoint Range: See table overleaf
- Hysteresis: <2%FS
- Response Time: <200ms
- Ambient Temp: 0..40°C
- Enclosure Material: UL 94V-0 Rated ABS
- Insulation Class: 600V
- AC Conductor Hole: Solid Core: 20mm Diameter
- Wiring Terminals: Solid Core: Barrier Strip
- Size: Solid Core: W28 x L89 x D70 mm
- Power Supply: None - self-powered

Operation

The output switch of all devices is normally open, when the monitored current exceeds the trip value as set by the multi-turn adjustment the switch will close. If the unit has a status LED, it will light to indicate a closed switch.

Devices that also feature a power LED will indicate circuit power whenever there is sufficient current flowing in the conductor to operate the device circuitry, typically 1 Amp minimum for solid-core units and 1.5 Amp minimum for split-core devices. (See table)
All devices are factory set at the minimum switch point (adjustment fully clockwise). To increase the set point, while the monitored load is on, turn the adjustment counter-clockwise until the output turns off as indicated by either the status LED or a voltmeter connected across the device output to indicate an open switch. Then turn the adjustment clockwise until the LED comes back on to indicate a closed switch or a voltmeter indication is seen. The adjustment should be turned slightly clockwise past this point to ensure normal line current variations do not cause false conditions. The GNG series is not adjustable.

* The CS-325 with the snubber circuit is best used to switch high-current inductive loads such as small fan motors. The CS-325-NS is best used to switch resistive or low-current inductive loads such as relays or lights.

### Technical Details

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Switch V Max</th>
<th>I Max</th>
<th>Von @ 24Vdc @ 150mA</th>
<th>Leakage Current</th>
<th>Power &amp; Status LED</th>
<th>Setpoint</th>
<th>Input I Min</th>
<th>Input I Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-325</td>
<td>AC</td>
<td>250Vac</td>
<td>200A</td>
<td>n/a</td>
<td>&lt;5 mA</td>
<td>No</td>
<td>Adj. with jumper &amp; turns</td>
<td>1.25A</td>
<td>200A</td>
</tr>
<tr>
<td>CS-325-NS*</td>
<td>AC</td>
<td>250Vac</td>
<td>200A</td>
<td>n/a</td>
<td>&lt;1 mA</td>
<td>No</td>
<td>Adj. with jumper &amp; turns</td>
<td>1.25A</td>
<td>200A</td>
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### CS-325 Setpoint Setting

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Amp-Turns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (none)</td>
<td>1-6</td>
</tr>
<tr>
<td>Medium</td>
<td>6-40</td>
</tr>
<tr>
<td>High</td>
<td>40-200</td>
</tr>
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</table>

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### Installation

Disconnect and lock-out all power sources during installation as severe injury or death can result from electrical shock due to contact with high voltage conductors. Ensure all installations are in compliance with applicable electrical codes and that the installation is completed by qualified installers familiar with the standards and proper safety procedures for high-voltage installation. Never rely on status indicating devices only to determine if power is present in a conductor.

Ensure that the output circuit to be switched is within the device switch ratings as shown in the chart, less than Switch V Max and less than Switch I Max.

If the device has a selectable range selection jumper, insure it is installed in the correct position for the current being monitored. Excessive current can damage the sensor. Auto-range devices will monitor any current over the entire range of Input I Min to Input I Max Amps as shown in the table.

Solid-Core devices require that the line to be monitored be disconnected and routed through the center of the device while Split-Core units can be easily installed over existing wires without the need to disconnect the circuit.

Mount the switch in a suitable location using the two mounting holes in the base of the unit.

The conductor may be looped more than once through the sensor to multiply the sensitivity but this also divides the maximum currents.

Connect the switch circuit to the two screw terminals using ring or fork type terminals. The switches are not polarity sensitive and operate as a “dry contact.”
Selecting the Current Switch

SyxthSense offers two types of solid-state switches in our Current Switch lineup – The Mosfet which is used in the 610/GNG series, and the Triac, used in the CS325 series. To determine which type of switch to use, you need to know what type of load the switch will be used with.

- Is the load AC or DC?
- Is the load looking for a dry (relay) contact?
- How much voltage and current will the load draw?

If the load is a DC load then you will need the Mosfet switch. The Triac will not switch a DC load. However, both the Mosfet and the Triac will switch an AC load.

If the load is looking for a dry contact then you will need the Mosfet switch. There is very little current leakage with this switch as compared to the Triac. If the load is less than 30 volts AC or 40 volts DC and less than 500 mA your best choice is the Mosfet.

If the load is 120/240 volts AC and less than 1 amp then choose the Triac version i.e. CS-325. Finally check whether snubber circuit is required (see below).

Snubber Circuit Information

The CS/SC 325 is available in two forms. The normal configuration is with a snubber circuit across the output (CS/SC325) or optionally with the snubber circuit removed (CS/SC325-NS).

The primary purpose of the snubber is to help prevent the switch from remaining turned on when the current is no longer flowing through the conductor being monitored. This can happen when the CS is being used to switch an inductive load. With an inductive load, there is a phase shift between the voltage and the current. This means that when the load current falls below the holding current of the switch, there is a certain amount of voltage across switch. If this voltage shows up too quickly (dv/dt), the switch will not turn off. The snubber circuit slows down the dv/dt and lets the switch turn off.

Unfortunately this all comes with a price, and that is leakage current. In some cases, such as a 24 Volt relay, this can cause the very situation they were meant to prevent, causing the switch, and the relay, to remain turned on.

The CS/SC325 with the snubber circuit is best used to switch high-current inductive loads such as motors or contactors. The CS/SC325-NS is best used to switch resistive or low-current inductive loads such as relays or lights.

Dimensions

![Diagram of the CS/SC325 switch dimensions]