CSDSC Series VFD and Constant Volume Current Switch Product Bulletin

LIT-12013948

2021-08-13

Description

The CSDSC Series self-calibrates to detect proof of flow on both variable-frequency drive (VFD) and constant volume motors on fans or pumps. The CSDSC switches automatically set the correct threshold, which eliminates false alarms associated with varying frequencies.

Figure 1: CSDSC current switch



Applications

Applications include detection of motor undercurrent conditions such as belt loss, coupling shear, and mechanical failure on fixed speed and variable fans and pumps. The CSDSC switch facilitates reduced installation time.

Features and benefits

CSDSC switches include the following features:

- Self-calibrating for proof of flow.
- From 1 A to 135 A at minimum 30 Hz. From 1.5 A at 20 Hz. From 2.5 A at 10 Hz.
- Normally open (NO) 30 VAC/DC output.
- Optional command relay.
- Depth, 2.50 in.; height, 0.82 in.; width, 2.23 in.
- Aperture dimensions: 0.75 in. x 0.75 in. You can use the switch for oversize conductors due to the large 0.75 in. aperture.
- Mount the sensor without removing the conductor, which reduces installation costs.
- Clamp the switch onto the conductor with the iris, use the detachable base to screw, or DIN mount.

Self-calibration for proof of flow on fans and pumps

- Works without the need for sensor calibration.
- No need to open hot starter enclosures, which increases safety and reduces labor costs.
- The sensor is always correctly adjusted.

Split-core with optional command relay

- Simplified installation, which reduces component and installation space and cost.
- Facilitate Normally Closed operation or a higher electrical rating.

Maintenance-free. No call backs

- Facilitates fan-proofing with less installation time and risk.
- No pressure tap or dust clogging the hose.

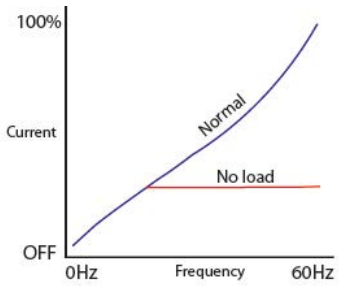
Eliminates hazardous calibration in energized enclosures

- Eliminates risk associated with guesswork, multi-turn adjustments, or sensor training.
- Reduces the risk of arc flash.

Setpoint operation

Detects normal current flow for both VFD and constant volume fans and pumps. For an example of a VFD normal current setpoint curve, see the following figure.

Figure 2: Normal flow detection



Optional relay

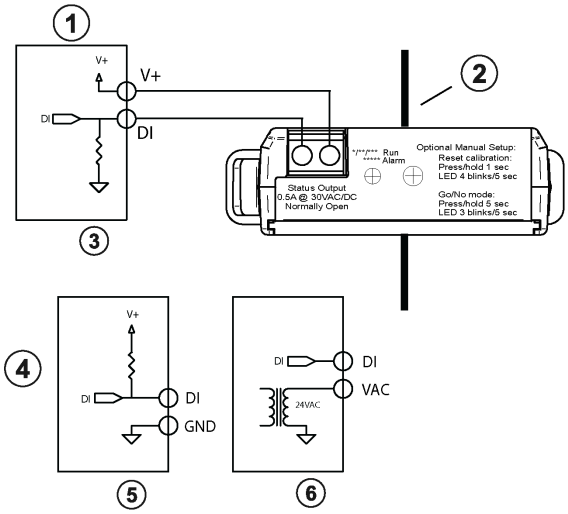
Figure 3: Optional relay



- Depth, 0.84 in.; height, 0.72 in.; width, 2.06 in.
- Add the relay to the CSDSC switch to feature start, stop, and status functionality without the need for an independent device.
- The relay is removable for service.
- The relay reduces time, space, and the number of installed components.

CSDSC wiring

Figure 4: CSDCS wiring diagram



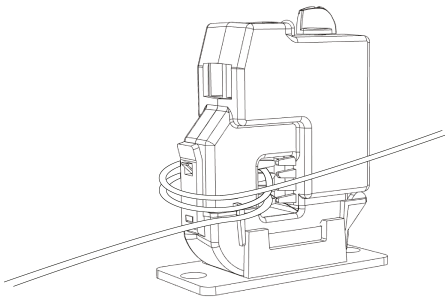
Note: The device is not polarity sensitive.

Callout	Description
1	Controller arrangement
2	Insulated primary AC conductor, maximum 600 VAC
3	Sinking
4	Alternate controller arrangements
5	Sourcing
6	AC

For small motors, if the sensor does not turn on due to low amperage, wrap the conductor through the aperture. Each wrap increases the amperage by the base amperage amount. For best resolution, choose the current sensor that most closely matches your maximum motor or full load amperes (FLA).

Important: Do not rely on the current status LED to indicate the presence of power.

Figure 5: Wire wrap for smaller motors and loads



Ordering information

Table 1: CSDSC ordering information

Product code	Minimum on	Maximum	Output	Relay
CSDSC-VFD0	1 A at 30 Hz 1.5 A at 20 Hz 2.5 A at 10 Hz	135 A	1.0 A at 30 VAC/DC	None
CSDSC-VFD1				CRCSDP-NO-24
CSDSC-VFD2				CRCSDP-NC-24
CSDSC-VFD3				CRCSDP-NO-12
CSDSC-VFD4				CRCSDP-NC-12

Note: Sensor power is induced for all models.

Table 2: Command relay ordering information

Product code	Contact rating	Coil, nominal
CRCSDP-NO-24	NO, 10 A at 125 VAC	24 VAC/DC, 15 mA
CRCSDP-NC-24	NC, 10 A at 125 VAC	24 VAC/DC, 15 mA
CRCSDP-NO-12	NO, 10 A at 125 VAC	9 VDC to 12 VDC, 30 mA
CRCSDP-NC-12	NC, 10 A at 125 VAC	9 VDC to 12 VDC, 30 mA

Technical specifications

Table 3: CSDSC technical specifications

Specification	Description
Standard output rating	1.0 A at 30 VAC/DC
Output type	NO, solid-state field-effect transistor (FET)
Temperature rating	-15°C to 60°C
Insulation class	600 volts root mean square (VRMS). For use on insulated conductors only. **Important:** Use a minimum 75°C insulated conductor.
Frequency range	10 Hz to 120 Hz; proof of flow loss alarm at 40 Hz+
Compliance c UL us LISTED	UL File E493157

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Single point of contact

APAC	Europe	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIJANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS WESTENDHOF 3 45143 ESSEN GERMANY	JOHNSON CONTROLS 507 E MICHIGAN ST MILWAUKEE WI 53202 USA

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