

CSD Series Current Devices

Product Bulletin

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Application

The Current Switch Device (CSD) Series of digital output current switches are nonintrusive devices designed to detect current flowing through a cable or wire. A cost effective solution for monitoring on and off status or proof of operation, these units are ideal for monitoring very small current loads on motors driving fans and blowers, pumps, heating coils, and lighting.

The CSD models with command relays not only monitor the current flowing through the cable but also facilitate the starting and stopping of the motor.

These units also provide a universal solid state output and do not require a power supply. Completely self-powered, these units draw their power from current induced from the cable or line being monitored.

CSD Series Current Devices are available in the following types:

- solid core, setpoint fixed
- solid core, setpoint adjustable
- solid core with command relay, setpoint adjustable
- split core, setpoint fixed



Figure 1: CSD Current Switch

- split core, setpoint adjustable
- split core with command relay, setpoint fixed
- split core with command relay, setpoint adjustable
- 12 VAC/VDC and 24 VAC/VDC accessory command relays

Table 1: Features and Benefits

Features	Benefits
Dual Function	Monitors current and motor start and stop.
100% Solid State Output	Has no moving parts to fail.
Polarity Insensitive Output	Provides easier wiring.
Snap-in Mounting Bracket	Simplifies installation.
Small Size	Fits in tight enclosures.

Product Overview

IMPORTANT: The Current Switch Device (CSD) Series Current Devices are intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the CSD could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the CSD.



WARNING: Risk of Personal Injury.

Do not touch the relay while power is applied to it. The relay surface is hot during use, and may cause a serious burn upon contact.



CAUTION: Risk of Property Damage.

Install the CSD Series Current Devices **only** on the **input** side of a variable speed drive. Failure to follow this precaution may result in excessive wear on the controlled equipment, as well as premature failure of the CSD Series Current Devices.

Fixed Setpoint Models:

CSD-SF0C0-1 (solid core)

- Setpoint fixed at 0.25 A
- Current range — 0.25 to 200 A

CSD-CF0A0-1 (split core)

- Setpoint fixed at 0.15 A
- Current range — 0.15 to 200 A

CSD-CF0J0-1 (split core)

- Setpoint fixed at 1.5 A
- Current range — 1.5 to 200 A

CSD-CF0J1-1 (split core with 24 V command relay)

- Relay Single Pole, Single Throw (SPST), Normally Open (N.O.), 10 A at 260 VAC, 5 A at 30 VDC
- Actuation coil — 20–30 VAC/VDC, 40–85 mA maximum
- Setpoint fixed at 1.5 A
- Current range — 1.5 to 200 A

Adjustable Setpoint Models:

CSD-SA1E0-1 (solid core)

- Multi-turn potentiometer — adjust setpoint for application
- Adjustable setpoint — wide range from 1.00 to 135 A
- Two status Light-Emitting Diodes (LEDs) — provide visual indication of off and on status

CSD-SA1E1-1 (solid core with 24 V command relay)

- Multi-turn potentiometer — adjust setpoint for application
- Adjustable setpoint — wide range from 1.00 to 135 A
- Relay SPST, N.O., 10 A at 260 VAC, 5 A at 30 VDC
- Actuation coil — 20–30 VAC/VDC, 40–85 mA maximum
- Two status LEDs — provide visual indication of off and on status

CSD-CA1G0-1 (split core)

- Multi-turn potentiometers — adjust setpoint for application
- Two status LEDs — provide visual indication of off and on status
- Adjustable setpoint — wide range from 1.25 to 135 A

CSD-CA1G1-1 (split core with 24 V command relay)

- Multi-turn potentiometers adjust setpoint for application
- Adjustable setpoint — wide range from 1.25 to 135 A
- Relay SPST, N.O., 10 A at 260 VAC, 5 A at 30 VDC
- Actuation coil — 20–30 VAC/VDC, 40–85 mA maximum
- Two status LEDs — provide visual indication of off and on status

CSD-SA1E2-1 (solid core with 12 V command relay)

- Multi-turn potentiometers adjust setpoint for application
- Adjustable setpoint — wide range from 1.00 to 135 A

- Relay SPST, N.O., 10 A at 260 VAC, 5 A at 30 VDC
- Actuation coil — 10–14 VAC/VDC, 25–45 mA maximum
- Two status LEDs — provide visual indication of off and on status

Ordering Information

To order a CSD Series current switch, contact the nearest Johnson Controls® representative. Specify the desired product code number from Table 2.

Table 2: Product Ordering

Product Code Number	Core Type	Setpoint Threshold	LED Display	Low Setpoint (Amperes)	Output Relay
CSD-SF0C0-1	Solid	Fixed	No	0.25	No
CSD-SA1E0-1	Solid	Adjustable	Yes	1.00	No
CSD-SA1E1-1	Solid	Adjustable	Yes	1.00	24 V SPST, N.O. 10 A at 260 VAC, 5 A at 30 VDC
CSD-SA1E2-1	Solid	Adjustable	Yes	1.00	12 V SPST, N.O. 10 A at 260 VAC, 5 A at 30 VDC
CSD-CF0A0-1	Clamp/Split	Fixed	No	0.15	No
CSD-CF0J0-1	Clamp/Split	Fixed	No	1.5	No
CSD-CA1G0-1	Clamp/Split	Adjustable	Yes	1.25	No
CSD-CF0J1-1	Clamp/Split	Fixed	No	1.5	24 V SPST, N.O. 10 A at 260 VAC, 5 A at 30 VDC
CSD-CA1G1-1	Clamp/Split	Adjustable	Yes	1.25	24 V SPST, N.O. 10 A at 260 VAC, 5 A at 30 VDC

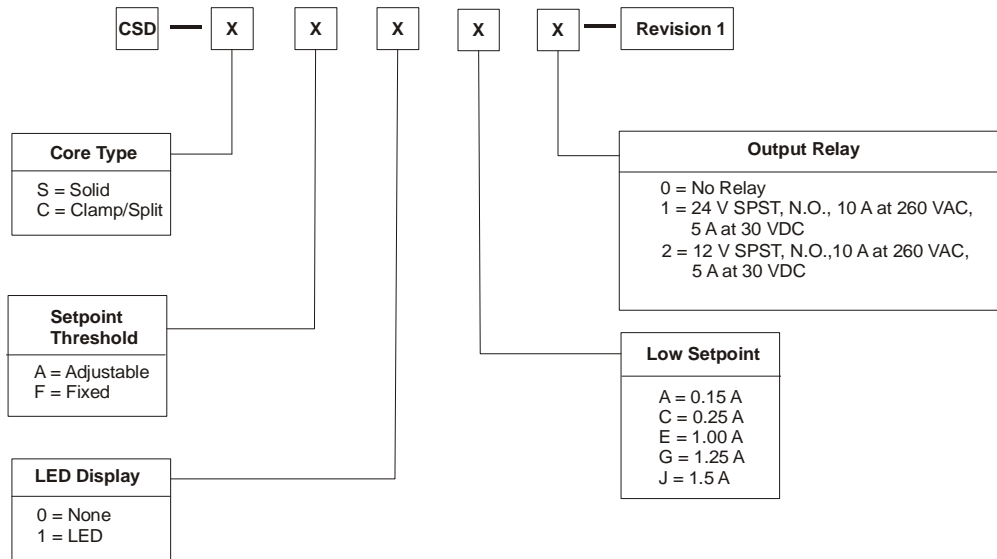


Figure 2: Ordering Template

FIG002.Lamp

Table 3: Accessories

Product Code Number	Product Code Description
CR-01200-0 ¹	12 VAC/VDC SPST, N.O. Relay
CR-02400-0 ¹	24 VAC/VDC SPST, N.O. Relay

1. Refer to the *Command Relay Installation Instructions (Part No.24-10345-50)* for more information regarding the command relays.

Repair Information


If the CSD Series current switch fails to operate within its specifications, replace the unit. For a replacement CSD, contact the nearest Johnson Controls® representative.

Technical Specifications

Solid Core Models

	CSD-SF0C0-1	CSD-SA1E0-1	CSD-SA1E1-1	CDS-SA1E2-1
Amperage Range	0.25–200 A	1.00–135 A	1.00–135 A	1.00–135 A
Switch Setpoint	Fixed	Adjustable	Adjustable	Adjustable
Output Relay	No	No	24 V SPST, N.O. 10 A at 260 VAC, 5 A at 30 VDC	12 V SPST, N.O. 10 A at 260 VAC, 5 A at 30 VDC
Actuation Coil	No	No	20–30 VAC/VDC, 40–85 mA Maximum	10–14 VAC/VDC, 25–45 mA Maximum
Switch LED Indication	No	Yes	Yes	Yes
Relay LED Indication	No	No	Yes	Yes
Trip Setpoint Value	0.25 A	1.00 A	1.00–135 A	
Current Switching Mode	Under Current Sensing	Over/Under Current Sensing	Over/Under Current Sensing	
Sensor Supply Voltage	Induced from power conductor cable.			
Wire Size	2.1–0.6 mm (12–22 AWG) Diameter			
Status Output	Switch normally open.			
Switch Load Capacity	1 A at 30 VAC/42 VDC Maximum			
Isolation Voltage	600 VAC rms			
Temperature Range	-15 to 60°C (5 to 140°F)			
Frequency Range	50/60 Hz			
Humidity Range	0–95% Noncondensing			
Screw Torque	0.5 N·m (4 lb·in.)			
Dimensions	65 x 47 x 25 mm (2-9/16 x 1-7/8 x 1 in.)		65 x 65 x 40 mm (2-9/16 x 2-9/16 x 1-19/32 in.)	
Aperture (Sensing Hole) Size	18 mm Diameter (0.71 in. Diameter)			
Compliance 	United States	UL Listed, File E310692, CCN NRNT, Under UL 508, Industrial Control Equipment		
	Canada	UL Listed, File E310692, CCN NRNT7, Under CAN/CSA C22.2 No. 14-M91 Industrial Control Equipment		
	Europe	CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC.		
Shipping Weight	0.16 kg (0.35 lb)			

Split Core Models

	CSD-CF0A0-1/ CSD-CF0J0-1	CSD-CA1G0-1	CSD-CF0J1-1	CSD-CA1G1-1
Amperage Range	0.15–200 A/ 1.5–200 A	1.25–135 A	1.5–200 A	1.25–135 A
Switch Setpoint	Fixed	Adjustable	Fixed	Adjustable
Output Relay	No	No	24 V SPST, N.O. 10 A at 260 VAC, 5 A at 30 VDC	24 V SPST, N.O. 10 A at 260 VAC, 5 A at 30 VDC
Actuation Coil	No	No	20–30 VAC/VDC, 40–85 mA Maximum	20–30 VAC/VDC, 40–85 mA Maximum
Switch LED Indication	No	Yes	No	Yes
Relay LED Indication	No	No	Yes	Yes
Trip Setpoint Value	0.15 A/1.5 A	1.25–135 A	1.5 A	1.25–135 A
Current Switching Mode	Under Current Sensing	Over/Under Current Sensing	Under Current Sensing	Over/Under Current Sensing
Sensor Supply Voltage	Induced from power conductor cable.			
Wire Size	2.1–0.6 mm (12–22 AWG) Diameter Recommended			
Status Output	Switch normally open.			
Switch Load Capacity	1 A at 30 VAC/42 VDC Maximum			
Isolation Voltage	600 VAC rms			
Temperature Range	-15 to 60°C (5 to 140°F)			
Frequency Range	50/60 Hz			
Humidity Range	0–95% Noncondensing			
Screw Torque	0.5 N·m (4 lb·in.)			
Dimension	69 x 65 x 27 mm (2-23/32 x 2-9/16 x 1-1/16 in.)		69 x 65 x 44 mm (2-23/32 x 2-9/16 x 1-3/4 in.)	
Aperture (Sensing Hole) Size	18 x 20 mm Diameter (0.72 x 0.78 in. Diameter)			
Compliance 	United States	UL Listed, File E310692, CCN NRNT, Under UL 508, Industrial Control Equipment		
	Canada	UL Listed, File E310692, CCN NRNT7, Under CAN/CSA C22.2 No. 14-M91 Industrial Control Equipment		
	Europe	CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC.		
Shipping Weight	0.16 kg (0.35 lb)			

The performance specifications are nominal and conform to acceptable industry standards. For application of conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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