R310A Series Current Sensing Switch Catalog Page

LIT-1900005

2020-04-22



Description

The R310A Series Current Sensing Switch detects alternating current (AC) flow in a single circuit without being connected to that circuit. It may be used in any application where current detection is required.

The R310A replaces the R10A used with Johnson Controls/ PENN® time delay oil failure cutout controls such as the P28, P45, and P445. These applications incorporate internal line breaking overload protection, where lockout due to overload cycling is unacceptable or undesirable. The R310A switch is not intended to detect breakage of belts.

The R310A is molded in a high dielectric material, which permits mounting inside a starter or contactor.

Refer to the *R310A Series Current Sensing Switch Product Bulletin (LIT-121536)* for important product application information.

Features

- small size allows mounting in small enclosure
- solid-state switching contains no moving parts to fail
- low 0.5 ampere activation allows monitoring of most small equipment circuit loads
- high 200 ampere monitoring capacity allows monitoring of heavy duty equipment
- large 0.70 in. (18 mm) diameter sensor hole accepts large diameter wire sizes and multiple coilings of smaller diameter wire sizes

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Applications

The R310A Current Sensing Switch is designed to sense alternating current in a conductor that passes through its opening. The R310A sensor closes an electronic switch if the alternating current in the conductor exceeds 0.5 amperes. Thus, the R310A switch may be used for several purposes:

- switch a pilot circuit
- energize a run signal on a device such as a fan, motor, or pump
- monitor motors and electrical loads for proper operation
- monitor on/off status of process motors

The R310A Series Current Sensing Switch is available in two models. The R310AD-1 switch is for use in low-voltage applications, such as with the P445 Electronic Lube Oil Control. The R310AE-2 switch is for use in high-voltage applications, such as with the P28 and P45 Electromechanical Lube Oil Controls.

The R310A switch avoids nuisance lockouts by sensing the lack of current flow to the motor. Regardless of the reason for motor shutdown, the lube oil control time delay circuit is de-energized when the current flow in the motor supply line drops below 0.5 amperes.

In a typical application, the lube oil control does not lock out when the control circuit shuts off the compressor. However, if the compressor overheats and the internal thermal overload circuits open, the compressor shuts itself down, which causes the oil pressure to drop. This drop in oil pressure will energize the lube oil control heater (P28, P45) or timer (P445), causing a nuisance lockout. In this situation, the R310 switch senses the lack of current to the motor, and is used to de-energize the time delay heater (P28, P45) or electronic timer (P445) before a nuisance lockout occurs.

Repair Information

If the R310A Series Current Sensing Switch fails to operate within its specifications, replace the unit. For a replacement switch, contact the nearest Johnson Controls® representative.

Selection Chart

Product Code Number	Description
R310AD-1C	Current Sensing Switch Voltage switching capacity: 0 to 30 VAC Used with: P445 Electronic Lube Oil Control
R310AE-2C	Current Sensing Switch Voltage switching capacity: 120 to 240 VAC Used with: P28 and P45 Electromechanical Lube Oil Controls

Technical Specifications

Table 1: R310A Series Current Sensing Switch technical specifications

R310A Series Current Sensing Switch		
Switch Action		SPST, normally open
Current Sensing Range	R310AD-1C	0.5 to 200 Amperes
	R310AE-2C	0.75 to 200 Amperes
Switch Threshold	R310AD-1C	0.5 Amperes
	R310AE-2C	0.75 Amperes
Sensor Supply Voltage		Induced from monitored conductor, isolation 600 VAC RMS
Switching Capacity(General Purpose)	R310AD-1C	0.1A at 30 VAC/DC
	R310AE-2C	0.5 at 250 VAC/DC
Output Polarity		Non-polarity sensitive output
Enclosure		NEMA 1
Ambient Operating Conditions		5 to 140°F (-15 to 60°C);0 to 95% RH, noncondensing

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Table 1: R310A Series Current Sensing Switch technical specifications

R310A Series Current Sensing Switch	
Ambient Storage Conditions	-40 to 158°F (-40 to 70°C);0 to 95% RH
Dimensions (H x W x D)	2.34 x 1.85 x 0.875 in.(59 x 46 x 22 mm)
Sensor Hole Size	7/10 in. (17 mm) Diameter
Agency Listings	UL Guide NRNTcUL Guide NRNT7

Product warranty

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

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Single point of contact

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Contact information

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