

Operations Manual



Zero Speed Switch Module
Model ZS11

Operations Manual

Model ZS11 – Zero Speed Switch Module

***The Operations Manual must be referred to for correct installation.
Failure to comply with the Operations Manual shall void all warranties and liabilities.***

Overview

The Phares Electric Model ZS11 Zero Speed Switch Module is an interface for use between existing sensor and control circuitry. This interface enables simple on/off sensors to be used for over speed, under speed and zero speed sensing applications.

The ZS11 Zero Speed Switch Module contains three relay outputs which operate via a single sensor input signal. Each relay output is adjustable, providing three independent speed level settings in one module.

The ZS11 supply voltage can be AC or DC (see product label) universal input voltage, and is DIN rail mountable for easy installation. The ZS11 can be integrated with existing industrial control systems or used as a stand-alone unit.

Detail

The Phares Electric Model ZS11 Motion Detection System consists of the ZS11 Zero Speed Switch Module, Sensor (hall effect, inductive, capacitive, photoeye, encoder, etc.), and Sensor Target.

The Sensor Target can be a bolt head, gear tooth, key, magnet, reflector, or other target depending upon type of Sensor used.

The Sensor Target is attached to or located at the point of measure. Motion is detected when the Sensor Target rotates, and passes by the Sensor. When motion is either detected or reaches setpoint, the relay outputs change state. They remain in this state until either under speed or zero speed condition occurs, depending upon application.

Use the ZS11 for over speed, under speed, and zero speed applications.

The ZS11 Zero Speed Switch Module has 5 diagnostic LED's. These LED's indicate Power, Relay status and Pulses from Sensor input signal. LED's are labeled Power, Relay 1, Relay 2, Relay 3 and Pulse.

The ZS11 Zero Speed Switch Module supplies 12 VDC to an external Sensor. The Sensor must be 3 wire, sourcing (PNP) or sinking (NPN) signal. Sensor input signal is configured via the two position selector switch located at the top right of the terminal strip.

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Detail (continued)

External sensor types that may be used with the ZS11 include:

Hall Effect
Photo Eye
Inductive
Capacitive
Encoder

Setup

1. Mount the Sensor and Sensor Target.
2. Connect wires to the ZS11 Zero Speed Switch Module. The "L1" and "L2" terminals are not polarity sensitive. The "G" and "Shd" terminals are not connected to any circuit nor to each other, and should be wired to Earth Ground if used for grounding and/or shielding purposes.
3. Set Sensor Selector Switch according to the appropriate Sensor input signal. Set Switch to "A" for Sourcing (PNP) and "B" for Sinking (NPN) signal.
4. When wiring is complete, apply power to the ZS11 Zero Speed Switch Module. The Power LED should illuminate.
5. Rotate Sensor Target and check the Pulse LED. It should blink each time a marker on the Sensor Target passes the Sensor indicating motion. If not, check the gap between Sensor and Sensor Target. Also, make sure the Sensor is aligned properly with the Sensor Target.
6. When the shaft on which the Sensor Target is mounted rotates at or above operating speed, Relay 1, Relay 2, and/or Relay 3 LED should illuminate indicating the Relays have changed state.
7. If the Relay LED's do not illuminate at the desired speed levels, adjust the trim pot associated with the appropriate Relay. The trim pots are 10 turn precision pots that do not have stops.
8. When the Relay LED's illuminate, the Relays will energize and remain in this state until speed drops below setpoint or motion stops. At this point the Relay LED's will turn off indicating that the Relays have returned to their normal state.
9. The ZS11 Zero Speed Switch Module has an internal non-replaceable 1/2 amp fuse for circuit protection.
10. A 5 amp fuse is recommended to protect the ZS11 relay contacts from possible overloads. Wire the fuses in-line to the Relay "Com" terminals.

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Setup (continued)

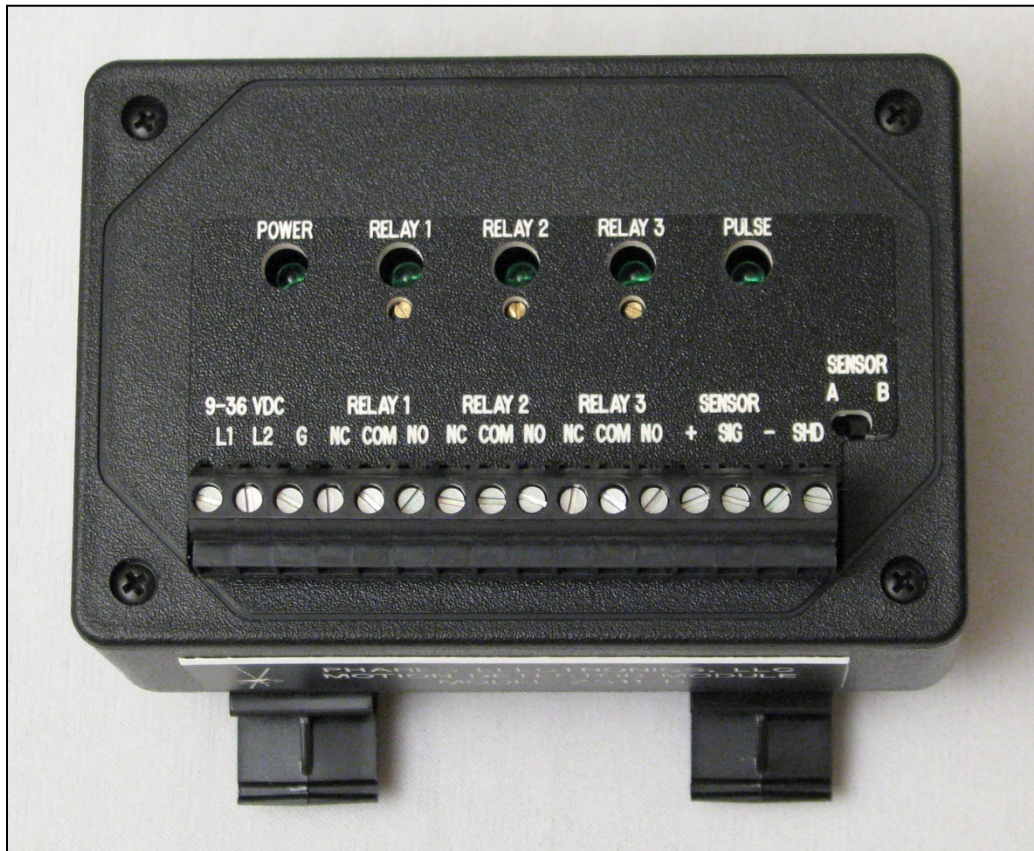


Figure 1. Indicators and terminal block

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Disclaimer

The ZS11 Zero Speed Switch Module is not rated UL or otherwise.

This ZS11 Zero Speed Switch Module is not intended for safety critical applications. Users of this Phares Electric product in such applications assume all risks of such use and shall indemnify Phares Electric against all damages, including attorneys fees and costs, resulting from such use.

Warranty

All products are thoroughly tested before shipping. If a product is found to be defective within 30 days from the date of purchase, not the date of installation, we will repair or replace the unit. The defective unit must be received and tested at Phares Electric before a replacement is shipped. If a replacement is needed before the defective unit arrives at Phares Electric, LLC, the replacement will be charged to your credit card, or invoiced to your Net30 Account. A credit will be issued once the unit is received at Phares Electric and deemed defective upon inspection and testing. Please call us for return shipping instructions.

The warranty is void if the unit is physically damaged from abuse or misuse, or if the unit shows evidence of excessive current, heat, moisture, vibration, or operating conditions outside of design limits or unauthorized modification.

The above constitutes the sole and exclusive warranty provided by Phares Electric. In no event shall Phares Electric, or its agents, be liable for any damages, whether direct, indirect, consequential, punitive or otherwise, arising out of any product or service provided or arranged by Phares Electric.

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Specifications

Power Requirements:

(Please see product label for supply voltage)

Part No. ZS11-A: 85-264 VAC, 50/60 Hz

Part No. ZS11-D: 9-36 VDC, 50/60 Hz

Current Draw:

116 mA

Circuit Protection:

ZS11 Zero Speed Switch Module:

Internal ½ amp fuse (non-replaceable)

ZS11 Relay Contacts:

A 5 amp fuse wired in-line with the Relay "Com" terminals is recommended

Input Signal:

12VDC, 3 wire, sourcing (PNP) or sinking (NPN)

Dimensions (in inches):

4-5/8. Wide x 3-1/2. High* x 3-3/4. Deep

*including DIN rail mount and terminal block

Relay:

Output:

SPDT Form 'C' dry relay contact (N.O/N.C.)

Contact Rating:

5 amp at 120 VAC; 5 amp at 30 VDC

Life expectancy:

Mechanical 10,000,000 operations min. (at 1,800 operations/hr)

Electrical 100,000 operations min. (at 1,800 operations/hr)

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Troubleshooting

Line No.	Description	Causes
1.	Power LED does not light with power applied.	<ul style="list-style-type: none">• Confirm appropriate voltage is across "L1" and "L2" terminals.• Remove power and wires to "L1" and "L2" terminals. Check continuity across "L1" and "L2" terminals. If there is no continuity, the internal fuse is blown and ZS11 Zero Speed Switch Module needs to be replaced.
2.	Relay LED(s) do not light.	<ul style="list-style-type: none">• Confirm that the Pulse LED is blinking. At high speeds it may appear to be lit continuously because it is blinking very fast.• Speed is below setpoint. Adjust appropriate trim pot associated with the Relay used in application. Turning the trim pot counterclockwise will lower the setpoint to a slower RPM setting and turning it clockwise will raise the setpoint to a faster RPM setting.
3.	Pulse LED does not blink.	<ul style="list-style-type: none">• Confirm that the Sensor is wired correctly to the ZS11 Zero Speed Switch Module.• Confirm that the Sensor Selector Switch is set properly for the Sensor type used. The "A" setting is for a Sourcing (PNP) Sensor, and the "B" setting is for a Sinking (NPN) Sensor.• Check the gap between the Sensor and the Sensor Target. The Sensor may not be able to detect the Sensor Target if there is too large of a gap.• Check Sensor alignment with Sensor Target. If out of alignment, the Sensor might not be able to detect the markers on the Sensor Target.• Sensor may be defective.

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