PS111 Zero Speed Switch and PS112 Adjustable Speed Sensor

Installation & Operation Manual

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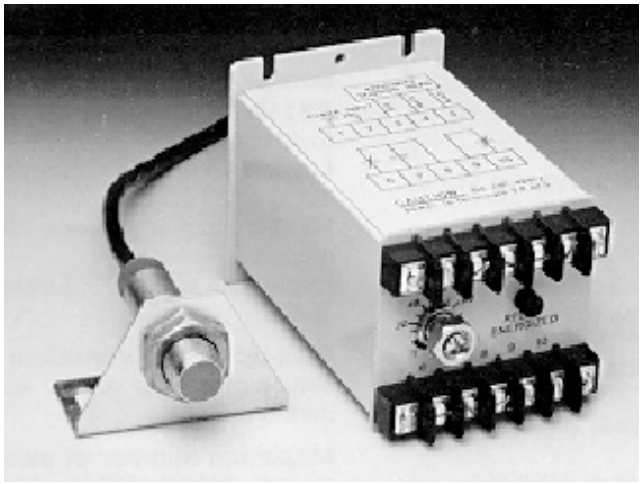
MAN-PS111-000
REV 02 07/19/99

Speed Switches

PS111 Zero Speed Switch
PS112 Adjustable Speed Sensor



- Solid-state construction
- Adjustable sensing time
- Senses speed as low as 1/3 PPM
- Can be used as PLC scan loss detector
- High noise immunity and transient protection
- Explosion proof sensors available
- Mounts on standard AB track
- Low cost

PS111 Zero Speed Switch

Operating Logic: Upon application of power to the input, the internal relay is energized and a time interval starts. If there is motion being sensed, pulses will be present at the sensing input, and the timer will be reset on each pulse. If pulses are coming at a rate faster than the time interval set by the potentiometer, the relay will stay energized. Should motion stop, the unit will time out and denergize the internal relay. If the pulses restart, the relay re-energizes and the timer restarts.

Standard Time Ranges: 0.05–5 sec., 0.3–30 sec., 1.8–180 sec. Other ranges on special order.

Adjustment: Easily adjustable linear scale, locking bushing potentiometer.

PS112 Adjustable Speed Sensor

Operating Logic: Upon application of power to the input terminals, the PS112 begins sensing the repetition rate of the pulses being generated by the proximity switch. If the pulse rate is lower than the setpoint adjustment, the internal relay remains deactivated. If the pulse rate is higher than the setpoint, the internal relay activates.

Sensing Range: 150 to 1500 P.P.M. standard. Other ranges on special order.

Response Time: Equal to time between any two pulses at given setpoint.

Adjustment: Easily adjustable linear scale, locking bushing potentiometer.

Sensing Mechanism

Noncontact proximity sensors
PS Series Speed Switches when used with QS series sensors can monitor motion of any metallic target such as gear teeth, chain links, sprockets, bolt heads, etc.

Encoders, Programmable Controllers, etc.
The pulse input to the PS Series Speed Switches can come from any 12 VDC device such as PLC's, encoders, photoelectric devices, etc.

Electromechanical Sensing
PS111 may also be used with a repetitive contact closure such as a limit or reed switch. The switch contacts will carry low voltage at low current, therefore the leads should be isolated from any other wiring that might induce noise into the sensing output.

Scan Loss Detector
PS Series Speed Switches when used with Programmable Controllers act as safety devices to monitor if the PLC is going through its regular scans. If the PLC for any reason quits scanning its I/O ports, the pulses to the speed switch would stop de-energizing its output.

Specifications

PS Series Speed Switches

Input Voltage: 105 to 135 Volts, 50–60Hz

Operating Temperature: –10 to +130 °F

Output: One SPDT and One SPST (N.C.) contacts

Rating: 10 Amp. resistive @ 120 VAC

Life Mechanical: 10,000,000 operations

Under Full Load: 200,000 operations minimum

Under Half Load: 1,000,000 operations minimum

Transient Protection: 1,000 volts for 8 milliseconds, 1% duty cycle

Sensor Input:

PS111: Input impedence 4.7k to ground
Logic 1: 5 to 13 VDC, *Logic 0:* 0 to 0.8 VDC

PS112: Input impedence 4.7k pull-up to 12 VDC
Logic 1: 9 to 13 VDC, *Logic 0:* 0 to 3 VDC

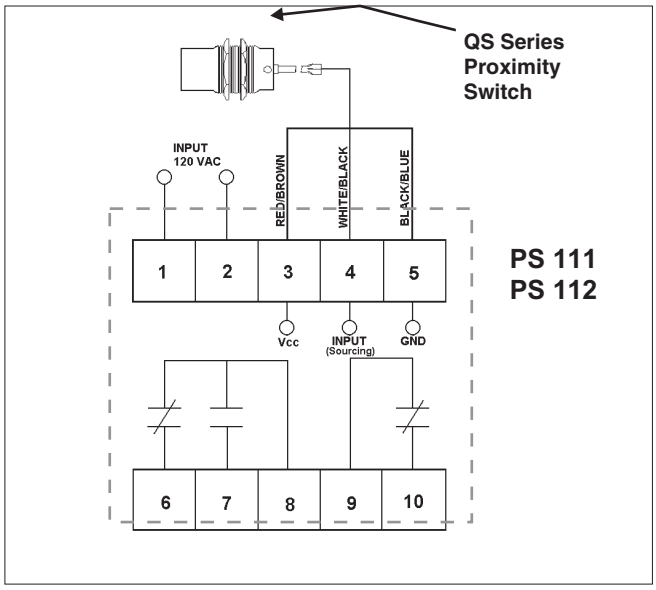
Pick-up Speed Variation: 10% of setting over input voltage and temperature range

Maximum number of pulses per minute (PPM):
PS111 — 10,000
PS112 — 100,000

Pick-up Repeatability: 2% at constant temperature and input voltage

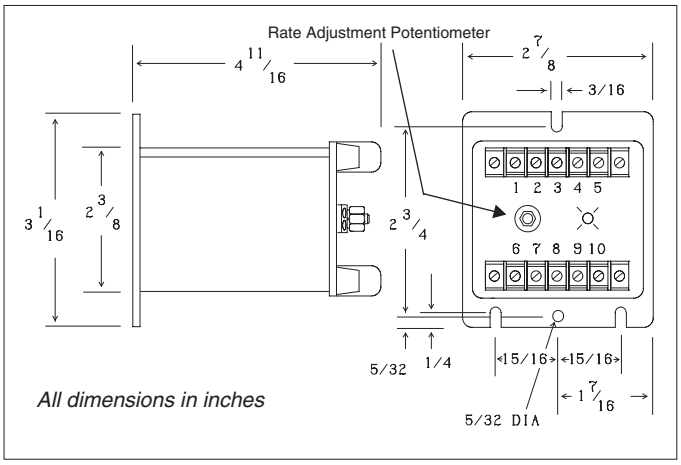
Wiring Diagram

Wire the switch in accordance with the diagram below.



Outline Dimensions

Outline dimensions are provided in the figure below.

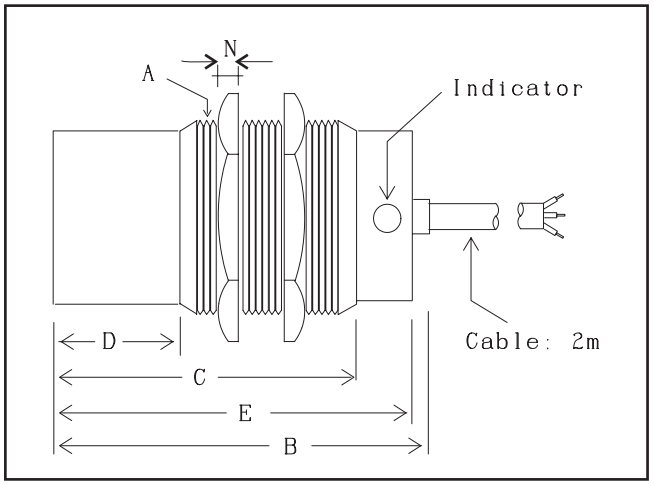


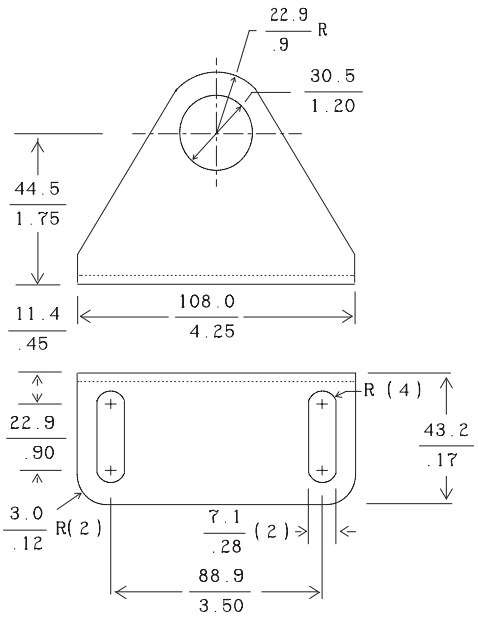
QS Series Proximity Switch Mounting

The QS132 proximity switch package includes the mounting bracket shown in the figure to the right. The QS132 is held in position by tightening the two nuts on the threaded body of the switch. This allows for finer adjustment of the proximity switch, in relation to the metal target being sensed, for optimum performance of the total control package. For all other models, mounting brackets are not included.

The mounting dimensions for QS series of switches are given in the table below:

Switch	A	B	C	D	E	N
QS132	M30P=1.5	57	38	13	50	5
QS133	M30P=1.5	57	38	-	50	5
QS134	M30P=1.0	47	29	-	40	4
All dimensions are in mm						





Mounting Bracket for QS132

For more information about QS Series Proximity Switches, refer to MAN-PRXSW-QS.

How to Order:

Switches

SMC-PS111-05SEC	Zero speed switch, minimum
SMC-PS111-30SEC	Zero speed switch, minimum
SMC-PS111-60SEC	Zero speed switch, minimum
SMC-PS111-180SEC	Zero speed switch, minimum
SMC-PS112-1500	Adjustable Speed Switch, 150–1500 RPM

Proximity Sensor

SMC-QS132-010	Proximity Sensor, unshielded, 0.60" sensing range, includes mounting bracket
SMC-QS133-010	Proximity Sensor, shielded, 0.250" sensing range
SMC-QS134-010	Proximity Sensor, shielded, 0.20" sensing range
SMC-QS200-010	Ferrous Proximity sensor, Class I, Division II, Hazardous area
SMC-QS220-010	Ferrous Proximity sensor, Class I, Division II, Hazardous area, explosion proof

Accessory

ADP-QS132-011	Adapter 30mm to 1/2" 14NPT (internal) conduit

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