

# Installation and Operation Instructions for SELECTRONIC® Speed Switches SS300 Series



Please read the following information before installing. A visual inspection of this product for damage during shipping is recommended before mounting. It is your responsibility to have a qualified person install this unit and make sure it conforms to NEC and local codes.

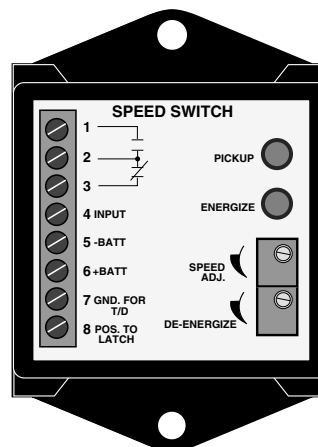
## GENERAL INFORMATION

# WARNING

**BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT**

- ✓ Disconnect all electrical power to the machine.
- ✓ Make sure the machine cannot operate during installation.
- ✓ Follow all safety warnings of the machine manufacturer.
- ✓ Read and follow all installation instructions.

SS300-AD



### Description

The SS300 Series are single set point speed switches with SPDT relay dry contact output. The trip point is set by a potentiometer. An LED indicates when the signal source is present. A second LED turns on when the trip point is reached. See Table 1 for available models and requirements. An optional time delay is on board to delay operation of the relay for 2-6 seconds after the set point has been reached.

The SS300 Series speed switch is intended for installation within a weatherproof enclosure to protect it from rain, dust, etc.

### Overspeed Shutdown

The SS300 Series shuts down the engine if RPM exceeds the pre-set limit.

### Speed Sensitive Pull-in/Drop-out

Engage or disengage PTO's, 4-wheel drives, other switch points, etc. according to speed of engine being monitored.

### Engine and Transmission Alarm/Shutdowns

Oil pressure in some engines and transmissions varies widely between running and idle speeds. The SS300 Series can select between two pressure switch set points according to speed of the engine or transmission and thus give maximum protection to the equipment while at operating RPM and eliminate nuisance alarms when at idle.

### Adjustable Differential Model

The ("AD") can be adjusted to change the speed range over which the pull-in and drop-out differential of the relay will operate. A typical application is to insure that engine speed is above a minimum RPM before applying a load but allows a drop in speed of several hundred RPM without disconnecting the load.

**Table 1: Models Available and Input Signal**

Model Number	Distributor Ignition	Magnetic Pickup	Alternator	Voltage 12 24
SS300 (std. model)		X		X X
SS300-LF (low frequency)	X		X	X X
SS300-AD (adjustable differential)		X		X X
SS300-AD-LF (low frq. & Adjst. diff.)	X		X	X X

### Specifications

#### Power Requirements:

- 12 VDC (9-16 VDC).
- 24 VDC (18-30 VDC).

#### Frequency Signal: Voltage (all models):

- Minimum Input Voltage Signal: 4.5 Vrms.
- Maximum Input Voltage Signal: 50 Vrms.

Maximum Current	12V	24V
Pull In	46 mA	46 mA
Pickup only	10.5 mA	16 mA

Frequency Range in Hz	Model Number
25-2000	SS300-LF SS300-AD-LF
625-9000	SS300-AD SS300

#### Reset Differential Magnetic Pickup Signal Models:

- "Standard Models: 2 Hz Differential.
- "AD" Models (Adjustable Differential): 650-8900 Hz Adjustable

#### Reset Differential Alternator Models:

- "LF" Models (Low Frequency): 2 Hz Differential
- "AD-LF" Models (Adjustable Differential Low Frequency): 50-1900 Hz Adjustable.

**Output:** Relay contact, SPDT, resistive load, 6 A, 30 VDC.

**Time Delay:** When terminal 7 is grounded, the relay operation is delayed for 2-6 seconds after rpm set point is reached.

**Adjustment:** 20-turn potentiometer(s).

**Temperature Range:** -4° to 185°F (-20° to 85°C).

**Relative Humidity:** 0 to 95% Non-condensing.

**Case:** Black, ABS plastic.

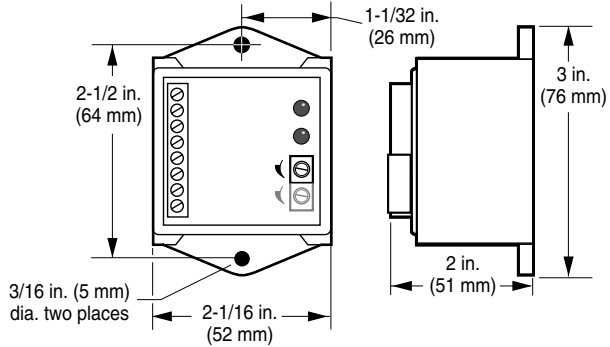
## MOUNTING DIMENSIONS



**CAUTION:** THE SS300 SERIES MODELS ARE INTENDED FOR INSTALLATION WITHIN A WEATHER-PROOF ENCLOSURE.

The SS300 Series models can be mounted to a flat surface within the panel using two #8 screws. Mounting screws are not supplied.

### SS300 Series (all models)



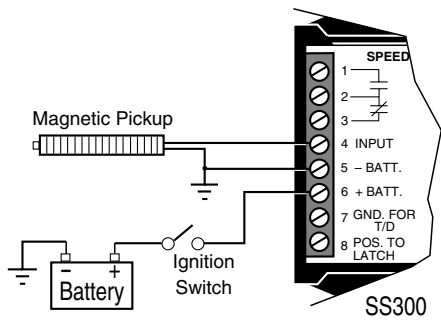
## TYPICAL WIRING INSTALLATION



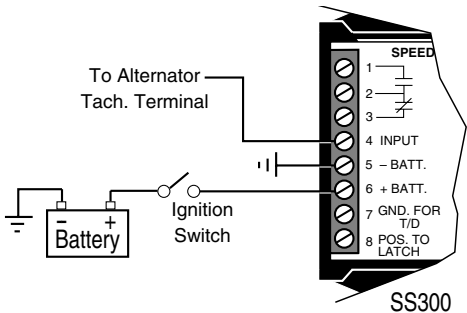
**CAUTION:** BEFORE PERFORMING THE WIRING OPERATION TURN THE POWER SOURCE OFF AND STOP YOUR ENGINE.

### Frequency/RPM Input Source

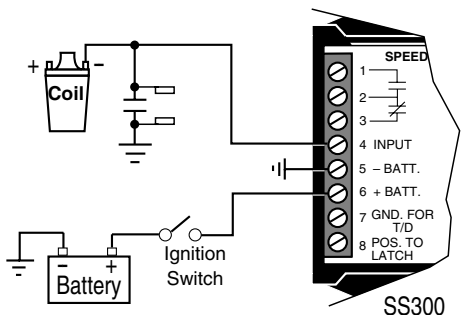
Connect the SS300 Series speed switch to the appropriate frequency/RPM input source. See Figures 1 thru 3.



**Figure 1:** Magnetic Pickup Input



**Figure 2:** Alternator Tach., Input



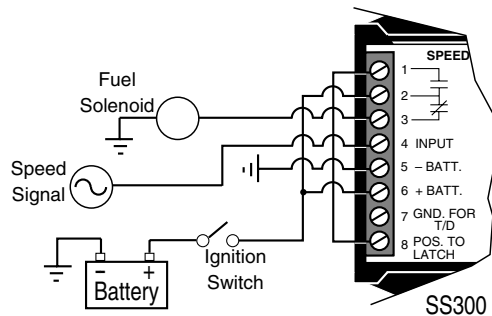
**Figure 3:** Distributor Ignition Input



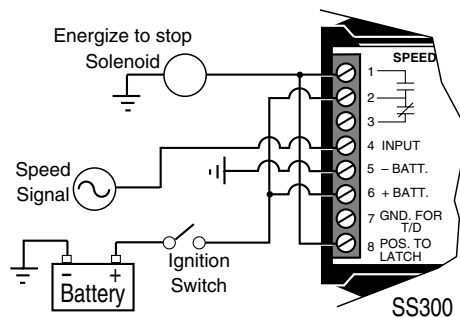
**CAUTION:** If replacing an SS100 Series model with an SS300 Series model, note the significant wiring differences on the SS300 terminals: 5, 6, 7, and 8. Wire your SS300 accordingly.

### Latching Overspeed with Fuel Solenoid

A latching overspeed switch with fuel solenoid application is shown in Figures 4 and 5. Ignition switch must be turned off to unlatch.



**Figure 4:** Energize to Run Solenoid

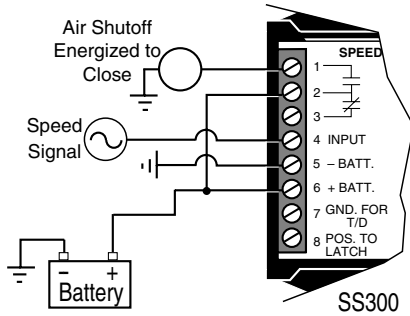


**Figure 5:** Energize to Stop Solenoid

## TYPICAL WIRING INSTALLATION (continued)

### Non Latching Overspeed Switch with Air Shutoff Solenoid

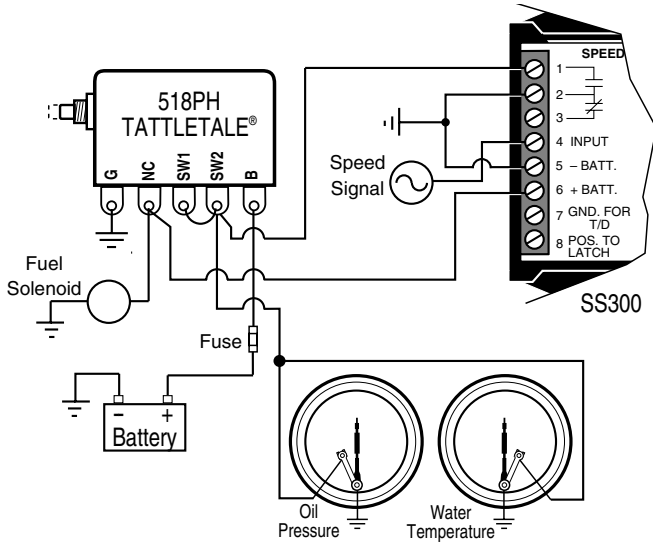
A non-latching overspeed switch with air shutoff solenoid application is shown in Figure 6. The air shutoff device must be manually reset to open/run position.



**Figure 6**

### Non Latching Overspeed Switch with 518PH and Fuel Solenoid

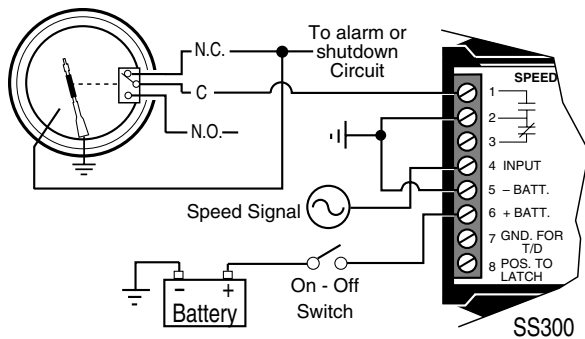
A non-latching overspeed switch with an 518PH magnetic switch and a fuel solenoid is shown in Figure 7.



**Figure 7**

### Dual Set Point Oil Pressure Switch

A dual set point oil pressure switch is shown in Figure 8.

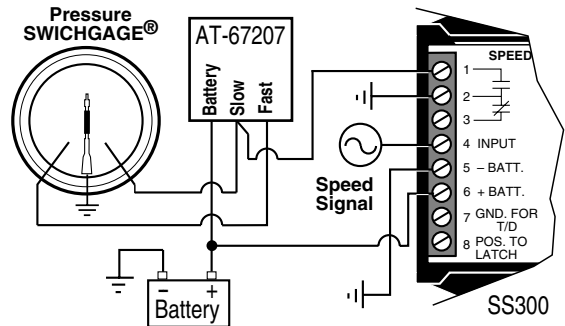


**Figure 8**

**CAUTION:** If replacing an SS100 Series model with an SS300 Series model, note the significant wiring differences on the SS300 terminals: 5, 6, 7, and 8. Wire your SS300 accordingly.

### SS300 with AT-67207 Throttle Controller

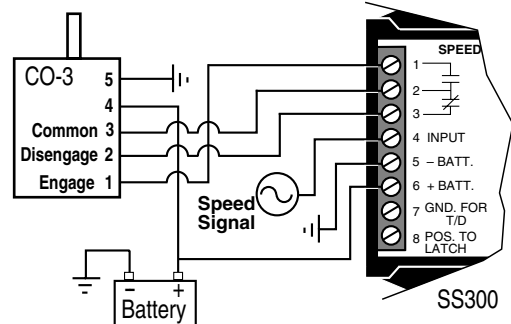
The SS300 with the AT-67207 throttle control is used to limit speed as shown in Figure 9. Engine speed is controlled by OPL pressure SWICHGAGE® setting and the AT-67207 throttle control. The throttle control moves as long as OPL contact is made. If OPL is calling for an increase in speed and engine speed exceeds the setting of the SS300, a slow signal is applied to AT-67207. The throttle control will stop if both fast and slow signals are applied. Engine speed at a constant load will not exceed the limit set by the SS300.



**Figure 9**

### SS300-AD with Clutch Engager

The SS300-AD can be applied with a Murphy CO-3 engager (Figure 10). The circuit is designed to engage a clutch after engine speed has increased to a preset RPM (Example: 1200 RPM), and disengage clutch when engine speed has decreased to idle (Example: 600 RPM). The adjustable differential SS300-AD relay is set to pull in at 1200 RPM and drop out at 600 RPM.



**Figure 10**

## SPEED SETTING ADJUSTMENT

### For Models SS300 and SS300-LF

**NOTE:** The adjustment control(s) is a 20-turn potentiometer(s) and have no stops when the extreme settings are reached. Always turn a full 20 turns.

1. Make sure the **PICKUP** LED light is “ON”. The **PICKUP** LED will be flashing for a low frequency (under 30 Hz) and will remain “ON” for a higher frequency.
2. Turn the **SPEED ADJUST** pot fully clockwise 20 turns (**Figure 13**).
3. Run the engine at the desired RPM and adjust the **SPEED ADJUST** pot counterclockwise until the **ENERGIZE** LED comes “ON” and the relay has transferred (**Figure 13**).

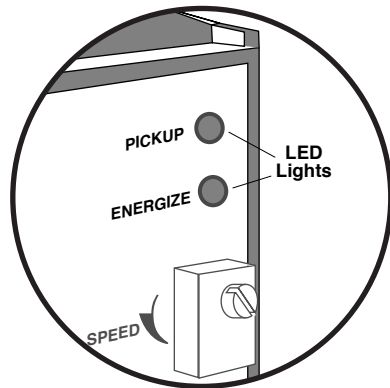


Figure 13

### For Models SS300-AD and SS300-AD-LF

1. Make sure the **PICKUP** LED light is “ON”. The **PICKUP** LED will be flashing for low frequency (under 30 Hz) and will remain “ON” for a high frequency.
2. Turn the **SPEED ADJUST** pot fully clockwise 20 turns (**Figure 14**).
3. Turn the **DE-ENERGIZE** pot fully counterclockwise 20 turns.
4. Run the engine at the desired RPM and adjust the **SPEED ADJUST** pot counterclockwise until the **ENERGIZE** LED comes “ON” and relay has transferred.
5. Reduce the engine speed to the desired drop out point.
6. Adjust the **DE-ENERGIZE** pot clockwise until the **ENERGIZE** LED goes “OFF” and the relay has dropped out (**Figure 14**).

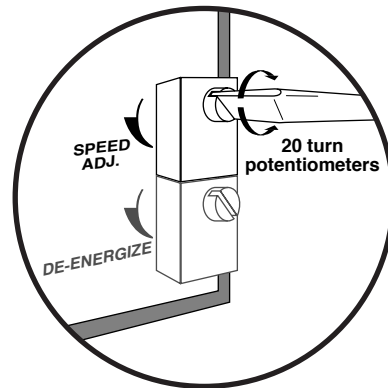


Figure 14

### Warranty

A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to [www.fwmurphy.com/support/warranty.htm](http://www.fwmurphy.com/support/warranty.htm)

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