

# Digital TACHSWICH™ by Murphy SELECTRONIC®



## SD35HL Model

- Digital Tachometer with Underspeed and Overspeed Switch
- Back Light for Night View
- Easy-to-Read LCD Display
- Digital Switches for Easy Calibration
- Power Supplied by 12, 24, or 32 VDC Battery System
- LED Indicators to Indicate Set Points

### Description

The SD35HL Digital TACHSWICH™ is a combination tachometer and adjustable speed switch, designed for use on engines with 12, 24, or 32 volts battery system. This TACHSWICH converts the pickup or alternator frequency data (Hz) into digital RPM and displays it on a four digit Liquid Crystal Display.

The SD35HL has two adjustable speed switches, one normally closed (used for low or underspeed), designated "L", and one normally open (used for high or overspeed), designated "H".

All contacts can be adjusted from 10 to 9990 RPM. Although the switches are called "H" (high) and "L" (low), they can be set anywhere in the adjustment range.

LED indicators are provided for each set point on the dial of the TACHSWICH. For the low trip point, an amber LED turns on until RPM exceeds the underspeed set point. A red LED turns on when RPM exceeds the overspeed set point. The LED's will remain on, until the reset level is reached or power is removed.

The tachometer calibration set and trip point(s) switches, are located on the back of the unit. The tachometer readout is blank when the engine is not running, and turns on when the frequency signal exceeds the minimum input voltage level. Trip points can be latched in or automatically reset..

### Applications

Typical applications include operating alarms, control or shutdown devices on:

- Generators
- Compressors
- Industrial Engines
- Oil Field Equipment
- Marine Vessels
- Vehicles
- Farm Equipment
- Construction Equipment.

### Specifications

#### Power Requirements:

- Voltage: 8-40 VDC.
- Current:  
*Tach back-light Off, 2 mA @ 12 VDC.*  
*Tach back-light On, 10 mA @ 12 VDC.*

#### Signal Input (Magnetic Pickup or Alternator):

- Voltage: 4 Vrms minimum; 28 Vrms maximum.
- Current: 0.7 mA maximum.

*Note: for alternator input, minimum 3-pole alternator required.*

#### Switch Rating:

- "H" Switch, N.O. (sink) 1 A 30 VDC.
- "L" Switch, N.C. (sink) 1 A 30 VDC.

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

**Readout Tachometer:** Four Digits; 3/8 in. (9 mm) high, will read from 1 to 9999 RPM.

**Update Rate:** One update per second.

#### Set Points:

- "L" Switch, N.C.; For low or underspeed.
- "H" Switch, N.O.; For high or overspeed.

*Note: The "L" and "H" Switches can be set anywhere in the adjustment range (10-9990 RPM).*

#### Reset Differential:

10 RPM; remove power to reset.

**Maximum Input Frequency:** 10,000 Hz.

**Shipping Weight:** 14 oz. (0.4 kg) approx.

**Shipping Dimensions:** 5-1/2 x 5-1/2 x 5-1/2 in. (140 x 140 x 140 mm) approx.

**Bezel:** 3-5/8 in. (92 mm).

**Case:** 3-3/16 in. (81 mm).

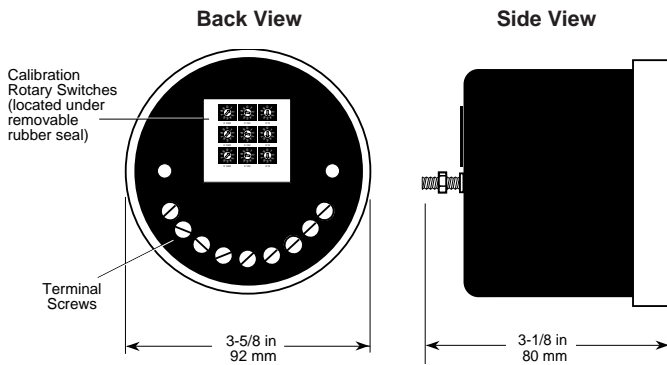
**Dial:** 3-1/2 in. (89 mm).

**Mounting Hole:** 3-3/8 in. (86 mm).

### Warranty

A two-year limited warranty on materials and workmanship is given with this Murphy product. Details are available on request and are packed with each unit.

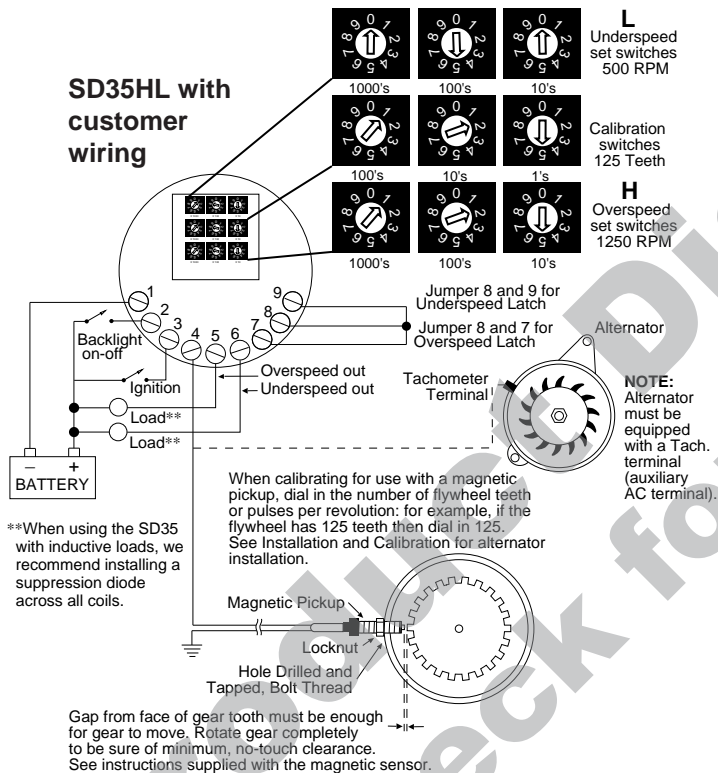
## Dimensions



## Typical Wiring Diagram

### Terminal Designation

1. Battery Negative
2. Back Light
3. Battery Positive
4. Signal Input
5. Overspeed Out (sink)
6. Underspeed Out (sink)
7. Jump to 8 for Latching O/S
8. Latch Common
9. Jump to 8 for Latching U/S



**NOTE:** To get minimum 4 Vrms, gap tolerance is critical. Turn the pickup in until it stops against the face of a gear tooth. Back the pickup out only enough to allow rotation of the gear. Rotate the gear. If any tooth touches the pickup, back it out only enough to clear the tooth. After clear rotation, secure pickup locking nut.

## Calibration

To calibrate the **SD35HL** for your engine, remove the rubber seal on the back of the tachometer and dial in the correct numbers on the **center row** of switches. See the following instructions and typical wiring diagram.

### A. Magnetic Pickup

Dial in the number of teeth on your ring gear. Set the switches from left to right. For example, if the ring gear has 125 teeth, dial a 1 on the left switch, a 2 on the center switch, and a 5 on the right switch. Using this setting, the **SD35HL** will count the passing teeth and convert them into the engine RPM.

### B. Alternator (ratio and poles unknown)

For setting the calibration switches when using an alternator (minimum 3-pole) or when the number of pulses per revolution is not known, set the calibration rotary switches to 0-6-0 and read the **SD35HL** at a known engine RPM. This can be read by a hand-held tachometer or any means which tells actual RPM. The **SD35HL** reading is the input frequency in hertz. Multiply the frequency times 60 and divide the result by the engine RPM. Set this number into the calibration rotary switches.

## Trip Point Setting

To set the trip points in the **SD35HL**, dial in the desired RPM setting by turning the calibration rotary switches clockwise starting from left to right. The top row is for the **Low** or underspeed set point. The bottom row is for **High** or overspeed set point.

## Magnetic Pickups



Pickup Models	Total Length	Threaded Length	Thread Size
MP3298*	3 in. (76 mm)	3 in. (76 mm)	5/8-18 UNF
MP7906†	3 in. (76 mm)	3 in. (76 mm)	3/4-16 UNF
MP7905††	4-1/2 in. (114 mm)	4-1/2 in. (114 mm)	3/4-16 UNF

\*Replaces 20-01-0080 and MP100. Lead wire hookup (12 in. [305 mm]).

†Replaces 20-01-0081. Lead wire hookup (12 in. [305 mm]).

††Replaces 20-01-0082. Lead wire hookup (12 in. [305 mm]).

## How to Order

Specify SD35HL.

Order magnetic pickups by specifying model. Example: MP3298.

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time.

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