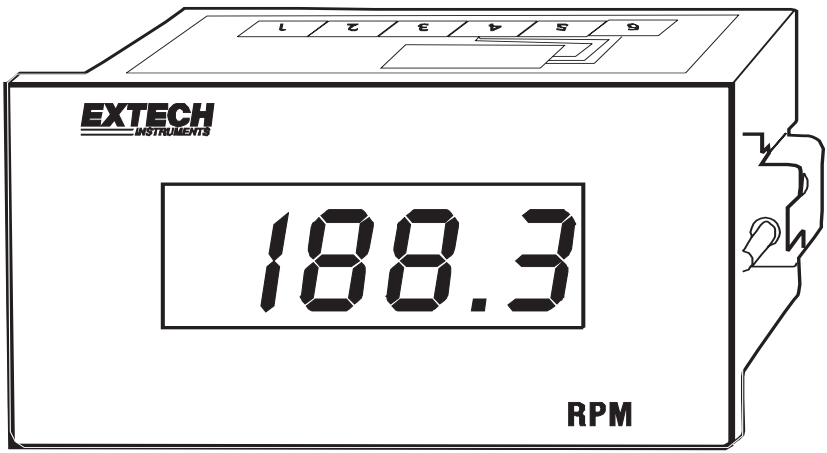
User Guide

EXTECH INSTRUMENTS

Panel Mount Digital Tachometer

Model 461950



Introduction

Congratulations on your purchase of the Extech 461950 Panel Tachometer. This meter displays continuous readings from 5 to 99,990 rpm. Single pulse activation eliminates the need for special gears when setting up the meter in any given application. Models 461955 (proximity sensor) and 461957 (photoelectric sensor) are also covered in this manual. Careful use of these devices will provide years of reliable service.

Specifications

Model 461950 Panel Tachometer

Range	5 to 99,990 RPM
Resolution	0.1 (5 to 999.9); 1 (1000 to 9999); 10 (10.000 to 99,990)
Accuracy	0.05% + digit (of reading)
Display	0.5 " (13mm) 4-digit (9999 count) LED display
Display update rate	Once per second
Power	110/220VAC; 50/60Hz ±15%
Panel cutout dimensions	3.62 x 1.77" (92 x 45mm)
Bezel dimensions	3.78 x 1.89 x 2.36" (96 x 48 x 60mm)
Meter dimensions/Weight	3.61 x 1.66 x 3.54" (92 x 42 x 90mm); 13.9 oz. (397 g)

Model 461957 Photoelectric Sensor

Range	Up to 6000 RPM (100 Hz)
Power	12 - 24VDC ±10%; Consumption: 40mA max.
Response time	< 1ms
Output	NPN transistor; Max load 80mA
Photo beam color	Green
Photo beam wavelength	5500 Angstroms
Cable length	6 ft (1.8 meters)

Model 461955 Proximity Switch

Range	Up to 36,000 RPM (600 Hz)
Power	12 – 24VDC ±10%
Power Consumption	10mA max.
Object distance detection	0.1" (3 mm) maximum target distance
Object size detection	0.07 x 0.11" (2 x 3 mm) minimum size detected
Cable length	6 ft (1.8meters)

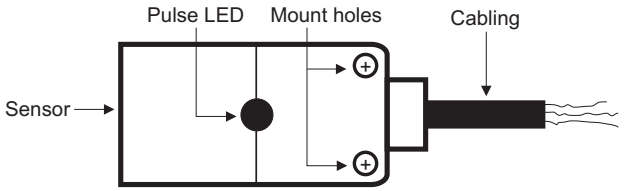
Mounting Instructions

Panel Meter Mounting

1. The 461950 dimensions are:
   - Meter: 3.61 x 1.66 x 3.54 " (92 x 42 x 90 mm)
   - Bezel: 3.78 x 1.89 x 2.36 " (96 x 48 x 60 mm)
2. Prepare a panel cutout with the following dimensions: 3.62 x 1.77" (92 x 45 mm).
3. The Tachometer will fit a standard 1/8 DIN cutout. Mounting hardware is provided which attaches to the sides of the meter. The screws attached to the mounting bracket should be tightened to the back of the panel (avoid over-tightening which can bow the meter housing).

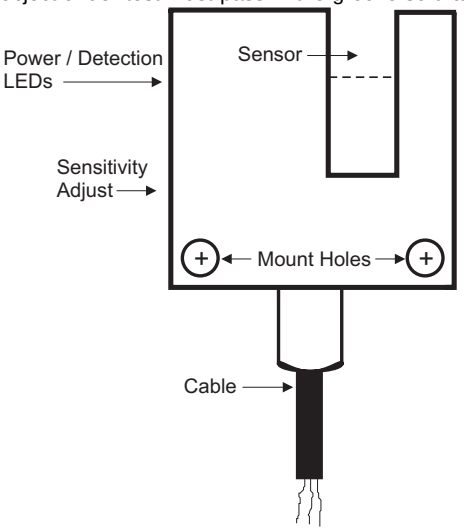
Proximity Switch Model 461955 Mounting

Use the mounting holes to secure the proximity switch to the desired surface. The sensor is the side of the switch that detects a moving metal object such as a gear tooth or a fan blade. The sensor side of the switch has an X on it and is located on the opposite side of the switch from the wiring cable. Refer to the top view diagram below. The Proximity switch must be mounted so that the object being detected passes within 0.16" (4mm) of the sensor side of the switch. The pulse LED will light when the sensor detects a metal object.



Photoelectric Sensor Model 461957 Mounting

Use the mounting holes to secure the photoelectric sensor to the desired surface. The photo beam is generated and detected in the groove (as depicted by the dotted line in the diagram below). The object under test must pass in the groove so that the light beam can be interrupted.



Wiring Instructions

The Model 461950 has seven screw terminals for AC power, sensor input, and sensor excitation.

Model 461955 Proximity Switch Wiring

1. Brown wire (10 - 30V supply signal) to terminal 3 on the panel tachometer (+12V)
2. Black wire to terminal 2
3. Blue wire to terminal 1

Model 461957 Photoelectric Sensor Wiring

1. Brown wire connects to terminal 3 of the panel tachometer
2. Blue wire connects to terminal 1
3. Black wire (sensor output during high to low transition) or Green wire (sensor output during low to high transition) connects to terminal 2. Connect one wire only to terminal 2 (black or green) depending upon which better suits the application.

AC Power Wiring

Meter terminals 5, 6, and 7, are for AC power connections. Connect to terminals 5 and 7 for 220V applications. Connect to terminals 6 and 7 for 110V power applications. A

Wiring Diagram

SENSOR INPUT				POWER INPUT		
GND	POS	+12V	N.C.	220V	110V	Neutral
1	2	3	4	5	6	7

NOTE: Fusing and electrical noise preventative devices such as MOVS, RC networks, and line filters should be considered by the user when installing to avoid electrical noise interference.

Meter Operation

Mount and wire the meter as previously described. The Model 461950 Panel Mount Tachometer was designed to measure and display RPM in the following ranges:

Ranges	Resolution	Accuracy (of rdg)
5 – 999.9 rpm	0.1 rpm	±(0.05% + 1 digit)
1000 - 9999 rpm	1 rpm	
10,000 - 99,990 rpm	10 rpm	

Extech sensors generate pulses that are counted by the meter and converted to RPM. The meter computes RPM values based on the number of pulses detected in a given period of time and provides an RPM display on the 4 digit (9999 count) LED.

Operation of the Proximity Switch Model 491955

The Extech *Proximity Switch* Model 461955 connects directly to the tachometer's input terminals and measures up to 36,000 RPM (600 Hz). Proximity switches detect magnetic (ferrous) objects as they pass the sensor, sending a pulse, one for each pass, to the meter. The pulse LED on the switch lights with each pass. The meter then calculates RPM and updates the LED display.

Operation of the Photoelectric Sensor Model 461957

Extech *Photoelectric Sensor* Model 461957 connects directly to the tachometer's input terminals and measures up to 6,000 RPM (100Hz). When the sensor is properly powered (by the voltage on terminal 3 of the meter), the green power LED (on the sensor) will switch on.

Photoelectric sensors generate a light beam that is interrupted by an object as it passes through the beam. Each time the beam of light is interrupted a pulse is transmitted to the meter and the red status LED on the sensor blinks. The meter then calculates and displays the RPM based on the number of pulses received in a specific period of time.

The sensitivity adjustment screw on the sensor may have to be adjusted so that one pulse is generated for each interruption of the light beam. If the red LED turns on less/more than once for each interruption of the beam, adjust the sensitivity screw.