

LCD Digital Tachometer

1-2B. Product Specifications

NOTE - DATCON's LCD digital tachometer is for use on stationary equipment.

DATCON LCD digital tachometer has four active digits with 0.5 inch tall characters.

PERFORMANCE	
Voltage	Self-powered tachometer, utilizing input signal voltage.
Voltage - Minimum	Minimum Operating Signal Voltage Required 2.5 volts RMS
Signal Source	DATCON Magnetic Sensor or DATCON Pulse Generator

ACCURACY	
To within 0.5% under all environmental conditions.	
Calibration	May be calibrated over range of 1-12,000 HZ with 25 turn calibration potentiometer.

ENVIRONMENTAL	
Temperature	Operating Range -25°C to 80°C (-13°F to 176°F) Storage Range -40°C to 90°C (-40°F to 194°F)
Shock Resistance	Withstands 12 shocks in each direction of 45-55 G's in each of three orthogonal planes. (SAE J1810)
Vibration Resistance	Withstands 0.060 inch double amplitude 10 HZ vibrations at one minute intervals for two hours in each of three orthogonal planes. (SAE J1810)

- Design:** Full 0.50 inch high liquid crystal display
- Material List:** Case - Glass filled thermoplastic
 Lens - Coated polycarbonate
 Bezel - Black anodized aluminum
 Terminals - Tin plated brass No. 6-32 threads
 Mounting Studs - Brass No. 8-32 threads
 Mounting Clamp - Zinc plated dichromate steel
 Nuts - Brass
 Washer - Phosphor bronze

All DATCON tachometers are equipped to accept optional lighting installation. Each instrument has a 1/2 inch wedge base socket or optional 5/8 inch push in socket. See **Section 7 Miscellaneous Accessories**.

1-2C. Application Guide

DATCON LCD digital tachometer is designed to perform on stationary equipment. The self-powered instrument has proven reliability for heavy-duty industrial use. With readings up to 9,999 RPM and sophisticated calibration ability it is appropriate for monitoring industrial machines, welding machines, and power generator engine speed. Energized by magnetic sensor or signal generator, DATCON's LCD digital tachometer is easily installed and comes with all hardware included.

1-2D. Installation Instructions

Step 1. Select a suitable mounting surface. DATCON tachometers require a SAE standard 3-3/8 inch diameter panel opening. An optional mounting kit is available. See **Section 7 Miscellaneous Accessories**.

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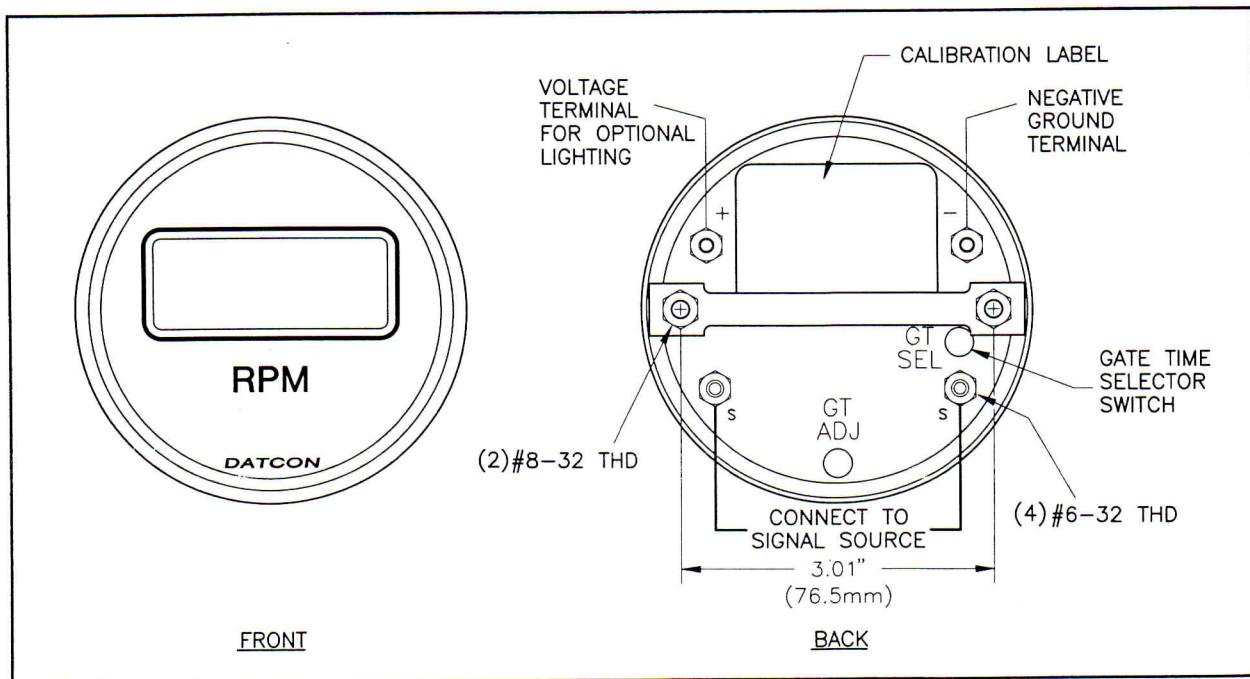


Figure 1-6. LCD Digital Tachometer

Step 2. Calibrate tachometer.

- A.** First determine gate time, or sample rate, (in seconds) by dividing 60 by the number of teeth on ring gear

$$\text{Gate Time} = 60 \div \text{Number of teeth on ring gear}$$

$$\text{Example: } 60 \div 120 \text{ Teeth on Ring Gear} = 0.5 \text{ seconds}$$

- B.** Set switch position according to gate time range. See Figure 1-6.

Position	Gate Time (in seconds)	Position	Gate Time (in seconds)
0	0.25 - 0.6 seconds	4	4.0 - 9.6 seconds
1	0.5 - 1.2 seconds	5	8.0 - 19.2 seconds
2	1.0 - 2.4 seconds	6	16.0 - 38.4 seconds
3	2.0 - 4.8 seconds		

- C.** Apply a signal source of 1-12,000 HZ. Calculate the appropriate reading for frequency of signal.

$$\text{Frequency 1st Number (F1)} = \text{Number of Teeth on Ring Gear} \times \text{Revolution per Minute (RPM)}$$
$$\text{Final Frequency} = \text{F1} \div 60$$

$$\text{Example: } 120 \text{ No. Of Teeth on Ring Gear} \times 1800 \text{ RPM} = 216,000 \text{ F1}$$
$$\text{F1 } 216,000 \div 60 = 3,600 \text{ HZ Final Frequency}$$

- D.** Once you have determined the final frequency calculate the correct RPM reading for calibration.

$$\text{Final Frequency HZ} \times 60 = \text{RPM1}$$
$$\text{RPM1} \div \text{No. of Teeth on Ring Gear} = \text{Final Reading}$$

$$\text{Example: Signal source of } 3,600 \text{ HZ} \times 60 = 216,000 \text{ RPM1}$$
$$\text{RPM1 } 216,000 \div 120 \text{ teeth on ring gear} = 1,800$$

Apply 3,600 HZ constant signal and calibrate the calibration potentiometer for correct RPM reading of 1,800.

- OR -

$$\text{Signal source of } 1,000 \text{ HZ} \times 60 = 60,000 \text{ RPM1}$$
$$\text{RPM1 } 60,000 \div 120 \text{ teeth on ring gear} = 500$$

Apply 1,000 HZ constant signal and calibrate the calibration potentiometer for correct RPM reading of 0500.

- OR -

$$\text{Signal source of } 8,000 \text{ HZ} \times 60 = 480,000 \text{ RPM1}$$
$$\text{RPM1 } 480,000 \div 120 \text{ teeth on ring gear} = 4,000$$

Apply 8,000 HZ constant signal and calibrate the calibration potentiometer for correct RPM reading of 4000.

- E.** Install mounting hardware to back of instrument.

WARNING - Disconnect battery ground cable before installing DATCON instruments. Connecting instruments to "live" wiring will result in electrical shock, causing possible injury.

- Step 3.** Disconnect ground cable from negative (-) terminal on battery. Locate instrument in suitable position. If mounted on vehicle, instrument should be easily read from normal driving position.
- Step 4.** Connect leads from pulse source to "S" terminals at back of instrument. See Figure 1-6.
- Step 5.** Connect negative (-) terminal to a secure ground point. Avoid painted or coated surfaces, these do not provide good grounding contact and could result in erratic operation.
- Step 6.** Instrument is ready to accept optional lighting, see **Section 7 Miscellaneous Accessories** for wiring instructions.
- Step 7.** Connect ground cable to negative (-) terminal on battery.

NOTES

1-2E. Troubleshooting

Problem	Likely Cause	Solution
Tachometer readout does not match engine speed	Incorrect gate time setting on back of instrument	Step by step, review information for your vehicle required for correct switch position. See table under <u>Installation</u> for gate time setting.
	Calibration error	Constant input signal must be factored into calibrating output RPM reading. See formula in <u>Installation</u> and check input signal against calculated RPM output. Check number of ring gear teeth and equipment RPM, these must be correctly factored into calibration formula.
	Incorrect sender to tachometer match	Record part numbers of tachometer, sender and note sender location. Cross reference part numbers in latest DATCON catalog (available at distributor). Check that signal source and tachometer are compatible.
Tachometer runs intermittently	Break in wiring	Trace wiring and look for kinks or cuts in wiring. Replace and reroute wire as required.
Tachometer does not function	Blown fuse	Check fuse, if filament is broken replace fuse. Verify correct fuse rating with your local distributor, or DATCON.
	Tachometer wiring to signal source	Trace condition of wiring and tightness of connections from back of tachometer to signal source and ground. Tighten and replace as needed.
	Conductive obstruction	Verify that correct clearance exists around terminals. Isolate terminals, or change wire routing as needed.
	Magnetic pick-up is positioned too far away from flywheel	Adjust sender position to 0.03", or 1/2 turn (180° rotation) distance from gear.