

# T-30 Tachometer Manual

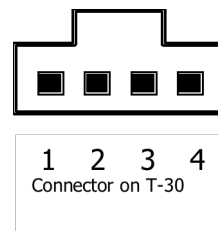
**The T-30 is not approved for installation in certified aircraft.**

## Installation:

### Mechanical

Mount the T-30 in any 2-1/4" instrument hole using four 6-32 screws.

### Electrical



#### Pin

- 1) **Black** (Left Ignition) Connect to Left Magneto P-Lead or Electronic ignition Tachometer signal (see notes)
- 2) **Yellow** (Right Ignition) Connect to Right Magneto P-Lead or Electronic ignition Tachometer signal (see notes)
- 3) **Red** (Power) Connect to your Instrument power Bus (12-28 Volts, see note "a")
- 4) **Green** (Ground)

### Electrical Notes:

- a) The Tachometer should be on a circuit protected by a fuse or circuit breaker (as small as 0.5 amps). It may be on the same circuit as the other engine instruments.
- b) Use single conductor 22 or 24 AWG shielded wire for ignition system connections. Ground the shield on one end. Trim the supplied connector wire leads as short as possible to minimize the length of unshielded wire for the ignition system connections.
- c) **Magnetos:** The supplied resistors **MUST** be installed in the shielded cables to the tachometer. Resistors of three different values are provided, see resistor key below. We suggest trying the 10K ohm resistors first. Do not install the resistors in the existing cables between the ignition switch and magnetos, install them in the cables to the tachometer. The resistors prevent the magnetos from grounding should a cable become damaged by abrasion and help condition the signal for the tachometer. **One resistor lead should be attached at the ignition switch OR the magneto, the other resistor lead should be soldered to the center conductor of the shielded wire connected to the tachometer.** Crimping a ring terminal to the resistor lead that will be connected at the switch or magneto works well. Use heat shrink tubing to cover the resistor. The resistor can be installed in either direction and has no polarity.
- d) **LASAR** Electronic Ignition: Attach the center conductor of the shielded wire to the *brown* tachometer output wire in the LASAR harness. The resistor is not installed for electronic ignition installations.
- e) **Lightspeed, EMag** Electronic Ignition: Attach the center conductor of the shielded wire to the ignition's harness tachometer output wire. Use the shield for the ground connection if applicable. The resistor is not installed for electronic ignition installations.
- f) **Rotax** – The blue/yellow and white/yellow wires are the tachometer signal wires. One of the two wires needs to be connected to ground at the engine block and connected to the T-30 ground wire, the other to either T-30 input wire.
- g) **Dual T-30 Installation:** To install a second unit follow the same guidance as above. Each Tachometer input must have its own resistor if it will be connected to a magneto.

## Troubleshooting:

If you have **magnetos** and are experiencing erratic RPM readings please follow this procedure:

- 1) Disconnect one of the p-leads from the T-30.
- 2) In the setup, set the pulses per rev for the connected channel (left or right) to "1.0" and the disconnected channel to "0.0". Set the filter to "0". This will isolate the system to looking at only one magneto.
- 3) Run the engine. With the filter set at "0", you should see a reading that varies +/- 20 RPM. If it is more than this, try using resistors of a higher value.
- 4) Try the next higher value resistor, 20K ohms then 47K ohms.

**Resistor Key:**  
 Brown-Black-Orange-Gold = 10K ohms  
 Red-Black-Orange-Gold = 20K ohms  
 Yellow-Violet-Orange-Gold = 47K ohms

## Specifications:

**Input Voltage:** 12-28 Volts DC

**Dimensions:** Fits a Standard 2-1/4" instrument hole.

Overall Width and Height 2.375", Depth behind panel .75" to back of connector

**Weight:** 2.5 oz.

**Need Help?**

[support@fdatasystems.com](mailto:support@fdatasystems.com)

or call (831) 325-3131

## Operation:

**Modes:** The T-30 has 3 modes: Tachometer, Flight Timer and Hour Recorder.

PRESS the **Mode** button the switch between modes. If no buttons are pressed for five seconds, the T-30 will automatically return to "Tachometer" Mode.

PRESS and HOLD the **Mode** button for seven seconds to display the Firmware Version number.

<p><b>Tachometer</b></p> <p>Ignition System Monitor — If two ignition systems are connected to the T-30 and the output of one system varies more than 300 RPM from the other system, the display will flash to indicate an ignition problem. The faulty ignition system (lower RPM) will be identified by "L" or "r" during the flashing. The flashing can be cancelled by pressing the <b>Action</b> button. The system monitor can be re-armed by pressing, holding and releasing the <b>Action</b> button for more than two seconds. The monitor re-arms automatically when it senses two correctly operating ignition systems (ie; after a magneto check).</p> <p>"MAX" will flash if the engines maximum RPM limit is exceeded.</p>
<p><b>Flight Timer</b></p> <p>The flight timer automatically runs when the engine is running over 300 RPM to keep track of your flight time and ground time for your logbook etc.... This mode is designated by a   - symbol in the left most digit location. The Flight Timer counts up from one minute (0:01) to a maximum value of nine hours fifty nine minutes (9:59) when the RPM is greater than 300.</p> <p>PRESS the <b>Action</b> button to reset the flight timer to zero. The timer is zeroed when power is removed from the T-30.</p>
<p><b>Engine Hour Meter</b></p> <p>This mode is indicated by a momentary display of "hr" when entering the mode.</p> <p>When in the "Hour Meter" mode PRESS the <b>Action</b> button to switch between displaying "Hours" and "Minutes:Seconds "</p>

## Setup:

<p><b>Hour Meter Setup:</b> The hour meter can be set to any starting value. To set the hour meter, First, PRESS and HOLD the <b>Action</b> button. While continuing to hold the <b>Action</b> button, PRESS and HOLD the <b>Mode</b> button until "hr" is displayed.</p> <p>Initially, the hours will be flashing. Set the desired engine hours with the <b>Action</b> button. Press the <b>Mode</b> to advance to setting minutes. Next, minutes and seconds will be flashing ("XX:XX"). Set the desired engine minutes with the <b>Action</b> button. Press the <b>Mode</b> again to complete and save the settings.</p>
<p><b>Tachometer Setup:</b> PRESS and HOLD the <b>Action</b> button until "8888" is displayed. Use the <b>Mode</b> button to advance to the next setup item.</p> <p>"L" flashing (Pulses Per Revolution) – Use the <b>Action</b> button to enter number of pulses per revolution (PPR) for the left ignition system. * See Note</p> <ul style="list-style-type: none"> <li>• <b>Magnetos</b> - Four cylinder, Enter "1.0". Six cylinder, "1.5". Nine cylinder, "4.5". Seven Cylinder, "3.5", Five Cylinder, "2.5"</li> <li>• <b>Electronics ignition systems</b> – Typically "2.0" for four cylinder and "3.0" for six cylinder engines. Consult the manufacturer's documentation to confirm output specifications.</li> <li>• <b>Rotax</b> – Typically "1.0" for the channel connected to the engine. Set the unused channel to "0.0"</li> <li>• If only one ignition system will be connected, enter "0.0" pulses per revolution for the unconnected side.</li> </ul> <p>*Note: If the RPM indication is double or half the actual RPM using the above settings, the PPR setting will should be halved or doubled to obtain the correct indication. Five and Seven cylinder radials are supported in firmware version 1.3 or greater.</p> <p>"r" flashing (Pulses Per Revolution) – as above for the right ignition system.</p> <p>"MAX" flashing (Maximum RPM warning) - Use the <b>Action</b> button to enter the engines maximum (Red Line) RPM.</p> <p>"F" flashing (Filter) – If the RPM indication is too jumpy or too slow to respond this value can be adjusted to improve performance. A value of "0" to "10" can be selected. If the RPM reading is jumpy, increase the value. Conversely if the RPM reading is too slow to react decrease the value. Use the <b>Action</b> button to enter the value. A value of "4" is a good starting point for Slick magnetos and Rotax ignition. "0" is a good starting value for electronic ignition. Use the lowest value that produces acceptable performance.</p> <p>If, after running the engine, the RPM reading at High RPM is erratic and increasing the filter setting in the setup does not solve the issue. See the Troubleshooting section of the instructions.</p> <p>"MIN" flashing (Hour Meter Ratio) – The engine hour meter can record in actual "Clock Time" or in "Tach Time". To record hours in actual "Clock Time", enter "0". To record hours in "Tach Time", enter the RPM at which one hour of operation is equal to one hour "Tach Time". Example: A value of "2500" is entered. One hour is flown at 2200 RPM. "Tach Time" recorded = <math>2200/2500 = 0.8 = 0:48</math> minutes. If one hour is flown at 2500, "Tach Time" recorded = <math>2500/2500 = 1.0 = 1:00</math> hour.</p>