



## Installing RPM Board 71,420

### Description

This board is used to read RPM from higher voltages seen from P-Lead, Rotax Engines, Jabiru alternator and RPM signals from certain electronic ignition. Questions regarding whether you need this board can be directed to Tech Support at Advanced Flight. Find your installation description below, if you are unclear which installation to use please call or email us.

### Installation Hardware

EM Side	Engine Monitor Connection
Red Wire	Pin 31 (RPM V+ <i>WHT/ORN</i> )
Black Wire	Pin 16 (RPM GND <i>BLK</i> )
White Wire	Pin 32 (RPM SENSOR <i>WHT/GRN</i> )
Ignition Side	
Yellow Wire	Left P-Lead / Rotax 5 <sup>th</sup> Trigger Coil / Jabiru Alternator
Red Wire	Right P-Lead (optional installation, can be bundled or cut back)
Filter Resistors	
	15k Ohm ¼ Watt (2x) , 30k Ohm ¼ Watt (2x)
Resistor Connectors	
	Male (2x)

### Warning

The RPM board must be installed aft of the firewall.

Use extreme caution when insulating and tie wrapping your connections to the RPM Board. Grounding a P-lead wire while the engine is running could stop your engine. Please follow instructions carefully and call if you have any questions.

### Procedure for Electronic Ignition

If your electronic ignition provides an output signal greater than 9V just hook up their tach output to either the red or yellow wire shown below. You will probably not need the resistors unless your reading is unstable. If you find it to be erratic, start with adding a little resistance in series. Around 560 ohm to 3k ohm should be sufficient. We can send you some or Radio Shack supplies an assortment of ¼ watt resistors.

If you have dual electronic ignitions attach one tach output to yellow and one to red. Ignitions that have open collector tach outputs will require a pull up resistor to 12V. If they "source" or provide 12 volts output then just wire it directly. Contact your ignition manufacturer to verify tach output type. If you are only using one input wire on the RPM board, please ground the unused wire.

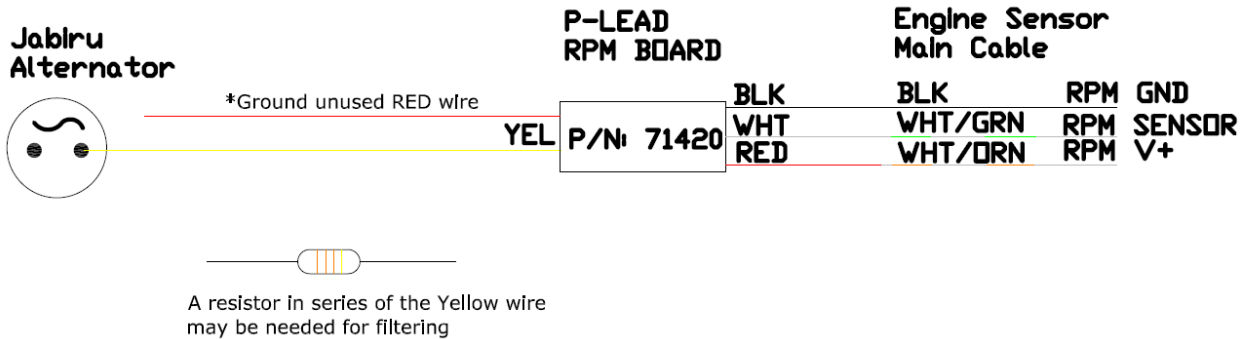
You will need to set pulses per revolution in calibration according to the manufacturer's pulses per rev.

## Procedure for Jabiru

Connect the yellow wire directly to your alternator. Either alternator terminal will work. It should be connected on the non-regulated side. A 1 amp fuse in series is recommended between the alternator and the RPM board. Ground the unused red wire from the RPM board.

Adjust the Pulses Per 2 Rev in [Instrument Calibration]->[RPM]. For older Jabiru engines use the following number: 10 for Jabiru 2200 or 12 for Jabiru 3300. All new engines should be set to 12 pulses per 2 Rev.

Depending on your engine and installation, experimenting with series resistance may be needed for a smooth reading. The resistor will go between the RPM board (yellow wire) and the alternator. Around 560 ohm to 3k ohm should be sufficient. We can send you some or Radio Shack supplies an assortment of ¼ watt resistors.

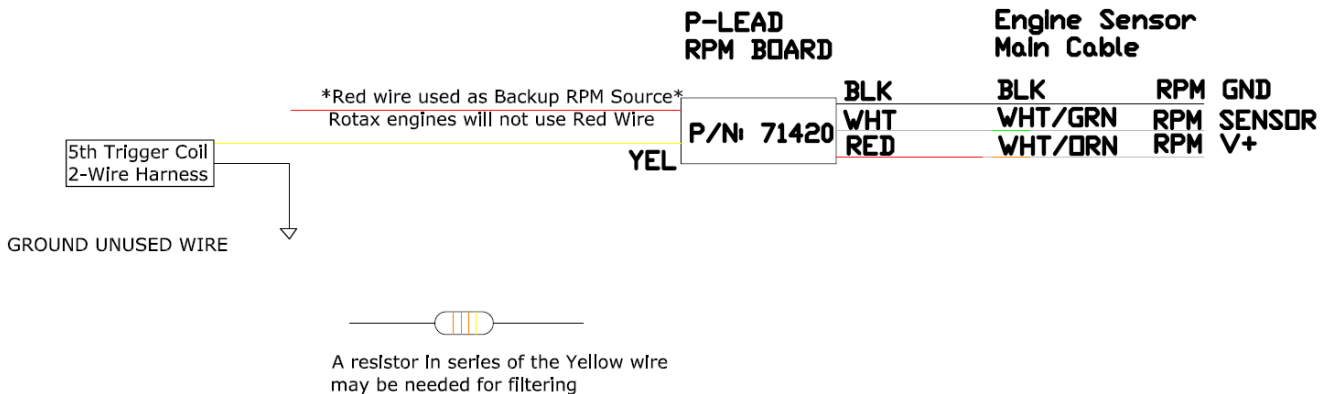


## Procedure for Rotax

We have found that, in general, our RPM board will be able to connect directly to the 5<sup>th</sup> trigger coil without additional filtering. However, every RPM board installation is slightly different so experimentation may need to be done to find the correct filter. A resistor, between 1k ohm to 15k ohm ¼ watt, can be used in series to the yellow wire from the RPM board. Should you need additional resistors, we can send you some or Radio Shack supplies an assortment of ¼ watt resistors.

The 5<sup>th</sup> Trigger Coil is found on a 2 wire connector provided on the Rotax. The 2<sup>nd</sup> wire in the Trigger Coil connector should be grounded. Consult your Engine Manual for the location. The unused red wire on the RPM board can be grounded also. Adjust the Pulses Per 2 Rev in [Instrument Calibration]->[RPM] to 2.

Ground the unused Red input wire. This will prevent the board from triggering in a noisy environment.



## Procedure for P-Lead

### Install Isolators

Your kit should include two 15k isolators that attach behind the mag switch. They are used to isolate the important function of the P-lead from the wiring and RPM Board. You should locate the right and left mag leads (P-leads) on the back of the mag switch. Install the two isolators to these lugs. DO NOT remove the existing mag leads (P-leads) to install the isolators. These isolators provide a safe way of picking off the P-Lead signal. Although care should still be taken when tie strapping and routing the wires back to the RPM board. The wire is carrying a low current form of a noisy P-lead signal, routing this away from sensitive avionics wires is a good idea.

Triple check that the mag lead screws are tight and the connectors are not interfering or shorting to any other terminals on the mag switch. Again shorting these wires at the mag switch may stop the engine.

### RPM Board Input

Cut the red and yellow wire (bundled together) to length. Strip back the insulation jacket and double the wire over before inserting it into the male connector. Double crimp the connector making sure the tool closes completely. Mate this connector with the isolator. Either wire can go to either isolator. See the drawing below for more information.

### Calibration

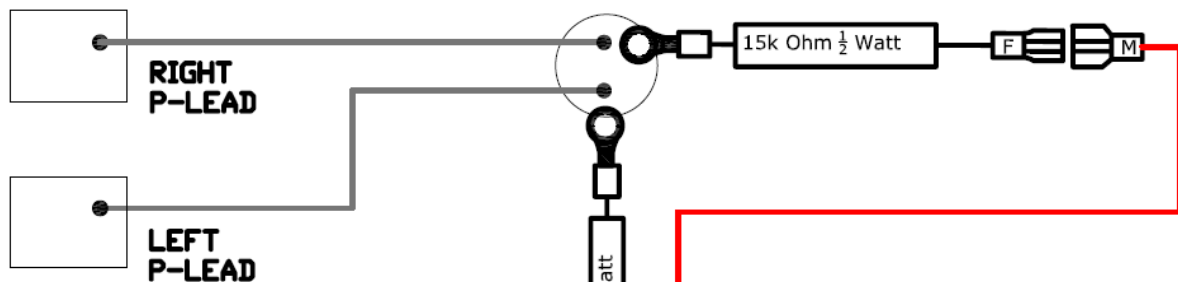
Go into Instrument Calibration->RPM->Pulses Per 2 Rev and set this number to the number of cylinders. A four cylinder Lycoming should use 4 for this number. Press Save.

### Check for Stable Reading

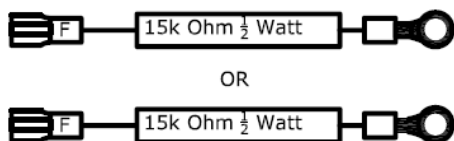
Start your engine with the mag switch set to Both. Idle the engine and look for fluctuating RPM. An engine's RPM will normally fluctuate 10 to 20 RPM at idle. To troubleshoot jumping RPM try disconnecting one of the RPM board input wires from the isolator and ground it. Run the engine again to look for a stable RPM. If the RPM appears stable there was a connection problem with the disconnected wire. If the wiring looks fine, it could also be that the magneto is outputting higher than normal voltages. Try using a higher resistance isolator found in your kit. There should be two 30k isolators and two 60k. Use these additional isolators in series. Advanced Flight can send you a kit of assortment values if you need. If you are removing the connection to the isolator multiple times double check that the male connector has not become bent. Use a pair of pliers to straighten it. The male plug can get pushed between the nylon and metal connector giving a poor, inconsistent reading. This can appear as an intermittent or erratic reading after a month or more of use.

# IGNITION SOURCE/MAGNETOS

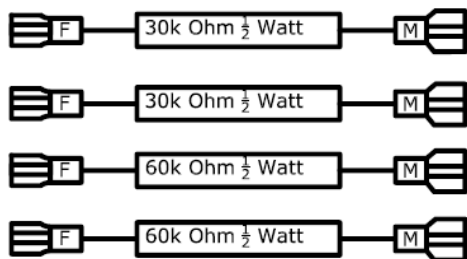
# MAG SWITCH



An Isolator is needed at the mag switch going to the RPM Board



Additional resistance is available, should you need it for stable RPM readings



## KEY:

- Size #6 ring terminal, 18-22 AWG
- $\frac{1}{4}$ " Shrouded female, spade connector, 18-22 AWG
- $\frac{1}{4}$ " Shrouded male, spade connector, 18-22 AWG

## P-LEAD RPM BOARD

## Engine Sensor Main Cable

RED	BLK	BLK	RPM	GND
YEL	WHT	WHT/GRN	RPM	SENSOR
P/N: 71420	RED	WHT/DRN	RPM	V+