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PowerPROview

Oracle

Software Users Guide

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Table of Contents

PowerPROview

Oracle Software Users Guide

Introduction

This manual deals with the Oracle Data Recorder connected to the PowerPROview software. For information on operating the PowerPROview software see the PowerPROview Users Manual.

Connecting the Oracle

The Oracle data Recorder can be connected by either using a POWERLink USB adapter or by connecting it to a Power Analyzer Pro's ESC port. If the Oracle is connected to a Pro the real time data streaming capability will not be available.

Toolbars

The toolbars and menu options for the Oracle Data Recorder will not appear until PowerPROview connects to an Oracle device. When disconnected the toolbars and menu options will disappear.

Oracle Toolbars

The Oracle Data Recorder, when connected, will have two (2) toolbars displayed. One for the Oracle's Data control and one for the Oracle's control.

Oracle Data Toolbar

The Oracle Data Toolbar gives you control over data streaming, recording, configuration, and other misc. functions of the Oracle.

Oracle Data Toolbar


Start Data Streaming


Stop Data Streaming


Zero AmpHrs & WattHrs Values


Enable Timed Record


Disable Timed Record


Start Recording


Stop Recording


Pause Recording


Continue Recording


Save Recording

Elapsed Recording Time


Oracle Configuration

Oracle Data Streaming

Data will only be displayed in the data objects in the data views when data streaming is on. While data streaming is on the Oracle sends data to the computer. If data streaming is off then data is not transmitted from the Oracle to the computer.

Zero AmpHrs & WattHrs Values
This function zeros the AmpHrs and WattHrs accumulators. This function can be automatically executed when recording starts if the system option “Auto Clear” is enable.

Time Limited Recording
Under system options you can set a maximum limit that recording will continue. With Timed recording enabled, recording will stop once that limit is reached.

Recording Oracle Data
You need to record data to be able to use it on a graph. The graph object on a data view is a special object that only displays recorded data. It will display the data as it is recorded. You can also load and display previously recorded data into the graph for comparisons. Once you have recorded data, save it to disk. Once the data has been saved to disk it can then be loaded into a graph for analysis and comparison. During recording the elapsed time is displayed in the toolbar recording time indicator. You can pause and resume recording at any time. Pausing a recording does not remove any data previously recorded. Resuming recording will append new data to the previously record data.

Do not confuse the recording of the Oracle real time data stream with the Oracle’s on-board recording feature. While the Oracle is connected to a computer, and the Oracle’s data streaming is on, the data output sent from the Oracle to the computer can be recorded by the computer. The Oracle can also record data in its on-board memory while the Oracle is connected to a computer or mounted in a plane, helicopter or other device. Once the data is recorded in the on-board memory it can be downloaded to a file and then displayed on a graph.

Oracle Configuration

You can configure various parameters of the Oracle data recorder. Configurations can be saved, deleted, edited, read from or written to an Oracle. When you click on the Configuration toolbar item the Configuration editor will appear with the current configuration information read from the Oracle. You can then modify and write the configuration back to the Oracle, save that configuration to disk, or read a previously saved configuration from disk and then write it to the Oracle.

Oracle Configuration Editor

There are two groups of configuration settings for the Oracle: General Settings and Recording.

 New Configuration

 Open Configuration File

 Save Configuration

 Read Configuration From Oracle

 Write Configuration To Oracle

Oracle Configuration General Settings

Description

The description field is where you can enter a short description for the configuration file. A description is only needed when saving a configuration to disk and is not written to the Oracle.

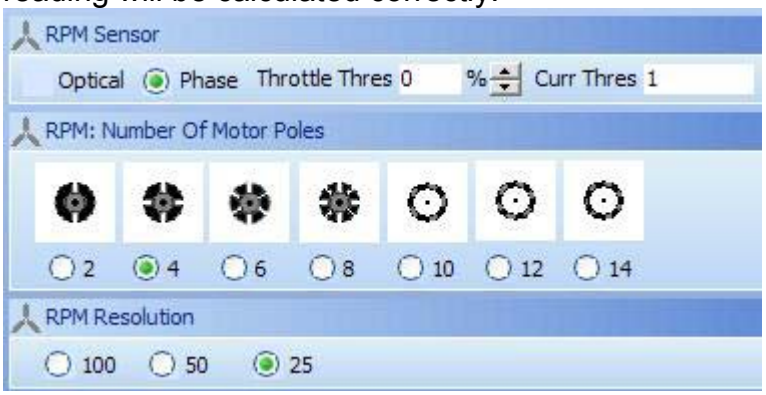
Temperature

Select either Celsius or Fahrenheit scaling for data output.

RPM

The RPM input can use either an Optical RPM (P/N MR-RPM-001) sensor or a RPM Phase Sensor (P/N MR-RPM-002). The Oracle Standard kit comes with the RPM Phase sensor. Set the sensor type to the sensor being used.

For The optical sensor you need to select the number of blades so that the RPM reading will be calculated correctly.

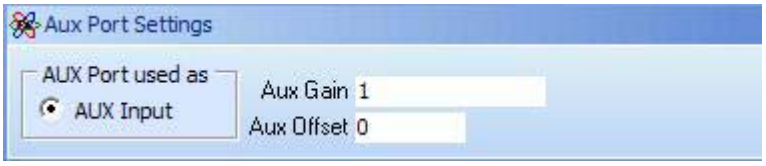


For the RPM Phase sensor you need to select the number of poles of the motor so that the RPM reading will be calculated correctly.

The RPM Phase sensor can not read values at very low RPM's due to the ESC's brake switching at very slow speeds. To provide stable RPM readings set either the Throttle Threshold or Current Threshold. If you set the Throttle Threshold to any value other than zero you must have the Throttle Input connected for the RPM value to be read. Typically you should use only the Current Threshold with a setting of around 1 to 5 Amps or at a setting that gives a stable RPM reading.

Select the RPM resolution setting that best fits your setup. Note that the higher the resolution the slower the readings will be updated.

Aux Port

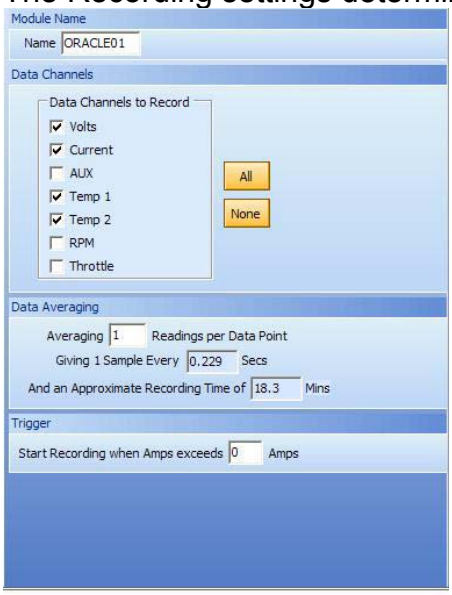


The Aux port can be used to read an analog input. In AUX Input mode the data can be scaled by the Gain and Offset parameters.

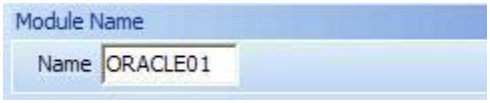
In AUX Input mode the Oracle will read an analog voltage in the range of 0.1V to 2.5V. Any input must be scaled to fall within that range. Typically an instrumentation op-amp is used to provide scaling and buffering of your input signal.

Aux Input Example:
Say you had an air speed meter that outputs a 0 to 5V signal for a wind speed of 0 to 100MPH. You would use an Op-Amp configured for a gain of 0.5 so that its output would be 0 to 2.5V for a wind speed of 0 to 100MPH. If you set the Aux Gain to 40 (100/2.5), then the display will show 100 when the Aux input is at 2.5V. With this setup the display will read in MPH.

<u>Oracle Configuration Recording Settings</u>
The Recording settings determine the on-board recording features.

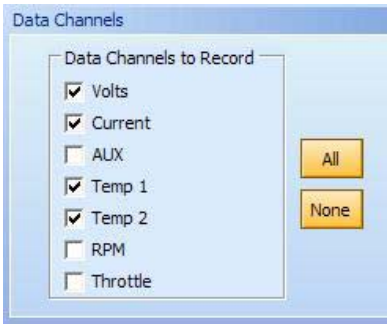


Module Name



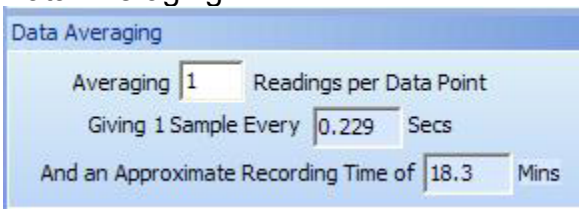
Each Oracle can have its own reference or name. If you have multiple Oracle's then this would be useful for telling one unit from another. The Oracle's name is also saved with the recorded data so that you will know which Oracle the data cam from.
You could also use the name to indicate the configuration or model the data is being used in.

Data Channels



You can select only those channels of data to record that you are interested in. The more channels you select the less time you can record. The fewer channels selected results in a longer recording time.

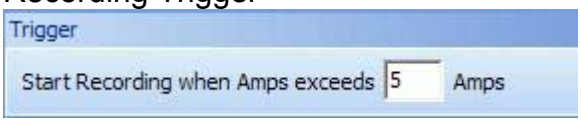
Data Averaging



You can set data averaging to average a number of points before recording the data to memory. This is useful if you are recording a long period of data and do not need every single data sample.

The approximate recording time is dependant upon the number of channels recorded and the averaging settings.

Recording Trigger



The on-board recording will not start until the current exceeds the set threshold. If the threshold is set to 0 then it will start recording immediately. Typically you would set this threshold such that the recording will trigger after you start flying so it should be set just above the idling current.

Oracle Toolbar

The Oracle Toolbar allows you to open the Oracle control window which allows you to view, download and erase the data recordings in the Oracle, Erase all recorded data and Configure the Oracle.

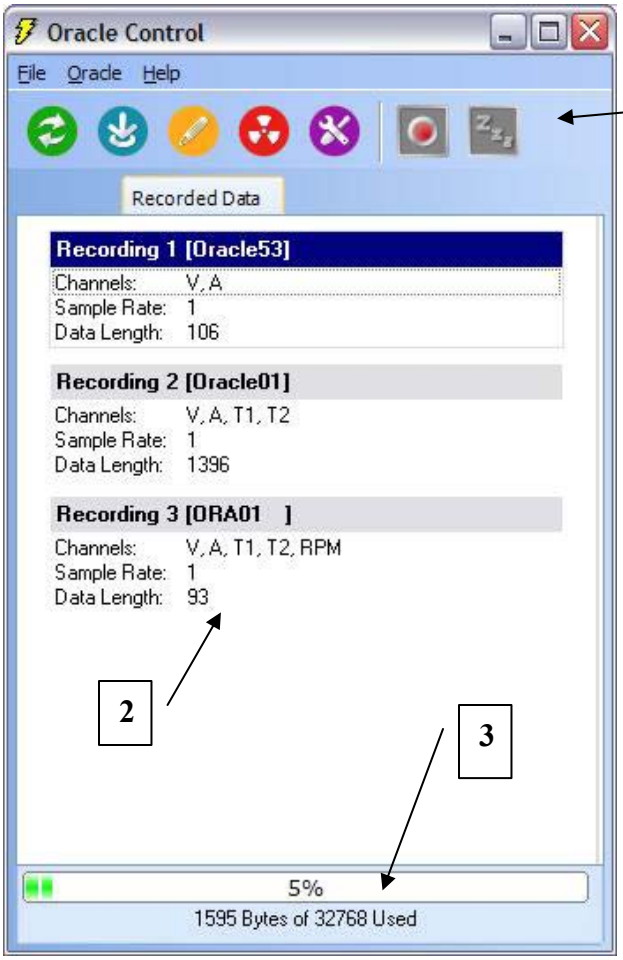
Oracle Toolbar


Open Oracle Control Window


Erase All Oracle Recorded Data


Configure Oracle

Oracle Control Window



1) Toolbar

2) Recorded Info

3) Memory Usage

Oracle Control Toolbar

 Refresh Recorded Data Info

 Download Recorded Data to a File

 Edit Saved Data

 Erase All Recorded Data

 Configure Oracle

 Start Oracle Recording

 Stop Oracle recording

 Oracle in Idle Mode

 Oracle in Trigger Mode

Controlling Oracle Recording

The Oracle on-board recording can be controlled while the Oracle is connected to a computer. The left button is the Record/Stop button. The right button is the Idle/Trigger button.

 Oracle in Idle mode

 Oracle recording

 Oracle in Trigger Mode

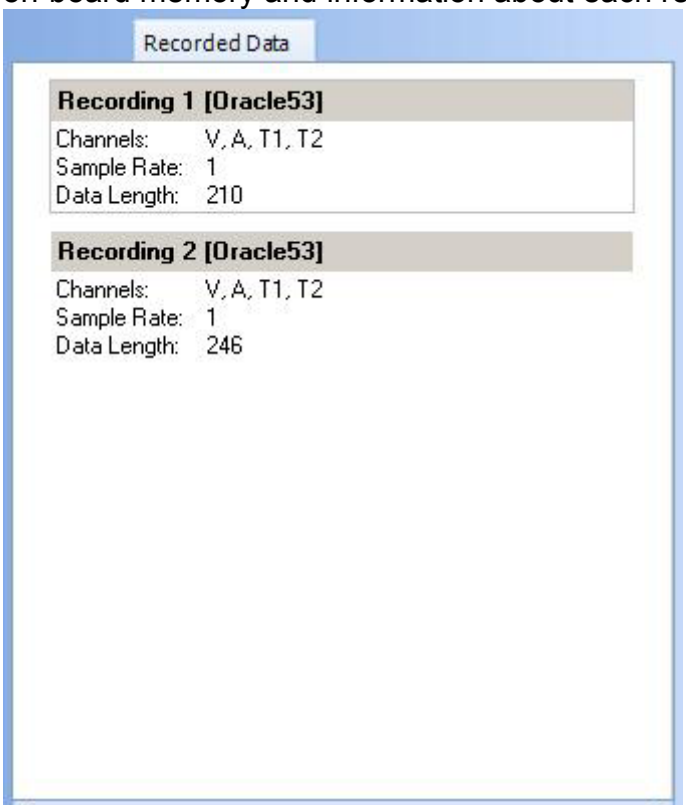
To have the Oracle start recording immediately, ignoring the trigger threshold, click on the Start Recording button. To stop recording, click on the Stop button.

If you want to put the Oracle in trigger mode click on the Idle button . To exit trigger mode and return to the idle mode click on the trigger button.

When the Oracle is powered up and is not connected to the PowerPROview software (i.e. in an airframe) it comes up in the trigger mode and will start recording once the trigger current threshold has been exceeded.

Recorded Info

The center portion of the control window shows all the recording that are in the Oracle's on-board memory and information about each recording.



For each recording, the recording sequence number, module name, channels that are recorded, averaging and data length info are shown.

Downloading Recorded Data

To download a specific recording, click on the recording to select it then click on the download button. You can also double click on the recording to download it.
The download function will download the data to memory and then saves it to a file. Name your data files such that the name will tell you what the data is or where it is from.

Once data has been downloaded you can edit and/or export the data using the Edit Saved Data function. You can also load the data into a graph object on a data view.

Memory Usage

The memory usage indicates the amount of memory used by the existing recordings in bytes and as a percentage of total memory available.