Blowby Logger: Quick Start

The Blowby logger will display blowby flow ifor your blowby sensor on it's LCD screen. There are several options which you can select to customize the logger for your particular needs.

The screen features are shown below:

Press the Options button for menu to select features and customize the logger

Press the Rezero button zero out the display with NO FLOW going through the blowby sensor. It will ask you to press one of the buttons on the right side of display once you have 0 flow.

If you have selected to all the Recording Mode, you can press the Start Recording button to start recording blowby. Once recording has started, this label changes to "Stop Recording". Then you press this same button to stop recording. Click on the Options button, then Recording, then Playback to display the recorded blowby data.

Battery Indicator. If moving "+", then battery is charging via USB cable. If "[-----]" then battery is fully charged. If "[-]" battery very low and may turn off power quickly to maintain battery power and save any recorded data.

Press the Off button to turn off the logger into "sleep" mode and save the battery. Turning Off here also saves any recorded data.
Turning off power with latching button on side of logger extends battery life best, but you will lose recorded Blowby data.

Setting up your Logger for the First Time

1) Press Options, then Reset Defaults to restore all the logger's settings to their standard settings and use right side buttons to choose Yes, then press Select button. (NOTE: Once you have set up your logger, do ***NOT*** Reset Defaults as you may loose some special settings you like.)

2) Press Options, then Meter Rating and select the size of your Blowby Sensor, from:

_____ 3 CFM _____ 6 CFM
_____ 12 CFM _____ 18 CFM

Then press the Select button. Then press Back button (upper left) to return to the main display.

3) When back at main display, press the Rezero button (lower left) and then press one of the right buttons with NO FLOW through the sensor after the system has fully warmed up (been on for 5 min or so). NOTE: The sensor is quite sensitive, and changing the mounting orientation can change the reading when rezeroing. Therefore, rezero the sensor with the sensor in its final mounting position. Also, try to isolate it from vibration by providing a long hose (3 ft or 1 meter or more) between the engine and the blowby sensor. This hose should be 0.6" ID minimum; 1.0" ID is best.

Notes:

- You will charge your logger via the USB cable to any computer's USB port.
- You can upload your recorded data to the free Blowby Logger software on Performance Trends website or from CD.
- The logger will shut down automatically if it senses it is not moving, to save battery power.
- The LCD backlight will shut down automatically if it senses it is not moving, to save battery power. The time to keep the light on can be modified in the Options menu.
- The logger will mark each recorded data set with date and time. This is available by going into Options, then Recording, then Time/Date. If it has not yet been set, this can be done with the free software under Options.
- If you are not using the system for more than a day or so, it is best to disconnect th 8 pin harness to the sensor to further save battery life. The sensor puts a small current draw on system even in sleep mode. Pressing the latching power switch on the side extends battery life the best, but you will lose recorded data.
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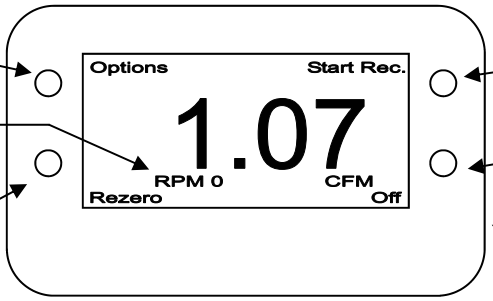
Blowby Logger Options Menu Operation

Main Screen Display



Press for Options Menu shown below

RPM reading if RPM recording turned On

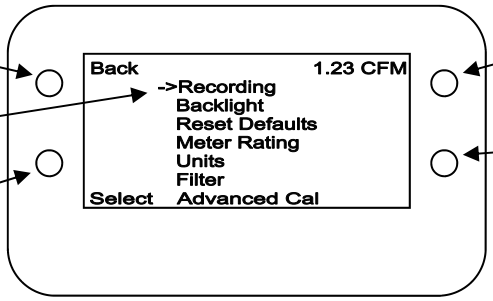
To rezero blowby reading

Press to start recording data if logger is in Recording Mode.

Press to put into "sleep" mode and save battery power.

Power On/Off button for long term storage extends battery life best, **but you lose recorded data**. It also "reboots" logger.

Options Menu



Press to return to Main Screen

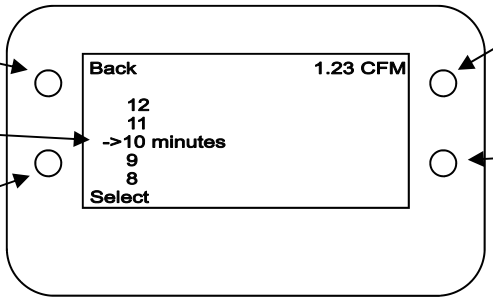
Cursor Arrow showing current selection

Press this button to select option or value currently selected by the cursor arrow.

This button moves arrow cursor up.

This button moves arrow cursor down

Backlight Time Menu (showing how picking an option works)



Press to return to Options list **WITHOUT** keeping your change

Cursor Arrow showing current selection

Press this button to select option or value currently selected by the cursor arrow and return to Options Screen with your selection saved.

This button moves arrow cursor up in list.

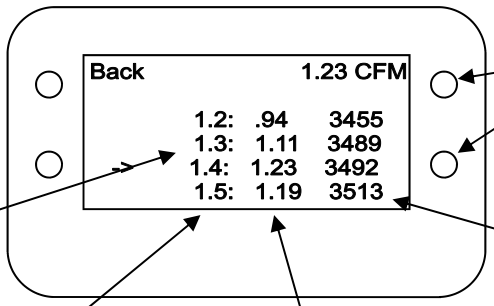
This button moves arrow cursor down in list

Tapping these buttons move cursor 1 step at a time. Holding these buttons move cursor quickly through list.

Playback Mode for Recorded Data

At main screen, press Options, then Recording, then Playback.

Data can also be uploaded to a PC via the free Performance Trends software.



Seconds in first column and blowby in second column.

Record Time, seconds

Blowby Flow

Press these buttons to scroll through the recorded data. Different recording sessions are separated by dashed lines.

RPM data if RPM Recording Is turned On.

Blowby Logger Options Menu Operation, cont

Explanation of some menu options: Most of the menu options are quite obvious. For example, under Options you have Record and then Recording Mode and the options are Recording Off or Recording On. Turning this to On allows you to record data by pressing the Record button (upper right of main screen). Without turning this On, there is no Record label for that button on the main screen.

However, some can be confusing and they will be explained here.

Off button at lower right corner of display reduces power consumption. Pressing latching button on side cuts off battery power completely, extending battery life the best, but **you will lose any recorded data**.

Options, Recording, Recording Rate explains that the record rate (how many readings per second) is determined by the Filtering setting. If Filtering is None, the rate is 10 samples per second. If Filtering is 1 second, the rate is 1 sample per second. The logger will record for either 1240 data readings (124 seconds at 0.1 rate, or the time set under Backlight/ Pwr for Inactive PwrOff.

Options, Recording, Include RPM lets you include RPM in the data recording. You may need a special cable and sensor from Performance Trends to do this.

Options, Recording, Pulses/Rev lets you specify how many pulses you get for every revolution of what you are measuring. If you have 1 magnet on the shaft, then this would be 1. If you are getting a tach pulse (special signal conditioning from Performance Trends may be required), then this could be 0.5 for a 1 cylinder, 4 stroke which fires every 2nd revolution. For a V-8 4 stroke, this would be 4.

Options, Backlight/Pwr lets you specify options to save on the battery life.

- BackIt On With lets you specify if motion of the logger or pressing a button will turn on the backlight.
- Backlight Time lts you specify how long the backlight will stay on after being activated.
- InactivePwrOff lets you specify how long the box can have no motion or button press or USB communications before the box “goes to sleep” to save on power. **IMPORTANT: This time is also the maximum recording time the logger will log data. If you want to record for the maximum time, set this to 20 min.**
- Low Bat PwrOff lets you specify how long before the box goes to sleep when the battery power is very low.

Options, Reset Defaults puts the logger back to all factory settings. This can be very useful if you think you have made mistakes with the settings. NOTE: After this you must select the proper Meter Rating. 6 CFM is the default which may not be correct for your blowby sensor.

Options, Meter Rating is a critical setting and must be set for your blowby meter rating, typically 3, 6 and 12 CFM, but other ranges are available.

Options, Filter lets you specify how many readings are averaged together to obtain the final blowby reading displayed. If you select None, only 0.1 seconds of blowby readings are averaged together. If you select 2 Seconds, the 2 seconds are averaged together and the display is only updated every 2 seconds. If you have set Recording Mode to On, then any data you record is recorded only every 2 seconds also. Note: This is different than recording a data point every 2 seconds, where that particular data point may be a “flyer” or “outlier”. This method of averaging several readings together produces much more repeatable, accurate results. If the engine is accelerating or changing load, typically None is best. If the engine is running at steady conditions, increasing this may be more accurate. Because of limited memory in the logger, if you need to record blowby for a long period of time, you must increase this to the maximum of 5 seconds.

Options, Advanced Cal let you change the calculations converting voltage reading into blowby flow.

- UEK1 should only be changed if directed to by Performance Trends.
- UEK2 should only be changed if directed to by Performance Trends.
- Square Root should only be changed if directed to by Performance Trends.
- Dsply Thres lets you change the minimum flow which will be displayed. At very low flow, or even now flow, minor changes in the blowby sensor’s mounting angle, vibration, etc can be registered as a small flow. Because the small flow can actually be in error, the display typically does not show an actual flow reading until it has gone above some minimum lever.
- Output Factor lets you increase or decrease the flow displayed by a certain factor. For example, if you have calibrated your blowby sensor against some other sensor and the blowby sensor is reading low by 5%. You can change this factor from the default of 1 (no change) to 1.05 to increase all readings by 5%. Now a reading of 3.00 CFM will actually be displayed and recorded 3.15 CFM.

Blowby Analog Output

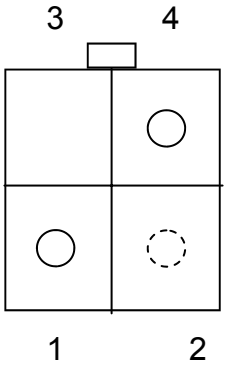
The Blowby Logger can produce a linear voltage proportional to the Blowby Reading. If you have a 6 CFM Blowby Sensor and have set that in the Blowby Logger, then 0-6 CFM is **0-4 volts**. The output goes up to 5 volts and is accurate above 4 volts. In the case of 0-6 CFM, 5 volts would be 7.5 CFM. If you have selected Units as LPS (liters per second), the scale is still 0-6 LPS is 0-4 volts. The 0-6 CFM range is approximately 0-3 LPS. That means the full scale LPS will occur at approximately 2.0 volts analog output.

If you have a Performance Trends DataMite logger for reading the linear Blowby signal, then a DataMite sheet will tell you how to hook up and calibrate that particular channel.

If you have some other type of logger, then you will be supplied with a mating connector for the 4 pin analog output from the logger. This is typically a connector on a lead about 2 feet long coming out of the Blowby Logger's 8 pin connector.

The mating connector sent will have 4 positions for terminals, but only 2 terminals are used. The terminals will be male pins to fit into the female terminals in the loggers connector.

Wire the connector to your logger using the pinouts below:



Pin numbers are visible from the back of the connector. When you wire up, make sure the pins match up with the sockets on connector on Blowby Logger harness.

Pin 1 is ground
Pin 2 Optional, 5 volt power in. This power MUST be regulated to be
5.0 volts, +/- 0.1 volts. See warning below.
Pin 4 is 0-5 volt output, 20 mAmp max.

Because of the various amount of current draw your logger may put on the Logger, it is recommended you keep the logger powered up via USB cable.

IMPORTANT: If you wire up to Pin 2, you must be careful to NOT power up via the USB and you MUST also remove the battery. Contact Performance Trends before trying this. A battery overload and fire hazard are possible.