eSync Tool | User Manual

Professional digital throttle body sync tool with Windows PC software

1. Foreword

Congratulations on your purchase of an eSync throttle-body synchronization tool. Products from HealTech Electronics Ltd. are the most advanced aftermarket accessories and maintenance tools for motorcycles.

For best performance and optimal operation, multi-cylinder engines require throttle-body synchronization from time-to-time. This synchronization process equalizes the negative pressure (i.e. vacuum) in the intake/throttle bodies, so all cylinders get the same amount of air/fuel mixture. The eSync Tool from HealTech Electronics Ltd. is the best solution for this job.
With conventional sync tools you only see a heavily damped average value of the pulsing vacuum. In contrast, with the eSync Tool you get real-time information about what is happening in the combustion chamber. You can also make far more precise adjustments. Measurements can be saved and used for reference later. With the Service Report function it's the perfect choice for workshops.

For more information on this product, please visit:
www.healtech-electronics.com/EST

2. Features

Compatibility
All multi-port gasoline engines are supported: motorcycles, ATV/UTVs, racing cars, racing outboard motors with either fuel-injected or carbureted engines. It's best suited for 2, 3 and 4-cylinder engines. However, the tool can be used on single-cylinder engines for engine condition analysis. It can also be used on engines with five or more cylinders, but only four cylinders can be synced at the same time.

Awesome tech
The unit has four digital, high precision, high sensitivity factory-calibrated quick response vacuum sensors. The complete waveforms (which occur in the combustion chamber) are shown in real time. This feature makes it possible to not only sync the throttle bodies with high accuracy but also to pinpoint various engine problems; inlet/exhaust valve leakage, induction leaks and even incorrect valve clearances. Analyze the measurements on your high-resolution color LCD display (a laptop or desktop PC is required).

Saves cost
It's ready when you are, just plug it in and start the measurement. Being able to see what is going on inside the combustion chamber (for each cylinder simultaneously) can save hours of work. Furthermore, it is a very useful tool for bike owners who do their own maintenance.

Small but tough
The eSync Tool is the smallest and lightest throttle body sync tool on the market so it won't take up much of your valuable workspace. On the other hand, the eSync will still work when others break or fail. It is rugged, and both shock and vibration proof.

Quick and simple to use
The vacuum hoses are colored differently for easier cylinder identification. The unit is powered from the computer via USB, no need to use an external power supply. The software automatically prompts you when a new version is available for download, you never have to look for updates manually. The 'Help' button retrieves the latest version of the User Manual from our website automatically.

Intuitive software
The eSync Tool is used with PC software with a clear and easy-to-understand user interface. You will see the intake pressure of each cylinder and how they relate to each other, not only on a bar chart but also on diagrams and via numeric values. The software calculates and displays the actual RPM and delta RPM from the pressure curves. Take before/after snapshots and print a PDF document report with the press of a button. This is a very useful feature for workshops as the whole syncing process can be documented. You can save measurements for later review as a reference or to create a report. The software is multilingual (more languages will be added soon).

Future proof
While other sync tools are supplied 'as is', we are committed to release software updates for the eSync Tool regularly. More functions and features will be added based on user feedback and requirements. The software updates will be free for the lifetime of the product.

Built to last
- Rugged design, encased in epoxy resin.
- Shock and vibration proof.
- Oil and water resistant.
- Each unit is extensively tested prior to shipping.
- Has no mechanical parts or battery to replace.
- Supplied in a durable, foam-insulated plastic case.

3. Specifications

- Compatible with computers running Windows 7, 8 or 10
- Requires at least 1366x768 display resolution
- Requires one USB 2.0 port (or higher)
- Maximum supply current at +5V (via USB): 30 mA
- Has 4pcs digital high precision, high sensitivity factory calibrated vacuum sensors
- Operating temp: -40C to +80C (-40F to +176F)
- Unit size: 59 x 35 x 17 mm (2.3 x 1.4 x 0.7 inches)
- Weight: 100g (with USB cable, without hoses)
- Waterproof (IP68)

4. Included items

- eSync module with 1.5m (59") USB 2.0 cable
- 4pcs silicone hoses (black, green, red, yellow), 45cm (17.7") long
- 2pcs silicone extension hoses (black, green), 23cm (9.0") long
- 1pcs "T" hose with a metal end-plug
- 4pcs M5 threaded metal adapters with O-rings
- 4pcs M6 threaded metal adapters with O-rings
- 2pcs HealTech stickers
- 1pcs Durable, foam-insulated plastic case

5. How to use

Disclaimer: This product is a professional tool which should only be operated by a competent mechanic and only for the purpose for which it was designed. If you have any doubts about your competence to use this product safely without any risk, don't use it! When flammable liquids and gases are present, do not smoke and apply extreme caution. HealTech Electronics Ltd. and its distributors shall not be liable for any losses or damages whatsoever.

The description of the throttle body syncing process is beyond the scope of this document. It is assumed that the user is a trained mechanic who has sufficient knowledge to carry out this task. Always refer to the specific Service Manual for the vehicle under test.

Preparation (needs to be done only once)**:**

1. Download and install the eSync Tool software from this link: *www.healtech-electronics.com/EST*
2. Start the software and enter your company data under *Settings -> Workshop info*. This step is required to produce Service Reports in PDF.

Basic steps to use the Tool:

1. Locate the throttle body assembly under the airbox.
   Connect the vacuum hoses to the vacuum ports of the cylinders. We recommend connecting the black hose to the 1st cylinder.
   Depending on the vehicle, you may need to use the 5mm or 6mm threaded adapters supplied in the kit.
   On a fuel-injected bike, connect the side branch of the black hose to the MAP sensor.
   If there's PAIR system (or similar) on the vehicle, do not forget to close its tube with pliers.
2. Connect the USB plug of the module to your computer and start the eSync software. You should see in the software that the module is *Connected*.
3. Fill in the Owner & Vehicle info under *Settings*.
   This step is necessary to be able to save a measurement and to produce service reports in PDF. The make/model/year you specify is used in the file name when you save a measurement.
4. Secure the module and make sure all hoses and the USB cable are clear of any moving parts and hot surfaces like the exhaust pipe.
5. Start the engine and let it idle to the normal operating temperature range.
6. Press the *Record* button and the *Stopped* label will change to *Measuring*.
7. Select the *Reference* cylinder and turn the unused channels off.
8. Adjust the cylinders to get them in sync with the reference cylinder. When they are in sync, the grey background of the bar chart will change to a light green color.
9. After syncing, analyze the waveforms on the graph. If you see that the waveform of one channel is different compared to the others, it means that something is wrong with that cylinder. *(Note: We will cover this topic with more details in the next version of this manual)*

10. When you are finished, press the *Pause* button and stop the engine.
    We recommend clicking on *File -> Save* to save the measurement so you can use it for later reference. You may generate a service report now, or later from the saved file.
    After pausing (but before saving), you may continue the previous measurement session by clicking on *Record*. After saving, the *Record* button will start a new session.
11. Exit from the software, unplug the USB cable and disconnect the hoses *(the order is not relevant).*

6. Additional Product & Usage Details

1. The four hoses are relatively short to take advantage of the highly accurate and responsive pressure sensors in the unit, ensuring that the displayed pressure curves are accurate.
   In case you need longer reach (e.g. for BMW boxer engines) use the supplied extension hoses.
2. The eSync Tool is calibrated in our factory before shipping and needs no further calibration.
3. If you wish, you may test the basic functions of the tool without connecting it to a vehicle. Just connect it to your computer, press the *Record* button and you may apply pressure and vacuum to the hose with your mouth, but be sure the hose remains dry.
4. The unit may be used up to 10 times for measurements without an internet connection on the computer. Subsequently, an internet connection is required at least once with the module connected via USB. This is necessary to ensure you use the latest updates and also protects the product against counterfeiting.
5. When you save a measurement, all channels are recorded regardless of the channel settings. When you open the file, you can toggle the channels on-off during playback even if some of them were switched off during the measurement.

7. Warranty

HealTech Electronics Ltd. guarantees this product against defects in material and workmanship for a period of two (2) years. The warranty period starts from the date of the original purchase as shown on the invoice.