

SPEEDOHEALER V4-TSD

Electronic Speedo and Odometer Calibrator & Top Speed De-restrictor
with Top Speed Memory

User Manual

for SH-V4-TSD

1. Foreword

Congratulations on your purchase of a SpeedoHealer calibrator unit.

At HealTech Electronics Ltd. we are committed to produce the best calibrator devices available and we would like to thank you for choosing our product.

The Harness Kits required for installation are supplied separately. Please make sure you have received the correct wiring harness kit for your vehicle.

After installation, we recommend using our online calculator to calculate the required calibration value and to generate step-by-step programming instructions. You can also use our SpeedoHealer calculator app, available for iOS and Android devices.

The SpeedoHealer TSD model has a Top Speed De-restrictor feature. It is inactive by default. You may activate this feature only for racing purposes on closed tracks, entirely at your own risk. It must not be used on public roads! HealTech Electronics Ltd. and its distributors shall not be liable for any misuse, losses or damages whatsoever.

2. Features Explained

Simple User Interface: Easy to program, review and update the stored parameters.

3 functions in 1 unit: Programmable Calibrator, De-restrictor and Top Speed Memory.

Extended calibration range: -99.9% to +9999.9% in steps of 0.1%

This means the speed signal can be modified from 1/1000 to x100, in increments of 0.001. This extended range can compensate for even for the most radical sprocket conversions and custom applications (*e.g. different engine-gauge combination, bike-engine powered cars, etc.*).

Detachable Remote button for the Top Speed Recall feature (installing it is optional).

Top speed de-restrictor: This unit can be configured to avoid the top speed restriction on motorcycles and ATVs which have a top-speed limitation based on the speed signal (*such as the CBR1000RR, VFR800X, GL1800, VFR1200F, ZX-10R, ZX-12R, ZX-14, FZ-09, MT-09, YZF-R1, V-Max, Can-Am, Kawasaki, Polaris ATVs and many more*).

You can set the TSD unit to either 'freeze' the speed signal to the ECU at a specific threshold, or apply a stronger calibration value so that the speed signal will be increased at a slower rate above the set threshold.

Note: The SpeedoHealer does not increase engine performance. Even if the TSD feature is activated, your vehicle will not go any faster if your vehicle's engine lacks the power, the gearing is not sufficient, or the SH unit is connected in-line with the speed signal coming from the ECU to the speedometer.

Interactive test mode: Confirm installation before starting the engine.

Compact dimensions: Full SMD design. The smallest and lightest calibrator available.

High-speed CPU: 32-bit processing ensures high accuracy and immediate response to the input signal with no lag. Ultra-low power consumption and auto stand-by.

Robust design: 100% weather proof. Every unit is fully tested, guaranteed to work. All leads are protected against reverse voltage, short circuits and high energy transients. Wide operating range: +3V to +19V at -40C to +80C (-40F to +176F)

3. Setting and Using your SH

3.1 Preparation

1. Ensure that the unit is installed correctly by executing the SH Test instructions (*Refer to the Install Guide bundled with the Harness Kit*).
2. Determine the Calibration value needed for your application. Use the online calculator on our website or download the SpeedoHealer calculator app. (*If you wish to see the calculation formulas, refer to the standard SpeedoHealer User Manual, chapter 4*).

3.2 Programming the unit

The TSD unit has three parameters which can be selected and programmed independently. The three parameters are as follows:

- A:** The Calibration value applied from zero speed to the set speed threshold [U]. Program the value which is shown by the SpeedoHealer calculator. This will make your speedometer accurate for speeds below the set speed threshold.
- b:** The Calibration value applied from the set speed threshold [U] to the maximum road speed of the vehicle. If the value is left at the default 0, it means that the SH unit will maintain a constant (unchanging) speed signal above the set speed threshold. Your speedometer will not show a higher speed reading than the threshold even if you ride faster. Normally you can keep it at the default 0. A specific [b] value has to be programmed only if the ECU indicates a fault code when the speed signal does not increase above a certain point even though the engine RPM increases.
- U:** Setting the speed threshold. This is the speedometer reading at which the unit will switch between the [A] and [b] calibration values automatically. Signal hysteresis is used to ensure that the auto-switching does not oscillate when riding at a constant speed close to the threshold. Be aware that the speedometer reading will not be correct after passing the set speed threshold.

Notes:

- To change between the three parameters, have the ignition key ON. Press **SET** until the actual parameter ([A], [b] or [U]) is displayed and keep it pressed until the displayed parameter changes to the one you wish to program.
- Entering into programming mode does not clear the previous setting, so you can update a previously stored calibration value easily.
- All settings are stored in Flash memory. No need to repeat programming after the battery or the SH unit has been disconnected.

3.2.1 Programming the [A] calibration value

1. Turn the **ignition key ON** to power up the unit. The [A] parameter is always the active one after power up.
2. Press **BOTH buttons** on the unit and keep them pressed until [L] is indicated.
3. The Sign of the calibration value is flashing:
 - [-] : Negative
 - [P] : PositiveTo toggle the Sign, press the **SET** button.
 - If the Sign you set is Negative, you will program 3 digits (max value: 99.9)
 - If Positive sign is selected, you need to enter 5 digits (max value: 9999.9)
 - You need to enter all digits (including the leading zeros), e.g. enter -07.5 if you want to program -7.5%

4. Press **SEL** to proceed to the first digit of the calibration value. [n] (next) is shown, and then the value of the first digit will flash. Press **SET** repeatedly until the desired value is shown. Repeat this step until all the digits have been entered.
5. After the last digit has been entered, press **SEL** to exit from programming mode. [o] (over) is shown, and then the unit will display the programmed digits one by one, just like any time ignition is turned ON.

3.2.2 Programming the [b] calibration value

1. Press **SET** until the actual parameter is displayed and keep it pressed until the displayed parameter changes to [b].
2. Press **BOTH buttons** on the unit and keep them pressed until [L] is indicated.
3. Program the [b] calibration value the same way as described in the previous chapter, steps 3-5, except that only a negative calibration value can be programmed for [b].

3.2.3 Programming the [U] speed threshold

1. Press **SET** until the actual parameter is displayed and keep it pressed until the displayed parameter changes to [U].
2. Press **BOTH buttons** on the unit and keep them pressed until [L] is indicated.
3. The speedometer will now indicate a speed other than zero. Change the desired speed threshold by using the **SET** button:
 - A short press increases the indicated speed by a small step.
 - Keeping the button pressed increases the indicated speed by large steps.
4. When the desired speed threshold is shown on the speedometer, press **SEL** to exit from programming mode. The unit will display the programmed digits one by one, just like any time ignition is turned ON.

3.3 Reviewing the calibration value in use

Whenever the ignition key is turned ON, the unit will show the following information in this order:

- [A]
- Sign of the Calibration value: [-]: Negative, [P]: Positive
- Calibration value without leading zeros

The followings are displayed only if the speed threshold is set:

- [b]
- Sign of the Calibration value: [-]: Negative
- Calibration value without leading zeros
- [U]

Examples:

[A 0]: there's no calibration and no speed threshold set (factory default).

[A - 7. 5]: -7.5% calibration is in use, TSD function is inactive.

[A P 5. 0]: +5.0% calibration is in use, TSD function is inactive.

[A - 8. 0 b 0 U]: -8.0% calibration is in use below the set speed threshold and the speedometer will not exceed the set speed threshold.

[A - 2. 0 b - 2 0. 0 U]: -2.0% calibration is in use below the set speed threshold, -20.0% calibration is in use above the speed threshold.

3.4 Reset

- If you wish to clear all settings and go back to defaults, turn the ignition key ON and then press **BOTH** buttons on the unit. Keep them pressed until [**E**] (Erased) is indicated.
- If you wish to clear the [**b**] calibration value only, select the [**b**] parameter and then press **BOTH** buttons on the unit. Keep them pressed until [**C**] (Cleared) is indicated.
- If you wish to clear the [**U**] speed threshold only, select the [**U**] parameter and then press **BOTH** buttons on the unit. Keep them pressed until [**C**] (Cleared) is indicated.

Notes:

- There is no need to clear the memory before programming a new calibration value. You can overwrite the previous setting easily.
- When the unit is powered up with default parameters, [**A 0**] is displayed. This means there's no calibration and no speed threshold set. The unit will work in *Transparent mode*, i.e. the speedometer will read the same as if no SH is installed.

3.5 Top Speed Memory function

The SH stores the last highest speed in flash memory. This can be recalled/displayed on the speedometer using the remote button, if it's connected to the TSM socket.

- To recall the top speed, press and release the remote button. The top speed is shown on the speedometer for a few seconds, and the SH display will count from [**5 to 0**].
- To erase the Top Speed Memory, press and hold the remote button for at least 2 seconds. The speedometer will read 0, and the SH display will indicate [**E**] (Erased).

3.6 Test mode

In Test mode, you can check whether the SH is installed and working correctly.

To initiate test mode:

- Make sure the ignition is OFF (unit is powered down).
- Press **SEL** and keep it pressed while you turn the ignition ON. [**t**] (test) is now indicated. Release the button.
*The speedo should indicate a number other than zero. If you wish, you can change the speed reading in 9 steps by pressing **SET** repeatedly.*
- Rotate the rear wheel. [**t**] *should be flashing as the wheel turns.*
- Press **SEL** to exit from Test mode. The unit will work normally.

4. Warranty

The SpeedoHealer is built to last: all leads are protected against reverse voltage, short circuits and high energy transients. Only high-quality components are built in, and the epoxy resin encasing provides extreme protection for the internal parts from shocks, vibrations and water. To ensure trouble-free operation, all units are extensively tested prior to shipment.

Should you not be entirely satisfied for any reason, our dealers offer a 30-day money-back guarantee (*all parts must be returned in original condition for full refund*).

Furthermore, the product is covered by our 2-year replacement warranty from the date of purchase (*invoice copy required*).