ZEPHYR
DIGITAL TRIPMETER
by DIGITECH
versione 1.14
english
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SUMMARY

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ZEPHYR it is a digital electronic odometer with double-reading LCD display and meter resolution, easy to use and to install.

Its main features are:

- Double counter: “Total” distance (up to 9999,999) and “Partial” distance (up to 199,999).
- Global START, STOP, RESET, SPLIT (freeze) functions and RESTART only for the “Partial” meter.
- BACK function for both meters, allowing you to back count. This function can be enabled from the keyboard or from an external control (such as backup lights).
- Programmable “Total” meter, so that counting can be started, increases or decreased from a specific value.
- Stores up to four kilometric constants, in case the instrument is used on other vehicles or the on the same car but with different sets of tires.
- The original odometer cable can be fitted with induction or rotor sensors.
- A sound buzzer can be enabled on the hundreds gear or on ten meter/miles with optional headset output.
- The “Partial” counter RESTART can be controlled with an external button/control.
- High visibility display with 12mm high digits.
- Available display backlight for perfect night vision.
- Backup battery, allowing operation even when disconnected from the vehicle power supply.

“Global” means that both Total and Partial counters can be managed.
The primary function of the keys is that written on them, the functions that are written below the keys become active only in “Total counter setting” and “Calibration” steps.

Turning on the instrument

To turn the instrument on, hold the key pressed until you hear a sound and the display shows the version of the software installed.

To turn off the ZEPHYR hold the key pressed until OFF disappears from the display.

When turning off, the instrument stores counters and settings, and displays them at the next power on.
Backlighting

In order to use ZEPHYR also in places where light is insufficient, or at night, you can enable the display backlighting.

By pressing the ⚫ key continuously, you can toggle between the three available backlighting options:

- **Always:** backlighting is always on. The ☀ symbol on the display is on and fixed
- **When needed:** the backlighting turns on by pressing any key. It remains on for 4 seconds, and then it turns off automatically. The ☀ symbol on the display blinks
- **Off:** backlighting remains always off. The ☀ symbol of display remains off

👉 With the backlighting on, the maximum visibility of the display can be obtained by tilting the instrument to the front, of approximately 40°.

Sound warning

The ZEPHYR can sound at every ten or hundred meter/mile change of the “Total” counter.

By pressing the ⌘ key continuously, you can toggle:

- **Hundreds:** A sound is played at every hundred change. The ⌘ symbol of the display remains always on.
- **Ten:** A sound is played at every ten change. The ⌘ symbol of the display blinks.
- **Off:** No sound is played. The ⌘ symbol of the display remains off

Low battery

Only in case you use the ZEPHYR with the internal batteries, when their endurance drops below 10%, the 💼 is displayed on the screen.

At this point, before the equipment turns off, the residual life goes from two (with backlighting always on) to about ten hours (with backlighting always off).
2 Calibration method

In order to find the distance covered, the instrument needs to know the “kilometric constant” of the motor vehicle, that is the number of pulses per (one) kilometer, generated by the installed sensor.

The Calibration step allows you to set the number of pulses per kilometer and to read and/or modify the current selected constant.

The “Setting” of the kilometric constant should be done every time the “section measured”, based on which the race management has produced the roadbook, is available.

WARNING: the Calibration cannot be done during a tryout, because the current measurement is reset!

ZEPHYR allows you to save four kilometric constants, which can be selected at any time.

To access Calibration press [SET CAL].

Press [ESC] at any time to exit the feature. You will return to the regular operation, keeping the selection and the value of previously set kilometric constant unchanged.

Selecting the kilometric constant

After you access this feature, the upper screen displays the current constant, in last two digits to the right. The blinking indicates the possibility of selecting another constant.

To browse the four constant list use ▲ or ▼ keys.

Press [ENTER] to confirm your selection and return to the regular operation.

Manual change of the kilometric constant

After selecting the constant, press ← and/or → to separately edit each digit.

When the digit blinks, use ▲ and ▼ to increase or decrease it. When the requested value has been reached, press → key to go to the next digit or ← key to go to the previous one.
Press **ENTER** to save the changes applied so far and return to regular operation.

⚠️ **WARNING**: constant values below 1000 are not allowed. In this case, the instrument notifies the anomaly by displaying “-999 Err” for few seconds and then it restores the previous value of the constant.

### Finding the value of the kilometric constant

Before proceeding in this step it is essential to find a section of road of which you know the length (e.g. a section between two kilometric references or a section previously measured).

⚠️ **In order to use the instrument with averages expressed in mph, it is sufficient that the road section sample has one length measured in miles.**

To go from “Change” to “Set”, press **SET CAL** again.

### Pulse count

On the left of the upper screen the letter “L.” (Learning) is display, to show that the instrument is ready to count the pulses generated by the sensor in order to cover the section of road taken as base sample.

Press **START SPLIT** to enable counting.

The blinking symbol shows that counting has been enabled.

When the sample road section is finished, by pressing **STOP** or **ENTER**, the learning is finished and you are taken to the setting step of the length of the used base.

⚠️ **WARNING**: the instrument does not accept a value of measured pulses equal to 0. In this case the instrument signals the error by displaying for “0000 Err” for few seconds.

In the case it is necessary to repeat the reading, you can reset the number of pulses measured so far by pressing **RESET**.

⚠️ **During the counting step, the upper screen displays the number of pulses produced by the sensor, while the lower screen displays the covered distance using the previous kilometric constant.**
Setting the base length

After pulse count is completed, the next step is to set the length of the base. The letter “b,” (base) is displayed on the left of the screen, followed by the “default” length value, equal to 1,000.

This value can be changed as seen before, that is using ← and → keys to move between digits and ▲ and ▼ keys to change their value.

Press ENTER to confirm the set value of the base.

Saving the kilometric constant

After the setting the length of the used base, the instrument finds the correct kilometric constant by calculating the relationship between the number of the measured pulses and the set base.

This value is displayed on the top screen together with letter “S.” (Save), pending the confirmation of its saving in the permanent memory.

Press ENTER to confirm the saving of the currently selected constant.

The value of the kilometric constant must be included between 1000 and 9999.

In the case the result of the calculation is lower than 1000, “-999 Err” is displayed on the screen for few seconds. The same happens if the calculation exceeds 9999: “+9999 Err” is displayed on the screen.

Then the instrument returns to the setting of the base length and displays again the 1000 default value.
3 Trip mode

When turned on, the instrument enters the TRIP mode which is displayed on the dedicated indicator. This is the regular operation mode, in which the covered distance is measured. Below you find the available controls that can be selected from the keyboard.

“Global” means that both Total and Partial counters can be managed.

Enabling Global count (START)

To enable distance count, press **START SPLIT**, **RESTART** or use the external remote control line.

*STOP* disappears from the screen and the two counters are increased based on the distance covered.

Locking Global count (STOP)

To stop counting, both “Total” and “Partial”, press **STOP**.

*STOP* is displayed on the screen and any further pulse from the sensor is ignored.

Freezing Global count (SPLIT)

After enabling global count, by pressing **START SPLIT** you can freeze the distance covered so far, on both counters.

This “freezing” condition is displayed by **SPLIT** caption on the screen.

To restore the “freezing”, press **START SPLIT** key again.

During “freezing”, global “Stop” and “Restart partial counter” continue to be enabled.

Decreasing Global count (BACK)

The count direction can be reversed at any moment, so that the distance can be decreased.

Press **BACK** key to switch from increasing to decreasing counting mode, displayed by **BACK** caption and viceversa.
The **BACK** function, that is the decreasing count, can be enabled by acting on the external **IN-BACK** control. In this case, button **BACK** is ignored and decreasing count will be on until it is released by the external control (e.g. if connected to backlights).

**Resetting Global count (**RESET**)**

Press the **RESET** key for approximately 2 seconds, to reset both counters, to remove the **BACK** function (if enabled) and to disabled counting by switching to function.

**WARNING:** the total counter is always set to 0,000 even if it was previously programmed to restart from a specific value.

**Restart partial counter (**RESTART**)**

Once global counting is enabled, each time you press **RESTART** key or you use the external remote control, the partial counter is resent and counting is immediately restarted.

**Total counter setting (**SET TOTAL**)**

Press **SET TOTAL** key to set the total counter, so that the measurement of the total distance can start from a preset value, instead of 0,000. In addition you can select if the distance measure increases or decreases from this programming.

After accessing this function, you can set and/or modify the value of the counter total, by using **<<** and **>>** keys to move between digits and **A** and **V** keys to change their value.

Use **V** to increase or decrease the total counter, after returning to regular operation. When “-“ is displayed in front of the programmed number, this will mean that the value is being decreased.

Press **CLEAR** to reset and restart the programming.

Press **ENTER** to confirm the programmed value and return to the regular operation.

Press **ESC** exit without making any change, and to leave the value of the total counter unchanged.
4 Connections

The installation and the connections of the instrument must be carried out by a professional installation engineer in order to avoid damaging the electrical system of the car and/or the ZEPHYR.

After the installation on the car, remember that ZEPHYR must be “calibrated” with the procedure described above.

If you must remove the instrument from the car, before detaching it from the connector, check that the power coming from the battery is disconnected (through the switch or ignition key removed), this in order to avoid damages to the instrument and/or the sensor.

General information

ZEPHYR is equipped of an interface box used to perform the connections to the car.

This Box must be anchored inside the car, in a place repaired from water infiltrations and connected to ZEPHYR through the appropriate cable ending with two 6 pin MiniDin connectors (included in the supply).
This type of connection allows you to remove the instrument from the dashboard without difficulty, making it possible to use it on different cars.

Pay attention to cable plug insertion key. The arrow on the covering of the connector must be turned upwards when you plug it into the interface box, while it must be turned towards the bottom when it is connected to the ZEPHYR.

**Power supply**

**External**

Usually, the ZEPHYR is supplied from the battery of the car through the interface box.

The sensor power supply is directly produced by the ZEPHYR. When the instrument is off, there is no power.

**Internal**

ZEPHYR can operate even if it is not connected to the battery, using four AA type batteries.

Also in this case, the power supply of the sensor is directly produced by the instrument.

The internal power supply is enabled at the same moment in which the external one is lacking. This way, even with strong power drops, or missing power supply, due to electrical connection problems (disconnected wire or burnt fuse), ZEPHYR it continues to carry out the counting of the distance.

As regards operation endurance only with internal batteries, please refer to the table in the “Technical Data” section.

**WARNING:** ZEPHYR will not signal in any way that it is using internal batteries. Therefore, in the event of fuse burnt or disconnected wire, the
instrument may turn off, because it has reached the maximum life of the internal batteries.
Pay attention to the turning on of “Low battery” symbol.

If ZEPHYR is installed on very ancient cars, where the spark plug/distributor ignition system produces considerable disruptions, these may be induced to the instrument power supply and alterate its operation. In this case, using only the internal battery power supply is the best solution.

Interface box

Once the box has been opened, remove the four cover screws. Through the appropriate terminal strip it is possible to connect the power supply and the sensor located on the car.

Description of connections:

<table>
<thead>
<tr>
<th>Connection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+Vcc BT</td>
<td>Positive of the instrument power supply. It must be connected to the positive connection of the battery, in series to a switch and a 1 Amp fuse</td>
</tr>
<tr>
<td>+Vcc BT</td>
<td>Negative of power supply. It must be connected to the battery or to the body.</td>
</tr>
<tr>
<td>+ SENS</td>
<td>Positive power supply for the sensor supplied by the instrument.</td>
</tr>
<tr>
<td>- SENS</td>
<td>Negative power supply for the sensor, negative of battery</td>
</tr>
<tr>
<td>IN SENS</td>
<td>Input of the pulses generated by the sensor.</td>
</tr>
<tr>
<td>OUT-OC</td>
<td>Contact closing to ground. Not used</td>
</tr>
<tr>
<td>IN-BACK</td>
<td>If connected to the battery positive, it forces the instrument BACK state. If connected to the backlights, it supplies an automatism for decrementing the distance when reverse maneuvers are made.</td>
</tr>
</tbody>
</table>
Wiring diagram of the interface box

Sensor option 1
- Black / Green
- Orange / Brown
- White

Sensor option 2
- Blue
- Brown
- Black

Fuse 1 Ampere

Backlights

ZEPHYR
5 Sensor test

After the wiring of the sensor has been carried out, ZEPHYR can check its operation.

By turning on the instrument with the SET TOTAL pressed, ZEPHYR enters the sensor test function.

The sensor input status is displayed in the upper part of the screen, while a pulse count is displayed in the lower part.

The caption "SEnS H" means that the sensor input is HIGH (greater than 10 volts). It means that a sensor is not connected or that a sensor is an inactive phase.

The caption "SEnS L" means that the sensor input is LOW (lower than 3 volts). It means a short circuit to ground of the input or that a sensor is in active phase.

In order to check the correct operation of the sensor, it is necessary to obtain a transition from HIGH to LOW and vice versa while the wheels of the car are moving.

Simultaneously with the transition from HIGH to LOW you get the pulse count increase (displayed in the lower part of the screen).

In order to exit from the test function, it is necessary to turn off the equipment by pressing the key.
## 6 Technical data

| **Power supply:** | external 10 to 15 volts  
|                   | internal: through 4 batteries, 1.5V type AA |
| **Consumption:**  | 40 mA typical  
|                   | 130 mA with active display backlighting |
| **Endurance with power supply from internal batteries:** | with alkaline batteries  
|                   | 70 hours with extinguished backlighting  
|                   | 55 hours with backlighting on for 12 hours  
|                   | 25 hours with backlighting always on |
| **Residual endurance from the turning on of the battery low warning light:** | with alkaline batteries  
|                   | 10 hours with extinguished backlighting  
|                   | 2 hours with backlighting always on |
| **Number of pulses per Km/Miles:** | Minimum: 1000  
|                                 | Maximum: 9999 |
| **Maximum speed:** | 720 Km/hour - 447 Miles/hour |
| **Sensor pulse minimum duration:** | 200uSec active  
|                                 | 200uSec non active |
| **Dimensions:** | (140x100x30)mm |
| **Weight:** | 400 grams, with 4 batteries type AA contained |
| **Operating temperature:** | 0 °C to +50°C |
| **External remote control input:** | contact normally open  
|                                 | pulse minimum duration 5 mSec |
| **Headphone output:** | jack stereo socket, diameter 3.5 mm  
|                        | (headphone 32 Ohm). |
7 Warranty

Warranty

Digitech S.r.l. warranty covers ZEPHYR for 24 months from the date of delivery to the purchaser, against any material or manufacturing defect.

During the period of validity of the guarantee, any component found to defective shall be repaired or replaced free of charge, provided the chronometer is sent carriage paid to Digitech.

This warranty shall be void if the instrument has been accidentally damaged due to misuse, negligence or tampering by any person not authorized by Digitech.

No other guarantee is expressed or implied.

In no other case Digitech S.r.l. can be considered as liable for damages not included in this guarantee.

Batteries and any damage caused by them are not covered by Digitech warranty. Contact the battery manufacturer to obtain information on the battery warranty.

If the chronometer needs to be repaired

If your instrument needs to be repaired, please contact our servicing department at 040/280 990 (09:00 AM to 12:30 AM and 02:30 PM to 06:00 PM, Monday to Friday).

In the package that you will send to us, make sure to include together with the chronometer:

- your address (the address to which returning the goods).
- A short description of the failure, and any method for reproducing it.
- If the warranty is not expired yet, insert a copy of the payment receipt or other document proving the purchase date.

The chronometer and the information accompanying it must be sent in the original packing or in another packing that can prevent any damage during shipment. The warranty does not cover this type of damage. We recommend making an insured shipment.
Digitel will then return the repaired chronometer with a similar method.

You will bear the cost of shipment to Digitech: any package sent with shipment costs at our charge will be rejected.

**Warranty on repairs**

Any repair carried out after the expiry of the warranty is guaranteed against any material or labor defect for a period of 90 days from the repair date.

Repairs carried out under the warranty will not extend the term of the original warranty in any way.

**Notification of operating problems**

If, when using ZEPHYR, you find any operating problems or if you have any doubt on the operation of the instrument, we strongly urge you to notify it. You can contact us by mail at the following address:

DIGITECH - Via Muggia, 6 - 34018 San Dorligo della valle (TS) - Italy

by fax:
+39 040 833 0561

by e-mail:
info@digitech-timing.com

In this way we will be able to quickly check and remove any problem.
Warning

The information contained in this document are subject to change without prior notice.

The sequences of keys and any program related material, including the merchantability and fitness for intended use thereof are not covered by any type of express or tacit Digitech’s warranty.

The user shall be the only party liable for any risk connected to the quality and the performance of the sequences of keys and of the program related material.

In the event the sequences of keys or the programs are found to be defective, the user (and nor Digitech nor others) shall bear any required correction and deriving damage, if any.

In any case, Digitech will not be in some way liable for any damage arising out of the supply, the use and the performances of the sequences of keys and the program related material.
8 Accessories

Included in the supply

- One interface box INTERFACE
- One double 6 pin MniDin cable for the connection with INTERFACE
- Four batteries 1.5 Volt, type AA
- One protection envelope
- This handbook

Available sensors

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW-ROTAN</td>
<td>Sensor for vehicles equipped with speedometer</td>
</tr>
<tr>
<td></td>
<td>cable.</td>
</tr>
<tr>
<td>SW-INDUT</td>
<td>Sensor for vehicles not equipped with speedome-</td>
</tr>
<tr>
<td></td>
<td>ter cable.</td>
</tr>
</tbody>
</table>

Available accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB5/JGA:</td>
<td>External button for <strong>RESTART</strong> key remote con-</td>
</tr>
<tr>
<td></td>
<td>trol.</td>
</tr>
</tbody>
</table>
9 Declaration of conformity

DECLARATION OF CONFORMITY
pursuant to EN45014 and to ISO / IEC Guide 22

Manufacturer’s name: DIGITECH S.r.l.
Manufacturer’s address: Via Muggia, 6 - 34018 San Dorligo della Valle (TS) - Italy

declares that the product

Type of product: Programmable odometer
Product name: ZEPHYR

conforms to the following directives

Directive 89/336/EEC EMC: EN55022 Class B
EN50082-1 : 1992
IEC801-2 1984 - 4kV CD - 8kV AD
IEC801-3 : 1984 - 3V/m

Additional remarks: The programmable ZEPHYR chronometer has been tested with a typical configuration, with an INTERFACE ox and PB5/JG-A DIGITECH button.

Trieste, August 5, 2006
Gustin Diego
QA Manager