explona

www.explona.com

explona repeater/mini

User manual

explona repeater/mini is the smallest device of **explona** family. It was designed mainly as an additional display for a driver. It can show data supplied by main odometer (e.g. **explona dakar**).

Additionally it can serve as a standalone, simple odometer. In this mode it measures distance, speed and voltage of the battery. When any GPS receiver with NMEA signal is connected display can show current course as well.

Its aluminum enclosure is waterproof and protects against various environment conditions. In every light condition the readings are clear thanks to big LED display with brightness regulation. The display can be turned off if needed.

The device has a quick recall of the distance reading from every other display mode.

You should calibrate the device after installation and each change of tyres (see chapter 4). Imprecise measurements can occur otherwise. The device is supplied not calibrated which is show by blinking "Cal Err" on display.

1. Features of explona repeater/mini

- two functions in one: the device can be external display for the driver (repeater mode) showing data from main unit or it can be a standalone tripmeter (mini mode) depending on availability of data from master unit,
- 7 steps of brightness, the display can be turned off completely,
- features of the repeater mode:
  - display of data from main **explona** tripmeter (e.g. **dakar**),
  - keyboard or external key selects the reading,
  - ability to follow brightness of the main unit if requested,
  - in case of data loss from main unit the device automatically switches to standalone tripmeter (mini) mode and continues to measure the distance uninterrupted.
- features of the mini mode:
  - distance "trip" and speed measurements based on wheel turns,
  - measurement of a voltage of the main battery,
  - compass, current course – when any GPS with NMEA is connected,
  - fast recall of the trip display,
  - ability to connect external *reset* switches,
  - easily distinguished readings,
  - non-volatile memory.

2. Repeater mode

In a repeater mode the device displays basic readings of a main tripmeter. Red button or externally connected switch is used to change the shown value: distance ("trip") → speed ("SoG") → course ("CoG"). The driver can change easily the display on his own if the external switch is mounted on the steering wheel. Any number of external switches can be connected. This way the pilot

can also change the display for the driver. To single **explona** tripmeter up to 3 repeaters can be connected.

The "up" and "down" keys change the brightness of the display. Pressing both keys simultaneously activates brightness follow mode. In this mode a change of brightness on main unit also changes the brightness of the repeater.

Decreasing the brightness below the minimum level turns off the display. It is shown by a single dot. All measures are continued but the keyboard is inactive to prevent accidental changes. The "up" key turns the display on.

In case of data loss from main unit the device automatically switches to standalone tripmeter (mini) mode and continues to measure the distance uninterrupted. This switch is indicated by blinking display. It must be confirmed by pressing any key before normal functions can be operated.

In the repeater mode the calibration is not required. However it is recommended so the device can work correctly after the data loss from main unit.

3. Mini mode

In the mini (miniature tripmeter) mode the device measures distance, speed and voltage of the battery. If any GPS receiver with NMEA signal is connected, it shows current course as well.

A value to display is chosen by pressing and holding the red button or external key – the description of the current reading will start blinking. Each next press will change the displayed value in cycle: distance ("trip") → speed ("SoG") → voltage ("Accu") → course ("CoG").

Pressing red button or external key shortly resets the distance. If the distance is not shown on the display it will be recalled after the first press. After that the second press will reset it.

In order to identify quickly the reading the following distinction was made:

- distance – value with a dot,
- speed – value without dot,
- voltage – "u" at the end,
- course – three digits with a degree sign at the end.

Brightness is changed as in repeater mode.

4. Calibration

Calibration is the process of determining the number of pulses per 1km (or 1 mile) of the travelled distance. This is necessary to accurately measure the distance. Calibration should be performed after installation and after each change of tyres. The device is supplied not calibrated which is show by blinking "Cal Err" on display. The calibration constant *K* should be in range 400–65535.

Performing the calibration requires a reference section of road. The length of the section should be 1km or 1mile depending on the choice of units. The more precise section will result in more precise tripmeter measurements. The selected section of road can be:

- reference section of measuring authorities,
- distance between road markers,
- measured by correctly calibrated other tripmeter,
- measuring tape (although a lot of patience is required).

The calibration procedure:

1. turn off the power,
2. press and hold red button and turn the power on,
3. after a few seconds old *K* constant will be shown, release the red button,
4. position your car at the beginning of the section, press red button shortly to reset the number of impulses,
5. drive entire section, stop exactly at the end,
6. press and hold red button – the calibration constant will be stored and the device will return to regular mode.

Watch periodically the displayed number of impulses. If it remains constant during motion then the speed connection or speed converter should be checked.

If calibration constant *K* is known (e.g. it was determined previously for give set of wheels and car) it can be set manually using "up" and "down" keys. This manual mode is helpful also to make small adjustments if previous value gives constant over/understated results.

5. Installation

The device must be installed in a safe way. It should not endanger health of driver and passenger during both regular work and accident. In particular it mustn't obstruct the airbags.

The installation can be performed in an authorized garage. Current list of authorized garages is available on the website: **www.explona.com**

5.1. Contents of the set

The set consists of:

1. **explona repeater/mini**,
2. user manual and warranty card,
3. TX10 driver to adjust the fastenings,
4. set of stickers,
5. box.

5.2. Mechanical installation

The device should be permanently attached. It shouldn't restrict the field of view. The enclosure is equipped with four fastenings. The TX10 driver (included) should be used if the fastenings need to be adjusted or repositioned. Be careful not to unscrew both fastenings from one side simultaneously. It may compromise the leak proof. All fastenings should be tighten after mount.

explona is specifically sealed to be leak proof.

Opening of the device breaks the seal and voids warranty.

5.3. Electrical installation

Power supply should be protected with a 3A to 5A fuse. The wiring should be connected according to the drawing on the next page. Wire connections:

- brown "GND" – ground,
- yellow "+12V" – power supply after ignition dedicated switch (**explona** doesn't have its own switch),

- green "SPEED" – speed signal,
- white – external switch (connecting to the ground),
- grey – connection to main tripmeter or external GPS receiver.

Connection of **explona repeater** to the main **explona** tripmeter are presented in the user manual of the main unit.

5.3.1. Connection of the speed signal

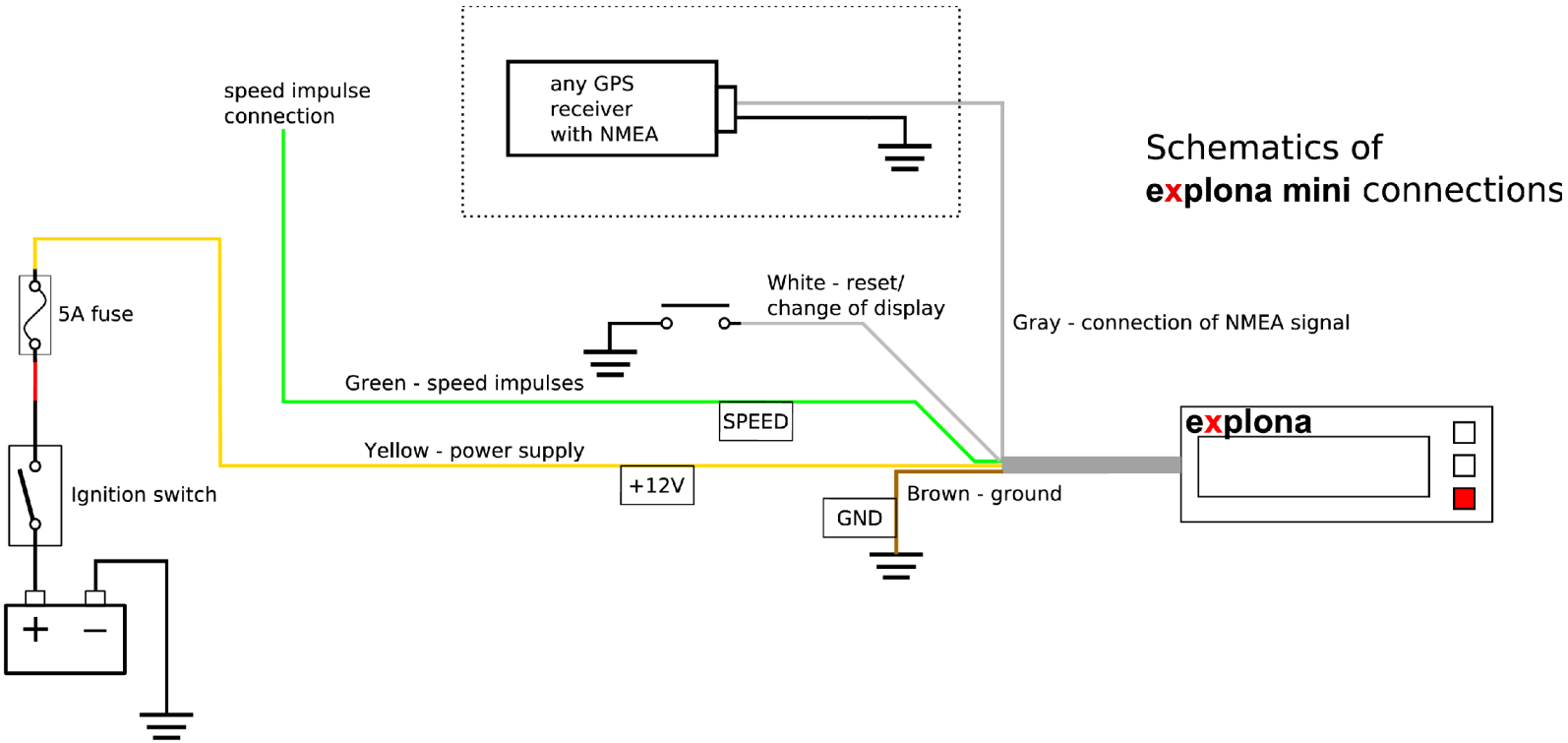
explona repeater/mini can be directly connected to vehicles equipped with electrical speedometer or reed switch sensor.

If vehicle has an electrical speedometer vehicle speed signal (VSS) from car's wiring should be found. It can be accomplished with the use of voltmeter. When the ignition switch is turned on and car is moving the voltage on speed signal should vary periodically (e.g. 0 i +12V or 0 i +5V).

If reed switch sensor is used one of its contacts should be connected to the "SPEED" wire and the other to the ground.

If the car is equipped with mechanical speedometer or has no speedometer at all it is necessary to use additional connection module. That module can accept signal from turn converter or sensor mounted near wheels.

The calibration should be performed after installation of the device.


Schematics of
explona mini connections
any GPS
receiver
with NMEA
speed impulse
connection
5A fuse
White - reset/
change of display
Gray - connection of NMEA signal
Green - speed impulses
SPEED
explona
Yellow - power supply
+12V
Ignition switch
GND
Brown - ground
+
−

6. Technical data

External dimensions [mm]	enclosure: 110×60×32 with fastenings: 145×75×40
Enclosure	aluminum, black
Ingress protection	IP65 – dust tight, protected from water jets
Display	red LED display with 7 brightness steps, can be turned off; anti reflex coating
Weight	300g
Operating voltage	10–40V DC
Power consumption	max 5W
Temperature range	-20–70 ºC
Distance resolution	10m
Maximum distance	999,9 km
NMEA interface	RS232, 8N1, 4800

7. Rating plate

The disposed device mustn't be placed as an unsorted municipal waste, it must be collected separately.