

User manual



LSK FuelGaugePro2

Digital Universal Floatless Fuel gauge

Thank you for showing interest in our products. I strongly advise you to read this user manual thoroughly. It contains important instructions about installation, setup and use of the gauge. By obeying these instructions, the product will reward you with long time flawless functionality.

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Content

Device description.....	2
Main features.....	3
Package contents.....	4
Technical specifications.....	4
Answers on FAQ.....	4
Usage restrictions.....	5
Fuel Pump: External Fuel Pump: Fuel Tank Air Intake:	5
Device mounting.....	6
Find a suitable place for the sensor	6
The best fuel gauge sensor placement.....	6
Placement with the external fuel pump.....	7
The fuel gauge sensor alternative placement.....	8
Electrical parts connection	9
Connect the gauge to the fuel hose	10
Fuel gauge setup	10
Measuring modes.....	10
Device settings.....	10
1) Calibration settings.....	10
2) Display settings.....	11
3) Restore Default.....	12
Setup button.....	12
Enter to the setting menu.....	13
The settings diagram.....	14
Examples of various settings.....	15
Basic use (Min/max mode).....	15
Autocalibration mode.....	15
Enable dot mode and disable blinking of first led.....	16
Restore default.....	16
Possible faults.....	16
Warranty period.....	17
Safety warnings.....	17
Recycling.....	18
Manufacturer	18

Device description

This device is useful for a motorcycles (and ultralight aircrafts, excavators, tractors etc.) without the built-in float in the tank. LSK FuelGaugePro2 is easy to setup for a wide range of fuel tanks. It's function is based on measuring of the hydrostatic pressure of the fuel. Advantage of this principle is minimal installation intervention (no need to make any holes into the fuel tank). Fuel gauge is connected to the fuel hose via supplied T-shape plug. Fuel Gauge device is divided into

two units, sensor unit and display unit. The universal fuel gauge must be calibrated before using. The working principle not allows to connect the gauge to hose, into which the fuel is drawn by the fuel pump.

- It cannot be used on bikes without on-board battery. The electricity from the generator is too unstable, causing the protection to shut down the gauge.
- The gauge is connected to the fuel hose from the tank using a **plastic T-shape three way** connector. It must be placed really **under the fuel tank**.
- The fuel gauge does not work when it is connected to a pipe, into which the fuel is delivered by a fuel pump (It can be used if the motorbikes is equipped with some types of external fuel pump, it is explained in this document below).
- If the fuel gauge is connected under a vacuum controlled fuel cock, that needs to work just fine and not remain partially closed.
- It only works on bikes with a 12 volt electrical system. It does not work on 6 volts. This can be solved by a 6V/12V converter that can be purchased in our website. In case of need, we will help with any uncertainties.
- It can be used on other machines, including diesel powered, like tractors, excavator etc.
- The fuel tanks with fuel evaporation control (Active charcoal filter) may cause problems with hydrostatic measurement principle.

Main features

- Floatless sensing
- Calibration modes: Auto-calibration, manual calibration
- Minimalized dimensions
- 12 displaying LED segments
- Selectable Dot/bar displaying modes
- Enable/disable low fuel indication LED flashing
- Adaptive LED brightness with built-in ambient light sensor
- Magnetic button for device setup

Package contents

- ✓ FuelGaugePro sensor unit
- ✓ LED display unit
- ✓ Permanent magnet for setup
- ✓ Fuel hose for connecting to the fuel system
- ✓ Plastic pipe T shape three way quick connector ø6mm
- ✓ Plastic pipe T shape three way quick connector ø8mm
- ✓ Clips for securing the fuel hoses
- ✓ Set of plastic ties
- ✓ Double-sided adhesive tape
- ✓ Cut in connectors for easy supply voltage connection
- ✓ Ring tongue terminal for grounding
- ✓ Autocalibration hose nozzle
- ✓ This user manual
- ✓ QuickStart Guide

Technical specifications

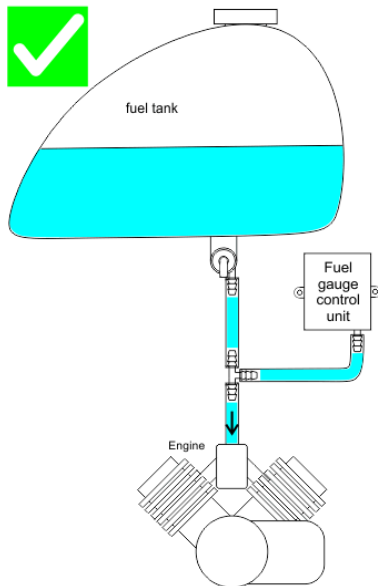
Supply voltage:	Nominal 12 V (Range: 10 V – 15 V)
Energy consumption:	Max. 1 W
Max. fuel level height:	90 cm (distance from the sensor to level of full fuel tank)
Sensor dimensions:	X: 35 mm, Y: 40 mm, Z: 20 mm (without hose plug) (<i>X: 1.37 in, Y: 1.57 in, Z: 0.78 in</i>) (without hose plug)
Display dimensions:	X: 52 mm, Y: 35 mm, Z: 16 mm (<i>X: 2.04 in, Y: 1.37 in, Z: 0.62 in</i>)

Answers on FAQ

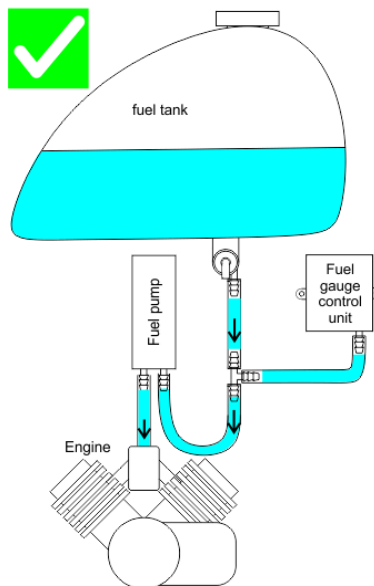
- The gauge is not affected with fall of the bike on the ground.
- The fuel gauge has linear measuring. Every bar means a twelfth of the amount of fuel or a twelfth of the pressure generated by the fuel. The showed decline in the fuel amount is therefore absolutely steady.
- The gauge doesn't lose its memory after being disconnected from power. The data is stored in a FLASH memory that can last years without power.
- The gauge or the sensor do not suffer in rough environment. The terrain change compensation will work very well here too.
- Even when the gauge is broken, the motorcycle can't be affected by this – only if you rip your fuel hose off and the fuel starts to leak.

Usage restrictions

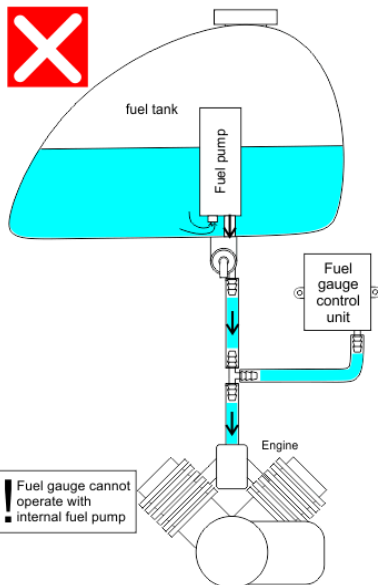
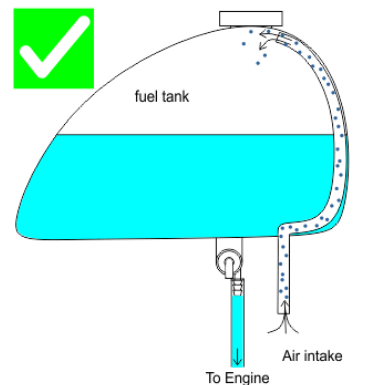
Fuel Pump:



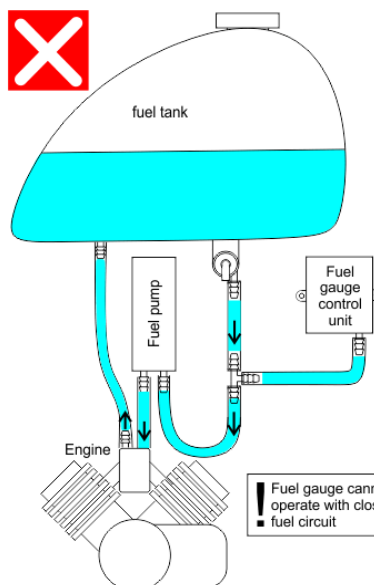
External Fuel Pump:



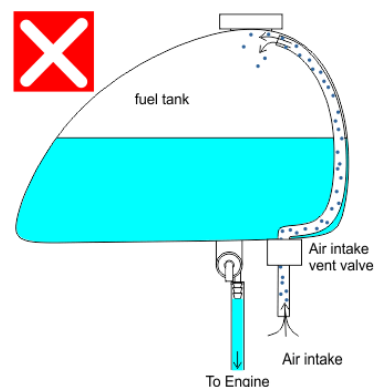
Fuel Tank Air Intake:



! Fuel gauge cannot operate with internal fuel pump



! Fuel gauge cannot operate with close fuel circuit



! Fuel gauge cannot operate with air intake vent valves that makes underpressure in the tank

CAUTION: We cannot guarantee the correct function on all motorcycles with a fuel pump. The external fuel pump may cause problems with measuring on some motorcycles. If this problem occurs, you can return FuelGauge to us and we will return your money back to you. Device must be in intact condition.

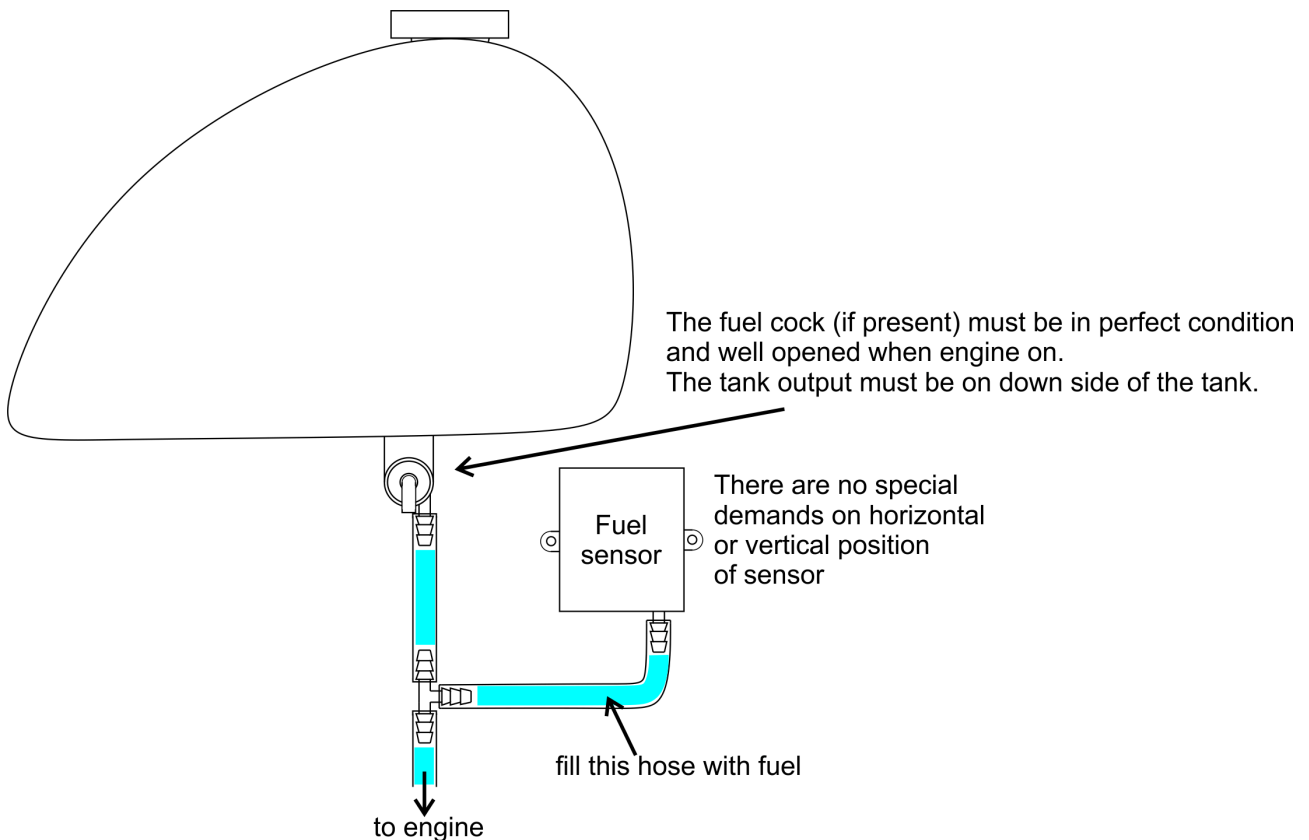
Device mounting

Find a suitable place for the sensor

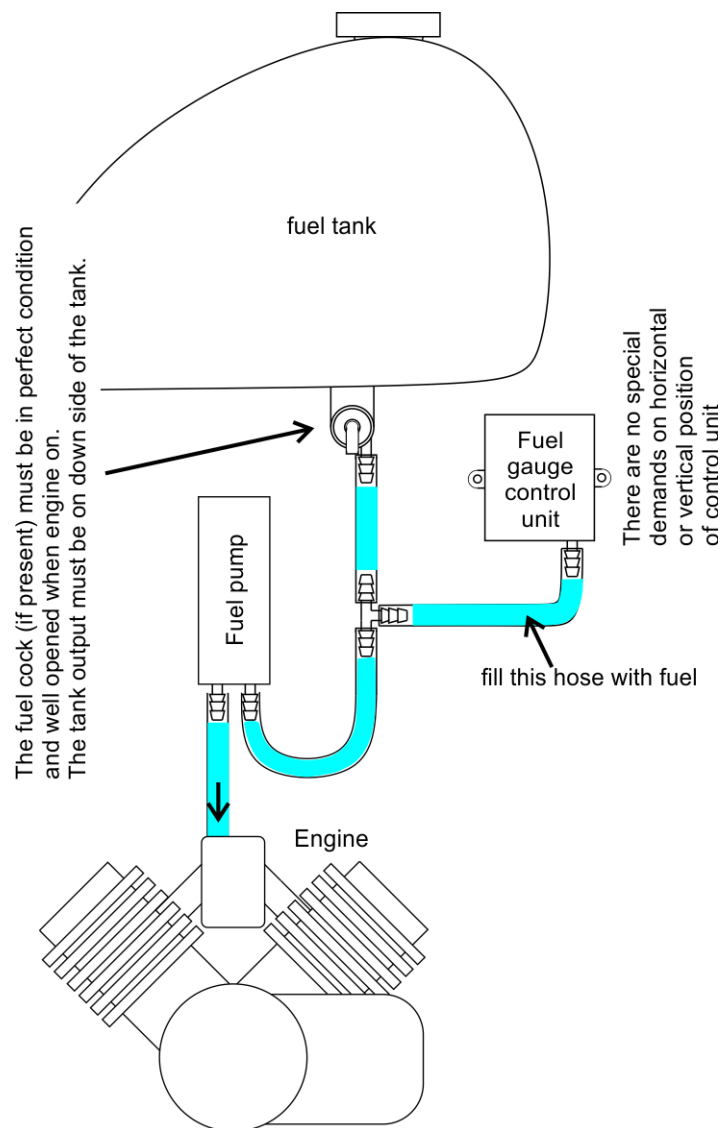
It can be over or under the fuel tank. It is better to mount it under the fuel tank and fill the hose up with fuel. This will make the gauge the most accurate.

- Do not place the unit on hot places. It can handle temperature up to 60°C(140°F).
- Check, if the display can reach your desired spot (if the cable is long enough).
- If you can, connect the gauge to the hose between the fuel tank and the fuel cock (not necessary, see picture below).
- The sensor unit can be in any position (lying or even with the fuel hose going up).

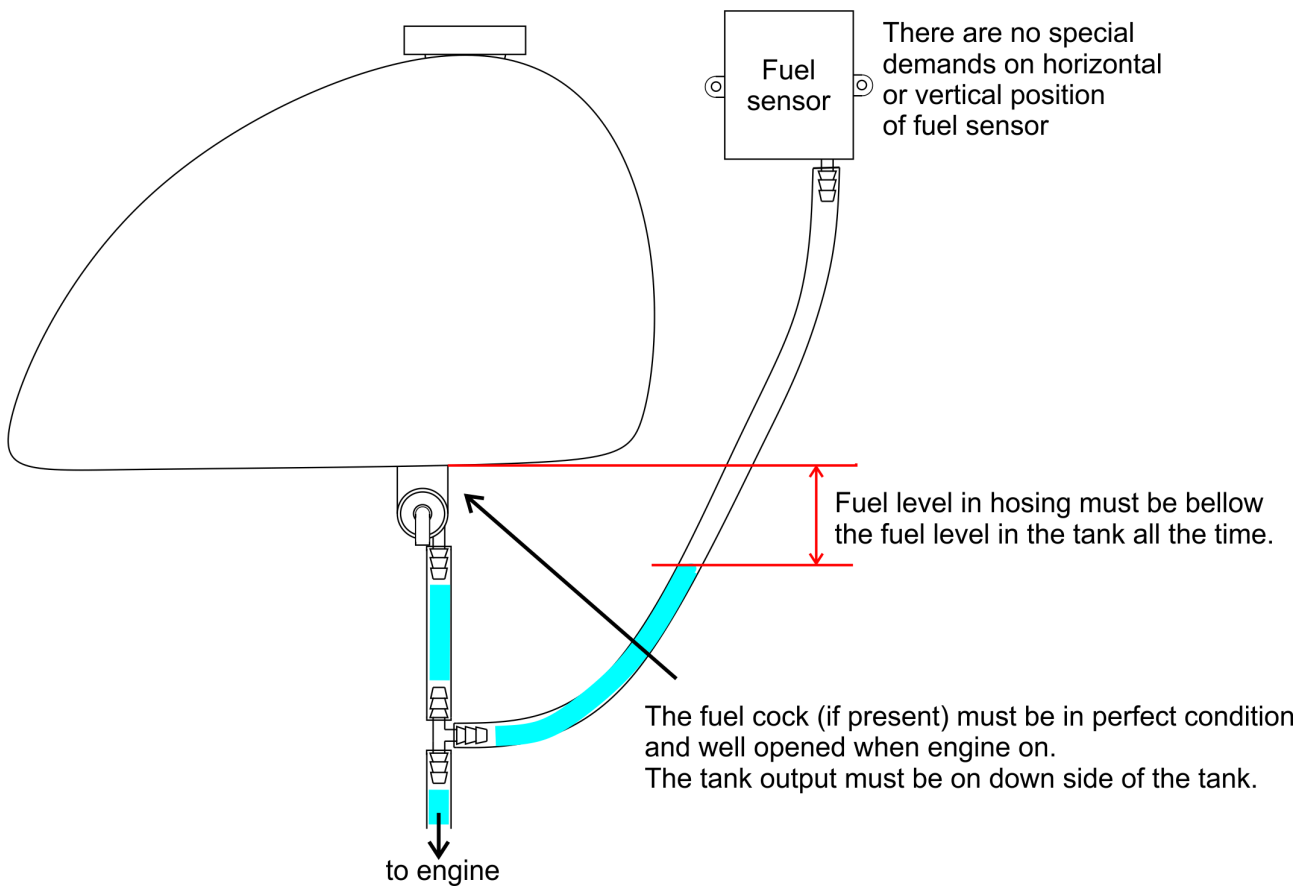
The best fuel gauge sensor placement



Placement with the external fuel pump

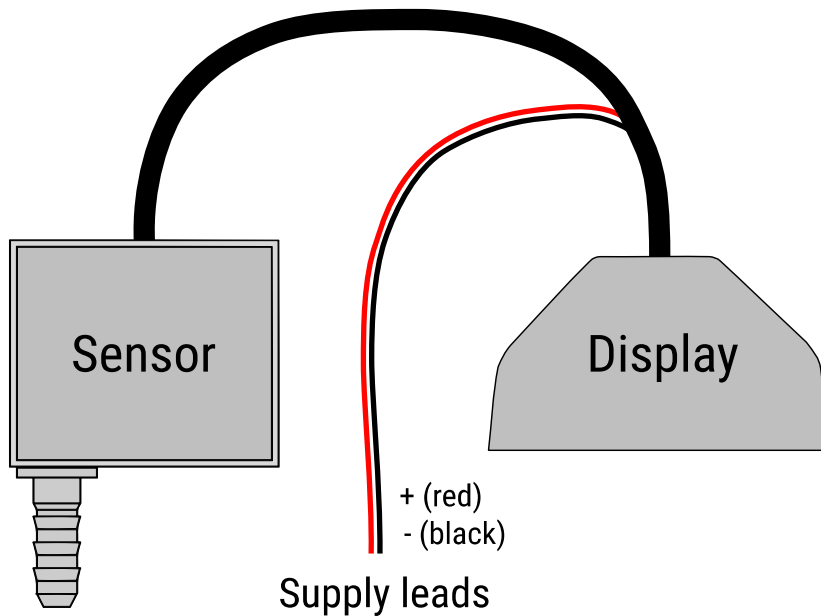


The fuel gauge sensor alternative placement



Electrical parts connection

Pressure sensor: See previous chapter „Find a suitable place for the sensor “.



Display: Pick a suitable place and secure it. If you decide to use tape, clean the surface before mounting the display (using degreasing agent – ethanol or other).

Supply leads: Connect over the ignition switch, then the gauge will be switched on together with the ignition key.

(-) **Black cable:** The best way to connect the (-) pole is to use the ring tongue terminal and screw it on some place of the frame, or even to the (-) pole of the battery. It can be also attached to any other (-) wire (usually black) using the cut in connector included in the package, but you must be 100% sure it is a (-) wire.

(+) **Red cable:** Use the cut in connector to connect it to another (+) cable that is switched on with the ignition. You can observe that by trying the gauge with its (+) cable on (+) cable of the motorcycle, while switching the ignition key on and off. It is always **better** however to leave this to a trained technician, who will do it professionally. This will prevent future problems with supply voltage, because cut in connector doesn't ensure 100% durable contact.

Connect the gauge to the fuel hose

Connection should be made according to the two pictures on previous page. Do not forget to secure the hoses with the clips included in the package. Check the system for any fuel leaks after a few kilometres and also after longer distances periodically. If everything is right and the gauge works, you may proceed to the setup.

Fuel gauge setup

Measuring modes

Min/max mode: This mode is usable for easy and quick calibration. For this mode is required to measure only 2 fuel levels, minimal level and full fuel level. The LED segments lights in linear dependence on fuel level (height of fuel in the tank).

Auto-calibration mode: In this mode, the device is displaying real amount of the fuel even if the fuel tank shape is very varied. This mode is more difficult to set than "min/max" mode.

Device settings

1) Calibration settings

Empty tank level: Save this value when fuel tank is empty. Set this value when min/max mode will be used.

Full tank level: Save this value when fuel tank is full. Set this value when min/max mode will be used.

Auto-calibration process (experimental):

- 1) Fuel tank must be full. Prepare a jerry can for leaking fuel during calibration.
- 2) Remove the tank cap.

- 3) Insert "calibration nozzle" into fuel hose under T-shape fuel connector and insert it into the jerry can.
- 4) Prepare Auto-calibration with setup button (settings menu diagram is in next chapter)
- 5) Open fuel cock and wait a few seconds
- 6) Start Auto-calibration process by setup button (by confirming menu item)
- 7) Autocalibration process will be automatically terminated when the fuel level reached the fuel cock. It can be terminated manually by magnet button too. (manually minimal fuel level finding)
- 8) Calibration is complete.

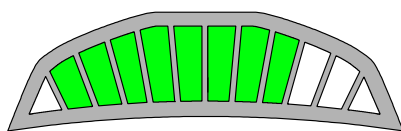
Measure mode: This settings is useful for set measure mode. If calibration menu was opened, mode **has to be set** considering with **used mode**.

Note for bikes with VACUUM FUEL COCK :

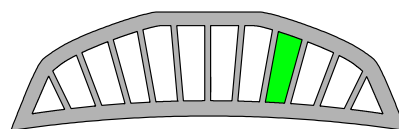
*During the calibration, the **engine should be running (the vacuum fuel cocks must be opened)**, the motorcycle should stand straight (not on emergency stand) and both the control unit and the fuel tank must be in their final position.*

2) Display settings

Bar/dot mode: The display is set to bar mode by default. Change displaying mode to dot mode is possible in the settings. Difference between showing the same fuel level in bar mode and dot mode is shown bellow.



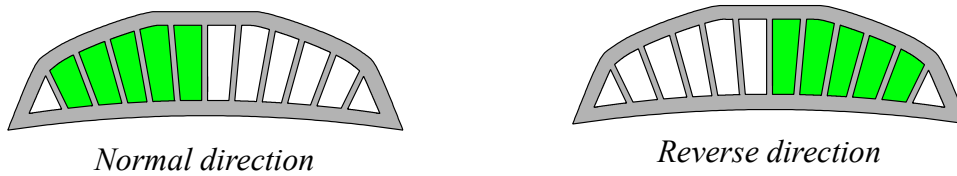
Bar mode



Dot mode

Flashing first LED: Flashing is suitable for better warning of low fuel level. The display is set to flashing mode by default. Flashing can be disabled in settings.

Reverse display: With this settings, the order of LEDs can be reversed. Different between normal and reverse mode of displaying a same fuel level is drawn below.

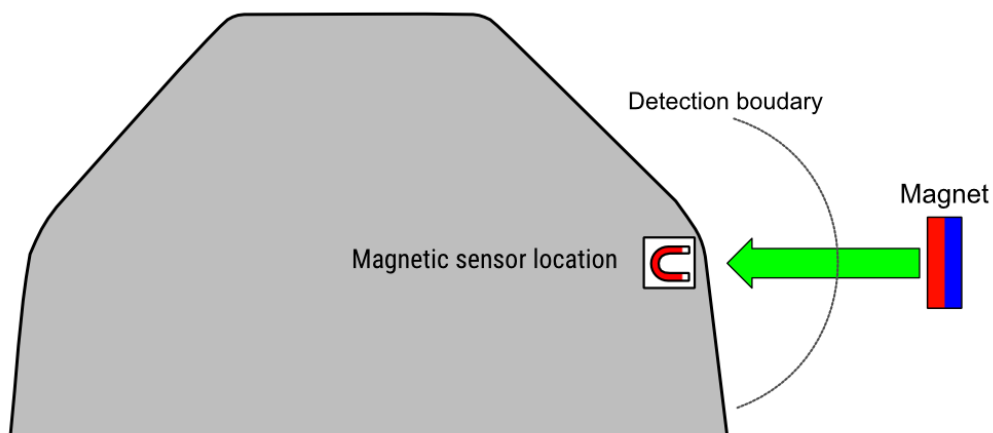


3) Restore Default

Confirming this setup item restores device settings to default. **Caution !** All saved settings and calibration data **will be lost !**

Setup button

Setup button is located in the right corner of display. It is magnetic sensor responsive to the proximity of the magnet (magnet is enclosed in the package). The test of the magnetic sensor can be performed by placing a magnet near the sensor. If device is not in the settings mode (normal mode), all LED segments will be lighted when magnet is detected.



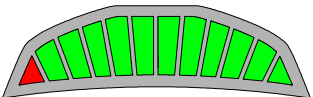
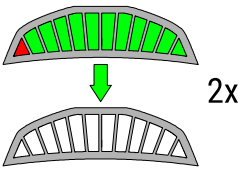
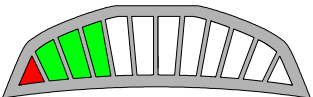
Enter to the setting menu

The menu is entered by holding the magnet near the sensor for ca. 2 seconds. Menu entering is confirmed by display double flashing. After double flashing event, first item from the main menu is active. The settings diagram is explained in the following chapter.

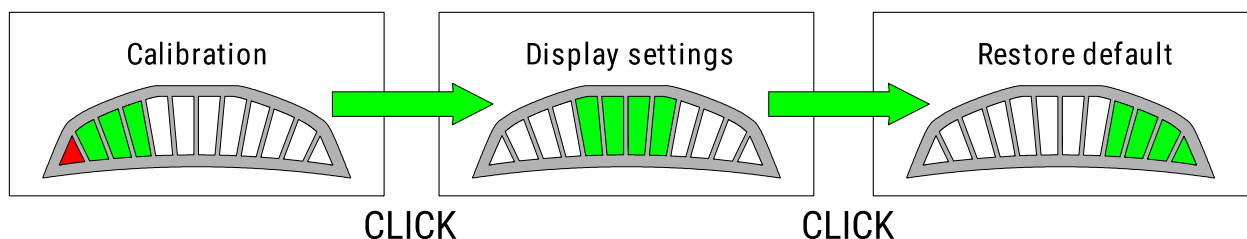
For browsing the menu exists **two events**, first event is called "**click**" and second one is called "**confirm**".

C l i c k: Click event is primary usable for skipping items in the menu. "**Click**" is performed by to proximity the magnet to the magnetic sensor for a short time and get it out.

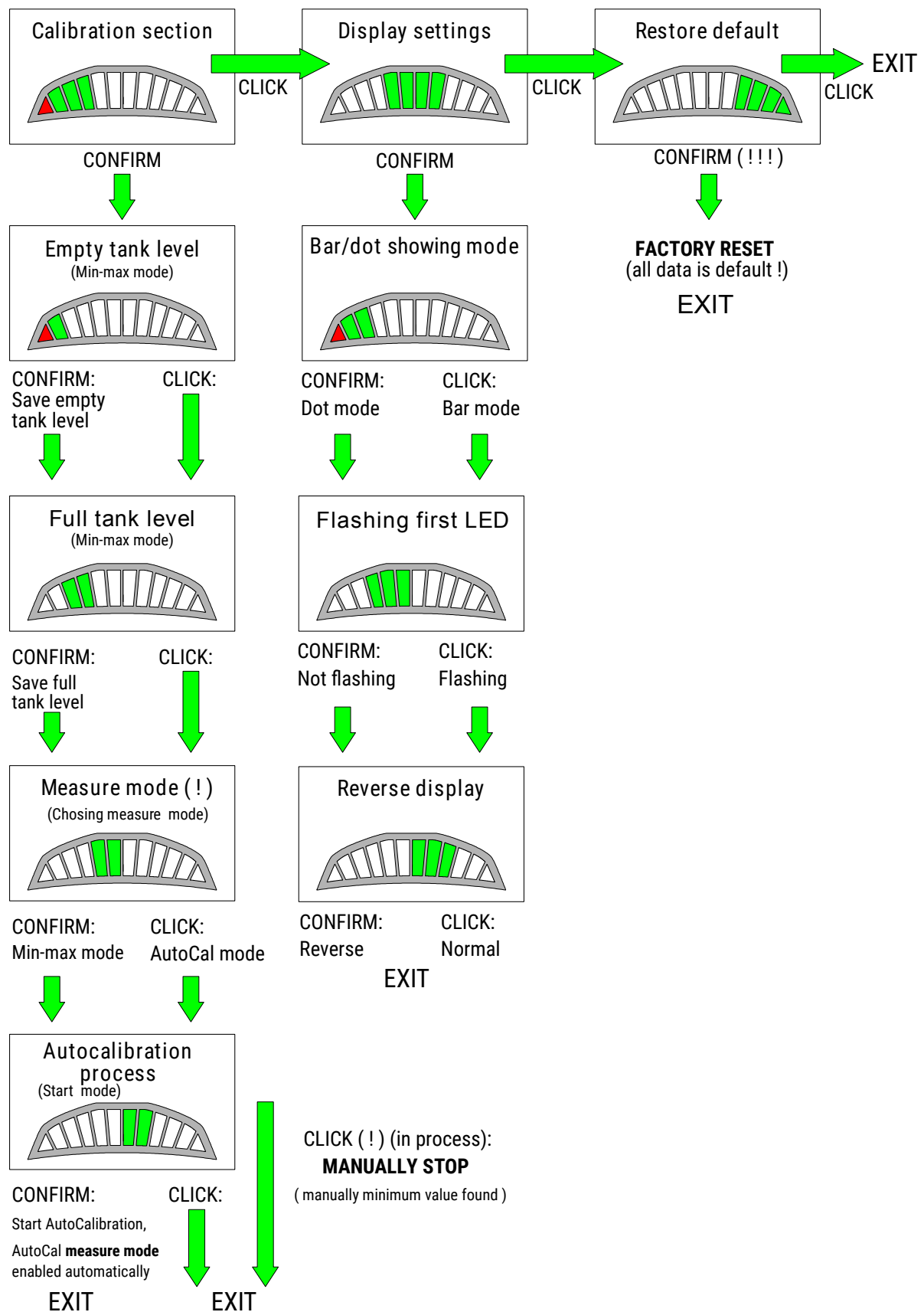
C o n f i r m: Confirm event is usable for confirming items in the menu (change the default value, to perform calibration etc.). Confirm event is performed by to proximity the magnet to the magnetic sensor for time longer than ca. 2 seconds.

	<p>Entering the main menu Hold the magnet near the magnet sensor for ca. 2 seconds. (all display segments are lighted when magnet is near the magnet sensor).</p>
	<p>Successful entry After holding it for two seconds, the device goes into the main menu (successful operation is signalized by segments double flashing).</p>
	<p>Calibration menu section After double flashing, there is main menu, that is divided into 3 parts, first part is called calibration and it is signalized by blinking segments shown in the picture.</p>

Main menu items and their browsing:



The settings diagram



Examples of various settings

Some examples of the basic settings for fuel gauge with short notes. Useful for fast using FuelFaugePro2.

Basic use (Min/max mode)

It's required prepared and connected device to the fuel system, fuel tank must be empty in this example.(The fuel tank may be full or empty, it depends on order of saving fuel levels. The calibration menu must be opened two times for reverse order of saving fuel level values)

- **Holt magnet near sensor for time more than 2 sec.** (enter to the settings menu)
- **Confirm** (Enter to the calibration menu)
- **Confirm** (Save value of the empty fuel tank) – The fuel tank must be empty
- **Confirm** (Save value of the full fuel tank) – The fuel tank must be full
- **Confirm** (Set mode: Min/max mode)
- **Click** (Skip auto-calibration item)
- **Settings menu is closed**

Autocalibration mode

It is required prepared and connected device to the fuel system and fuel tank must be full before auto-calibration.

- **Holt magnet near sensor for time more than 2 sec.** (enter to the settings menu)
- **Confirm** (Enter to the calibration menu)
- **Click** (Skip item: min value)
- **Click** (Skip item: max value)
- **Click** (Set mode: Calibration mode)
- **Confirm** (The calibration process has been started, immediately after that, fuel hose must be released and fuel must be leaking to the prepared container through calibration nozzle.)
- **(OPTIONAL) Click** (If fuel tank is "empty", this value will be remembered as level of

empty fuel tank.)

- *The calibration process should be **self terminated** if fuel tank is **empty**. If not, **manually termination** by clicking is possible.*
- ***Settings menu is closed***

Enable dot mode and disable blinking of first led

- ***Holt magnet near sensor for time more than 2 sec.** (enter to the settings menu)*
- ***Click** (Skip the calibration menu)*
- ***Confirm** (Enter to the display settings menu)*
- ***Confirm** (Enable dot mode)*
- ***Confirm** (Disable first LED blinking)*
- ***Click** (Enable direct LED order)*
- ***Settings menu is closed** (Device is in the measure mode)*

Restore default

- ***Holt magnet near sensor for time more than 2 sec.** (Enter to the settings menu)*
- ***Click** (Skip the calibration menu)*
- ***Click** (Skip the display settings menu)*
- ***Confirm** (Restore default settings)*

Possible faults

If you obey all the instructions, this fuel gauge should work properly without any need to change settings or any other problems. In case of any problems, feel free to contact us at info@lskelectronics.com.

- If the gauge doesn't show anything on the display, check out all the connections of the

device.

- If the gauge flash at start but then doesn't show anything, try checking the fuel system (connection, fuel cock on/off).
- If the gauge shows nonsense and is calibrated correctly, try checking, if you filled up the fuel hoses like explained on "Device mounting" chapter.
- Wrong data display is may be caused by dirty fuel pipes or just marginally opened fuel cock. In case of problems, try to check for the fuel hose damage. This fault is often represented by the amount of fuel depending on engine revs. It is not probably that the pressure sensor should fail. If sensor module is wrong (but connections is ok), display shows one lighted LED which goes forward and backward.
- If nothing helps, write at info@lskelectronics.com and request money return.

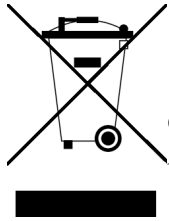
Warranty period

Warranty is guaranteed for two years after the day of purchase. We provide warranty and post-warranty service. If you don't obey instructions in this user manual, warranty can be rejected.

Safety warnings

- *The gauge should be installed by a trained people or by a service. Improper installation of fuel hoses can cause the fuel to leak and a fire. This can damage the motorcycle and the owners health.*
- *Improper electrical connection can cause damage of this and other electrical devices on the bike.*
- *Keep away from children.*
- *Not approved for the use on public roads. Use only at owners own danger.*

Recycling



Worn out (broken) device should be handed to authorities on places designed for collecting old electrical devices. Packaging should be thrown out into an appropriate bin.

Manufacturer

LSK Motorcycle electronics

Website: www.lskelectronics.com



Motorcycle Electronics

Manufactured in compliance with RoHS norm.

