lxnav Standalone Digital G-Meter with Built In Flight Recorder

lxnav Standalone Digital G-Meter with Built In Flight Recorder User Manual

Contents

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Important Notices

The LXNAV G-METER system is designed for VFR use only. All information is presented for reference only. It is ultimately the pilot's responsibility to ensure that the aircraft is being flown by the manufacturer's aircraft flight manual. The g-meter must be installed by applicable airworthiness standards according to the country of registration of the aircraft.

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- **WARNING:** A Yellow triangle is shown for parts of the manual that should be read carefully and are important for operating the LXNAV G-METER system.
- **WARNING:** Notes with a red triangle describe procedures that are critical and may result in loss of data or any other critical situation.

 A bulb icon is shown when a useful hint is provided to the reader

Limited Warranty

This LXNAV g-meter product is warranted to be free from defects in materials or workmanship for two years from the date of purchase. Within this period, LXNAV will, at its sole option, repair or replace any components that fail in normal use. Such repairs or replacements will be made at no charge to the customer for parts and labor, the customer shall be responsible for any transportation cost. This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alterations or repairs.

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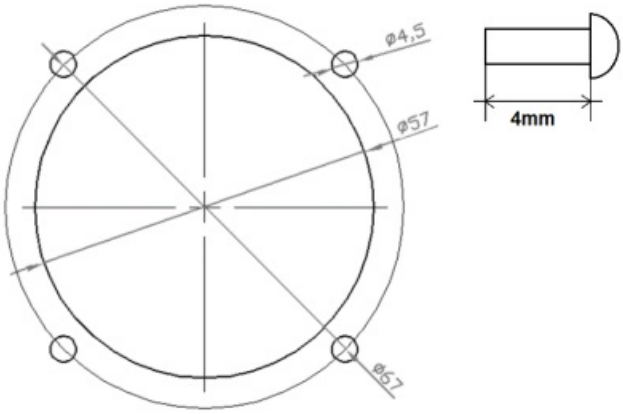
Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you. LXNAV retains the exclusive right to repair or replace the unit or software, or to offer a full refund of the purchase price, at its sole discretion.

SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.
To obtain warranty service, contact your local LXNAV dealer or contact LXNAV directly. Installation

The LXNAV G-meter requires a standard 57mm cut-out. The power supply scheme is compatible with any FLARM device with an RJ12 connector. The recommended fuse is 1A.
On the back, it has fitted two pressure ports with dedicated labels that show their functions.
More about pinout and pressure port connections is available in chapter 7: Wiring and static ports.

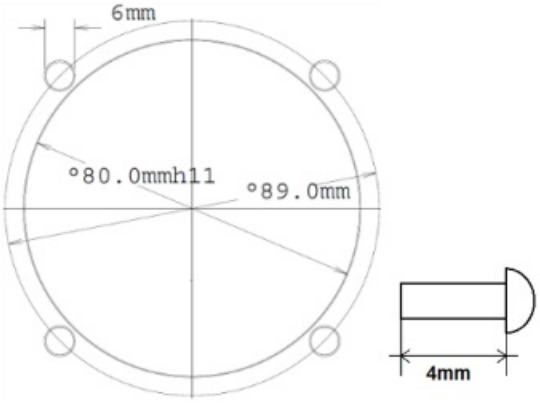
Pressure ports are available only in “FR” version

Cut-Outs
Cut-Out for LXNAV G-meter 57



WARNING: The length of the screw is limited to a maximum of 4mm!

Cut-Out for LXNAV G-meter 80



Drawing is not to scale
WARNING: The length of the screw is limited to max 4mm!

LXNAV G-meter Basics

The LXNAV G-meter at a Glance

The LXNAV g-meter is a standalone unit designed to measure, indicate, and log g-forces. The unit has standard dimensions that will fit into the instrument panel with an opening of 57 mm diameter.
The unit has an integrated high-precision digital pressure sensor and inertial system. The sensors are sampled more than 100 times per second. Real-time data is displayed on a QVGA 320×240 pixel 2.5-inch high-brightness color display. To adjust values and settings the LXNAV g-meter has three push buttons.

LXNAV G-meter Features

- An extremely bright 2.5″ QVGA color display readable in all sunlight conditions with the ability to adjust the backlight
- 320×240 pixels color screen for additional information such as minimum and maximum g-force
- Three push buttons are used for input
- G-force up to +-16G
- Built-in RTC (Real time clock)
- Logbook
- 100 Hz sampling rate for very fast response.
- 57mm (2.25'') or 80mm(3,15'') version

Interfaces

- Serial RS232 input/output
- Micro SD card

Technical Data

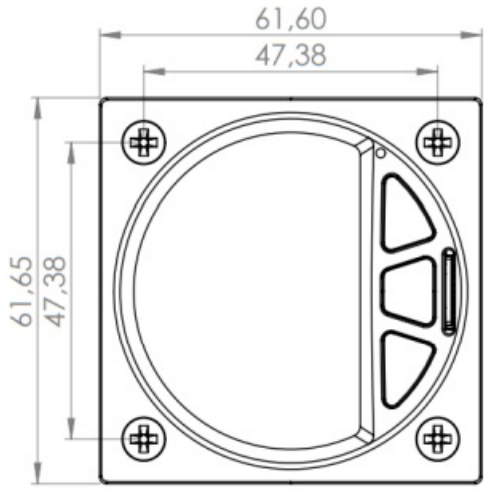
Parameter	Symbol	Min	Typ	Max	Units
Power Supply	Power	8.0	12.0	32.0	V
Consumption at 12V	Current	90	120	140	mA
Max range	G	-16		+16	G (m/s^2)
G-force Accuracy	G	-0.1		+0.1	G (m/s^2)
FR memory (Ext. Micro SD card)			16Gb		
Airspeed measurement				370	km/h
Airspeed measurement				200	kts
Airspeed accuracy	-2			+2	km/h
Airspeed accuracy	-1			+1	Kts
RTC accuracy	Time	-100		+100	ppm

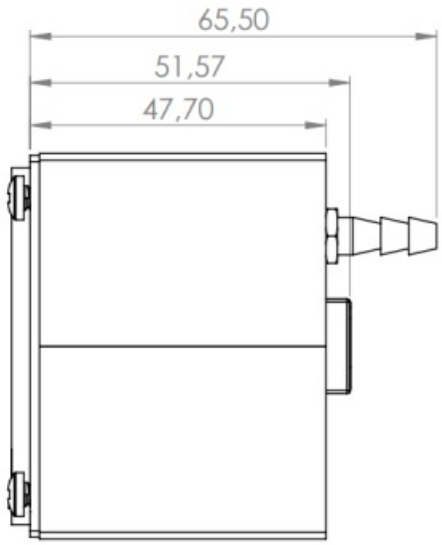
WARNING: The Airspeed sensor is not calibrated as is used only for detecting the start and end of the flight. The measurement of the airspeed may be inaccurate.

G-meter57

- Power input 8-32V DC

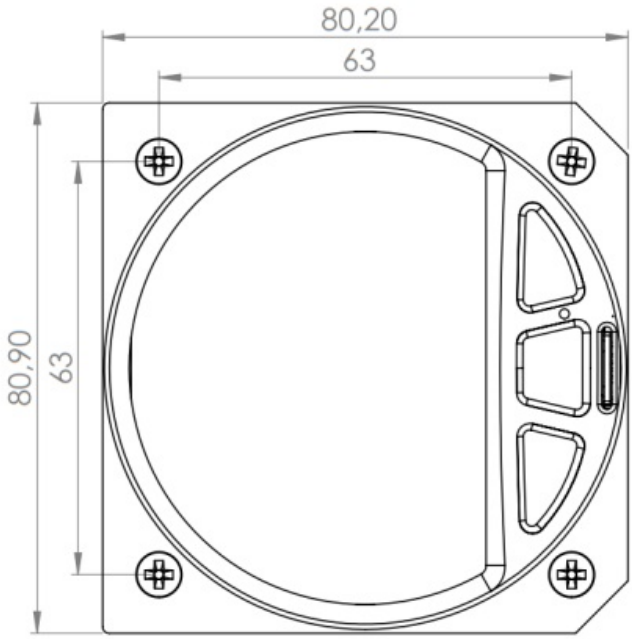
- Consumption 90-140mA@12V
- Weight 195g
- Dimensions: 57 mm (2.25'') cut-out
- 62x62x48mm

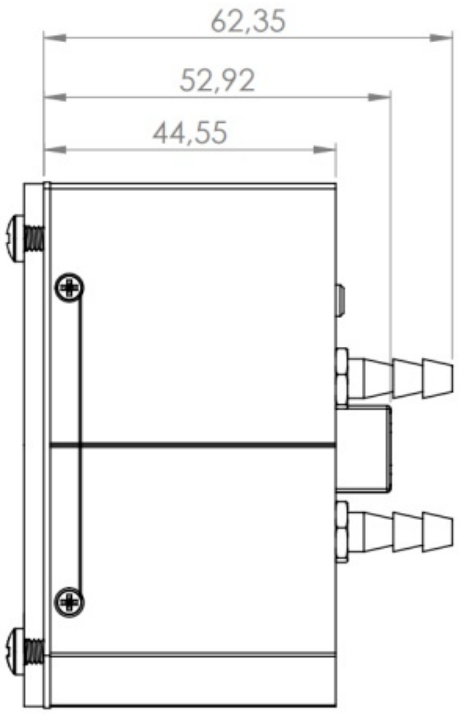




G-meter80

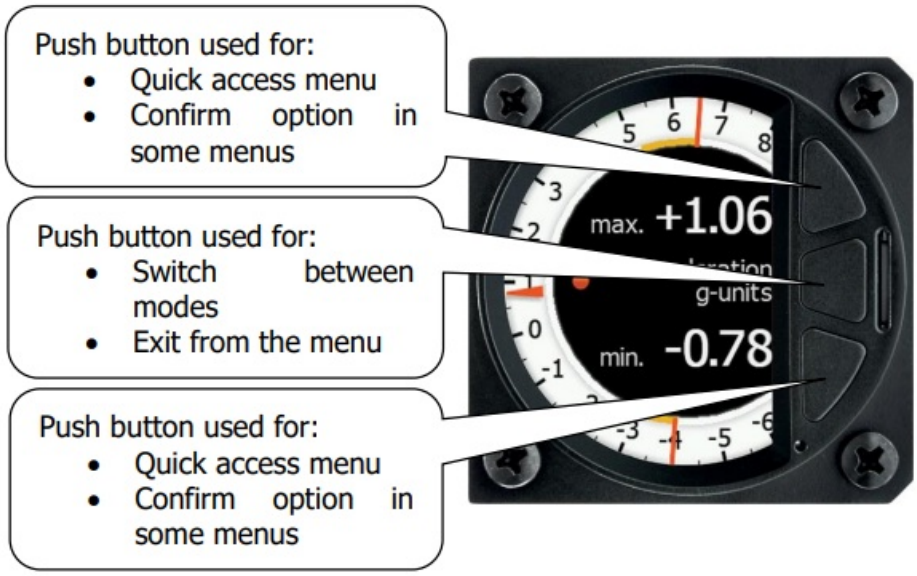
- **Power input** 8-32V DC
- **Consumption** 90-140mA@12V
- **Weight** 315g
- **Dimensions:** 80 mm (3,15'') cut-out
- 80x81x45mm





System Description

Push Button
LXNAV G-meter has three push buttons. It detects short or long presses of the push button. A short press means just a click; a long press means pushing the button for more than one second.
The three buttons have fixed functions. The top button is ESC (CANCEL), the middle is to switch between modes, and the lower button is the ENTER (OK) button. The upper and lower buttons are also used to rotate between subpages in the WPT and TSK modes.



Flight recorder (FR) version
G-meter FR can also record flights. If FR is enabled Logbook mode is available as well as the option to transfer flight data recordings (.igc) files via SD card. Please note that although G-meter has a flight recorder and files are in .igc format the device is not IGC certified (can't be used for soaring competitions or records claims). Only G-force data and IAS is recorded. IGC logs are stored internally in the unit. Recorder IAS is not calibrated and may not indicate the real values.

SD card
SD card is used for updates and transfer logs. To update the device simply copy the update file to the SD card and restart the device. You will be prompted for an update. For normal operation, it is not necessary to have SD card inserted.

WARNING: Micro SD card is not included with the new G-meter.

Switching on the Unit
The unit will power on and will be ready for immediate use.

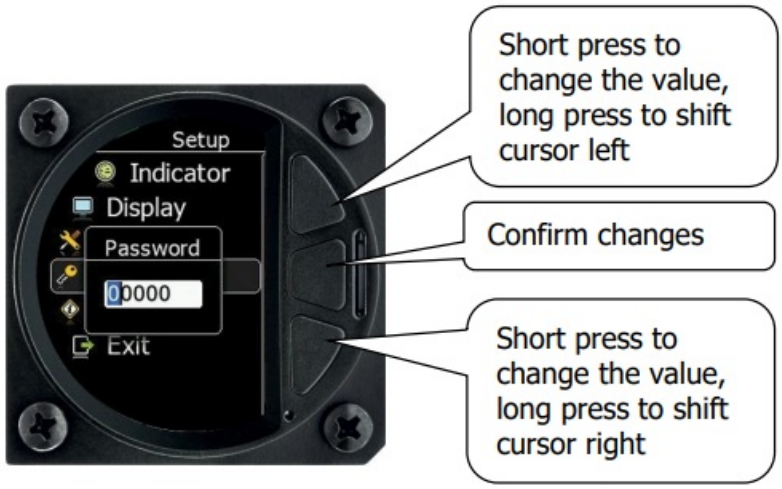
User Input
The LXNAV G-meter user interface consists of dialogues that have various input controls. They are designed to make the input of names, parameters, etc., as easy as possible.

Input controls can be summarized as:

- Text editor
- Spin controls (Selection control)
- Checkboxes
- Slider control

Text Edit Control

The Text Editor is used to input an alphanumeric string; the picture below shows typical options when editing text/numbers. Use the upper and lower button to change the value at the current cursor position.



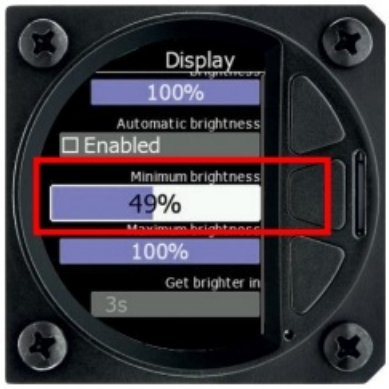
Once the required value is selected, long press the lower push button to move to the next character selection. To move back to the previous character, long press the upper push button. When you have finished editing press the middle push button. A long press of the middle push button exits from the edited field (“control”) without any changes.

Selection Control

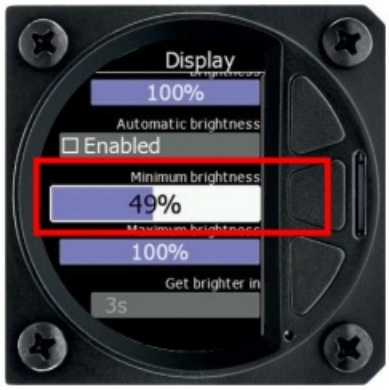
Selection boxes, also known as combo boxes, are used to select a value from a list of predefined values. Use the top or bottom button to scroll through the list. With middle button confirms the selection. A long press to the middle button cancels changes.

Checkbox and Checkbox List

A checkbox enables or disables a parameter. Press the middle button to toggle the value. If an option is enabled a check mark will be displayed, otherwise, an empty rectangle will be displayed.



Slider Selector
Some values, such as volume and brightness, are displayed as a slider icon.



With a push of the middle button, you can activate the slide control, and then by pushing the top and bottom buttons you can select the preferred value and confirm it via the middle button.

Switching Off
The unit will switch off when there is no external power supply present.

Operating Modes

The LXNAV G-meter has two operating modes: Main mode and Setup mode.

Main Mode

Setup Mode

- **Main mode:** Shows g-force scale, with maximums and minimums.

- **Setup mode:** For all aspects of the setup of the LXNAV g-meter.

With up or down menu, we will enter the quick access menu.

Main mode

Quick Access Menu
In the quick access menu, we can reset the maximum displayed positive and negative g-load or switch to night mode. The user must confirm switching to night mode. If is not confirmed in 5 seconds, it will switch back to normal mode.

Setup Mode

- **Logbook**

  The logbook menu displays the list of flights. If the RTC time is set properly the take-off and landing time shown will be correct. Each flight item consists of the maximum positive g-load, the maximum negative g-load from the flight and the maximum IAS.

- This function is available only with the “FR” version.

Indicator

The needle range can be set between 8g, 12g, and 16g. The theme and needle type can be also adjusted in this menu.

Display

Automatic Brightness
If the Automatic Brightness box is checked the brightness will be automatically adjusted between the minimum and maximum parameters set. If the Automatic Brightness is unchecked the brightness is controlled by the brightness setting.

- **FMinimum Brightness**

  Use this slider to adjust the minimum brightness for the Automatic Brightness option.
- **Maximum Brightness**

  Use this slider to adjust the maximum brightness for the Automatic Brightness option.
- **Get Brighter In**

  The user can specify in which period the brightness can reach the required brightness.
- **Get Darker In**

  The user can specify in which period the brightness can reach the required brightness.
- **Brightness**

  With the Automatic Brightness unchecked you can set the brightness manually with this slider.
- **Night Mode Darkness**

  Set the percentage of the brightness to be used after a press on the NIGHT mode button.
- **Hardware**

  The hardware menu consists of three items:
  - Limits
  - System time
  - Airspeed offset

Limits
In this menu, the user can set the limits of the indicator

- Min red zone limit is a red marker for maximum negative g-load

- The max red zone limit is a red marker for maximum positive g-load
- Warning zone min is the yellow area of caution for negative g-load
- Warning zone max is the yellow area of caution for positive g-load

G- The force sensor works up to +-16g.

System Time
In this menu, the user can set the local time and date. Available is also an offset from UTC. UTC is used within the flight recorder. All flights are logged in UTC.

Airspeed Offset
In case of any drift of the airspeed pressure sensor, the user can adjust the offset, or align it to zero.

WARNING: Do not do autozero, when airborne!

- **01043 –** Auto zero of the pressure sensor
- **32233 –** Format device (all data will be lost)
- **00666 –** Reset all settings to factory default
- **16250 –** Show debug info
- **99999 –** Delete complete logbook
  Logbook deletion is PIN-protected. Each owner of the unit has a unique PIN code. Only with this PIN code is it possible to delete the logbook.

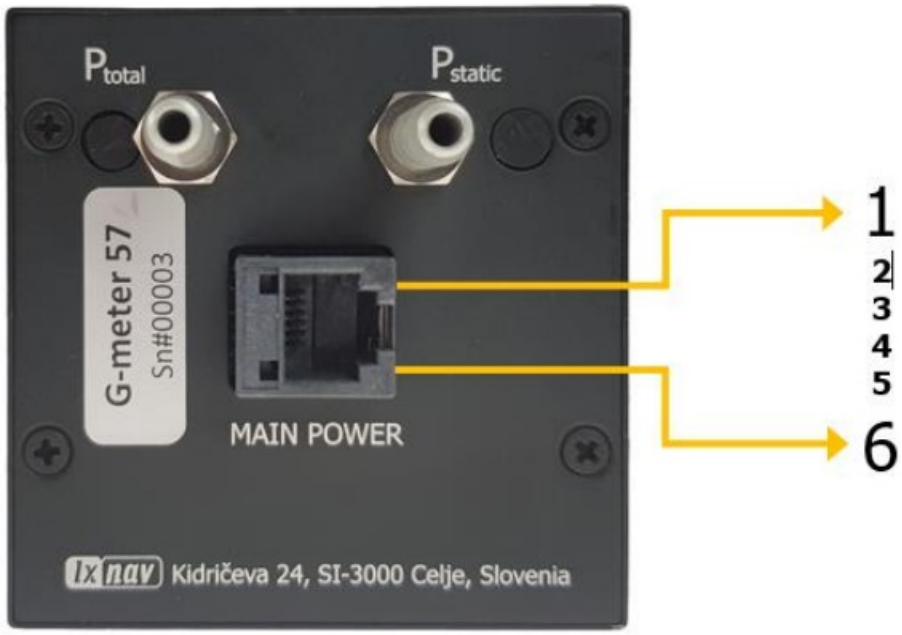
About

The About screen displays the serial number of the unit and the firmware version.

Wiring and static ports

Pinout

The power connector is pin-compatible with S3 power or any other FLARM cable with an RJ12 connector.

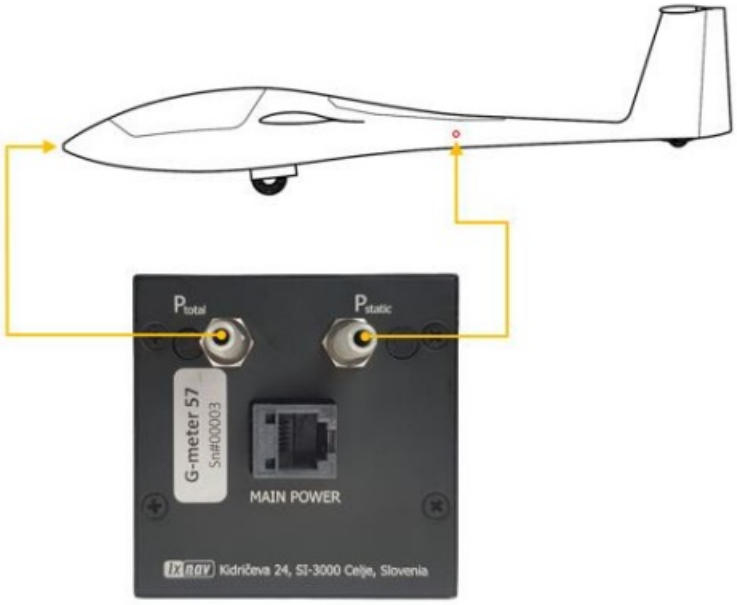


Pin Number	Description
1	Power supply input
2	No connection
3	Ground
4	RS232 RX (data in)
5	RS232 TX (data out)
6	Ground

Static ports connection

Two ports are on the back of the G-meter unit:

- Pstatic ……. static pressure port
- Ptotal …….. pitot or total pressure port



WARNING: Static ports are used for flight loggers. Without static ports connected device will still have all other functionalities.

Revision history

Rev	Date	Comments
1	April 2020	Initial release
2	April 2020	Review of English language content
3	May 2020	Updated chapter 7
4	May 2020	Updated chapter 6.3.4.1
5	September 2020	Updated chapter 6
6	September 2020	Updated chapter 3
7	September 2020	Style update
8	September 2020	Corrected chapter 5.5, updated chapter 2
9	November 2020	Added chapter 5.2
10	January 2021	Style update
11	January 2021	Added chapter 3.1.2
12	February 2021	Updated chapter 4.1.3
13	April 2021	Added chapter 5.2, Updated chapter 5.5.4, 7.2
14	August 2021	Updated ch. 4.1.3
15	January 2023	Updated Ch. 5.2
16	January 2023	Updated ch. 4.1.3, 5.2
17	January 2024	Updated ch. 4.1.3, 4.1.1
18	February 2024	Updated ch. 6.3.2

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Documents / Resources

	lxnav Standalone Digital G-Meter with Built In Flight Recorder [pdf] User Manual Standalone Digital G-Meter with Built In Flight Recorder, Standalone, Digital G-Meter with Built In Flight Recorder, Built In Flight Recorder, Flight Recorder, Recorder

References

- LXNAV Gliding
- User Manual