

# LX Eos 80



## *Installation manual*

- LX navigation -

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# Document information

## 0.1 Abstract

This document represents the installation manual for the LX Eos 80. The user manual, release notes, dataport and additional info can be found on [www.lxnavigation.com](http://www.lxnavigation.com).

## 0.2 Document status

**Document status: PUBLIC**

Document status	Explanation
Internal	Intended only for LX navigation staff
Public	Available publicly to all
Personal	Intended for a specific person and/or company, noted on this page
Dealer	Intended for a specific dealer, noted on this page
Manufacturer	Intended for a specific manufacturer, noted on this page

## 0.3 List of applicable products

Device	HW Version
LX Eos 80	1.0

## 0.4 Revision history

Document name	Document revision	Date	Revised by	Approved by	Notes
LX_E8IM	R1	10.1.2023	A.S.	N.S.	initial release

## Overview

The **Eos 80** is a digital electronic variometer. It is a highest level IGC certified logger with ENL capability and is as well expandable to MOP (if the MOP IGC logger is connected).

The LX Eos 80 features a built-in battery, Voice module with voice warnings, Bluetooth and Wifi and the possibility of a cable connection to external devices like OAT probe, Flarm, radio transceivers and 3rd party PNA/PDA devices.

On the back side of the Eos 80, we can see the three pressure connectors, for connecting PTOT, PST and TE/PST pressures. The Eos 80 also has a separate, internal altitude pressure, used for logging flights.

The Eos 80 comes in the standard 80mm (3 1/8 inch) aviation instrument holes. It utilizes a transfective technology display. It is important to note, that the Eos 80 is much more similar in function to the Era varios, than the Eos 57.

The Eos 80 was envisioned to be easy and intuitive to use, with a single command input (one push-rotary knob).

# Mounting

Tools needed:

- flat head screw driver,
- Philips screw driver,
- 8mm spanner.

## 2.1 Main unit

Installation requires a standard 80 mm aviation size cut-outs. Please refer to [Cut-out drawing](#) to ensure fitting.

Follow the steps below:

1. Unscrew the three regular M4 Phillips head screws from the device.
2. Take the caps off of the push-rotary knobs (see figure 1).
3. Unscrew the flat headed screws from within the push-rotary knob while holding the push/rotary knob still by its black plastic. Pull the black plastic part off of the push-rotary shaft (see figure 2).
4. Unscrew the M5 hex bolt, enclosing the push-rotary shaft (see figure 3).
5. Place the device into its future place in the instrument panel.
6. Check that all of the holes are properly aligned and use M4 Phillips head screws and M5 hex bolt to hold device in place. Use supplied screws only.
7. Attach the rotary knob to the shaft. Make sure there is enough play between the rotary knob and instrument panel. Hold the knob with one hand and tighten the screw. Do not use any other tool to adjust the rotary knob. Put the top cover back. Test if there is enough play for the knob. It should rotate freely and when pressed jump back to its original position. If not, change the position of the knob on the shaft or adjust the size of the hole for the push/rotary shaft screw.

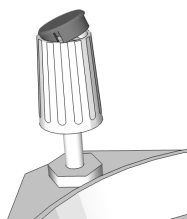


Figure 1. Step 2

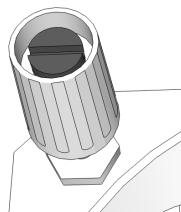


Figure 2. Step 3

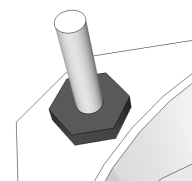


Figure 3. Step 4

## 2.2 External SD card slot

Due to retro fit considerations LX Eos 80 does not contain built-in SD card slot. External slot is connected via the dedicated port on the back side of the unit.

To mount the External slot to the instrument panel please prepare two holes and a rectangular opening on a flat surface as seen on the figure External SD slot dimensions. The slot is then fixed to it's position with two M2.5 screws supplied.

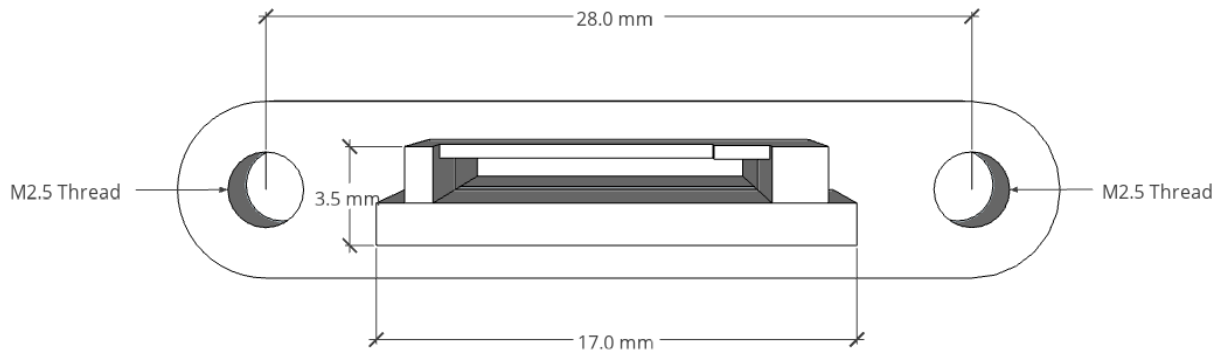


Figure 4. External SD slot dimensions

# Wiring

All needed cables are in the package. Some connections might not be available on your device and are optional upgrades.

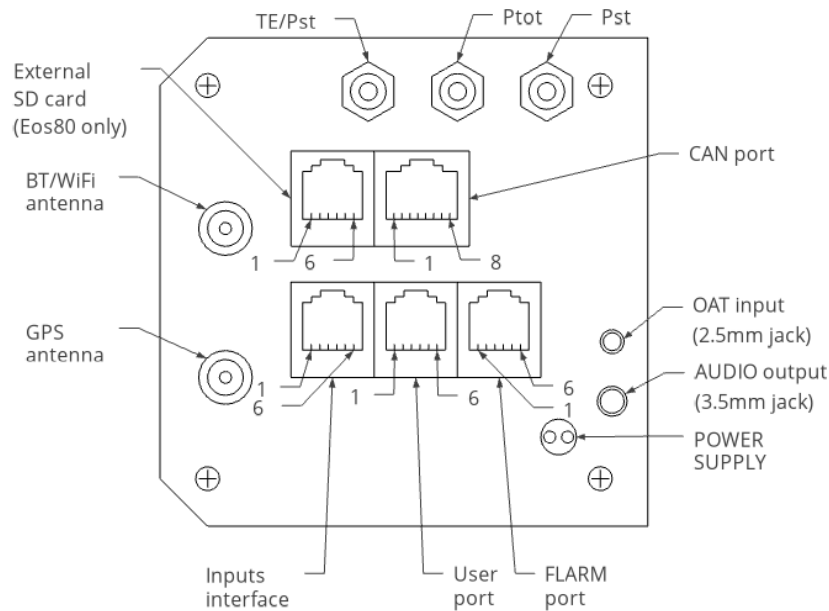


Figure 5. Instrument connections

User port (RJ11)		Flarm port (RJ11)		Inputs (RJ11)	
Pin number	Description	Pin number	Description	Pin number	Description
1	12 V out	1	12 V out	1	input 1
2	not connected	2	not used	2	input 2
3	not connected	3	GND	3	input 3
4	RS232 data in	4	RS232 data in	4	input 4
5	RS232 data out	5	RS232 data out	5	input 5
6	GND	6	GND	6	Common GND

External SD card (RJ11)		CAN port (RJ45)	
Pin number	Description	Pin number	Description
1	CS	1	12 V
2	MOSI	2	12 V
3	GND	3	12 V
4	VCC	4	CAN L
5	SCK	5	CAN H
6	MISO	6	GND
		7	GND
		8	GND

### 3.1 Power supply

LX Eos 80 requires DC power input in a range between 9 and 29 V DC. It is compatible with 12V and 24V aircraft systems. Use external fuse, as there is no fuse inside the unit. Apply power supply only to the main unit, as other units will get power over CAN bus. To provide the power to the system use supplied power connector. Blue wire is negative (GND) potential and red wire positive (9 - 29 V DC).

Prior to connecting the power to the device make sure that cables are tight and there is no short-circuits between wires. Plug the connector to the device. The device will turn on as soon as the main power supply is available. It will automatically charge the internal battery all the time. Recommended wire is 0.75 mm<sup>2</sup> AWG 18 or greater.

#### NOTE

Some units require pushing or holding the left push-rotary for device to turn on.

### 3.2 Static pressure (PST)

Connect the unit to the static pressure source. Static pressure source is obtained from the static port usually on the static ports of pitot tube or static ports on the fuselage.

Locate existing PST tube. If no free ports are available use T junction to split the tubes. Connect PST tube to PST port on the main unit.

### 3.3 Total pressure (PTOT)

Connect the unit to the total pressure source. Total pressure source is obtained from the total port on the pitot tube.

Locate existing PTOT tube. If no free ports are available use T junction to split the tubes. Connect PTOT tube to PTOT port on the main unit.

### 3.4 Total energy compensation (TE)

In case there is a total energy probe installed in your glider, connect the unit to the TE source.

Locate existing TE tube. If no free ports are available use T junction to split the tubes. Connect TE tube to TE/PS port on the main unit.

#### **NOTE**

Make sure the PST, PTOT and TE tubings are airtight. It is highly recommended to keep the tubings as short as possible. The tubings must avoid sharp bends and twists. Water must not be allowed to enter the tubing.

### 3.5 CAN bus

CAN bus is used for communication with other units in the system as well as supplying power to these units. This allows indicators and second seat units to display the data from first seat unit. It allows the integration with other devices like LX Joy, AHRS, etc. as well.

Use supplied shielded RJ45 1:1 cable to connect it with other LX navigation devices. CAN bus is compatible with LX navigation devices only.

### 3.6 Outside air temperature (OAT)

Connect OAT probe to the unit using the 2.5mm jack connector. Besides knowing the outside temperature at any given time, OAT probe is required as well to display true air speed (TAS).

Install OAT probe to the place with as little as possible heat influence from other components on the glider (heat from engine, direct sunlight, etc.). The ideal position is on the bottom part of the fuselage. Good alternative is air intake for the ventilation in the cockpit.

### 3.7 Audio

Connect the unit to glider built-in speaker using the 3.5mm jack connector Audio output. LX Eos 80 features active audio amplifier which is capable of delivering 1W of continuous power to 8 ohm passive speakers.

### 3.8 GPS

Connect GPS receiver antenna to the SMA connector on the back of the unit marked with GPS underneath. Install supplied antenna horizontally with "GPS" sign pointing to the sky. We supply high gain active antenna with superb reception. Despite that be careful with the placement. Do not install antenna under metal or carbon fiber instrument panel/cover. The antenna should have clear "sight" to the satellites. It can be covered with non-conductive material (eq. Glass fiber, glass, wood, cloth, etc.).

### 3.9 Bluetooth/WiFi

Connect Bluetooth/WiFi antenna to the SMA connector on the back of the unit marked with BT/WIFI underneath. Please note that the Bluetooth/WiFi antenna is already built into the Era 57.

The GPS antenna should not be under any electrically conductive materials (metals, carbon fiber, etc.)

WiFi and Bluetooth connectivity enables LX Eos 80 to connect to 3rd party devices like Oudie, XCSoar, LK8000, etc. as well as connecting to LX Cloud.

The expected range of WiFi signal is up to 100 m and 20 m for Bluetooth.

### 3.10 FLARM

Connect FLARM device to FLARM port. The Flarm port uses standard Flarm pin-out in the 6-pin configuration. Use a 1:1 RJ12 to RJ12 cable.

Refer to the figure **Instrument connections** for the connector pinout.

### 3.11 User

Various devices can be connected to the LX Eos 80's User port. The User port is used for bidirectional NMEA communication, using the RS 232 protocol. The list of devices is long, from PNA/PDA devices to radio transceivers.

Refer to the **LX Radio Transceiver Connections manual** for details on connecting radios.

Refer to the figure **Instrument connections** for the connector pinout.

### 3.12 Inputs

Connect Inputs interface to the Input port with 1:1 6 pin flat cable. The inputs interface incorporates slots for 5 external micro-switches. These micro-switches can trigger different functions and commands, as well as warnings.

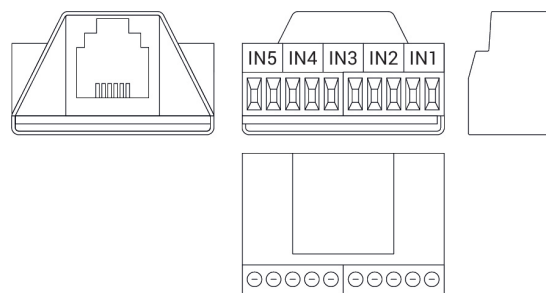


Figure 6. Inputs interface

### 3.13 External SD

Connect external SD card slot to the SD card port.

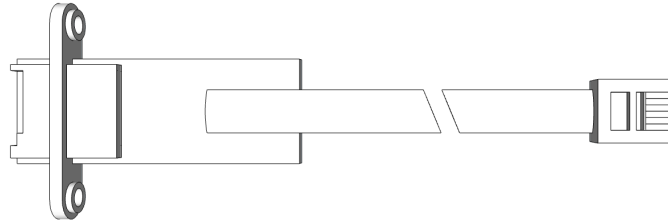


Figure 7. External SD card slot

**NOTE**

After finishing the installation, check that the device is completely working, prior to closing the instrument panel cover.

**NOTE**

If you run into any issues, contact us at [info@lxnavigation.com](mailto:info@lxnavigation.com) for assistance.

## Cut-out drawing

LX navigation uses standard aviation dimensions - 80 mm (3.125 in). Print this page on a regular or transparent paper to transfer the cut-out to the instrument panel.

Before cutting make sure, the dimensions are correct according to given dimensions indicated below. All dimensions are in milimeters.

Note that the push-rotary knob is in the bottom left M5 hole.

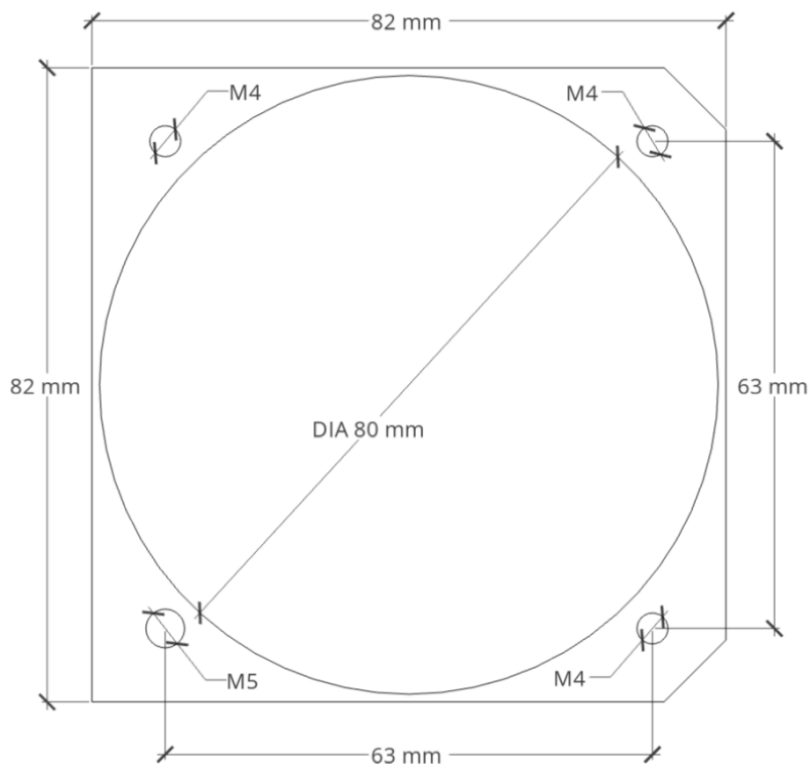


Figure 8. Cut-out template



## Technical specification

Description	Unit	Value
Dimensions	[mm]	82.3 x 82.3 x 84.3
Power supply	[V DC]	9.0 - 29.0
Nominal Voltage	[V DC]	13.8
Average Power Consumption	[W]	1.8
Mass	[g]	284
Mounting Panel Cutout	[mm]	80.0
Depth Behind Panel without Connectors	[mm]	47.3
Depth In Front of Panel	[mm]	20.3
Ground Survival Temperature	[°C]	-55 - +85
Operating Temperature	[°C]	-20 - +55
Relative Humidity	[%]	0 - 98
Max. Operational Altitude	[ft]	45,000
Operational Shock		6 g
Crash Safety Shock		20 g
Vibration		DO-160D U F/F1
WiFi range	[m]	100
Bluetooth range	[m]	20

## Environmental data

Description	Section	Category	Conditions
Temperature / Altitude	4.0	D1	
Low Ground Survival Temperature	4.5.1	D1	-55 °C
Low Operating Temperature	4.5.1	D1	-40 °C
High Ground Survival Temperature	4.5.2	D1	+85 °C
High Short Time Operating Temperature	4.5.2	D1	+70 °C
High Operating Temperature	4.5.3	D1	+55 °C
In Flight Loss of Cooling	4.5.4	Z	No auxiliary cooling required
Altitude	4.6.1	D1	45,000 ft
Temperature Variation	5.0	B	
Humidity	6.0	A	
Shock	7.0	B	
Vibration	8.0	U/U2	Vibration curve F/F1 (robust vibration, helicopter)
Explosion Proofness	9.0	X	not tested
Water Proofness	10.0	X	not tested
Fluids Susceptibilities	11.0	X	not tested
Sand and Dust	12.0	X	not tested
Fungus Resistance	13.0	X	not tested
Salt Spray	14.0	X	not tested
Magnetic Effect	15.0	Z	less than 0.3m
Power Input (DC)	16.0	B	
Voltage Spike Conducted	17.0	B	
Audio Frequency Conducted Susceptibility	18.0	B	
Induced Signal Susceptibility	19.0	X	not tested
Radio Frequency Susceptibility	20.0	T	Radiated Susceptibility T
Conducted Susceptibility Emission of RF	21.0	M	Except intended operating frequencies (2.4/5 GHz)
Lightning Induced Transient Susceptibility	22.0	A2XXX	
Lightning Direct Effects	23.0	X	not tested
Icing	24.0	X	not tested
Electrostatic Discharge (ESD)	25.0	A	
Fire, Flammability	26.0	X	enclosure made of aluminum (Al) sheet

Environmental tests are performed in accordance with RTCA DO-160.

# Conformity

Declaration of CE Conformity

## Identification of product

LX Eos 80 (all variants)

## Manufacturer

LX navigation d.o.o.  
Tkalska ulica 10  
SI-3000 Celje  
Slovenia

## Related standards

EMC directive 2004/108/EC

This product is designed to comply with standards/regulations and technical specifications stated above. This certificate is granted subject to the LX navigation quality rules on product certification.

## Remark

The product is designed to comply with LX navigation standards and standards harmonized with directive 2004/108/EC: EN 55022:1998+A1:2000+A2:2003, class A; EN 55024:1998+A1:2001+A2:2003; EN 61000-3-2:2000+A2:2005; EN61000-3-3:1995+A1:2001+A2:2005

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