LXNAVIGATION

iris series

User guide

LX iris series

Device manual

- LX navigation -

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LXNAVIGATION

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Document information

0.1 Abstract

This document represents the user manual for the LX iris series. The installation manual and additional info can be found on **www.lxnavigation.com**.

0.2 List of applicable products

Device	Size	HW Version
LX iris ASI LX iris altimeter LX iris all-in-one LX iris g-force LX iris chrono LX iris display	57 & 80 mm	1.0 - 1.9

0.3 Revision history

Document name	Document revision	SW version	Date	Revised by	Approved by	Notes
LX_ISUM	R1	1.0	9.1.2023	A.S.	N.S.	Up to version 1.2.1076
LX_ISUM	R2	1.0	6.5.2025	B.D.	N.S.	Up to version 1.2.1934

Contents

Important notices

1.1 Using this manual

This manual has been created in LaTeX, giving us the possibility of linking up everything we find linkable. You will find references to other parts of the manual, to other manuals, webpages, etc. throughout the manual.

Linkable content will be **bold and underlined**, i.e. you can find additional info on how to take care of your LX iris in the **Taking care of your LX iris** section of this manual (click on the underlined text).

NOTE
The most recent version of this manual will always be available at
www.lxnavigation.com/

1.2 Device operating limits

This instrument may be used under VFR (Visual flight rules) only! Any navigational information is provided for reference only. The pilot takes all responsibility and risk associated with the use of this device.

Have a nice flight.

1.3 Limited warranty

This device is warranted to be free from defects in materials or workmanship for two years from the date of purchase. Within this period, LX navigation will, at its sole discretion, 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 labour, 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.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM COUNTRY TO COUNTRY.IN NO

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The manufacturer does not take the responsibility for possible mistakes or misprints in this text and gives no guarantee for accuracy of this manual. This manual has been written with the greatest care and we have done our best to avoid any mistakes but with all respect please check any doubtful statement and let us know. We would be very grateful and we thank you in advance for any comment.

1.4 Sunburned display

Damages to the device, especially the display part, are not covered by the warranty and will be considered as misuse of the device. To learn how to take care of your display and device in whole, check the **Taking care of your LX iris** section of this manual.

1.5 Disclaimer/EULA

Getting started

2.1 Device overview

LX iris represents a series of 57 mm (2.25") and 80 mm (3.15") standalone instruments, available as:

- iris airspeed indicator (ASI)
- iris altimeter (ALT + VSI)
- iris all-in-one (VSI + ALT + ASI)
- iris g-force
- iris chrono
- iris display (repeater)

Every unit is equipped with integrated backup battery. With its big, sunshine readable display, small dimensions and 3 in 1 function (all-in-one) it is an ultimate backup instrument on your instrument panel. It is designed to be easily and quickly installed as plug-and-play device. Configurable via CAN2WIFI device (refer to CAN2WIFI user's manual), where a user can quickly change the colour ranges, values, units or customize the interface, font size, background, displayed values and their position.

WARNING
This instrument family is not TSO approved as a flight instrument.

LX iris features are:

- Indicated airspeed with configurable colour ranges and markings
- Altimeter with rotary knob to set the QNH
- Vertical speed indication
- Optional GPS antenna for Ground speed (GS)
- Optional outside air temperature sensor for True airspeed calculation (TAS)
- The biggest, sunshine readable display in 57 mm instrument
- Backup battery with up to 3h of autonomy
- Highly configurable interface
- 2 CAN BUS ports for power and data
- User port
- Power input 9 - 30 V DC

2.2 Intrument lineup

Figure 1. iris ASI

Figure 2. iris G-force

Figure 3. iris all-in-one

Figure 4. iris ALT

NOTE

Optional different layouts, values, colours, sensor calibration etc. Customizable with CAN2WIFI device, please refer to CAN2WIFI manual. Edit your layout with any smart device or computer.

2.3 What is in the box

The following items are contained in the box. Optional items are market as Optional:

- LX iris instrument
- M4x6 screws (number depending on device)
- Rotary knob (depending on device)
- Power supply connector
- GPS antenna - Optional
- Can bus cable - Optional
- OAT sensor - Optional

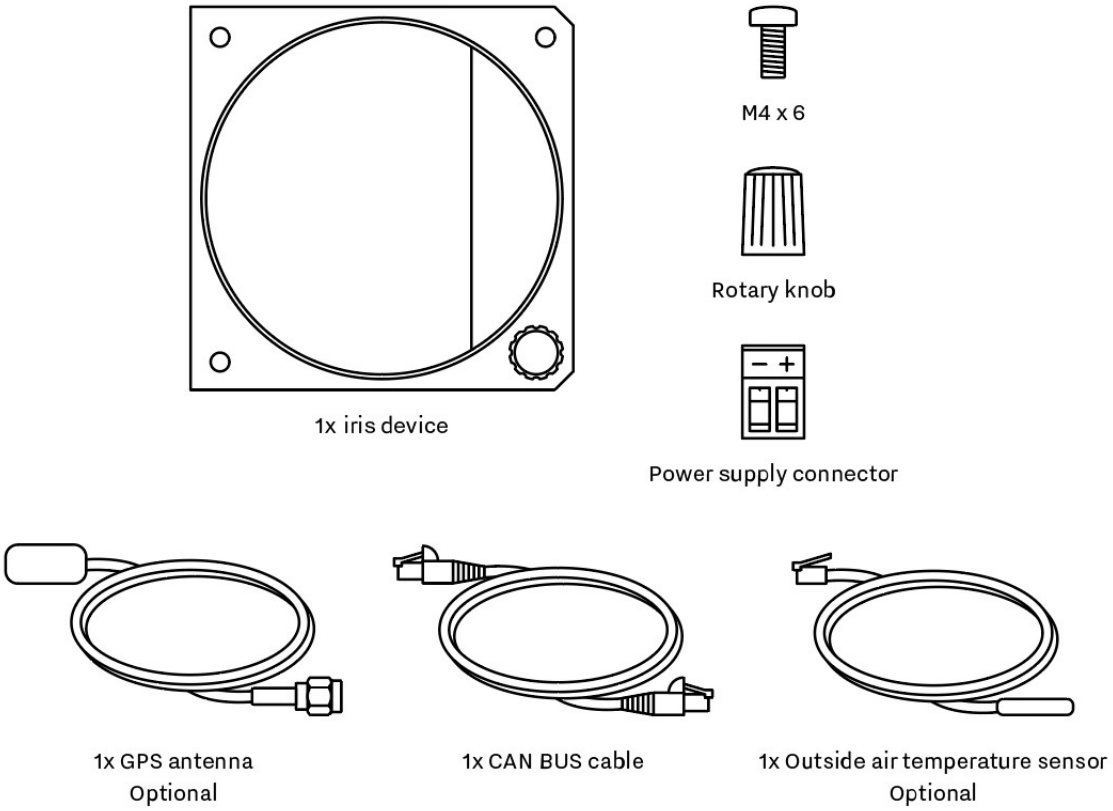

Figure 5. Box contents

Basic operation

3.1 Turning LX iris on

To use the instrument, turn on the master power supply. The unit will start automatically. At first it will display Hardware (HW) version, software version (SW) and status of internal battery. If status shows maintenance required please contact LX navigation for maintenance. After the initial setup it will display the main screen. Main screen depends on the instrument type and your desired screen design. You can change appearance of the main screen with CAN2WIFI device. Please refer to the CAN2WIFI manual for more information on how to change displayed screen on the unit. You can change which data is visible, which units are used and what are the limitation (eg. VNE when showing airspeed).

3.2 Rotary knob

Depending on the instrument type, the rotary push knob is installed in the bottom right corner of the front side. It's function depends on the instrument type as well.

Altimeter and all-in-one
Rotating the knob changes the barometric setting value. This is synchronised across all connected devices on the CAN bus. Barometric setting is adjustable on the ground and during the flight.
Pressing the knob shows brightness setting dialog. Rotating the knob when this dialog is shown changes the brightness level.

g-force
Pressing the knob resets maximum and minimum g-force values on screen.
Long press on the knob shows brightness setting dialog. Rotating the knob when this dialog is shown, changes the brightness level.

chrono
Pressing the knob cycles through the following commands for the stopwatch timer: Start > Stop > Reset.
Rotating the knob changes the current local time offset (difference between the UTC and local time).
Long press on the knob shows brightness setting dialog. Rotating the knob when this dialog is shown, changes the brightness level.

3.3 Turning the device off

Normally the LX iris turns off by turning off the master power supply. However because the units feature integrated backup battery the certain conditions have to be met for this to happen.
The battery's function is to keep the LX iris running in case of the aircraft's main power disruption. Instrument will therefore continue to run on battery if it's detecting airborne conditions. And will run until the airborne conditions are no longer detected. Then it saves necessary data and performs soft shutdown.
There are two types of LX iris series instruments according to detection of airborne conditions:

- **Instruments with both static and total pressure sources** (airspeed, all-in-one, etc.)
  Such units determine airborne conditions by observing indicated airspeed and climb rate values. To determine the aircraft is NOT airborne, IAS has to be below 36 km/h and absolute climb rate below 0.1 m/s for at least 3 seconds. If in any 3 second interval climb rate or airspeed rises above those thresholds, LX iris will stay in airborne state and will not shutdown.
- **Instruments with static pressure source only** (altimeter, variometer, etc.)
  Such units (standalone) determine airborne conditions by observing climb rate value only. Because in level flight climb rate is kept constant, the interval to detect minor change of 0.1 m/s is extended to 30 seconds. Normally this should be detectable if the aircraft is truly airborne.

NOTE
If static source only instrument is connected via CAN to other device which provides dynamic pressure data (airspeed indicator, all-in-one), it will act the same as intruments with both sources available.

It is important to notice that after boot, LX iris will not shutdown for at least 20 seconds, then it will start to check conditions above.

NOTE
Battery technical specifications can be found in the Lx iris technical datasheet available at **www.lxnavigation.com**..

Calibration and update

4.1 Altitude calibration

Every unit is factory calibrated. It Is calibrated in 20 steps in the whole operational pressure (altitude) range. Calibration is done at controlled conditions taking into account temperature. Offset parameters are saved to the device and can be only adjusted at the factory. However, user is able to adjust the main offset of the altitude reading using CAN2WIFI device. For more information please refer to the CAN2WIFI manual.

4.2 Airspeed calibration

Every unit is factory calibrated. It is calibrated in 10 steps in the whole operation pressure (airspeed) range. Calibration is done at controlled conditions taking into account temperature and different static pressure levels. Main calibration parameters are saved to the device and can be only adjusted at the factory. However, user is able to adjust the airspeed calibration table using CAN2WIFI device. For more information please refer to the CAN2WIFI manual.

4.3 Firmware update

Normally it's not needed to update the LX iris firmware. However if this turns out necessary, it can be done using using CAN2WIFI device. For more information please refer to the CAN2WIFI manual.

Figure 6. CAN2WIFI configurator

Taking care of your LX iris

5.1 Turning on the device

Device will power up once you turn on the master power switch. If the device does not power up with master switch, check the power wiring.

5.2 Check the battery

At the power up of the device check the hardware version, software version and battery status. We suggest to keep it in dry and dark conditions when not used. Turn on the device every 6 months and keep it on for at least one hour to keep battery in best conditions.

5.3 The internal battery

The LX iris has a Li-Ion internal battery, used for powering the unit, if the main power supply of the plane gets cut during flight.

The internal battery can power the LX iris from **3 to 5 hours**, depending on the brightness level and the state of the battery.

To extend the longevity of your LX iris's battery a few key steps should be taken:

- **Avoid using the internal battery, when not needed -** Do not intentionally cut the power to the LX iris, when there is still power available in the airplane.
- **Avoid draining the internal battery -** Draining the battery completely is a known culprit for reducing battery capacity.
- **Proper winter storage -** During periods of long inactivity, especially during winter, when cold temperatures are present, the battery capacity is lowered by cold temperatures and it can easily happen that the battery gets completely drained and the battery to lose part of its capacity. To avoid this from happening, it is recommended that, whenever the LX iris is in storage, it should be connected to an external power supply regularly, every 4 to 6 weeks, for at least 3 hours, for the internal battery to charge.

NOTE
The LX iris charges the internal battery automatically, when connected to an external power supply.

5.4 Pressure sensors

The LX iris incorporates a variety of delicate pressure sensors. Since these are zero-flux sensors (there is no airflow through the sensors, only pressure differences), no air filters are required.

Static pressure sensors have an operating range of 0 to 1200 mbar, with a high resolution of 20cm of altitude. Any overpressure could damage the static pressure sensor permanently, which is why great caution should be exercised when setting up and testing the pitot-static system. If the total pressure were to be connected to the static port, and a pilot was to check the IAS reading by blowing into the pitot tube, damage could easily occur.

The differential pressure sensor has an operating speed of up to 460 km/h (100hPa). Older devices with HW version 1.0 - 1.2 have differential pressure sensor with an operating speed of up to 325 km/h (50hPa). Flying over this speed, or applying the equivalent pressure, may damage the sensor permanently.

5.5 Display

Leaving the airplane canopy open in the sun is known to have a magnifying glass effect, concentrating the sun rays to a smaller area. This can damage the internals of your cockpit, as well as the display of the LX iris. Applying excessive heat will make the coating of the display start to become yellow and bubble (best case scenario), or destroy the device completely.

This is why it is prudent to always have your canopy, or your instrument panel, covered from direct sunlight.

5.6 RJ connectors

RJ connectors (RJ45) on the back of the LX iris are used for connecting external devices. If the cable is pulled out, without pressing the plastic security pin, the internals of the LX iris's connector may break and get ripped out. One should always be careful when taking the cable out, to press the security pin completely.

5.7 Reverse polarity on power

Although the LX iris has diodes protecting it from reverse polarity on the main power lines, one should note the RJ connectors are not protected and internal electronics could still get damaged, if a power supply is connected to the wrong pins on the RJ connectors. Similarly, the LX iris can damage external devices, if a wrong cable is used for connection, as the LX iris provides a 12 V DC power supply to the CAN port.

Q & A

Q: My LX iris does not power up?
A: Check the main battery. Check the wiring.

Q: My Lx iris is displaying wrong value. Why?
A: Check the pressure inputs and tubing. Make sure the connections are tight and the tubes do not leak.

Q: How to take care of the battery inside the instrument over the winter?
A: Turn on the device every 6 months and keep it on for at least one hour to keep battery in best conditions. Store it in dry room, at the temperature between 0℃ and 30℃. We suggest to keep it in dry and dark conditions when not used.

Q: My LX iris is damaged and in need of repair. What to do?
A: Send the device to: LX navigation d.o.o., Tkalska ulica 10, SI-3000 Celje, Slovenia. You can find the instructions for shipping the device here: **www.lxnavigation.com/repair-my-device/**.

Contact

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