

LX
navigation

iris series

User guide



iris series

User's manual
(version 1.0)

Refers to:

iris all-in-one (ASI + ALT + VSI)
iris airspeed indicator (ASI)
iris vertical speed indicator (VSI)
iris altimeter (ALT)

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PART ONE – INTRODUCTION

1.1 Overview

Iris represents a series of 57mm (2 1/4") standalone instruments, available as:

- iris airspeed indicator (ASI)
- iris altimeter (ALT)
- iris vertical speed indicator (VSI)
- iris all-in-one (VSI + ALT + ASI)
- iris indicator (slave indicator)

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.

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

1.2 Instrument line-up



iris ASI



iris VSI



iris all-in-one



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.



1.3 Technical specification

Data sources

- Airspeed sensor: 12 bit, 0 to 50 hPa, 325 km/h with resolution less than 0.1 km/h (optional)
0 to 100 hPa, 460 km/h
- Barometric sensor: 24 bit, 10 hPa - 1200 hPa, 10 cm resolution
- CAN BUS interface for Power and Data transfer
- USER port with serial RS 232 communication

Optional sources

- Outside air temperature (OAT) probe for True airspeed (TAS) connected to User port
- GPS antenna for Ground speed (GS) connected to SMA connector if provided

Power

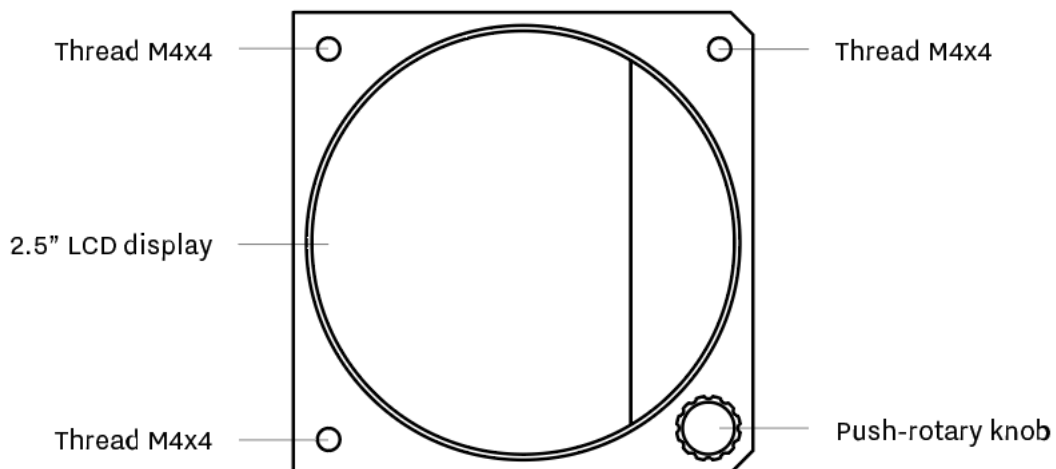
Power consumption: 0.15 A @ 12 V DC / 0.1 A @ 24 V DC

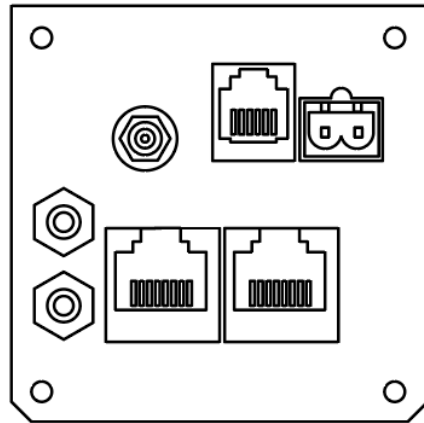
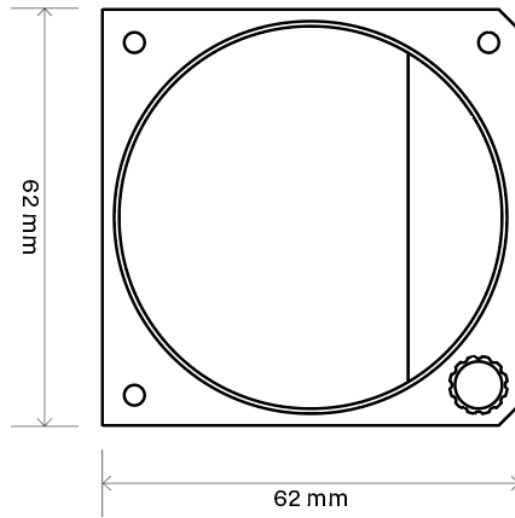
Input power: 9 - 30 V DC via direct wiring harness or 12 V DC via CAN bus cable

Backup battery with up to 3h of autonomy in case of power loss

Enclosure

- Housing: Black aluminum
- Dimensions: (width x height x depth) 62 x 62 x 63 mm (2.44 in x 2.44 in x 2.48 in)
- Weight: 215 g (0.47 lbs.)
- Operating temperature: -30°C to 85°C (-22°F to 185°F)
- Humidity: 30 % to 90 %, non-condensing
- Panel hole: 57 mm (2 1/4 inch) standard aviation size





PART TWO – INSTALLATION

2.1 Installation procedure

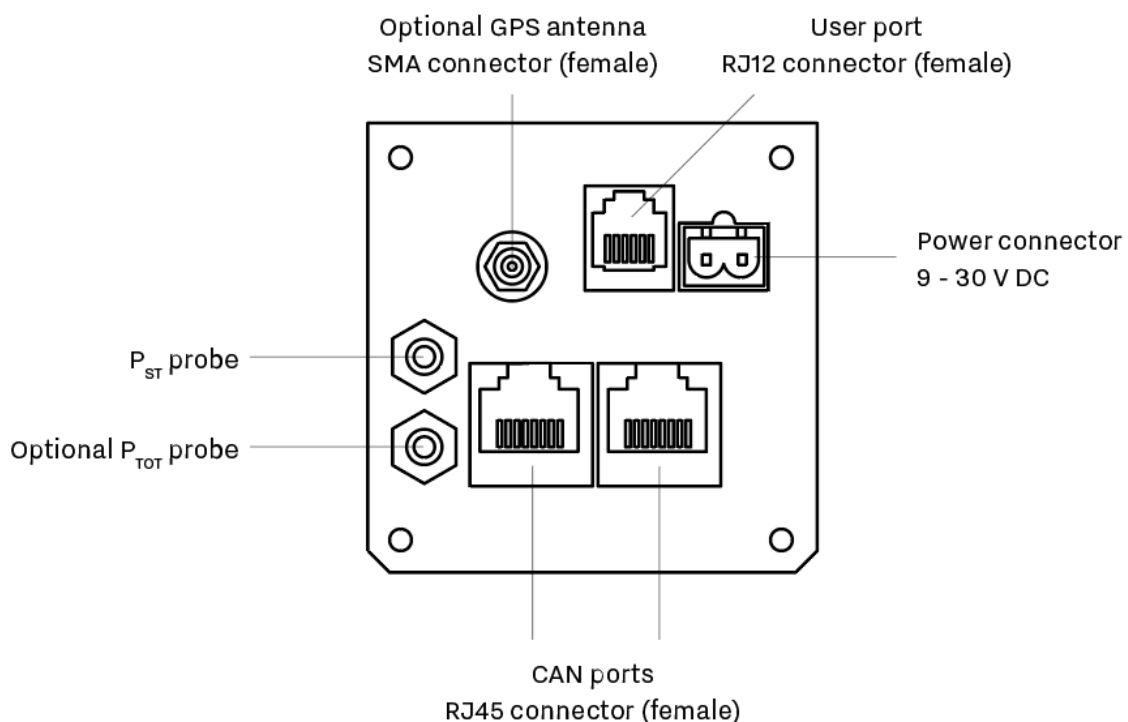
Installation requires a standard 57mm aviation size cut-out. Please refer to next chapter to ensure fitting.

To install the device, remove M4 screws and remove rotary knob if it is mounted on the unit. To remove rotary knob first remove the top cover to expose the flat screw. Hold the knob with your hand and unscrew the flat screw inside. Remove the knob without using any force. Insert the unit into the cut-out and use supplied M4 screws to hold device in place. Use supplied screws only. At the end insert 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.

Tools needed: flat head screw driver, Philips screw driver.

2.2 Connections

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



Power supply

Device requires DC power input in a range between 9 and 30 V DC. It is compatible with 12V and 24V aircraft systems. Use external fuse, as there is no fuse inside this device. If you connect more than one device to the system over the CAN bus apply power supply only to single device, as other units will get power over CAN bus. To provide the power to the system screw negative (GND) wire (typically blue) to the left side of the power supply connector (-). Connect main power supply to the right side of power supply connector (+). Prior to connecting the power to the device make sure that cables are tight and there is not 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 is wire with 0.75mm² AWG 18 or greater.



Optionally you can add additional switch for the installed family of the system.

Static pressure (P_{ST})

In any case (except for the repeater) you should 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 P_{ST} tube. If no free ports are available use T junction to split the tubes. Connect P_{ST} tube to P_{ST} port on the device. Make sure the tubing is airtight. It is highly recommended to keep the static tubing as short as possible. The tubing must avoid sharp bends and twists. Water must not be allowed to enter the tubing.

Total pressure (P_{TOT})

In case of iris – ASI and iris – All-in-one you should connect the unit to the total pressure source. Total pressure source is obtained from the total port on the pitot tube.

Locate existing P_{TOT} tube. If no free ports are available use T junction to split the tubes. Connect P_{TOT} tube to P_{TOT} port on the device. Make sure the tubing is airtight. It is highly recommended to keep the static tubing as short as possible. The tubing must avoid sharp bends and twists. Water must not be allowed to enter the tubing.

Can bus (CAN)

This connection is optional and is not required for normal operation. It is used when more than one device is installed, for communication and power. When connected to the CAN Bus data will be transmitted and received to/from other devices enabling you to display the data on other devices.

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

Outside air temperature (OAT)

This is optional. If you want to display true air speed (TAS) or if you want to know the outside temperature at any given time it is required to connect OAT. OAT is optional with iris – ASI and is part of the system with iris – ALL-IN-ONE. Connect OAT probe to the unit. Install OAT probe to the place with as little as possible heat influence from other components on the airplane (heat from engine, direct sunlight, etc.). The ideal position is on the bottom part of the fuselage away from engine and exhaust pipe. Good alternative is air intake for the ventilation in the cockpit.

If OAT (outside air temperature) is available, iris can display TAS (true airspeed).

GPS

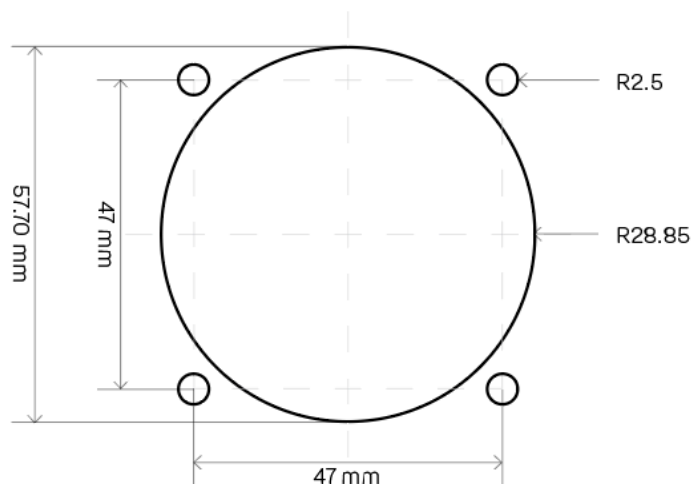
This is optional. If GPS receiver is present, you will see an SMA connector on the back of the device marked with GPS underneath. Connect supplied GPS antenna to the SMA connector. Install antenna horizontally with “GPS” sign pointing to the sky. We supply high gain active antenna with superb reception. 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 fibber, glass, wood, cloth, etc.).

When GPS data is available, iris can display GS (ground speed). Additionally if OAT (outside air temperature) is available, iris can display wind speed and wind direction.

2.3 Installation cut-out drawing

LX navigation uses standard aviation dimensions - 57 mm (2.25 inch). Print this page on a regular or transparent paper to transfer the cut-out to the instrument panel. The provided dimension already took into account the needed tolerance. The dimensions are in mm.

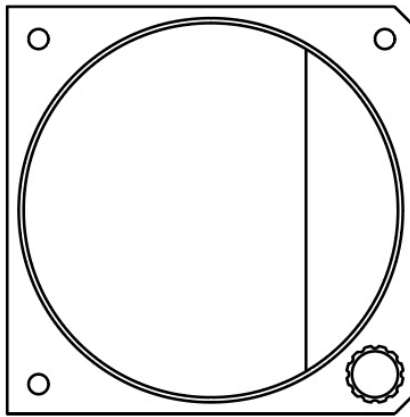
Before cutting make sure, the dimensions are correct according to given dimensions below.



2.4 Box contents

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

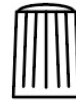
- iris device
- M4x6 screws (number depending on device)
- Rotary knob (depending on device)
- Power supply connector
- GPS antenna *Optional*
- Can bus cable *Optional*
- OAT sensor *Optional*



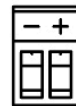
1x iris device



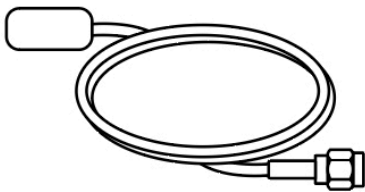
M4 x 6



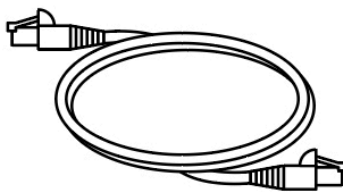
Rotary knob



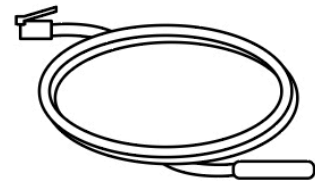
Power supply connector



1x GPS antenna
Optional



1x CAN BUS cable



1x Outside air temperature sensor
Optional

PART THREE – OPERATION

3.1 Basic operation

To use the device, turn on the master power supply. The device 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 the unit will display the main screen. Main screen depends on the device 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).

If the device is equipped with a rotary knob use it to change QNH value. QNH is synchronised across all connected device on the CAN bus. If you hold the QNH button it will go to default value of 1013 hPa (29.91 inHg). QNH is adjustable on the ground and during the flight.

3.2 Maintenance

No special maintenance is required. As the instrument contains a battery, 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. We recommend you to periodically send the unit to the company or authorized representative for an inspection every 5 years to perform pressure calibration if needed.

3.3 Sensor calibration

Altitude

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 manual of CAN2Wifi.

Airspeed

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. 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 airspeed reading using CAN2Wifi device. For more information please refer to the manual of CAN2Wifi.

Other sensors

Other sensors inside the unit are not factory calibrated as there is no need to calibrate them. They come pre-calibrate and are as such build into the unit. No further calibration is required.

NOTE!

The instrument has no serviceable parts inside. In the case of malfunction, it must be sent to LX navigation for a repair. Please contact LX navigation prior sending.

PART FOUR – EULA

End user license agreement

This agreement is made between the Customer (the person and/or company that bought the End Product, and all subsequent users and owners) and LX Navigation d.o.o., Tkalska ulica 10, SI-3000 Celje, Slovenia (hereinafter "LXN").

Terms and termination of agreement

This agreement shall commence when the Customer receives the product.

By buying and using the End Product, the Customer has accepted the following terms and conditions. If the Customer does not agree with the said terms and conditions, he can return the product if it is undamaged and without any sign of use, within 30 days of receiving it, and receive a full refund, thus terminating this agreement.

Warranty

End product, software, firmware, license keys, and data are provided on an "as is" basis without warranty of any kind — either expressed or implied — including, without limitation, any implied warranties of merchantability or fitness for a particular purpose. LXN does not warrant the performance of the device, software, firmware, license key, or data or that the device, software, firmware, license key, or data will meet your requirements or operate error free.

LXN warrants this device for a period of two (2) years after the original date of purchase against defects due to faulty workmanship or materials arising from normal use of the device. The warranty covers working parts that affect the function of the device. It does NOT cover cosmetic deterioration caused by fair wear and tear, or damage caused by accident, misuse or neglect. Any attempt to open or take apart the device (or its accessories) will void the warranty.

Limitation of liability

In no event shall LXN be liable to the Customer or any party related to the Customer for any indirect, incidental, consequential, special, exemplary, or punitive damages (including, without limitation, damages for loss of business profits, business interruption, loss of business information, loss of data or other such pecuniary loss), whether under a theory of contract, warranty, tort (including negligence), products liability, or otherwise, even if LXN has been advised of the possibility of such damages. In no event will LXN's total aggregate and cumulative liability to the Customer for any and all claims of any kind arising hereunder exceed the amount of fees actually paid by the Customer for the device, license keys or data giving rise to the claim in the twelve months preceding the claim. The foregoing limitations will apply even if the above stated remedy fails of its essential purpose.

Indemnification

The Costumer will, at their own expense, indemnify and hold LXN, and all officers, directors, employees and resellers thereof, harmless from and against any and all claims, actions, liabilities, losses, damages, judgments, grants, costs, and expenses, including reasonable attorneys' fees (collectively, "Claims"), arising out of any use of the End product, software, firmware, license key, or data by the Costumer, any party related to the Costumer, or any party acting upon their authorization.

Amendments

LXN reserves the right, in its sole discretion, to amend this Agreement from time to time by posting an updated version of the Agreement on www.lxnavigation.com, provided that disputes arising hereunder will be resolved in accordance with the terms of the Agreement in effect at the time the dispute arose. We encourage you to review the published Agreement from time to time to make yourself aware of changes. Material changes to these terms will be effective upon the earlier of (I) your first use of the End product, software, firmware, license key, or data with actual knowledge of such change, or (II) 30 days from publishing the amended Agreement on www.lxnavigation.com. If there is a conflict between this Agreement and the most current version of this Agreement, posted at www.lxnavigation.com, the most current version will prevail. Your use of the End product, software, firmware, license key, or data after the amended Agreement becomes effective constitutes your acceptance of the amended Agreement. If you do not accept amendments made to this Agreement, then it is your responsibility to stop using the End product, software, firmware, license key, and data.

Return address:

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

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PART FIVE – Q&A

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.

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.

Set the QNH

If you use the altimeter or all-in-one version of Iris, use rotary knob to set the QNH. Rotate the rotary knob to increase or decrease the value. Press the rotary knob to confirm the selected value.

Initial screen

At the power up of the device check the hardware version, software version and battery status.

Turning off the device

Device will automatically shutdown itself 30 seconds after “block on”.

Questions and answers

Q: My device does not power up?

A: Check the main battery. Check the wiring.

Q: My device is displaying wrong value. Why?

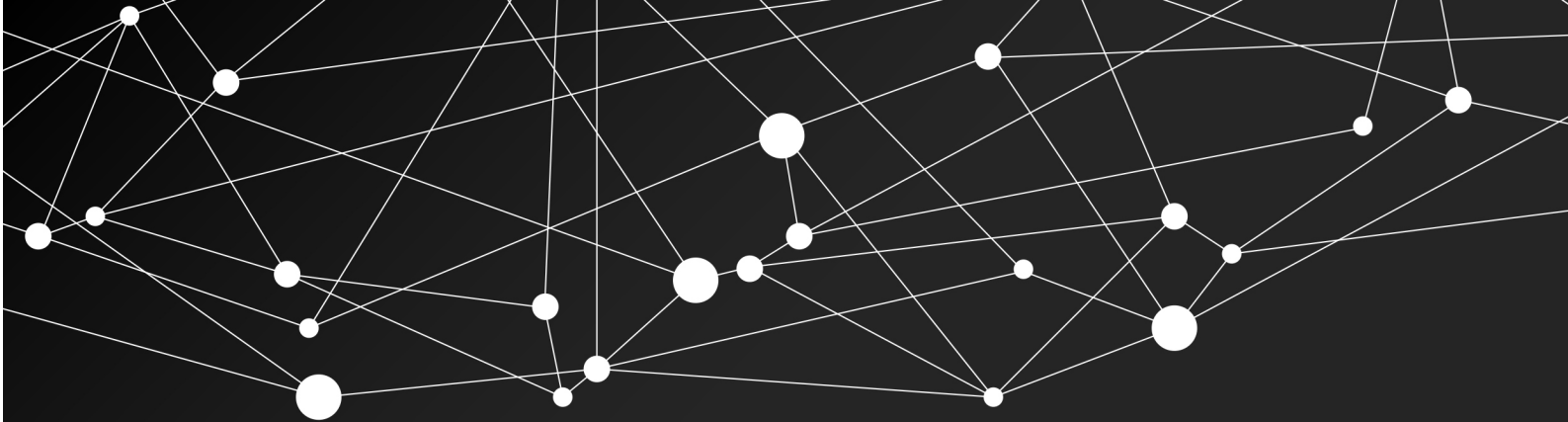
A: Check the pressure inputs and tubing. Make sure the connections are tight and the tubes do not leak.

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°C and 30°C. We suggest to keep it in dry and dark conditions when not used.

Q: My device 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.



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