LXNAVIGATION

# NAVIA

Navia Display Installation manual

# Contents

# Document information

## 0.1 Abstract

This document represents the installation manual for the Navia Displays. The user manual, release notes, dataport and additional info can be found on **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 | Part number | HW Version |
|---|---|---|
| Navia Display 4 | LX02000550 | 1.0 |
| Navia Display 7 | LX02000530 | 1.0 |
| Navia Display 12 | LX02000540 | 1.0 |

## 0.4 Revision history

| Document name | Document revision | Date | Revised by | Approved by | Notes |
|---|---|---|---|---|---|
| N_DIM | R1 | 20.03.2026 | N.S. | N.S. | initial release |

# Overview

The Navia Display is the primary human-machine interface for the Navia avionics ecosystem. Designed and manufactured by LX navigation, these ultra-bright, sunlight-readable capacitive touchscreens provide the pilot with intuitive, high-definition access to primary flight instrumentation, navigation, engine monitoring, and traffic data.

To accommodate various aircraft panels and pilot preferences, the Navia Display is available in three different form factors:

- **Navia Display 12** (12-inch diagonal) - *Part Number: LX02000540*
- **Navia Display 7** (7-inch diagonal) - *Part Number: LX02000530*
- **Navia Display 4** (4-inch diagonal) - *Part Number: LX02000550*

**Standard 80 mm Mounting**
Despite their large screen sizes, all Navia Displays are specifically engineered to mount directly into a **standard 80 mm (3.125 inch) aviation instrument cutout**. This greatly simplifies installation and makes upgrading legacy panels incredibly straightforward without the need to cut new, large rectangular holes.

**Power over Ethernet (PoE) Architecture**
Unlike traditional avionics displays that require thick, complex wiring harnesses for power, ground, and multiple data streams, the Navia Display utilizes modern Gigabit Power over Ethernet (PoE). A single, standard network cable connects the display to the Navia Core Pro (or Navia Hub), providing both high-speed video/data transfer and 48V power delivery simultaneously. This drastically simplifies panel wiring and saves weight.

Because the Navia Core Pro acts as the central server, the displays function as lightweight, ultra-fast "clients." This architecture means that multiple displays can be installed in a single cockpit (e.g., pilot and co-pilot tandem seating) with perfectly synchronized data.

**System Expansion and Control**
The Navia Display ecosystem is designed to be highly modular. For instance, the main displays can be seamlessly expanded with a **Navia Indicator (available in 57 mm and 80 mm sizes)**. This combination is especially useful for glider installations pairing a 7-inch Navia Display with a standard round indicator. This setup creates a traditional instrument panel feel while ensuring that the variometer (the most critical instrument in a glider) remains persistently visible on its own dedicated display.

Furthermore, the entire User Experience is optimized for in-flight operation through the **Navia Grip**. The Navia Grip was specifically designed to enhance the usability of the display while flying. Operating as an advanced remote control and mouse, it allows pilots to navigate menus

and make precise inputs without ever having to reach for the touchscreen or take their hands off the controls.

# Display Specifications and Comparison

Powered by cutting-edge mobile ARM processors, Navia displays redefine performance and efficiency in avionics. Each display boasts an octa-core ARM processor (up to 2.4 GHz), intelligently combining four high-performance cores with four high-efficiency cores. With 8GB of unified RAM shared with a state-of-the-art 3D graphics accelerator, the displays render complex visuals with exceptional fluidity. Furthermore, a dedicated AI processor (NPU) capable of up to 6 TOPS enables lightning-fast, real-time voice recognition and intelligent pilot assistance. All screens feature an advanced anti-reflective, anti-glare, and anti-fingerprint coating to ensure optimal visibility in all lighting conditions. The table below outlines the specific hardware dimensions and screen capabilities of each model:

| **Feature** | **Navia Display 12** | **Navia Display 7** | **Navia Display 4** |
|---|---|---|---|
| **Active Screen** | 11.6" | 7.0" | 4.0" |
| **Resolution** | 1920 × 1080 pixels | 1200 × 1920 pixels | 720 × 720 pixels |
| **Max Brightness** | 1600 nits | 2500 nits | 1200 nits |
| **Pixel Density** | 190 PPI | 323 PPI | 255 PPI |
| **Dimensions** | 273 × 165 mm | 113 × 169 mm | 86 × 88 mm |
| **Weight** | 200g | 150g | 120g |
| **Processor** | 2.4 GHz – 8-core ARM™ | | |
| **Memory / GPU** | 8 GB LPDDR4/4X with built-in 3D GPU | | |
| **AI Coprocessor** | Up to 6 TOPS NPU | | |
| **Connectivity** | 1Gbit PoE, Wi-Fi, Bluetooth, USB, Serial | | |

# Display Orientation

Depending on the specific form factor, the Navia Displays can be utilized in different orientations to best fit your instrument panel layout.

- **Navia Display 4:** This display features a square aspect ratio, meaning it has only one native mounting orientation.
- **Navia Display 7:** The standard, factory-default configuration for the 7-inch model is **Portrait**.
- **Navia Display 12:** The standard, factory-default configuration for the 12-inch model is **Landscape**.

**NOTE**

**Custom Orientations:**

The rectangular displays (7-inch and 12-inch) are highly versatile and can be mounted in alternate orientations to suit specific panel retrofits (e.g., using the 7-inch display in landscape, or the 12-inch display in portrait). However, if you want a different orientation, please **speak with LX navigation** prior to installation. We must load a special software configuration onto the device to permanently change the screen orientation.

# Compatible Devices

The Navia Display relies on the broader Navia ecosystem to function. It does not operate as a standalone flight computer without a Core device. The table below outlines the primary compatible devices for direct connection and operation:

| Product Name | Part Number | Connection | Description |
|---|---|---|---|
| Navia Core Pro | LX02000490 | Gigabit PoE (RJ45) | Essential central server providing power, data, and software logic. |
| Navia Hub | LX02000500 | Gigabit PoE (RJ45) | Expansion switch for installing multiple displays. |
| Navia Grip | LX02000560 | Wireless / 9-pin D-Sub | Advanced control stick grip (mouse, PTT, AI voice trigger). |
| Navia Indicator 57 | LX02000820 | 9-pin D-Sub | Legacy 57mm size standard panel indicator. |
| Navia Indicator 80 | LX02000830 | 9-pin D-Sub | Legacy 80mm size standard panel indicator. |

# Inventory of Materials

Before beginning installation, please verify your materials against the lists below. Doing so ensures you have received all ordered parts from LX navigation in good condition. We advise keeping the original packaging for future storage or transport.

## 5.1 In the Box

- 1x Navia Display (Size 4, 7, or 12)
- 1x Device Registration Card (with QR code and portal link)
- 1x Mounting Screw Kit (contains various lengths of M4 screws)

## 5.2 Additional Required Equipment (Not Included)

To fully install and utilize the Navia Display, the following components must be sourced separately depending on your specific aircraft setup.

- High-quality Ethernet PoE cables (Available directly from LX navigation in 0.4m, 1m, 3m, and 5m lengths. Custom shielded Cat5e/Cat6 cables wired to the T568B standard may also be used).
- Navia Display J500 connector set or Navia Grip Adapter (if installing Navia Grip or external Navia Indicators).

**NOTE**

**Note on Connectors:**

In most cases, the Navia Display will only be connected via PoE or with the Navia Grip Adapter. If you are connecting a Navia Grip via the Navia Grip Adapter, there is **no need to purchase an additional connector set**. The Navia Grip Adapter acts as a breakout connector, allowing a parallel connection of the Navia Grip and a Navia Indicator 57 or 80.

# Required Tools and Materials

To simplify ordering and assembly, LX navigation has created a comprehensive list of part numbers. You can purchase individual components like back shells, pins, and housings, or you can order complete **Connector Sets** that include everything needed for a specific device.

## 6.1 Materials (Individual Components)

The list below details the individual components required for the installation, including the LX navigation part number alongside the manufacturer's original description.

- 1x **LX04000270** – Plug for Male Contacts Housing D-Sub Connector 9 Position (163X10019X)
- 1x **LX04000290** – 9 Position Two Piece Backshell Connector 90°, 180° Shielded (16-001810)
- 9x **LX04000280** – D-Sub Contact Male Pin Gold 20-24 AWG Crimp Machined (161A18299X)

## 6.2 Available Connector Sets (Kits)

For your convenience, complete connector sets are available. Each set contains the exact quantities of housings, backshells, and pins required for the respective hardware interface.

**NOTE**
**Navia Grip Adapter Advantage:**
In most cases, the Navia Display will only be connected via PoE or with the Navia Grip Adapter. If you are connecting a Navia Grip via the Navia Grip Adapter, there is **no need to buy any additional connector**. The Navia Grip Adapter acts as a breakout connector, allowing a parallel connection of the Navia Grip and a Navia Indicator 57 or 80 seamlessly.

**Navia Display J500 connector set (LX02001830)**

| LX Part Number | Qty | Description |
|---|---|---|
| LX04000270 | 1 | Plug for Male Contacts Housing D-Sub Connector 9 Position (163X10019X) |
| LX04000290 | 1 | 9 Position Two Piece Backshell Connector 90°, 180° Shielded (16-001810) |
| LX04000280 | 9 | D-Sub Contact Male Pin Gold 20-24 AWG Crimp Machined (161A18299X) |

## 6.3 Tools

- PH2 Screwdriver (for M4 mounting screws)
- Pin crimping tool
- Pin insertion/extraction tool
- Cutting tools for instrument panel modification (if applicable)

# User Interface and Control Philosophy

The Navia Display features a smooth, button-less design that is completely future-proof. This clean architecture allows for a new, highly intuitive User Experience (UX) designed with future software expansions in mind.
While the display offers an exceptionally responsive capacitive touchscreen, the absolute best way to interact with the system in flight is via the **Navia Grip**. The Navia Grip acts as an advanced ergonomic mouse and keyboard for the display. Using its integrated trackpad, the pilot can access any item or menu on the screen while maintaining both hands on the flight controls and full command over the airplane.

**Dual-Grip Configurations (Side-by-Side Cockpits)**
The Navia Display is designed to be controlled by a single Navia Grip as standard. However, in aircraft with side-by-side seating, owners may wish to allow **both** pilots to control a single primary display using two independent Navia Grips.
While this functionality is not supported out-of-the-box using the standard display ports, it can be achieved using an additional hardware expansion. Please contact LX navigation directly to acquire the specialized **USB Multi-Grip Hub** required to enable dual-control operation on a single screen.

**AI Voice Assistant**
Additionally, the seamless integration of the **AI Voice Assistant** (processed via the Navia Core Pro) greatly decreases the need to physically touch the screen while flying. Pilots can change frequencies, swap pages, or acknowledge alerts using natural speech, allowing them to keep their eyes outside the cockpit.

# Mounting

Unlike legacy avionics, the Navia Display is deliberately **not** flush-mounted. It is designed to sit **on top** (proud) of the instrument panel surface, with only a standard round **80 mm (3.125 inch)** rear extension protruding through the panel cutout. It is secured by four M4 screws inserted from the back of the panel into this rear chassis.

**Retrofitting and Space Optimization**
This innovative mounting architecture allows for incredible flexibility when retrofitting existing instrument panels. Because the main screen sits above the panel surface rather than being recessed into it, the display can be positioned at the very edge of the panel—or even allowed to overhang the panel's perimeter. This is incredibly useful for maximizing usable screen area in space-constrained cockpits and finding that missing space.

**Turbulence and Ergonomics**
Furthermore, because the Navia Display is a dedicated button-less touchscreen, the raised

bezel design serves a critical ergonomic function. It allows pilots to physically grab the side or edge of the screen, providing a stable pivoting point for their fingers to ensure precise, accurate touchscreen inputs even when flying in severe turbulent air.

**Cooling and Ventilation Clearance**

Modern, high-brightness avionics displays generate heat. While the Navia Display is designed to passively dissipate heat through its aluminum chassis without the need for active cooling fans, it is crucial to ensure adequate ambient airflow behind the instrument panel. We highly recommend leaving a minimum clearance of **30 mm (1.2 inches)** behind the rear chassis to allow for proper thermal convection. **Do not** pack wiring bundles or acoustic foam directly against the back of the display.

**Compass Safe Distance**

Like all modern electronic flight instruments, the Navia Display generates a small electromagnetic field that can interfere with traditional magnetic compasses. Ensure the display is mounted at least **30 cm (12 inches)** away from the aircraft's standby magnetic compass. A post-installation compass swing is highly recommended to verify no interference is present.

**Viewing Angle Considerations**

While the Navia Displays feature ultra-wide IPS viewing angles, you should optimize the mounting location so that the screen is as perpendicular to the pilot's normal line of sight as possible. This maximizes brightness, ensures color accuracy, and minimizes potential glare from the canopy or side windows.

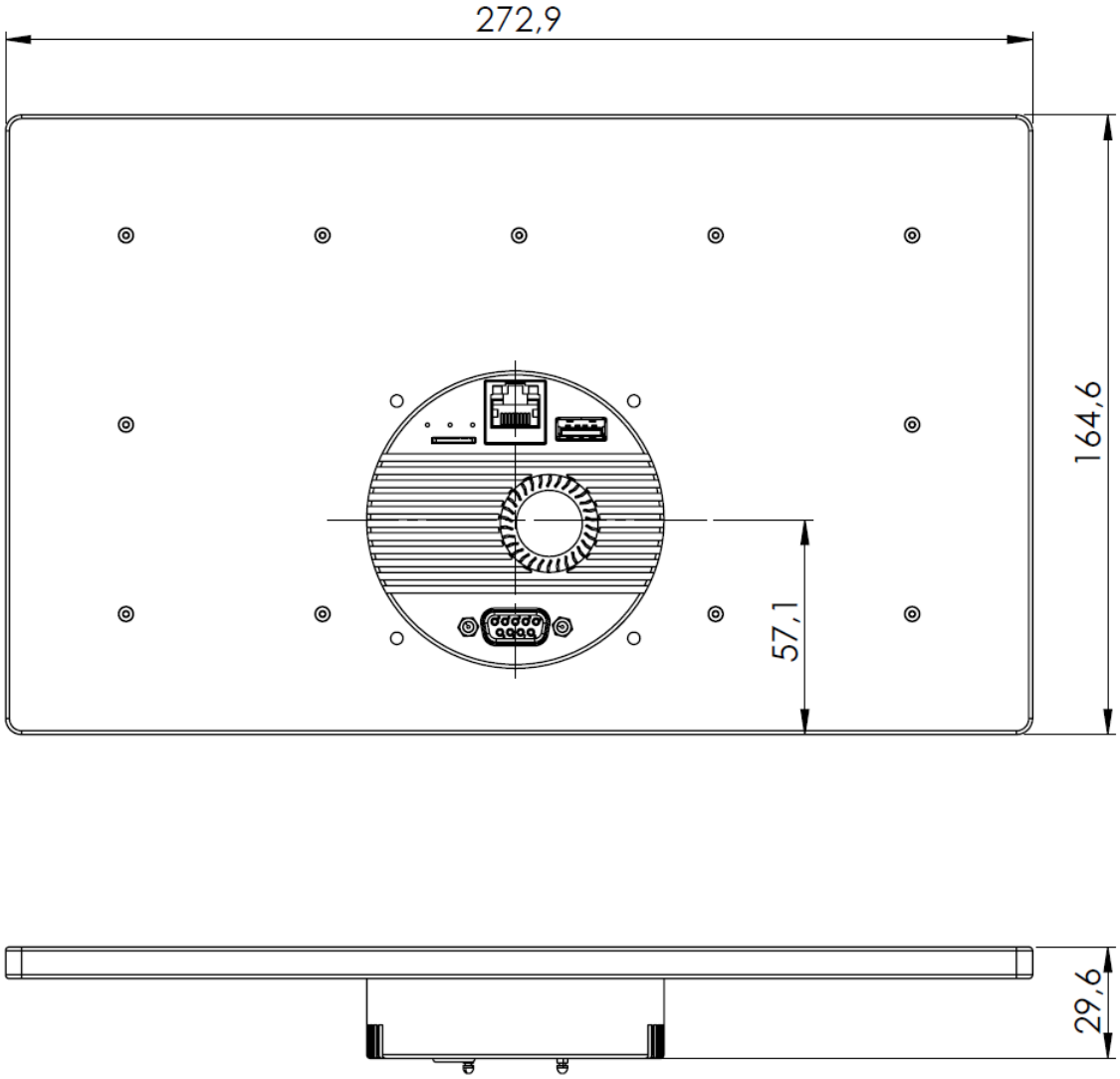


Figure 1. Navia Display 12 dimensions

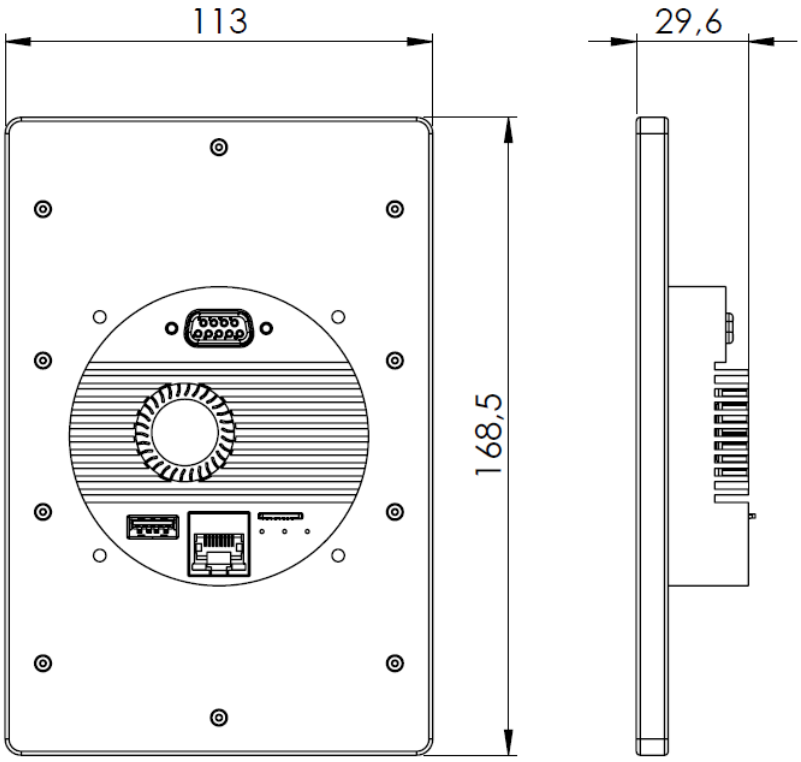


Figure 2. Navia Display 7 dimensions

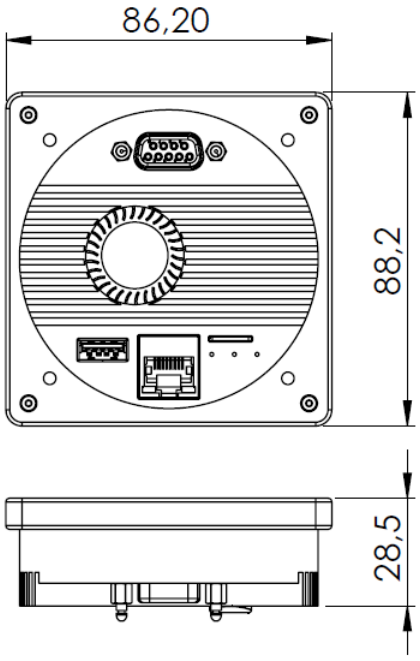


Figure 3. Navia Display 4 dimensions

## 8.1 Standard 80 mm Cutout Dimensions

To prepare your instrument panel, you will need a standard 80 mm (3.125 inch) circular cutout. The four M4 mounting holes are arranged in the standard aviation pattern around this central cutout.

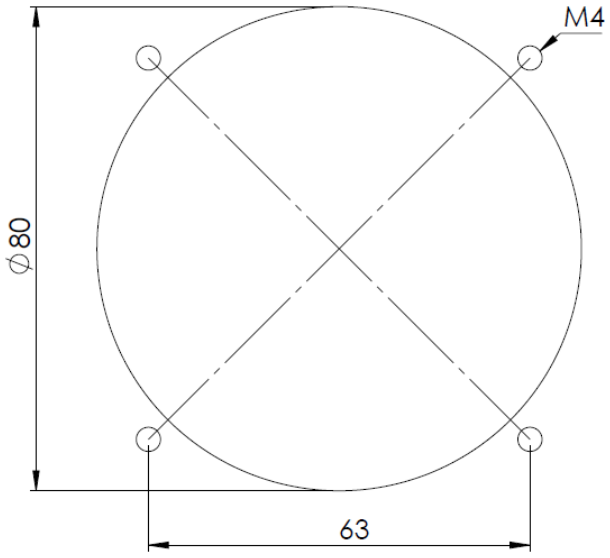


Figure 4. Standard 80 mm panel cutout and M4 hole spacing

## 8.2 Critical Mounting Depth Limits

**WARNING**
**CRITICAL - MAXIMUM SCREW DEPTH:**
The maximum allowable insertion depth for the M4 mounting screws into the back chassis of the display is **exactly 3 mm**.
If you use a screw that threads deeper than 3 mm into the unit, **it will push against the LCD panel from the inside**. This will cause permanent pressure marks, dead pixels, or completely crack the glass display. **Over-tightening or using excessively long screws immediately voids the warranty.**

To accommodate varying instrument panel thicknesses, LX navigation provides a comprehensive kit containing several sets of M4 screws in different lengths.
**How to select the correct screw:**

1. Measure the exact thickness of your aircraft's instrument panel at the mounting location.
2. Add **3 mm** (the maximum safe insertion depth) to your panel thickness.
3. Select the M4 screw from the provided kit that matches (or is slightly shorter than) this total calculated length.
4. *Example: If your panel is 2 mm thick, you must use a 5 mm long M4 screw or shorter (e.g. 4 mm). If you do not have the exact length, it is always better to go 1 mm down to prevent any risk of damaging the display.*

**WARNING**

**Do Not Over-Tighten:**

Tighten the M4 screws firmly by hand, but do not use excessive torque.
Over-tightening can strip the threaded inserts or warp the display chassis.

# Rear Panel Interfaces & Electrical Connections

The back side of the Navia Display features several connection ports and interfaces designed for system integration, development, and external control.

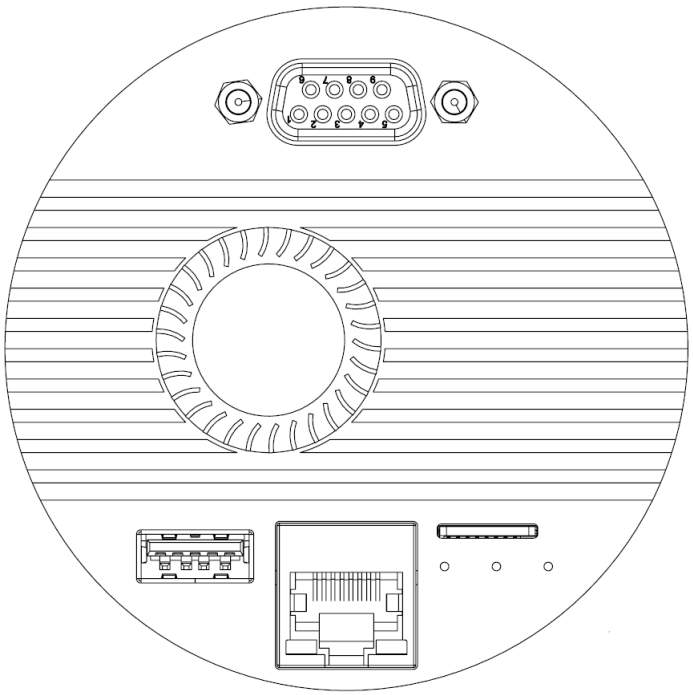

Figure 5. Rear panel interfaces of the Navia Display

**WARNING**
**NO HOT-PLUGGING ALLOWED:**
It is strictly forbidden to hot-plug **any** connection on the Navia Display. This includes the RJ45 PoE port, the 9-pin Sub-D expansion port (Navia Grip/Indicator), and the USB port. Always ensure the Navia Core Pro is completely powered **off** before connecting or disconnecting any cables. Attempting to connect devices while the system is live can cause electrical arcing and permanent hardware failure, resulting in a faulty device.

## 9.1 1. Power over Ethernet (PoE) Port

The Navia Display is powered and receives all its data exclusively through the standard RJ45 Ethernet port. There are no separate power wires or ground straps required. The PoE system provides a stable 48V power supply and a Gigabit data link over this single cable.

**WARNING**
**NEVER HOT-PLUG POE DEVICES:**
It is strictly forbidden to hot-plug any devices into the Navia Hub. Always ensure the Navia Core Pro (and thus the Navia Hub) is completely powered **off** before connecting or disconnecting any PoE Ethernet cables. "Hot-plugging" devices while the passive 48V PoE system is live carries a significant risk of electrical arcing and high-voltage spikes, which can permanently damage the internal components of the Hub, the displays, and the Navia Core.

**WARNING**
**RJ45 Port Compatibility Hazard:**
Do **not** confuse the Navia Hub's PoE ports with standard networking RJ45 ports or similar-looking connectors found on third-party FLARM units, or older LX navigation products. The Navia PoE system utilizes a passive 48V PoE pinout that is strictly incompatible with these older systems. **Especially avoid connecting CAN bus cables from legacy LX navigation equipment.** Unlike the Navia Core Pro, the Navia Hub **does not contain an internal fuse**. Misconnecting these ports will cause a catastrophic electrical short, resulting in permanent damage to the Hub and any connected devices.

## 9.2 Custom Ethernet Cabling and Securing

While LX navigation offers pre-made, rigorously tested Gigabit Ethernet cables in various lengths (0.4m, 1m, 3m, and 5m), you may need to assemble custom cables for specific routing requirements. If you choose to crimp your own cables, you **must** wire the RJ45 connectors according to the standard **T568B** Ethernet wiring scheme.

| RJ45 Pin | T568B Wire Color |
|---|---|
| 1 | White/Orange |
| 2 | Orange |
| 3 | White/Green |
| 4 | Blue |
| 5 | White/Blue |
| 6 | Green |
| 7 | White/Brown |
| 8 | Brown |

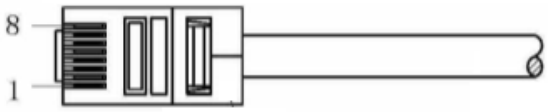


Figure 6. RJ45 Ethernet standard

It is highly advised to use shielded, aviation-grade Cat5e or Cat6 cables to guarantee stable Gigabit data speeds and efficiently handle the 48V power delivery without significant voltage drops or EMI interference.

**WARNING**
**Gigabit PoE Cable Securing:**
Do **not** over-tighten standard nylon zip-ties around Ethernet or PoE cables. Crushing a Cat5e/Cat6 cable alters the internal twisted-pair geometry, which can severely degrade Gigabit data speeds and PoE power delivery, or even cause electrical shorts. Use aviation lacing cord or wide hook-and-loop (Velcro) ties for safely securing high-speed data cables.

## 9.3 2. 9-pin D-Sub Expansion Connector

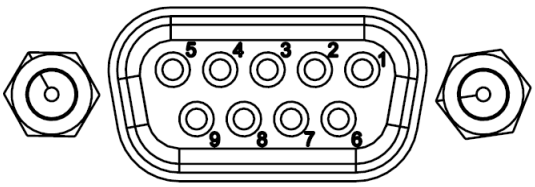


Figure 7. 9-pin D-Sub Expansion Connector

This dedicated 9-pin connector provides power, high-speed USB, and RS232 data communication for peripheral LX navigation cockpit hardware. It is specifically used to connect:

- **Navia Grip:** For remote control of the display interface.
- **Navia Indicator 57** / **Navia Indicator 80:** For dedicated mechanical or digital secondary instrument readouts.

**Navia Grip Adapter and Parallel Connections**
The Navia Grip connects to this port via a specialized **Navia Grip Adapter** (enclosed in a 9-pin Sub-D backshell). This adapter is internally pre-wired to extract the 12V, 3.3V, GND, and USB data lines required for the Grip to function.
Additionally, the adapter exposes the remaining necessary pins (12V, GND, RS232 RX, and RS232 TX) to an integrated 10-pin terminal block at the back of the shell. This clever design allows the user to easily connect a Navia Indicator in parallel to the same 10-pin terminal block without needing to splice wires or use a separate display port, acting as the connector itself.

**9-Pin Sub-D Pinout**
Below is the exact pinout for the display's rear 9-pin Sub-D expansion connector.

| Pin | Signal Name | Description |
|---|---|---|
| 1 | 12V | Power supply output |
| 2 | USB_DATA_N | USB Data (-) for Navia Grip |
| 3 | USB_DATA_P | USB Data (+) for Navia Grip |
| 4 | GND | System Ground |
| 5 | NC | Not connected (Reserved for future use) |
| 6 | 3.3V | Logic power supply for Navia Grip |
| 7 | RS232_RX | Data receive (for external Indicator) |
| 8 | RS232_TX | Data transmit (for external Indicator) |
| 9 | GND | System Ground |

### 9.4 3. USB Type-A Port

The USB Type-A port is primarily utilized for factory debugging and software development procedures. However, it can safely be used by the pilot in flight as a low-current charger for mobile devices (e.g., smartphones or small tablets).

- **Power Output:** The USB port supplies standard **5V at a maximum of 500mA**.
- **Data Transfer:** This port is **not** used for transferring flight logs, databases, or software updates. (All normal system updates are handled via the Navia Core Pro).

### 9.5 4. SD Card Slot

Similar to the USB port, the integrated SD Card slot is reserved strictly for specialized development and deep-level factory update procedures. For standard pilots and installers, this slot should remain empty. Flight logs and databases are not stored on or extracted from this SD card slot.

### 9.6 5. Hidden Development Buttons

Located on the rear chassis are 3 small, recessed buttons. These buttons are hidden to prevent accidental pressing during installation or flight.

- **Usage:** They can only be actuated by inserting a fine needle or paperclip.
- **Function:** These buttons are strictly utilized for deep-level factory resets, hardware debugging, or emergency bootloader update procedures. **Do not press these buttons** unless explicitly instructed to do so by an LX navigation support technician.

# System Boot, Operation and Configuration

Because the Navia Display operates as a client to the Navia Core Pro, it requires very little independent hardware configuration. However, understanding the boot sequence and software profiles is essential for setting up your cockpit.

**Boot Sequence and Cooling Fan**
When power is applied to the system, the Navia Display will boot up first. You may notice the integrated cooling fan spin up briefly for a short time; this is a normal self-test. After the initial spin, the fan is strictly temperature-controlled. It will only engage when the device reaches a specific temperature threshold. In a cold environment, the fan may never spin during flight, while in very warm conditions, it might run continuously to protect the internal electronics.
The total boot time for the entire system is approximately **1 minute**. While booting, the display will show a spinning logo with the current software version information below it. This indicates the display has fully booted its internal OS and is waiting for the Navia Core Pro to finish starting. As soon as the Navia Core Pro connects, the screen will transition to the active interface.

**Login and Parent/Child Hierarchy**
Depending on how the screens are configured in the system settings, a display may show the main login screen immediately, or it may wait. In a multi-screen setup, secondary ("child") screens will wait for the primary ("parent") screen to log in first, and then perform an automatic login to synchronize the flight session.

**Display Types: Navigation vs. Widget Screens**
Users can select between two fundamental types of displays for each physical screen installed:

- **Navigation Screens:** The main focus of this screen type is the moving map. Optional widgets can be displayed overlaid on top of the map or organized in a dedicated side panel. This is typically used as the primary flight interface.
- **Widget Screens:** These screens do not show a map; they exclusively display data widgets. This layout is incredibly useful for creating a dedicated Primary Flight Display (PFD), an Engine Monitoring Unit (EMU) screen, or an auxiliary display for specific flight parameters (e.g., a large digital Variometer for gliders, or a G-load meter for aerobatics).

**System Profiles vs. User Profiles**
Each display can be rigidly assigned to the aircraft (System) or adapt dynamically to the pilot (User):

- **System Screen:** This configuration is locked to the airplane. Only the aircraft owner or administrator can modify its layout. Once configured, it will consistently show the exact same layout (such as a standard PFD or Engine monitoring screen) for every pilot who flies the airplane, regardless of who logs in.

- **User Screen:** This screen adapts to the logged-in pilot. In a multi-display setup, a User screen will act as a "child" and wait for a "parent" display to log in. Once the parent logs in, the User screen recognizes the specific pilot flying and automatically loads whatever custom widgets and layouts that pilot has saved to their personal profile. This is exceptionally useful for club gliders where every pilot prefers a different instrument layout.

**Software Updates**
Whenever the Navia Core Pro receives a software update (via Wi-Fi or cellular connection), it will automatically push the corresponding display firmware updates to all connected screens over the PoE network simultaneously.

**Screen Brightness Control**
Navia Displays are engineered to be exceptionally bright, guaranteeing perfect visibility in any lighting condition—from direct, intense sunlight to pitch-dark night flying.
Brightness is managed globally through the Navia Core Pro. When you adjust the brightness level via the dashboard on any single display, **all connected screens** will automatically adjust their brightness at the exact same time. You can control the brightness using three methods:

- **Manual Control:** Via the on-screen dashboard slider.
- **External Potentiometer:** Using a physical cabin light knob wired to an analog input on the Navia Core Pro.
- **External Ambilight Sensor:** For automatic adjustment, an external ambient light sensor can be wired to an analog input on the Navia Core Pro.

**NOTE**
**No Internal Sensor:** There is **no ambient light sensor built into the Navia Display itself**. Automatic adjustment strictly requires an external sensor wired to the Navia Core Pro.

**WARNING**
**Power and Thermal Management:**
While the displays are incredibly bright, running them at maximum backlight intensity significantly increases power consumption and heat generation. **Reducing the backlight** can drastically decrease power consumption (extending battery life, which is critical for gliders) and keeps the display physically colder. Always adjust the brightness accordingly to balance optimal visibility with power and thermal efficiency.

# Maintenance and Care

The Navia Display utilizes a high-quality capacitive touchscreen glass. To ensure longevity and optimal visibility, extreme care must be taken regarding environmental exposure and cleaning.

**WARNING**

**Sunburn and Heat Damage Warning:**

Prolonged exposure to direct sunlight can permanently damage the LCD panel. Bubble canopies act as magnifying glasses (the "lens effect"), concentrating solar energy into a tiny, super-heated focal point on the screen. This is an especially critical issue in gliders where the instrument panel is raised together with the canopy, leaving the displays completely exposed and facing the sun while parked or waiting on the grid.

**Prevention:** Always use a specialized screen protector or completely cover your canopy and instrument panel when the aircraft is on the ground.

**Warranty Exclusion:** Screen "sunburns" and concentrated heat damage are easily identifiable and are **strictly not covered under warranty**. Repairing a sunburned screen requires a complete and expensive LCD replacement.

## 11.1 Cleaning Instructions

Proper cleaning is vital to maintain the optical clarity and longevity of the touchscreen's anti-reflective and oleophobic coatings. Treat the Navia Display as you would a high-end computer screen or professional camera lens.

**What to DO:**

- **Microfiber Cloth:** Use only a clean, soft, lint-free microfiber cloth specifically designed for optics or screens.
- **Specialized Cleaners:** Use a specialized aviation screen cleaner or a mild 50/50 mixture of isopropyl alcohol and distilled water.
- **Technique:** Apply the cleaning fluid to the *cloth*, not the screen. Gently wipe the screen in straight, vertical or horizontal lines.

**What NOT to do:**

- **No Abrasives:** Never use paper towels, facial tissues, or dry rags, as these can contain wood fibers that cause microscopic scratches.
- **No Ammonia or Bleach:** Avoid household glass cleaners (like Windex) that contain ammonia or strong chemicals, as these will eat through the delicate anti-glare coatings.
- **No Direct Spraying:** Never spray any liquid directly onto the glass. Liquid can seep into the bezel edges via capillary action and destroy the internal display electronics.
- **No Excessive Pressure:** Do not press hard on the glass during cleaning; if a stubborn smudge remains, dampen the cloth slightly more and repeat the process.

## 11.2 Service and Repair

There are absolutely **no user-serviceable parts** inside the Navia Display. Attempting to open the chassis to repair a damaged screen or internal component will immediately void the warranty. If the unit fails or requires a screen replacement, it must be returned directly to LX navigation or an authorized partner for professional service.

# Post-Installation Checkout

**NOTE**
After finishing the installation, check that the device is fully operational before closing the instrument panel cover.

1. **Physical Verification:** Ensure the display is seated flush against the panel and that the mounting screws are snug, but not over-tightened. Verify there are no pressure marks on the LCD.
2. **Power On:** Turn on the Navia Core Pro. Verify that the Navia Display powers up automatically via the PoE connection.
3. **Touch Interface:** Test the touchscreen by swiping between pages and tapping menu items to ensure full responsiveness across all areas of the glass.
4. **Peripherals:** If a Navia Grip or Indicator is connected to the 9-pin D-Sub, verify that it is receiving power and successfully interacting with the display UI.

**NOTE**
If you run into any issues, contact us at info@lxnavigation.com for assistance.

# Weight and Balance Data

After installing the Navia Display, it is a strict regulatory requirement that the aircraft's Weight and Balance records be updated to reflect the new equipment list.
To assist your mechanic or installer, LX navigation provides a dedicated **Equipment Datasheet** that contains the exact mass and center-of-gravity (CG) moment/arm data for all devices in the Navia system. Ensure the new empty weight and CG are physically calculated and logged in the aircraft's official records before flight.

# Technical specification

| Description | Unit | Display 12 | Display 7 | Display 4 |
|---|---|---|---|---|
| Dimensions | [mm] | 272.9x164.6x29.6 | 113x168.5x29.6 | 86.2x88.2x28.4 |
| Power supply | [V DC] | 48 | 48 | 48 |
| Nominal Voltage | [V DC] | | | |
| Average Power Consumption | [W] | | | |
| Maximum brightness: | [nits] | 1600 | 2500 | 1200 |
| Resolution: | [px] | 1920 x 1080 | 1200 x 1920 | 720 x 720 |
| Mass | [g] | 605 | 327 | 165 |
| Ground Survival Temperature | [°C] | | -55 – +85 | |
| Operating Temperature | [°C] | | -20 – +55 | |
| Relative Humidity | [%] | | 0 – 98 | |
| Max. Operational Altitude | [ft] | | 45 000 | |
| Operational Shock | | | 10 g | |
| Crash Safety Shock | | | 20 g | |
| Vibration | | | DO-160D U F/F1 | |

# 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 (868/915 MHz 6 and 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.

# Declaration of Conformity

**Identification of product**
**Product Name:** Navia Display 12, Navia Display 7, Navia Display 4
**Part Number(s):** LX02000540, LX02000530, LX02000550

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

**Related Directives**
LX navigation d.o.o. declares under our sole responsibility that the product complies with the essential requirements of the following European Directives and therefore bears the **CE marking**:

- **2014/53/EU** Radio Equipment Directive (RED)
- **2015/863/EU** Restriction of Hazardous Substances (RoHS 3)

**Harmonized Standards Applied**
The following harmonized standards have been applied to demonstrate conformity:

- **Health & Safety (Article 3.1a):** EN 62368-1:2014+A11:2017 (Product Safety), EN 62311:2008 (RF Exposure)
- **Electromagnetic Compatibility / EMC (Article 3.1b):** EN 301 489-1 V2.2.3, EN 301 489-3 V2.1.1, EN 301 489-17 V3.2.4, EN 301 489-19 V2.1.1
- **Radio Spectrum Efficiency (Article 3.2):** EN 300 328 V2.2.2, EN 301 413 V1.1.1, EN 300 220-1 V3.1.1, EN 300 220-2 V3.1.1
- **Additional Compliance:** EN 63000:2018 (RoHS)

**Aviation Environmental Testing**
While this device does not hold a formal aviation certification (such as an ETSO/TSO), it has been rigorously tested to meet the demanding environmental conditions for airborne equipment outlined in **RTCA DO-160**.

**Signed for and on behalf of LX navigation d.o.o.**
**Name / Title:** Nik Šalej, CEO
**Date:** March 20, 2026
**Location:** Celje, Slovenia

# Disclaimer and Legal Notice

**Accuracy of Information**

While every effort has been made to ensure that the information contained in this manual is accurate and complete, LX navigation d.o.o. assumes no responsibility or liability for any errors, omissions, or inaccuracies. The information in this document is provided "as is" and is subject to change without prior notice. LX navigation reserves the right to continually improve its products, software, and documentation without obligation to notify any person or organization of such revisions or changes.

**Operational Responsibility**

The Navia avionics system is designed to provide supplementary flight data and enhanced situational awareness. It is **not** a certified primary flight instrument and must not be used as the sole means of navigation, collision avoidance, or instrument flight (IMC/IFR). The pilot in command is solely responsible for the safe operation of the aircraft, adherence to all applicable aviation regulations, and the proactive separation from other aircraft, terrain, and obstacles.

# Limited Warranty

**Two-Year Hardware Warranty**
LX navigation warrants this hardware product to be free from defects in materials and workmanship under normal aviation use for a period of **two (2) years** from the date of original retail purchase.
During this warranty period, if a defect arises, LX navigation will, at its sole discretion and to the extent permitted by law, either:

1. Repair the product at no charge using new or refurbished replacement parts.
2. Exchange the product with a new or refurbished product that is functionally equivalent to the original.

**Warranty Exclusions**
This Limited Warranty does not apply to any software (including the operating system and internal firmware), databases, or any third-party equipment. Furthermore, this warranty does not cover damage caused by:

- Misuse, abuse, accidents, or neglect (including physical impact or water damage).
- Unauthorized modifications, alterations, or repairs performed by anyone other than LX navigation or an officially certified service partner.
- Opening the device enclosure or breaking the factory security seals.
- Improper installation, wiring, or application of incorrect voltage.
- Environmental damage extending beyond the certified limits of the device, including concentrated solar heat damage ("sunburns") on LCD screens.

To obtain warranty service, the customer must contact LX navigation support. Shipping costs to the LX navigation repair facility are the responsibility of the customer.

# End User License Agreement (EULA)

By purchasing, installing, or using any Navia device, or by downloading, accessing, or using any LX navigation software, firmware, license key, or data, you agree to the following terms and conditions. If you do not agree with these terms, do not install or use the device, software, or data.

## 19.1 License and Limitation of Use

**1.1. License.** Subject to the terms of this Agreement, LX navigation hereby grants you a non-exclusive, non-transferable right to use the software, firmware, license keys, and data embedded in binary executable form solely for your own personal or internal flight operations. You acknowledge that all software, algorithms, and related data are proprietary intellectual property of LX navigation and its suppliers.

**1.2. Limitation.** Software, firmware, and license keys may only be used as embedded in devices manufactured by LX navigation. No other licenses are granted by implication or otherwise. You may not reverse engineer, decompile, disassemble, or manipulate the software or hardware in any way.

## 19.2 Terms of Use in Aviation

**2.1. Installation.** The device must be installed according to the official LX navigation Installation Instructions and must comply with the applicable national aviation regulations (e.g., EASA Standard Change or Minor Change). Installation must be verified by certified maintenance staff where required by law.

**2.2. Safety Limitations.** The Navia system cannot warn or provide data in all situations. Sensors may be degraded by GPS outages, poor antenna placement, or environmental factors. The system does not issue resolution advisories. It is the sole responsibility of the pilot in command to decide upon the use of the system and to maintain safe flight conduct.

**2.3. Mandatory Updates.** System firmware and applicable databases (e.g., Obstacles, Airspace) must be updated regularly. LX navigation reserves the right to render outdated firmware versions inoperable to ensure network compatibility and system safety.

## 19.3 Data Privacy and Telemetry

**3.1. Data Collection.** Navia devices may collect, store, and transmit flight data, including aircraft identification, GPS position, altitude, and system diagnostics. LX navigation may use this data for system improvement, troubleshooting, and Search and Rescue (SAR) purposes.

**3.2. Data Sharing.** LX navigation is not responsible for any third-party device, software, application, or network that receives, intercepts, stores, or broadcasts data transmitted by your Navia device.

## 19.4 Limitation of Liability

**4.1. "As Is" Provision.** While the hardware is covered by a 2-year warranty, all software, firmware, databases, and digital services are provided on an "as is" and "as available" basis without any implied warranties of merchantability or fitness for a particular purpose.

**4.2. Total Liability Cap.** In no event shall LX navigation, its directors, employees, or suppliers be liable to you or any third party for any direct, indirect, incidental, consequential, special, or punitive damages. This includes, without limitation, damages for loss of life, personal injury, loss of the aircraft, loss of business profits, or loss of data, whether under a theory of contract, warranty, or tort (including negligence).

**4.3. Maximum Compensation.** In no event will LX navigation's total aggregate liability to you for any and all claims arising out of the use of the system exceed the amount actually paid by you for the specific device giving rise to the claim.

## 19.5 Indemnification

You agree to indemnify and hold LX navigation harmless from and against any and all claims, actions, liabilities, losses, damages, costs, and expenses (including reasonable attorneys' fees) arising out of your improper installation, misuse of the device, or violation of any aviation regulations.

## 19.6 Governing Law and General Terms

**6.1. Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the Republic of Slovenia, without regard to its conflict of law principles.

**6.2. Severability.** If any provision of this Agreement is found to be void or unenforceable, that provision shall be severed, and the remaining provisions will continue in full force and effect.

**6.3. Amendments.** LX navigation reserves the right to amend this Agreement at its sole discretion by publishing updated documentation. Continued use of the device and software constitutes acceptance of the amended terms.

# Contact

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