LXNAVIGATION

NAVIA
CORE PRO

Navia Core Pro Installation manual

Contents

Document information

0.1 Abstract

This document represents the installation manual for the Navia Core Pro. 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 Core Pro	LX02000490	1.0

0.4 Revision history

Document name	Document revision	Date	Revised by	Approved by	Notes
N_CPIM	R1	20.03.2026	N.S.	N.S.	initial release
N_CPIM	R2	20.05.2026	N.S.	N.S.	Corrected Navia Traffic wiring (J200 V_IN pin 9, GND pin 18); corrected Air Avionics ACD GND (pin 5 or 14) and RS232-RX (pin 2)

Overview

Navia Core Pro is the heart of the Navia system, acting as the centralized "Server" for the entire avionics suite. Designed and manufactured by LX navigation, it operates as a powerful data router that seamlessly connects multiple external devices and provides direct internet connectivity via a built-in global SIM.

The Navia system is an advanced technology avionics suite designed to integrate pilot/aircraft interaction into one central system. The system combines primary flight instrumentation, aircraft systems instrumentation, and navigational information, all seamlessly displayed on one or multiple Navia Displays. The Navia system is composed of several sub-units, referred to as Navia Family devices. These devices have a highly modular design and can be installed directly behind the instrument panel (or mounted to the panel in the case of a Navia Display or control panel) or in a separate avionics bay if desired. This design greatly eases troubleshooting and maintenance of the Navia system. A failure or problem can be isolated to a particular device, which can be replaced quickly and easily. Each device has a specific function, or set of functions, that contributes to the system's overall operation. For additional information on specific device functions, see the applicable sections of this manual.

To simplify aircraft wiring, Navia Core Pro features Power over Ethernet (PoE), allowing it to deliver both high-speed data (up to 1 Gbps) and power (up to 100W) to connected peripherals through a single cable.

Furthermore, it boasts advanced processing capabilities to perform complex tasks such as revolutionary offline AI voice recognition. This allows pilots to control radios, set transponder codes, and manage navigation using intuitive voice commands, significantly reducing workload and enhancing safety.

Compatible LX navigation Devices

The modular architecture of the Navia system allows the Navia Core Pro to seamlessly connect and route data between various proprietary LX navigation devices. Depending on the specific bandwidth and data requirements, these devices interface with the Navia Core using a variety of communication protocols.

The table below outlines the compatible Navia Family devices, their part numbers, and the required connection method:

Product Name	Part Number	Connection	Description
Navia Display 12	LX02000540	Gigabit PoE	High-speed screen rendering, data sharing, and power.
Navia Display 7	LX02000530	Gigabit PoE	High-speed screen rendering, data sharing, and power.
Navia Display 4	LX02000550	Gigabit PoE	High-speed screen rendering, data sharing, and power.
Navia Hub	LX02000500	Gigabit PoE	Expansion switch for adding multiple displays and PoE devices.
Navia EMU	LX02000810	Gigabit PoE	Real-time, high-resolution engine telemetry.
Navia Sense Gliding Pro	LX02000510	RS232 & Wi-Fi	Ultimate redundancy and high-speed sensor data.
Navia Sense Gliding	LX02000720	RS232 & Wi-Fi	Ultimate redundancy and high-speed sensor data.
Navia Sense Airplane Pro	LX02000730	RS232 & Wi-Fi	Ultimate redundancy and high-speed sensor data.
Navia Sense Airplane Pro HS	LX02000740	RS232 & Wi-Fi	Ultimate redundancy and high-speed sensor data.

Product Name	Part Number	Connection	Description
Navia Traffic (Flarm only)	LX02000750	RS232	FLARM Traffic, powered directly via Navia Core.
Navia Traffic (Dual Flarm/ADSB)	LX02000760	RS232	FLARM and ADSB TRAFFIC, powered directly via Navia Core.
Navia Grip	LX02000560	Wireless / USB to Display	Control of display as mouse, heated stick, warnings, AI/PTT voice controll.
Navia UPS	LX02000790	I2C	Active monitoring of backup battery and automated failover.

Standby Instruments

Although there is no regulatory requirement to equip the aircraft with backup flight instruments for all flight rules, LX navigation strongly recommends the installation of backup instruments for aircraft that will be flown in conditions other than Day VFR. In case of an electrical system failure, or in the unlikely event of an issue with the Navia system, backup instruments should, at a minimum, provide a secondary reference for aircraft attitude, airspeed, and altitude.

Recommended Backup Instruments by Aircraft Type:
To ensure the highest level of safety and compatibility, we recommend the following LX navigation backup instruments based on your aircraft category:

- **Experimental Airplanes:** We recommend the **IRIS Family** (e.g., IRIS EFIS) as a reliable and highly capable backup solution.
- **Certified Airplanes:** We highly recommend the **IRIS All in One Certified** to meet certification requirements while providing a robust secondary reference.
- **Alternative EFIS Backups:** As an optional backup, users can install the **IRIS EFIS 57**, **IRIS EFIS 80**, **IRIS EFIS Pro 57**, or **IRIS EFIS Pro 80mm**, depending on available panel space and requirements.

Backup Flight Loggers and Glider Solutions:
For flight logging and specialized glider backups, we recommend the following solutions:

- **Gliders:** For sailplanes, we recommend installing a backup variometer and flight recorder, specifically the **Era 57** or **Era 80**. Alternatively, the **Colibri X** can be added as a standalone backup flight logger unit.
- **Jet and Electric Propulsion:** For airplanes utilizing jet or electric propulsion, the **LX MOP IGC** is the recommended backup logger solution.
- **Additional Logging Options:** An additional **Navia Sense** module can be installed purely to provide redundant flight logger capabilities. You can also enable a logging license on a FLARM device such as the **Navia Traffic** or **Flarm Eagle** (*Note: IGC logging via FLARM is only supported in non-powered gliders or piston engine airplanes equipped with an ENL sensor*).

Inventory of Materials

This document contains the comprehensive electrical and mechanical specifications necessary to successfully install the Navia Core Pro. Because this manual serves as a sequential installation guide, we highly recommend following the chapters in the exact order presented. To help you prepare, this section outlines both the mandatory and optional hardware required to complete the setup (note that some parts listed here will be referenced again in later chapters).

Prior to starting the physical installation, take time to fully inventory your materials against the lists below. Doing so ensures you have received all ordered parts from LX navigation in good condition, while also helping you identify any third-party components you may still need to acquire for your specific aircraft configuration.

4.1 Unpacking Unit

Upon receiving your Navia Core Pro, gently unpack all items and visually examine them to ensure no damage occurred while in transit. Should you discover any compromised components, immediately contact the shipping carrier to initiate a damage claim. Be sure to hold onto the original box and all interior packing materials, as these are typically required to process a claim. Please wait for the carrier's authorization before attempting to return any parts to LX navigation. *Keep in mind that the LX navigation office operates Monday through Friday; any communications regarding returns or shipping claims sent over the weekend will be handled promptly on the next business day.*

We advise keeping the original packaging for future storage or transport needs. If you no longer have the original box, ensure you use a sturdy alternative packed with enough cushioning to strictly prevent the device from shifting during transit.

4.2 In the Box

Verify that the following items are included in the standard package:

- 1x Navia Core Pro unit
- 1x Device Registration Card (with QR code and portal link)
- 4x Default mounting screws (pre-installed in the device)

Device Registration
Included in your package is a registration card featuring a QR code and a direct link to the LX navigation download portal. We highly recommend scanning this code to register your specific

device right away. Once registered, you gain immediate access to all vital documentation for your exact unit, including the Certificate of Conformity (CoC) and digital manuals. Crucially, registering your Navia Core Pro ensures that our support team can proactively contact you regarding important software updates, service bulletins, or critical repair notifications.

4.3 Additional Required Equipment (Not Included)

To fully install and utilize the Navia Core Pro, the following components must be purchased separately depending on your specific aircraft setup. Please refer to the LX navigation catalog for exact part numbers.

Antennas
Depending on the features utilized, you will need to acquire and mount the following antennas:

- 2x LTE MIMO Antenna (Part Number: **LX03000040** - 2J5124P-300LL100-C20GST)
- 3x Wi-Fi/Bluetooth Antenna (2 used as access point, 1 as client connecting to external networks e.g., airport Wi-Fi) (Part Number: **LX03000070** - 2JW031-C675)

Connectors, Pins, and Wiring
For the physical installation, you will need the mating connectors, appropriate pins, and aviation-grade wiring. A complete and detailed list of all required connector part numbers, pin types, connector housings, and recommended wire gauges can be found in Section 5 (*Required Tools and Materials*).

Circuit Protection

- 7.5 A Automatic Circuit Breakers (e.g., Klixon MS26574-7.5) for power inputs
- Avionics Master switch (if not already present in the aircraft)

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.

5.1 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 **LX04000110** – Plug for Male Contacts Housing D-Sub, High Density Connector 44 Position (163X10189X)
- 1x **LX04000360** – Receptacle for Female Contacts Housing D-Sub Connector 25 Position (164X11789X)
- 2x **LX04000370** – 25 / 44HD Position Two Piece Backshell Connector Black 90°, 180° Shielded (16-001830)
- 44x **LX04000230** – HD D-Sub Contact Male Pin Gold 22 AWG Crimp Machined (161A18009X)
- 25x **LX04000240** – D-Sub Contact Female Socket Gold 20-24 AWG Crimp Machined (M39029/63-368)
- Power wire AWG 20 (M22759/16-20-9)
- Signal wire AWG 22 (M22759/16-22-9)
- Shielded signal wire (M27500-22 TG 1T14)
- High-quality Ethernet PoE cables (Available directly from LX navigation in 0.4m, 1m, 3m, and 5m lengths)

5.2 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.

Navia Core Pro J100 connector set (LX02000920)

LX Part Number	Qty	Description
LX04000110	1	Plug for Male Contacts Housing D-Sub, High Density Connector 44 Position (163X10189X)
LX04000370	1	25 / 44HD Position Two Piece Backshell Connector Black 90°, 180° Shielded (16-001830)
LX04000230	44	HD D-Sub Contact Male Pin Gold 22 AWG Crimp Machined (161A18009X)

Navia Core pro J101 connector set (LX02000930)

LX Part Number	Qty	Description
LX04000360	1	Receptacle for Female Contacts Housing D-Sub Connector 25 Position (164X11789X)
LX04000370	1	25 / 44HD Position Two Piece Backshell Connector Black 90°, 180° Shielded (16-001830)
LX04000240	25	D-Sub Contact Female Socket Gold 20-24 AWG Crimp Machined (M39029/63-368)

Navia Sense J300 connector set (LX02000950)

LX Part Number	Qty	Description
LX04000250	1	Receptacle for Female Contacts Housing D-Sub Connector 15 Position (164X11779X)
LX04000260	1	15 Position Two Piece Backshell Connector 90°, 180° Shielded (16-001820)
LX04000240	15	D-Sub Contact Female Socket Gold 20-24 AWG Crimp Machined (M39029/63-368)

Navia Traffic J200 connector set (LX02000940)

LX Part Number	Qty	Description
LX04000310	1	Receptacle for Female Contacts Housing D-Sub, High Density Connector 26 Position (164X11959X)
LX04000260	1	15 Position Two Piece Backshell Connector 90°, 180° Shielded (16-001820)
LX04000320	26	Plug for Male Contacts Housing D-Sub Connector 9 Position (162A18419X)

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)

Navia Mop J600 connector set (LX02001840)

LX Part Number	Qty	Description
LX04000300	1	Receptacle for Female Contacts Housing D-Sub Connector 9 Position (164X11769X)
LX04000290	1	9 Position Two Piece Backshell Connector 90°, 180° Shielded (16-001810)
LX04000240	9	D-Sub Contact Female Socket Gold 20-24 AWG Crimp Machined (M39029/63-368)

Navia Mop J601 connector set (LX02001850)

LX Part Number	Qty	Description
LX04000330	1	Receptacle for Female Contacts Housing D-Sub, Combo Connector 2 (Coax or Power) Position (172704-0042)
LX04000290	1	9 Position Two Piece Backshell Connector 90°, 180° Shielded (16-001810)
LX04000340	2	D-Sub Contact Male Pin Gold 20 AWG Solder Cup Machined (172704-0134)

Navia Indicator J700 connector set (LX02000960)

LX Part Number	Qty	Description
LX04000300	1	Receptacle for Female Contacts Housing D-Sub Connector 9 Position (164X11769X)
LX04000290	1	9 Position Two Piece Backshell Connector 90°, 180° Shielded (16-001810)
LX04000240	9	D-Sub Contact Female Socket Gold 20-24 AWG Crimp Machined (M39029/63-368)

Navia Sense OAT sensor wired (PT1000) with crimped pins (LX02001860)

LX Part Number	Qty	Description
LX04000350	1	PT1000 OAT probe 1.5m (T02-PT1000B-1D-T105-1500)
LX04000240	3	D-Sub Contact Female Socket Gold 20-24 AWG Crimp Machined (M39029/63-368)

LTE Antenna (LX03000040)

LX Part Number	Qty	Description
LX03000040	2	LTE antenna (2J5124P-300LL100-C20GST)

WiFi/Bluetooth Antenna (LX03000070)

LX Part Number	Qty	Description
LX03000070	3	WiFi/Bluetooth antenna (2JW031-C675)

WARNING

Antenna Installation: All antennas must be installed on the outside of the fuselage with a clear, unobstructed view of the sky or open space. Proper antenna placement is critical for reliable LTE connectivity, WiFi signal strength, and Bluetooth range. Improper antenna positioning will result in degraded performance, dropped connections, and unreliable communication between devices.

5.3 Tools

- PZ1 Screwdriver
- PH1 Screwdriver
- Pin crimping tool
- Pin insertion/extraction tool (M81969/1-01 for AWG 22 / High-Density pins)
- Pin insertion/extraction tool (M81969/1-02 for AWG 20 / Standard pins)

WARNING

Non-Magnetic Tools (Navia Sense or other AHRS Units):

Use of non-magnetic tools (e.g., beryllium, copper, or titanium) is recommended when installing or servicing the Navia Sense or other AHRS units. Do not use a screwdriver that contains a magnet when installing or servicing a magnetometer or AHRS device, as this can permanently alter its magnetic signature.

5.4 Wire Preparation and Crimping

Wire Stripping

Carefully strip approximately 3 to 4 mm of insulation from the end of the wire. Ensure that you use a properly sized wire stripper so that no underlying copper strands are nicked, cut, or broken during the process. Damaged strands significantly reduce the current-carrying capacity and mechanical strength of the wire.

Crimping Process and Inspection

It is mandatory that all pins are **crimped and not soldered**. Soldering creates a rigid point on the wire that is highly susceptible to breakage from aircraft vibration. After crimping,

inspect the connection to verify a good crimp: the bare copper strands should be visible in the pin's inspection hole, and the wire insulation must not be caught inside the wire crimp barrel. Perform a gentle "pull test" to ensure the wire is securely held. Once verified, simply push the pin into the corresponding hole in the connector housing until you feel it lock into place.

Pin Insertion and Extraction
It is crucial to use the correct dedicated tool for inserting and extracting pins to avoid damaging the delicate locking tabs inside the connector housing. Note that High-Density D-Sub connectors utilize smaller pin dimensions than standard D-Sub connectors. Therefore, you must select the tool that matches your wire gauge and pin size:

- **M81969/1-01 (Green/White):** Use this tool for smaller High-Density pins (Size 22) and AWG 22 wire.
- **M81969/1-02 (Red/White):** Use this tool for standard-sized pins (Size 20) and AWG 20 wire.

How to Insert a Pin:

1. Place the crimped wire into the groove of the colored insertion tip (Green for the 1-01 tool, Red for the 1-02 tool) so the tip rests against the shoulder of the crimped pin.
2. Carefully align the pin with the rear of the desired cavity on the connector housing.
3. Push straight in until you feel and hear a positive "click," indicating the internal retaining clip has locked the pin in place.
4. Pull the tool straight back to remove it, and perform a gentle pull-test on the wire to verify it is securely locked.

How to Extract a Pin:

1. Slide the white extraction tip of the tool over the wire of the pin you wish to remove.
2. Push the white tip straight into the rear of the connector housing cavity. Apply firm, steady forward pressure until the tool bottoms out; this action safely expands the internal metal locking tabs.
3. While keeping the tool fully seated, pinch the wire against the tool and pull both the tool and the wire out together simultaneously. *Warning: Never forcefully yank the wire without the extraction tool properly seated, as this will permanently destroy the connector's internal locking mechanism.*

Wire Splicing
The Navia Core Pro pinout has been carefully designed so that **no wire splicing is needed** in a standard installation. However, in rare cases where splicing is absolutely unavoidable, it must be done correctly using avionics-grade environmental splices (such as proper crimp butt-splices covered with dual-wall adhesive heat shrink or dedicated solder sleeves). Never use standard electrical tape, bare twists, or twist-on wire connectors in an aircraft environment.

Strain Relief
Once the connector is fully populated, tightly secure the exiting wire bundle using zip ties or aviation lacing cord to the connector backshell. Proper strain relief prevents the weight and

vibration of the wire bundle from transferring mechanical stress directly to the individual pins, ensuring long-term reliability.

Mounting

The dimensions of Navia Core Pro are shown in the figure 1.

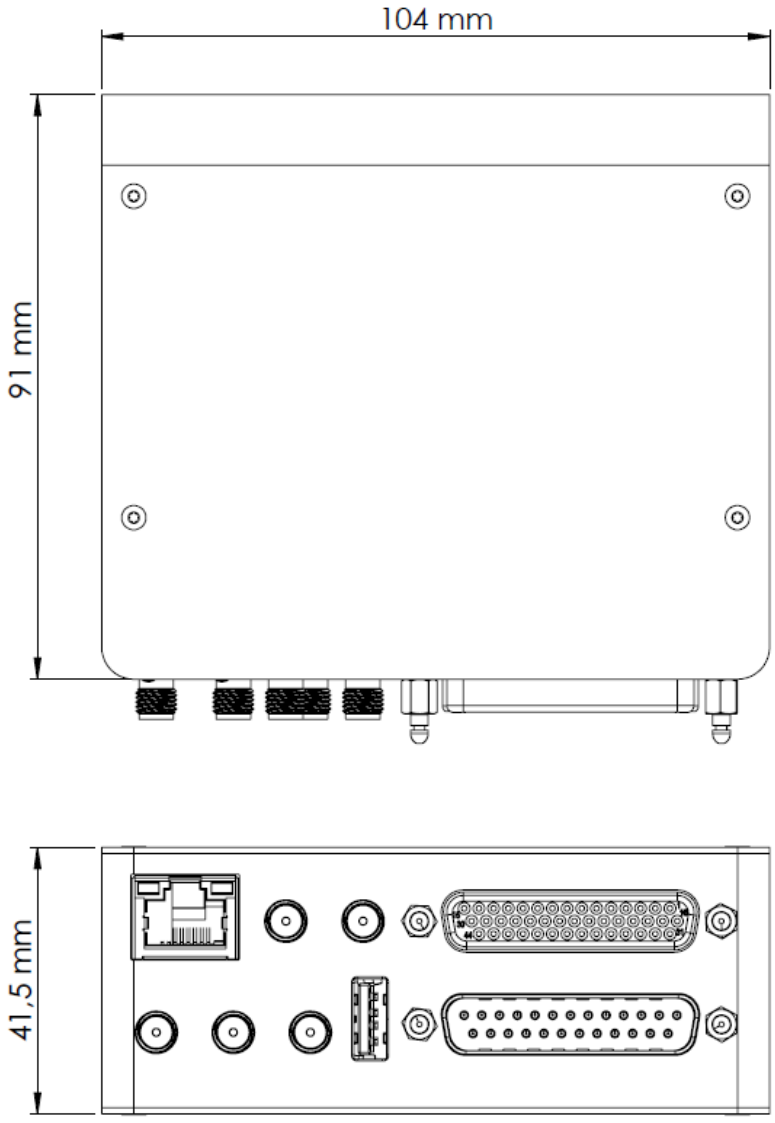

Figure 1. Device overview

Navia Core Pro is designed with two M2 threaded holes on each side. The use of M2 DIN 7985 screws is recommended.

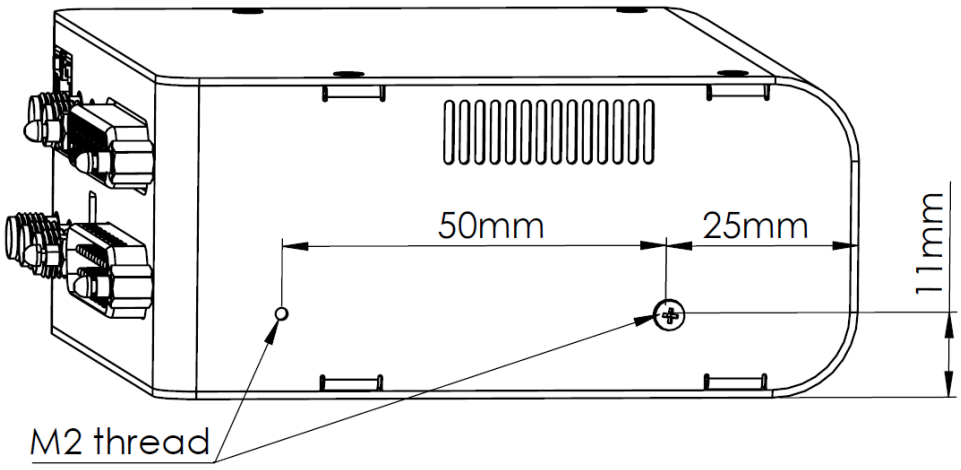

Figure 2. Mounting points

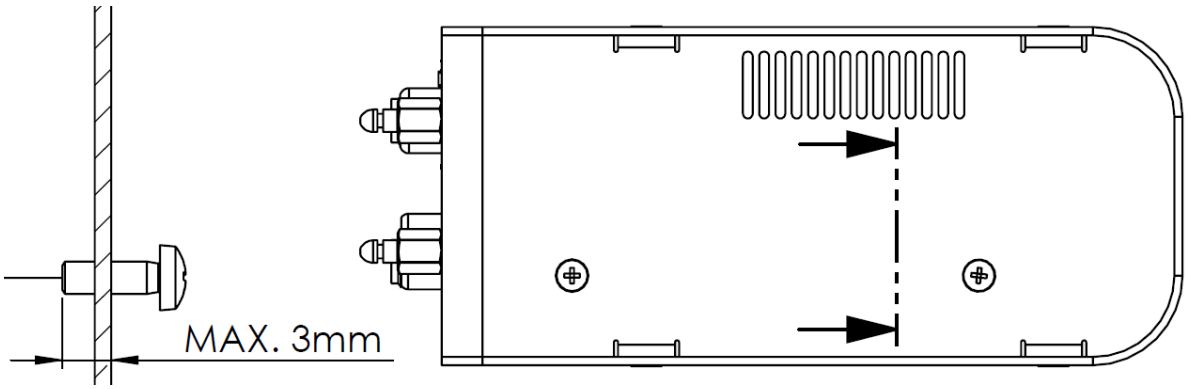

Figure 3. Length of screws

WARNING
Always use appropriate length of screws; using too long screws can damage internal components of Navia Core Pro.

Navia Core Pro is designed to be mounted in the avionics compartment or behind the instrument panel of the aircraft. Depending on the aircraft's individual requirements other locations may be suitable as well.

Navia Core Pro does not require additional external cooling. Make sure that installation is performed behind the engine firewall.

Two mounting options are possible:

- mounting in a Navia mounting rack,
- on a flat surface using two mounting brackets.

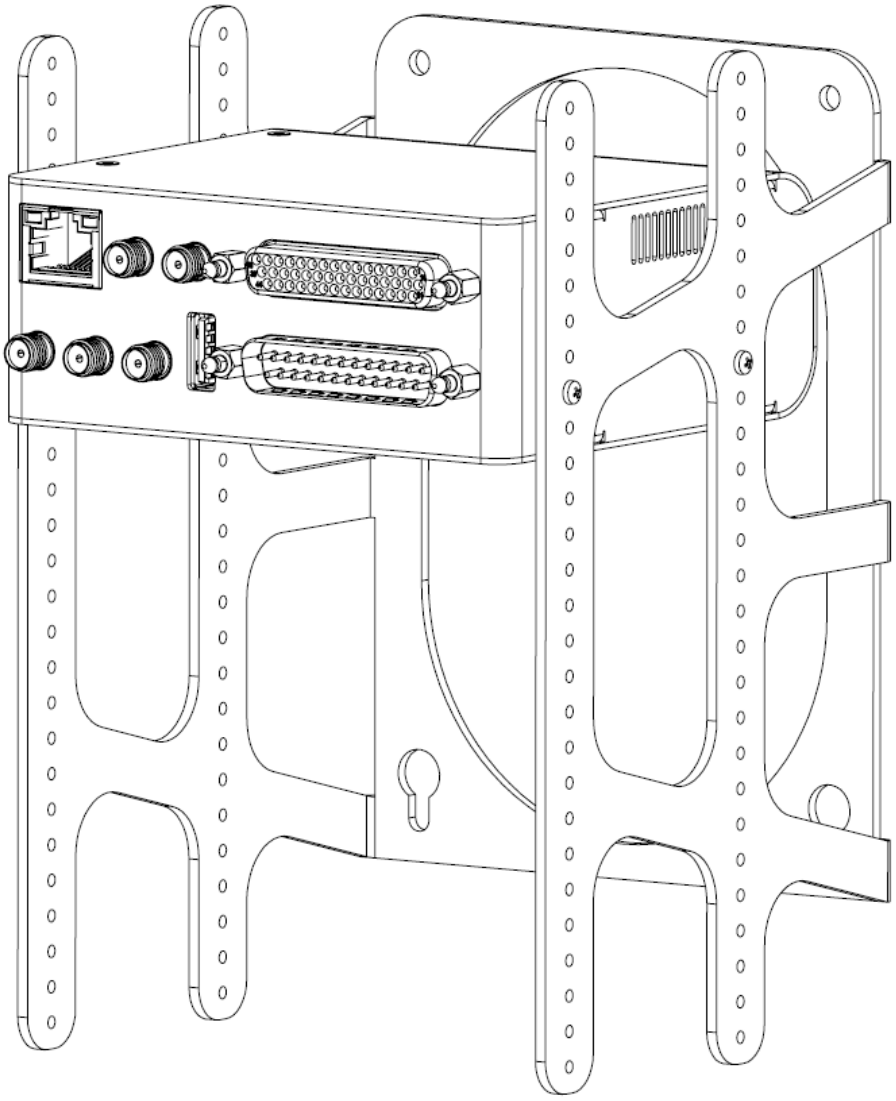

Figure 4. Mounting in Navia mounting rack

WARNING

When installing Navia Core Pro in a Navia Mounting Rack, install it at the position where the cooling openings on the side are not covered. Covering the cooling openings can cause the device to overheat, which could decrease performance or damage the device.

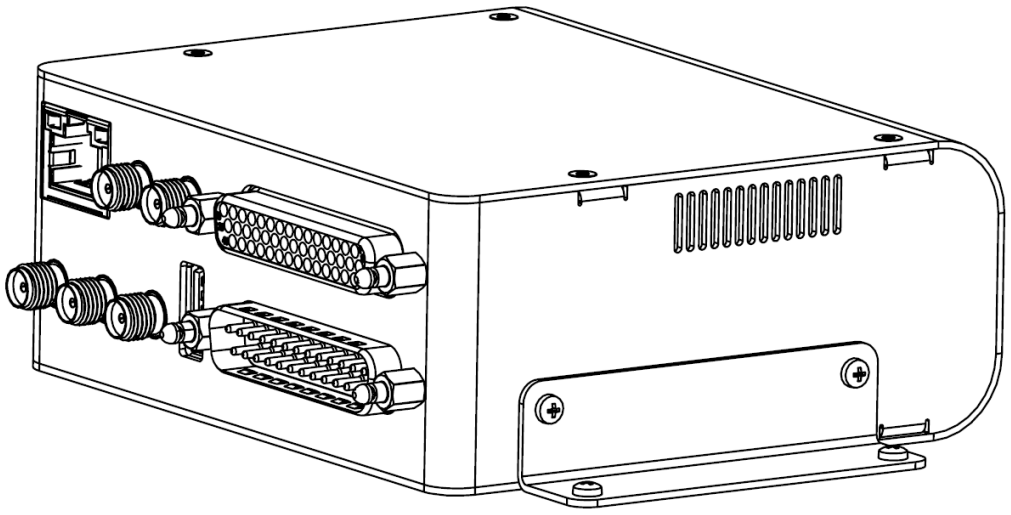

Figure 5. Mounting with two mounting brackets

Compass consideration

Make sure that Navia Core Pro is mounted more than 25 cm from the compass. When installation is completed a fresh compass calibration is recommended (in some installation cases required).

Wiring

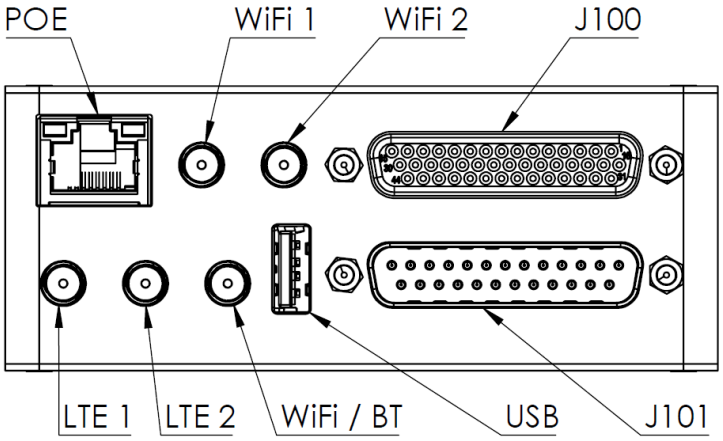

Figure 6. Front side connections

7.1 Electrical Considerations

This section presents information required for planning the electrical layout of the Navia system installation.

WARNING
CAUTION: Electro-Static Discharge (ESD)
To avoid damage to the Navia Family devices, take precautions to prevent Electro-Static Discharge (ESD) when handling connectors and associated wiring. ESD damage can be prevented by touching an object that is of the same electrical potential as the device before handling the device itself.

Power Specifications
All Navia Core Pro units and compatible Navia Family devices are capable of operating on standard 14 VDC or 28 VDC aircraft electrical systems, supporting a wide input voltage range of **10 to 32 VDC**. Use this information when determining power supply requirements. All installed electrical appliances must be considered when calculating total power requirements for the aircraft.

7.2 Wiring Harness Options

While LX navigation provides all the essential connector housings and loose pins needed to complete an installation from scratch, we offer several convenient alternatives to simplify the

process and minimize the risk of wiring errors.

- **Pre-Crimped Wires:** LX navigation provides sets of high-quality, aviation-grade wires that come pre-crimped with the correct pins. Installers can simply insert these pre-crimped wires directly into the appropriate slots in the connector housing according to their specific pinout needs.
- **Ready-Made Harnesses:** We offer plug-and-play wiring harnesses designed for standard system architectures. These ready-made harnesses (such as a unified loom connecting the Navia Core, Navia Sense, and Navia Traffic) drastically reduce installation time and are designed with future expansion in mind.
- **Custom Wiring Looms:** For highly integrated or uniquely configured aircraft, users can order a custom wiring loom tailored exactly to their specific installation requirements.

Please get in contact with the LX navigation sales and support team to discuss the best wiring solutions or to order a custom loom for your aircraft.

7.3 Wiring Harness Installation

Use cable meeting the applicable aviation regulations for the interconnect wiring. Any cable meeting these specifications is acceptable for the installation. When routing cables, follow these precautions:

- All cable routing should be kept as short and as direct as possible.
- Check there is ample space for the cabling and mating connectors.
- Avoid sharp bends in cabling.
- **Moisture Prevention:** Form a "drip loop" (a slight downward U-shape) in the harness just before the wire bundle enters the device connector. This prevents moisture or condensation from running down the wires directly into the pins and connector housing.
- Avoid routing near aircraft control cables.
- Avoid routing cables near heat sources, RF sources, EMI interference sources, power sources (e.g., 400 Hz generators, trim motors, etc.) or near power for fluorescent lighting.
- Route the GPS antenna cable as far as possible away from all COM transceivers and antenna cables.
- Analog Input wires routed too close to spark plugs, plug wires, or magnetos may result in erratic readings.

WARNING

CAUTION: Wiring Validation

Check all wiring connections for errors before connecting any wiring harnesses to the Navia Core Pro or Navia Family devices. Incorrect wiring could cause internal component damage.

7.4 Quick Release Connectors

Navia Core Pro utilizes advanced quick-release mechanisms for both the J100 and J101 interfaces. This design bridges the gap between robust avionics reliability and modern maintenance convenience.

Advantages of Quick Release Connectors:

- **Vibration Resistance:** Despite their ease of use, they feature a secure locking mechanism that guarantees a stable, uninterrupted electrical connection even under severe aircraft vibration and turbulence.
- **Effortless Maintenance:** The quick-release design allows for rapid connection and disconnection without the need for specialized tools (such as screwdrivers required for traditional D-Sub retention screws). This makes it incredibly easy to remove the unit for bench testing, upgrades, or panel reorganization.
- **Reduced Wear and Tear:** Eliminating repetitive screwing and unscrewing minimizes mechanical wear on both the device receptacles and the aircraft wiring harness.
- **Accessibility:** Designed for tight avionics compartments, the quick-action locks can be easily engaged and disengaged with one hand in hard-to-reach areas behind the instrument panel.

Usage Instructions:

To mate the connector, simply align it with the receptacle on the Navia Core Pro and push firmly until the locking mechanism visibly and audibly clicks into place. To disconnect, squeeze the release latches on the sides of the connector housing to disengage the lock, and gently pull straight back. **Never pull on the wire bundle itself** to remove the connector, as this can damage the internal crimps and strain relief.

7.5 Power Supply

Navia Core Pro operates on a wide input voltage range of **10 to 32 VDC** and features three main power supply inputs via the J101 connector (D-Sub 25-pin male):

- **POWER_IN_1 (J101 pin 1)** / **GND (J101 pin 14)**
- **POWER_IN_2 (J101 pin 2)** / **GND (J101 pin 15)**
- **POWER_IN_3 (J101 pin 3)** / **GND (J101 pin 16)**

Wiring and Grounding

Use AWG 20 (or thicker) wire for all power supply connections to safely handle the potential current draw. Proper grounding is highly critical in avionics to prevent noise and ground loops; always route your ground connections directly to a common, high-quality avionics ground bus. Verify using a calibrated multimeter that the electrical resistance between the Navia Core's ground pins and the main aircraft ground bus or airframe is **less than 3.0 milliohms**. It is recommended to pair the main power inputs with their respective ground return paths on **J101 pins 14, 15, and 16**. *Note: While the system accepts down to 10 VDC, we strongly suggest providing power with a higher voltage as it significantly increases the overall efficiency of the system.*

Power Management and Distribution
The device is designed to connect up to three different power supply sources simultaneously. It will automatically draw power from the source with the highest voltage level. Each input is protected by a diode, ensuring that current only flows into the device and preventing any backfeeding.

We have included three power supply sources so that the electrical load can be distributed across up to three batteries (particularly useful in gliders), which reduces the power draw from a single battery and increases its effective capacity. This completely eliminates the need for an external battery power selector switch. For optimal usage and load sharing, connect the same type of battery (identical chemistry and nominal voltage level) to each power supply source.

Circuit Protection and Switching
Each power pin is rated for up to **7.5 A**. The inputs are **not internally fused**. You must install a **7.5 A inline automatic circuit breaker (e.g., Klixon MS26574-7.5)** for each power input. These circuit breakers can also be conveniently used as manual switches to enable or disable the power supply to the system. Alternatively, if you want to isolate a specific power source (such as your engine starter battery), simply install a dedicated inline switch. Make sure any switch used is appropriately rated for the current.

WARNING
Placarding and Labeling:
Ensure that all newly installed Circuit Breakers and Avionics Master switches connected to the Navia Core are clearly placarded and labeled on the aircraft instrument panel to comply with standard airworthiness regulations.

Software Configuration
For each power input, Navia Core actively measures both the voltage and current draw. Once the batteries are installed, go to **Airplane Setting > Power Settings** on your display and adjust the power supply according to your setup. By selecting the correct power source profile (supported options include **Lead gel, LiFePo, LiIon, and engine alternator**), nominal voltage level, and design capacity, the system calculates the estimated remaining time on battery. **Note:** Reducing the screen brightness can dramatically decrease overall power consumption. Adjust your screen brightness to extend your remaining time on battery.

Installation Guidelines by Aircraft Type

- **Glider Installation:** We recommend you install the highest possible capacity batteries you can fit inside your battery box. Use the exact same type of batteries on all positions. We highly recommend using the latest LiFePO4 battery technology, which provides more power, features built-in protection circuits, and is safe to install in an airplane.
- **Airplane Installation:** In most cases, use a single power input connected to the main power of the airplane (engine generator / main battery).

WARNING

In case of total power loss, use a backup battery system connected to the **AUX_POWER_IN (J101 pin 7)**. More about the backup system is provided in the next section.

7.6 Backup Battery System

To ensure uninterrupted operation in the event of a main power failure, connect a backup battery system to the **AUX_POWER_IN (J101 pin 7)** and route its ground return to **GND (J101 pin 20)**.

Navia UPS Integration

When installing a Navia UPS, connect the power to the **AUX_POWER_IN (J101 pin 7)** and also connect the corresponding communication wires. Navia Core and Navia UPS actively communicate; the UPS precisely measures the internal state of the battery and accurately reports the remaining time on battery to the system. **Note:** The Navia UPS is not internally fused. You must install a **7.5 A inline fuse (e.g., Klixon MS26574-7.5)** on the power line between the Navia UPS and the **AUX_POWER_IN** pin.

Automatic Switching Logic

Navia Core will automatically switch to the **AUX_POWER_IN** source only when all main power supply sources drop below **10 V**. In this scenario, the system assumes main power has been lost and seamlessly transitions to the auxiliary power.

WARNING

If you use the **AUX_POWER_IN (J101 pin 7)**, you **must** install a switch on the **POWER_EN (J101 pin 8)**. When **POWER_EN** is connected to ground, the backup battery is safely switched off. If this switch is not installed (or not toggled off), the system will continuously drain the backup battery when the aircraft is parked. We highly recommend wiring the **POWER_EN** pin to your aircraft's main **Avionics Master** switch. This ensures the backup system is safely and automatically disengaged when the aircraft is powered down.

Alternative Backup Batteries

Alternatively, you can connect any standard battery to the **AUX_POWER_IN (J101 pin 7)**. Note that the system will begin drawing power from this source only when all main power inputs fall below 10 V. This type of installation is especially suitable for motor airplanes to safely maintain critical avionics during engine restarts or alternator failures.

7.7 Communication and Data Interfaces

Navia Core Pro is equipped with five independent RS232 serial communication ports. None of these ports are hardcoded or preassigned to specific devices. The user has full flexibility to

configure the device and communication protocol for any of the five ports via the software interface. While we provide wiring recommendations based on the connector pin arrangements, devices can be connected to any available RS232 port that suits your installation.

Port Locations

- **Connector J100:** RS232 1 and RS232 2
- **Connector J101:** RS232 3, RS232 4, and RS232 5

Wiring RS232 Connections
When wiring RS232 communication lines, always ensure proper RX and TX matching between devices:

- **RX (Receive):** Data coming *into* the Navia Core.
- **TX (Transmit):** Data going *out* from the Navia Core.
- **GND:** Always connect the corresponding signal ground to ensure reliable communication.

Supported Devices and Categories
The Navia Core is designed for extensive integration. It features native support for the **Navia Sense** by LX navigation. Users can connect multiple Navia Sense, Navia Traffic and other devices from Navia Family. System allows simultaneous connection of multiple devices of the same type to add robust redundancy for critical sensor data.

Supported third-party devices are divided into the following categories:

- **Sensor Data:** GNSS, Airspeed, Altitude, Climb rate, Inertial data, and AHRS.
- **Traffic Receivers:** FLARM and GDL90 compatible systems.
- **Autopilot**
- **Radio**
- **Transponder**
- **Power Management**

7.8 Powering External Devices

When planning your avionics setup, you have several options for powering external 3rd-party devices directly from the Navia Core. The selection depends primarily on whether you want the device to power up automatically when the system turns on, or if you require software-controlled switching.

Fixed Power Outputs (Always On)
Use these outputs if the external device should turn on automatically. The system provides two regulated **5V DC** outputs (each protected by an internal 500mA fuse), which are generally designed for connected devices like the Navia Sense. Additionally, there is one fixed output (**POWER_OUT3**) that directly tracks the input voltage of the system (10 to 32 VDC) and is always active when the Navia Core is powered.

Controlled Power Outputs
If you want to actively control the behavior of an external device and have the ability to power it off during flight, use the two controlled output pins. These outputs also track the system's input voltage (10 to 32 VDC). They are ideal for connecting and managing selectively used devices such as a Radio, Transponder, or FLARM.

Pin Name	Pin	GND	Voltage Level	Type
+5V	J100 pin 3	J100 pin 16	5V DC	Fixed (500mA fuse)
+5V	J100 pin 33	J100 pin 17	5V DC	Fixed (500mA fuse)
POWER_OUT1	J101 pin 4	J101 pin 17	10 – 32 VDC (Tracks Input)	Controlled
POWER_OUT2	J101 pin 5	J101 pin 18	10 – 32 VDC (Tracks Input)	Controlled
POWER_OUT3	J101 pin 6	J101 pin 19	10 – 32 VDC (Tracks Input)	Fixed (Always On)

Fusing Recommendations
When using the 10 to 32 VDC power outputs from the Navia Core, inline fuses are technically optional because the main power supply line is already protected by the master fuse. However, adding dedicated fuses for these individual outputs is **highly recommended** to isolate faults. If you install inline fuses for these ports, we recommend using **2 A Klixon MS26574-2** circuit breakers.

Bypassing Navia Core Power Management
You are not required to power your devices through the Navia Core. You can choose to bypass our internal power management entirely and connect your 3rd-party devices directly to the main avionics power bus in your airplane. In this case, you will manage your devices in the traditional way with dedicated panel switches. Ensure you apply the corresponding fuses specified by the device manufacturers when wiring directly to the avionics bus.

Advanced Digital Integration (VP-X)
If you are installing a highly complex avionics suite, we strongly recommend the use of a dedicated digital fuse box, such as the **Vertical Power VP-X**. You can interface the VP-X directly with the Navia Core to experience perfect integration, allowing centralized, software-driven power monitoring and management from your display.

Software Configuration for Devices
It is important to note that nothing in the Navia Core wiring is hardcoded or permanently fixed. Selecting the power supply type and the communication protocol for any external device is all done inside the software. Once your physical wiring is complete, navigate to **Airplane Settings > Devices** on your display. From this menu, you can freely assign any communication port and any power supply strategy to any of your connected devices.

7.9 Power over Ethernet (PoE) Interfaces

The Navia Core Pro is fundamentally designed to serve as the ultimate data router and central hub for your entire avionics suite. For modern peripherals that demand high-speed data transfer, the system utilizes Gigabit Power over Ethernet (PoE).

Passive 48V PoE and 100W Power Delivery
Internally, the Navia Core converts your aircraft's standard power supply to generate a robust, passive 48V PoE signal. This advanced architecture allows you to connect high-performance peripherals—such as the **Navia Display**, **Navia Hub**, and **Navia EMU**—using a single, high-quality Ethernet cable that seamlessly handles both gigabit data communication and power delivery. The Navia Core is incredibly capable, providing up to **100W of total power** to drive these connected PoE devices.

PoE Cable Pinout and Custom Assembly
The Navia Core Pro utilizes standard Ethernet pinouts for its PoE connections. If you choose to assemble custom cables for your installation, 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

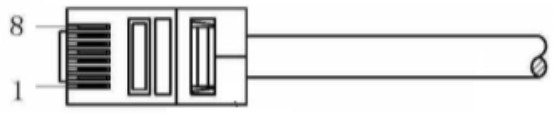

Figure 7. RJ45 Ethernet standard

Cable Recommendations: If building custom cables, 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.
Alternatively, LX navigation offers pre-made, rigorously tested, high-quality Ethernet cables specifically designed for the Navia ecosystem. These can be ordered in convenient lengths of **0.4m, 1m, 3m, and 5m**.

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. Use aviation lacing cord or wide hook-and-loop (Velcro) ties for securing high-speed data cables.

Expanding with the Navia Hub
The Navia Core features a single primary PoE port. If your installation requires connecting more than one PoE-enabled device, you must route your connections through the **Navia Hub**. The Navia Hub acts as an intelligent expansion switch; all ports on the Navia Hub are functionally equal, allowing you to plug your displays and devices into any available port effortlessly.

WARNING
Never Hot-Plug PoE Devices:
Always ensure the Navia Core 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 your systems.

WARNING
RJ45 Port Compatibility Hazard:
Do **not** confuse the Navia Core's PoE port 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.** Cross-connecting these systems will cause a catastrophic electrical short and result in the total failure of all connected devices.

Internal Hardware Protection
To safeguard the overarching system, the Navia Core's PoE subsystem is protected by a dedicated, internal quick-blow fuse. This is a one-time hardware fuse. If you experience a scenario where the Navia Core powers on normally but completely fails to provide PoE power to any connected devices, this internal fuse has likely blown. There are no user-replaceable parts inside the device. In this event, you must return the Navia Core to an authorized LX navigation service center for service.

7.10 USB Type-A Port

There is a standard USB Type-A port located at the back of the Navia Core Pro unit. At the moment, this port is strictly reserved for future use.

In the meantime, it can be conveniently used to charge mobile devices in the cockpit. Please note the following operational limitations:

- **No Data Capabilities:** This port currently will not provide any data transfer capabilities and cannot be used to interface USB data peripherals.
- **Power Limitation:** The charging output is strictly limited to a maximum of **500mA**.

7.11 Audio Interfaces

Navia Core Pro features the most advanced audio system of any avionics unit on the market. **Please thoroughly study this section before connecting any devices or deciding on your final audio setup.**

Wiring Requirements (Crucial)
Aircraft environments are highly susceptible to electrical noise. All audio and microphone lines **must** use shielded, twisted-pair aviation wire. Connect the wire shield to ground at **one end only** (preferably at the Navia Core) to prevent ground loops. Never connect dedicated audio signal grounds, such as **AUDIO_IN_GND (J100 pin 11)**, to the main aircraft chassis or power ground.

Amplified Mono Outputs and Spatial Audio
The system is equipped with 4 independent, amplified mono outputs. Each output is rated for a minimum of **4 Ohm speakers** and provides **1.5W of power per channel**.

This 4-channel design allows users to take full advantage of the internal Digital Signal Processor (DSP), which enables **Spatial Audio**. By positioning 4 speakers in a surround sound arrangement, pilots receive audible traffic alerts dynamically positioned to match the direction the traffic is approaching from, vastly improving situational awareness.

While the 4-speaker setup offers the maximum benefit, we recognize that space limitations (especially when retrofitting existing aircraft) may make this impractical. Therefore, the system is fully configurable for 3, 2, or 1 speaker arrangements:

- **4 Speaker Arrangement:** Left Front, Right Front, Left Rear, Right Rear (Full Spatial Audio).
- **3 Speaker Arrangement:** Center Front, Left Rear, Right Rear.
- **2 Speaker Arrangement:** Left, Right.
- **1 Speaker Arrangement:** Any location (Spatial Audio is disabled; standard mono warnings are routed to the single speaker).

Headset Integration and Parallel Connections
The speaker arrangements above are valid for gliders, motorgliders, and silent motor planes. However, if headsets are used, pilots can still benefit from Spatial Audio by using **stereo headsets**. By connecting one pair of speaker outputs (e.g., **SPEAKER_POS1** and **SPEAKER_POS2**) to one stereo headset and the remaining pair to a second headset, the

DSP will process spatial warnings directly inside the headsets.

For motorgliders, it is possible to share the audio outputs between spatial speakers and headsets. In this scenario, simply wire the headsets and the cabin speakers in parallel to the corresponding audio output pins.

WARNING

Impedance Mismatch & ANR Headsets:

Standard aviation headsets typically have an impedance of 150 to 600 Ohms, while cabin speakers are 4 to 8 Ohms. If wired directly in parallel, most of the power will flow to the speaker, resulting in a very loud speaker and a very quiet headset. To balance this, we highly recommend installing an inline volume potentiometer (L-pad) for the speaker, or using dedicated isolation resistors. Additionally, when using modern ANR (Active Noise Cancellation) headsets—especially models with built-in Bluetooth—their internal digital electronics and shared grounds can introduce high-frequency noise or ground loops into the system. In such cases, installing a **1:1 or 1:4 audio isolation transformer** on the headset line provides galvanic isolation and completely resolves the issue.

Audio Configuration and Balancing

None of the audio channel assignments are predefined. Once wired, navigate to **Airplane Settings > Audio** to set up your specific headset and speaker configuration.

When installing physical speakers in a cockpit, some may naturally be closer to the pilot's ears than others. To ensure spatial alerts are correctly centered, the software allows you to adjust the volume for individual channels independently so that the perceived sound strength is equal from all directions.

Advanced Audio and Microphone Processing

The second core feature of the advanced DSP handles the audio and microphone inputs. The Navia system processes audio from the pilot's microphone (whether a standard headset or a gooseneck mic) originally intended for ATC communication. This allows the pilot to control all main aspects of the avionics hands-free using aviation vocabulary via the AI Voice Assistant.

Radio or Audio Panel Integration: To fully leverage the Navia system, route the Audio Out from your Radio or Audio Panel into **AUDIO_IN_SIG (J100 pin 10)** and **AUDIO_IN_GND (J100 pin 11)** on the Navia Core. The audio signal is then intelligently routed by the Navia Core directly to your connected speakers or headsets. (*Note: In this advanced setup, the Radio or Audio Panel speaker outputs are not connected directly to the speakers, but rather to the Navia Core as a middleman.*)

Parallel Microphone Usage (No Splicing): There are two pairs of pins on the Navia Core dedicated to microphone input (e.g., **MIC_PILOT1** on **J100 pins 39 and 41**). Internally, these

pins are bridged. This intelligent design means you do not need to splice your microphone wire to feed both the Navia Core and your Radio or Audio Panel. Simply connect your microphone to one set of pins on the Navia Core, and use the second set of pins to run a wire to the Mic Input on your Radio or Audio Panel. This allows seamless, parallel use of a single microphone for both radio/intercom transmission and the AI Voice Assistant.

Microphone Compatibility: The Navia Core Pro microphone inputs **strictly support only standard (STD) electret microphones**, which are standard in modern aviation headsets and electret gooseneck microphones. The system does not natively support dynamic microphones. If you are retrofitting an older aircraft that utilizes a dynamic microphone, you **must** install an inline amplifier (Part Number: *[Insert PN]*) to convert the dynamic signal to an electret-compatible level before routing it into the Navia Core.

Bluetooth Audio Streaming
The Navia Core Pro also provides Bluetooth connectivity, allowing the system to function as a high-quality Bluetooth receiver. To use this feature, simply enable the Bluetooth search function on your Navia display, then navigate to your phone's Bluetooth setup page and pair the system. Once paired, you can use your favorite media app to stream music and listen to it directly through your connected cabin speakers or headsets.

ATC Audio Suppression: For safety and situational awareness, the Navia Core is designed to intelligently suppress (mute or dim) the Bluetooth audio stream whenever incoming ATC communication or radio data is received. Users are able to fully adjust individual volume levels and customize these audio suppression strategies in the system settings.

7.12 Digital Inputs/Outputs and Analog Inputs

Navia Core Pro provides a highly flexible, software-configurable I/O system consisting of **5 GPIO (General Purpose Input/Output) channels** and **2 Analog Input channels**. All logic operates at a strictly controlled **3.3V logic level**.

Analog Inputs (AIN_1, AIN_2)
The analog inputs measure variable voltage (0 - 3.3V) and can be used to interface with continuous sensors. The two most common applications are:

- **Flap Sensor:** The system can read flap positions using a variable resistor. Any standard 10k ohm linear potentiometer/resistor will work perfectly for this application. For a guaranteed plug-and-play solution, LX navigation provides a ready-to-use flap sensor (Part Number: LX02000370) which can be found in our official catalog (https://lxnavigation.com/product/flaps-sensor/).
- **Ambient Light Sensor (Ambilight):** To enable automatic screen brightness adjustment based on the ambient lighting conditions in the cockpit, you can connect a simple photoresistor (LDR) to one of the analog inputs. *(Note: The specific LX navigation part number for the pre-wired ambilight sensor is currently pending.)*

Digital GPIO (GPIO_1 to GPIO_5)

Each GPIO pin can be independently configured as either an input or an output:

- **Configured as Inputs:** Used to read the binary state (open/closed) of external buttons or switches. Common applications include monitoring landing gear status, canopy lock state, water ballast valves, Speed Command (SC) toggles, or variometer priority switches.
- **Configured as Outputs:** Used to send 3.3V control signals to external devices. Examples include triggering the SC for an external device, sending a PEV (Pilot Event) signal to connected flight loggers, enabling/disabling an autopilot system, or triggering a smoke system.

WARNING
Electrical Limitations of GPIO Outputs:
The GPIO lines are heavily protected against EMI/RFI and transient voltages using LC/RC filters, ferrite beads, and clamping diodes. Because of this robust protection, **each line features an internal 560-ohm series resistor**. Consequently, these outputs are designed for **signal-level logic only**. They cannot source or sink enough current to drive high-power loads such as relays, solenoids, or light bulbs directly. Drawing significant current will cause a massive voltage drop across the internal 560-ohm resistor, resulting in failure to trigger external devices and potentially damaging the internal logic controller. If you need to switch high-current or 12V devices, you **must** use the GPIO pin to drive an appropriate external solid-state relay, transistor, or MOSFET buffer circuit.

Configuration
None of the digital or analog pins are preassigned to specific functions. After wiring your chosen sensors or switches, navigate to **Airplane Setting > I/O Configuration** in the software to assign functions and define the active states (e.g., active high vs. active low) for your specific installation.

7.13 Radio Integration and Communication Interfaces

Because the Navia Core Pro uses flexible, software-assigned RS232 ports, there are no dedicated “Radio TX/RX” or “Transponder TX/RX” pins. You may connect your external radio’s data lines (RX, TX, and GND) to any of the available RS232 ports (1 through 5) and assign the protocol in the software under **Airplane Settings > Devices**.
Note: This section specifically describes the serial data communication integration. For instructions on properly wiring the radio’s audio outputs, microphone inputs, and PTT (Push-To-Talk) lines, please strictly adhere to the guidelines provided in Section 5.6 (Audio Interfaces).

Suggested Ports and Power Routing
While any data port can be utilized, our recommended standard installation uses **RS232 3 (Connector J101)** for radio data communication. For powering the radio, you have three recommended options:

- **Controlled by Navia Core:** Route power through **POWER_OUT1 (J101 pin 4)** to allow software control.
- **Complex Power Management:** Route power through a Vertical Power VP-X system.
- **Traditional Management:** Connect directly to the aircraft's avionics bus via a dedicated external circuit breaker.

Supported Radio Functions
Establishing a data connection between the Navia Core and a compatible radio unlocks powerful centralized capabilities, including:

- **Frequency Management:** View, set, and swap Active and Standby frequencies directly from the Navia touchscreen interface.
- **AI Voice Control:** Utilize the built-in offline AI Voice Assistant to tune frequencies and manage your communications completely hands-free.

Supported Radio Models
Navia Core currently supports direct serial communication with the following aviation radios. Detailed wiring specifications for each model can be found in the subsections below.

7.13.1 TQ KRT2

The TQ KRT2 radio can be fully integrated with the Navia Core Pro for both data control (frequency management and AI Voice Assistant) and centralized audio routing.

Data and Power Wiring
We recommend using RS232 3 on the Navia Core for communication and POWER_OUT1 for software-controlled power management.

Navia Core Pro (J101 Connector)	TQ KRT2 (15-pin Connector)
POWER_OUT1 (Pin 4)	Batt. Plus (Pins 8 & 15)
GND (Pin 17)	Batt. Minus (Pin 1)
RS232_TX3 (Pin 21)	RX-Remote (Pin 13)
RS232_RX3 (Pin 9)	TX-Remote (Pin 2)
GND (Pin 18)	Batt. Minus (Pin 1)

Audio, Microphone, and PTT Wiring
To utilize the Navia Core's DSP and Spatial Audio, route the audio output of the KRT2 into the Navia Core, and share the microphone and PTT lines.

Navia Core Pro	TQ KRT2 (15-pin Connector)
AUDIO_IN_SIG (J100 Pin 10)	LSP+ (Pin 7)
AUDIO_IN_GND (J100 Pin 11)	LSP- (Pin 4)
MIC_PILOT1 (J100 Pin 39 or 41)	Microphone-L (Pin 3)
MIC_PILOT2 (J100 Pin 40 or 42)	Microphone-R (Pin 6) **For Double Seaters*
GND (J100 Pin 16)	Mic.-GND (Pin 9)
RADIO_PTT1 (J101 Pin 12)	PTT-L (Pin 10)
RADIO_PTT2 (J101 Pin 25)	PTT-R (Pin 11) **For Double Seaters*

*Note: The table above illustrates the connection using the KRT2's amplified speaker outputs (LSP+ and LSP-). However, to minimize the risk of ground loops or over-driving the Navia Core's audio input, you may optionally use the KRT2's unamplified headset outputs. In that alternative setup, connect **AUDIO_IN_SIG** to **Headset (Pin 14)** and **AUDIO_IN_GND** to the corresponding audio ground. Be sure to always use shielded cables for all audio and microphone lines, grounding the shield at the Navia Core side only.*

7.13.2 Air Avionics Air Control Display (ACD)

The Air Avionics Air Control Display (ACD) is a highly versatile control head. According to its manual, the ACD allows for multiple combinations of connecting third-party radios, transponders, and Air Avionics' own remote hardware (via RS-232 or CAN bus). When integrated with the Navia Core, the Navia system sends control commands directly to the ACD, which then intelligently routes them to whichever COM or XPDR hardware is connected behind it. Optionally, the ACD can also feature a built-in certified altimeter.

Data and Power Wiring
We recommend using **RS232 3** on the Navia Core for communication and **POWER_OUT1** for power management. Connect these to the ACD's 15-pin D-Sub connector.

Navia Core Pro (J101 Connector)	Air Avionics ACD (15-pin Connector)
POWER_OUT1 (Pin 4)	Vin (+9...32V) (Pin 1)
GND (Pin 17)	GND (Pin 5 or 14)
RS232_TX3 (Pin 21)	RS232-RX (Pin 2)
RS232_RX3 (Pin 9)	RS232-TX (Pin 3)
GND (Pin 18)	GND (Pin 5 or 14)

Audio Wiring
To route the audio alerts (and optional altimeter warnings) from the ACD into the Navia Core's DSP, connect the ACD's audio output pins to the Navia Core's audio input. Note that your microphones and PTT lines will generally connect directly to your remote radio hardware or audio panel, rather than the ACD control head itself.

Navia Core Pro	Air Avionics ACD (15-pin Connector)
AUDIO_IN_SIG (J100 Pin 10)	Audio Out (Pin 7)
AUDIO_IN_GND (J100 Pin 11)	Audio GND (Pin 14)

7.13.3 Trig Avionics TY91, TY92, TY96, and TY97

Because Trig Avionics radios utilize the exact same style of quick-release D-Sub connectors as the Navia family, the physical installation process is super simple and identical to the standard wiring procedures used for all Navia Core components.

Data and Power Wiring
We recommend using RS232 3 on the Navia Core for communication and POWER_OUT1 for

software-controlled power management. *Note: To ensure the radio powers on automatically when the Navia Core applies power, the Trig's 'Power ON' pin (Pin 13) must be wired directly to ground.*

Navia Core Pro (J101 Connector)	Trig Radio (25-pin Connector)
POWER_OUT1 (Pin 4)	Aircraft Power (Pins 24 & 25)
GND (Pin 17)	Ground (Pins 19 & 22)
RS232_TX3 (Pin 21)	RS232 In (Pin 5)
RS232_RX3 (Pin 9)	RS232 Out (Pin 6)
GND (Pin 18)	Ground (Pin 9)
–	Power ON (Pin 13) → Connect to Ground

Audio, Microphone, and PTT Wiring
Route the unamplified audio output of the Trig into the Navia Core, and share the microphone and PTT lines.

Navia Core Pro	Trig Radio (25-pin Connector)
AUDIO_IN_SIG (J100 Pin 10)	Headphone Out (Pin 11)
AUDIO_IN_GND (J100 Pin 11)	Headphone Return (Pin 10)
MIC_PILOT1 (J100 Pin 39 or 41)	Microphone 1 (Pin 23)
MIC_PILOT2 (J100 Pin 40 or 42)	Microphone 2 (Pin 21) **For Double Seaters*
GND (J100 Pin 16)	Ground (Pin 9)
RADIO_PTT1 (J101 Pin 12)	PTT1 Key (Pin 15)
RADIO_PTT2 (J101 Pin 25)	PTT2 Key (Pin 14) **For Double Seaters*

7.13.4 Becker GT6201, AR6201, and AR62xx

The Becker 6200 series (including GT6201 and AR6201) can be integrated with the Navia Core Pro for remote tuning and centralized audio. **Crucial Note:** The Becker 6200 series natively uses RS422 for its serial communication. Because the Navia Core uses RS232, an external **RS232-to-RS422 serial converter/adapter** is mandatory to connect the data lines.

Data and Power Wiring (Including Adapter)
We recommend using RS232 3 and POWER_OUT1 on the Navia Core. Route the RS232 lines to your converter, and the converter's RS422 lines to the radio.

Navia Core Pro (J101)	Becker 6200 Series (25-pin) & Adapter
POWER_OUT1 (Pin 4)	Power IN (Pins 1 & 14) **Also power adapter if needed*
GND (Pin 17)	GND (Pins 13 & 25) **Also ground adapter*
RS232_TX3 (Pin 21)	Adapter RS232 RX
RS232_RX3 (Pin 9)	Adapter RS232 TX
–	Adapter RS422 TX+ → Becker RX+ (Pin 10)
–	Adapter RS422 TX- → Becker RX- (Pin 23)
–	Adapter RS422 RX+ → Becker TX+ (Pin 11)
–	Adapter RS422 RX- → Becker TX- (Pin 24)

Audio, Microphone, and PTT Wiring
To utilize the Navia Core's DSP, route the unamplified headphone audio output of the Becker into the Navia Core, and share the microphone and PTT lines.

Navia Core Pro	Becker 6200 Series (25-pin Connector)
AUDIO_IN_SIG (J100 Pin 10)	Headphone Out (Pin 6)
AUDIO_IN_GND (J100 Pin 11)	Headphone GND (Pin 19)
MIC_PILOT1 (J100 Pin 39 or 41)	Standard MIC 1 (Pin 5)
MIC_PILOT2 (J100 Pin 40 or 42)	Standard MIC 2 (Pin 17) **For Double Seaters*
GND (J100 Pin 16)	MIC GND (Pin 18)
RADIO_PTT1 (J101 Pin 12)	PTT 1 (Pin 4)
RADIO_PTT2 (J101 Pin 25)	PTT 2 (Pin 16) **For Double Seaters*

Note: Ensure you are using the Standard MIC inputs on the Becker, which are designed for electret microphones. As always, use shielded aviation wire for microphone lines, grounding the shield at the Navia Core side to prevent ground loops.

7.13.5 Funke ATR833 and ATR833S

The Funke ATR833 (including ATR833-II) and ATR833S radios share an identical 25-pin D-Sub pinout for the purposes of this integration. They can be seamlessly connected to the Navia Core Pro for centralized control and spatial audio routing.

Data and Power Wiring
We recommend using RS232 3 on the Navia Core for communication and POWER_OUT1 for software-controlled power management.

Navia Core Pro (J101 Connector)	Funke ATR833 / ATR833S (25-pin Connector)
POWER_OUT1 (Pin 4)	+14 / +28V-PWR (Pins 11 & 12)
GND (Pin 17)	BATT (-) (Pins 13 & 25)
RS232_TX3 (Pin 21)	DATA-RX (Pin 9)
RS232_RX3 (Pin 9)	DATA-TX (Pin 22)
GND (Pin 18)	BATT (-) (Pins 13 & 25)

Audio, Microphone, and PTT Wiring
To utilize the Navia Core's DSP, route the audio output of the Funke into the Navia Core, and share the microphone and PTT lines.

Navia Core Pro	Funke ATR833 / ATR833S (25-pin Connector)
AUDIO_IN_SIG (J100 Pin 10)	HEAD-0 (+) (Pin 2)
AUDIO_IN_GND (J100 Pin 11)	GND (HEAD-0) (Pin 3)
MIC_PILOT1 (J100 Pin 39 or 41)	MIC L STD (Pin 19)
MIC_PILOT2 (J100 Pin 40 or 42)	MIC R STD (Pin 18) **For Double Seaters*
GND (J100 Pin 16)	MIC L GND (Pin 6) & MIC R GND (Pin 14)
RADIO_PTT1 (J101 Pin 12)	PTT-0 (Pin 15)
RADIO_PTT2 (J101 Pin 25)	PTT-1 (Pin 17) **For Double Seaters*

*Note: The Funke radios provide both Loudspeaker (LSP+ / LSP-) and Headset (HEAD-0) outputs. We highly recommend using the unamplified Headset outputs (Pins 2 & 3) to feed the Navia Core. This provides a cleaner line-level signal and helps avoid ground loops or over-driving the audio inputs. Additionally, ensure you wire your microphones to the standard electret inputs (MIC L STD / MIC R STD) and **not** the dynamic (DYN) pins, as the Navia Core Pro exclusively works with standard electret microphone signals.*

7.14 Vertical Power VP-X Integration

The Navia Core Pro is fully compatible with the Vertical Power VP-X Electronic Circuit Breaker System. Within this ecosystem, the Navia Core acts as the primary EFIS display and control interface. Integrating the VP-X allows pilots to manage the aircraft's entire electrical system, view real-time power consumption, monitor circuit faults, and read flap or trim positions directly from the Navia touchscreen.

One of the most powerful features of this integration is the ability to use the Navia AI Voice Assistant to control physical aircraft systems. With a simple voice command such as *"Enable Position Lights"* or *"Turn on Fuel Pump,"* the Navia Core will seamlessly command the VP-X to switch the respective circuits.

Powering the Navia Core via VP-X
When integrating with the VP-X ecosystem, the Navia Core serves as your primary EFIS. Therefore, the Navia Core itself should receive its main power from the VP-X. Connect the Navia Core's **POWER_IN_1 (J101 pin 1)** to the dedicated primary EFIS power output on the VP-X (typically the **EFIS 1** circuit on the VP-X J2 connector).

Data Wiring
Communication between the Navia Core and the VP-X is achieved via a single RS232 serial connection. You can use any available RS232 port on the Navia Core. For this example, we recommend using **RS232 4 (Connector J101)**.

Navia Core Pro (J101 Connector)	Vertical Power VP-X
RS232_TX4 (Pin 22)	EFIS RS232 RX
RS232_RX4 (Pin 10)	EFIS RS232 TX
GND (Pin 19)	Serial Ground

Note: Please refer to the official Vertical Power VP-X Installation and Operating Manual to identify the exact pin numbers for the EFIS RS232 connection on your specific VP-X wiring harness (typically located on the J2 connector).

Hybrid Power Management Strategy
Using the VP-X does not restrict you from using the Navia Core's internal power outputs. You can employ a flexible hybrid strategy: routing high-draw or standard 12V/24V avionics through the VP-X, while utilizing the Navia Core's **POWER_OUT1**, **POWER_OUT2**, or **POWER_OUT3** for selectively managed devices.

WARNING
Low Voltage Devices (Navia Sense):
The VP-X distributes main aircraft bus voltage (typically 12V or 24V). Devices that require 5V logic power, such as the **Navia Sense**, **must** be connected directly to the Navia Core's regulated **+5V (J100 pins 3 or 33)** outputs. Connecting a 5V device directly to a VP-X circuit will result in immediate and permanent damage to the device.

Configuration
Setting up the VP-X integration requires a two-step process:

1. **VP-X Configuration:** Use the Vertical Power Configurator software to configure your VP-X unit according to the Vertical Power manual. You will need to define your circuit breaker sizes, switch assignments, flap position limits, and ensure the primary EFIS serial communication protocol is enabled to match the Navia system.
2. **Navia Core Configuration:** On the Navia display, navigate to **Airplane Settings > Devices**. Select the RS232 port you utilized for the physical connection (e.g., Port 4) and assign it to the **Vertical Power VP-X** communication protocol.

7.15 Traffic Receivers (FLARM & GDL90)

The Navia Core Pro supports integration with any traffic receiver that outputs NMEA traffic data in FLARM format or standard GDL90 traffic data. This allows the Navia display to process and show real-time traffic alerts, surrounding aircraft positions, and to provide advanced Spatial Audio warnings directly to your headsets or speaker array.
You can connect your traffic device to any available RS232 port on the Navia Core and assign the correct protocol in the software under **Airplane Settings > Devices**. For the examples below, we recommend using **RS232 5** for communication and the fixed **POWER_OUT3** to provide continuous power to the traffic unit whenever the avionics are powered on.

7.15.1 Navia Traffic

The most optimal integration is achieved with the **Navia Traffic** unit. It is specifically designed to be physically installed inside the Navia Rack system, directly on top of the Navia Core Pro, perfectly complementing the entire avionics suite.

While a dedicated installation manual is provided for Navia Traffic, the basic electrical connection simply requires 4 wires (Power, Ground, and two RS232 data lines) between the units.

Navia Core Pro (J101 Connector)	Navia Traffic
POWER_OUT3 (Pin 6)	V_IN (Pin 9)
GND (Pin 19)	GND (Pin 18)
RS232_RX5 (Pin 11)	RS232_1_TX (Pin 3)
RS232_TX5 (Pin 23)	RS232_1_RX (Pin 4)

7.15.2 Generic FLARM Devices

Navia Core Pro supports generic FLARM-compatible collision avoidance devices, including but not limited to the **Flarm Eagle, Flarm RedBox, Flarm MiniBox, Classic Flarm, PowerFlarm Core, FlarmFusion, FlarmMouse, and PowerMouse**.

These third-party devices typically output data and receive power through a standard IGC FLARM RJ45 (8-pin) or RJ11 (6-pin) connector. To interface these devices with the Navia Core, you must connect the 4 essential pins (Power, Ground, TX, and RX) from the Navia Core to the corresponding data and power pins on the device's RJ connector.

Note: The order of the pins on the 6-pin RJ11 connector is exactly the same as the middle 6 pins of the RJ45 connector, simply dropping the first VDC (Pin 1) and the last GND (Pin 8).

Navia Core Pro (J101)	FLARM RJ45 (8-pin)	FLARM RJ11 (6-pin)
POWER_OUT3 (Pin 6)	Pins 1 & 2 (Power / VCC)	Pin 1 (Power / VCC)
GND (Pin 19)	Pins 3, 6, 7, 8 (GND)	Pins 2, 5, 6 (GND)
RS232_RX5 (Pin 11)	Pin 5 (FLARM TX - Data Out)	Pin 4 (FLARM TX - Data Out)
RS232_TX5 (Pin 23)	Pin 4 (FLARM RX - Data In)	Pin 3 (FLARM RX - Data In)

7.15.3 PowerFlarm Core and Flarm Fusion

While the PowerFlarm Core and Flarm Fusion devices provide standard RJ45 and RJ11 ports, they also feature a 9-pin D-Sub (DE-9) connector for power, data, and audio. We highly recommend using this 9-pin DE-9 connector to interface with the Navia Core Pro. This approach leaves the RJ45/RJ11 ports free to connect additional dedicated peripherals, such as a standalone variometer, a dedicated FLARM display, or a secondary traffic monitor.

Navia Core Pro (J101 Connector)	PowerFlarm / Fusion (9-pin DE-9)
POWER_OUT3 (Pin 6)	Pin 7 (+12 to +32 V DC power supply)
GND (Pin 19)	Pin 5 (GND)
RS232_RX5 (Pin 11)	Pin 2 (TX, Fusion sends RS-232)
RS232_TX5 (Pin 23)	Pin 3 (RX, Fusion receives RS-232)

7.15.4 Air Avionics AT-1

The Air Avionics AT-1 collision avoidance system interfaces with the Navia Core Pro using its 26-pin High-Density D-Sub connector. The Navia Core provides a dedicated RS232 port to receive high-speed traffic data from the AT-1.

Navia Core Pro (J101 Connector)	Air Avionics AT-1 (26-pin HD D-Sub)
POWER_OUT3 (Pin 6)	Power IN (Pin 1)
GND (Pin 19)	Ground (Pin 10) & Signal GND (Pin 2)
RS232_RX5 (Pin 11)	RS232 TX 1 (Pin 3)
RS232_TX5 (Pin 23)	RS232 RX 1 (Pin 4)

7.16 Navia Sense Integration

The Navia Core Pro natively supports the Navia Sense for highly accurate AHRS, inertial, and air data. The Navia system architecture allows you to connect one or multiple Navia Sense units simultaneously to provide robust, automatic redundancy for critical flight data.

Data and Power Wiring
The Navia Sense operates on 5V logic power and communicates via RS232. We recommend connecting the primary Navia Sense to **RS232 1 (Connector J100)** and powering it using the regulated **+5V** output on the same connector. Ensure you use **TX1 and RX1** on the Navia Sense (J102 connector) for this communication.

Navia Core Pro (J100 Connector)	Navia Sense (J102 15-pin Connector)
+5V (Pin 3)	5V (Pin 2)
GND (Pin 16)	GND (Pin 10)
RS232_RX1 (Pin 1)	RS232_TX1 (Pin 9)
RS232_TX1 (Pin 2)	RS232_RX1 (Pin 1)

Adding a Secondary Navia Sense
If installing a second, redundant Navia Sense, connect its power to the second regulated **+5V (J100 Pin 33)** and **GND (J100 Pin 17)**, and route its data lines to **RS232_RX2 (J100 Pin 4)** and **RS232_TX2 (J100 Pin 5)**.

WARNING
MOP Expansion Pins:
The Navia Sense's secondary RS232 port (**RS232_RX2 on Pin 3** and **RS232_TX2 on Pin 11**) is strictly reserved for expanding the Navia Sense with MOP capabilities. **Do not** connect these pins to the Navia Core Pro for standard data communication.

7.17 iLevil AP and AW Integration

The iLevil AP and AW series are highly capable, multi-functional avionics devices that provide AHRS (sensor data), ADS-B/traffic data, and in the case of the iLevil AP, full autopilot integration. Both the AP and AW models share the exact same pinout for connecting to the Navia Core Pro.

Data Combination and Redundancy
The Navia Core Pro features intelligent data merging capabilities. You can use the iLevil AP/AW as the sole sensor and traffic device in your system, or you can connect it alongside other devices such as the **Navia Sense**, **Navia Traffic**, or third-party FLARM receivers. When multiple sensors are connected, the Navia Core Pro will automatically combine and cross-reference the data streams to provide the highest level of accuracy and redundancy.

Data and Power Wiring
You can connect the iLevil to any available RS232 port on the Navia Core. For this example, we recommend using **RS232 2 (Connector J100)** for data communication and **POWER_OUT2 (Connector J101)** to allow the Navia Core to manage its power. To establish communication, you must use one of the iLevil's auxiliary serial ports, such as **AUX 0**.

Navia Core Pro	**iLevil AP / AW (15-pin D-Sub)**
POWER_OUT2 (J101 Pin 5)	Main Power (Pins 8 & 15)
GND (J101 Pin 18)	Ground (Pins 1 & 9)
RS232_RX2 (J100 Pin 4)	AUX 0 TX (Pin 12)
RS232_TX2 (J100 Pin 5)	AUX 0 RX (Pin 4)

Device Configuration
You must configure the iLevil device correctly so that it routes the appropriate data stream through the selected AUX port (AUX 0). This is done using the official **iLevil application**. Furthermore, you can continue to run and use the iLevil application on your tablet or secondary screen alongside the Navia Core Pro, as the iLevil supports concurrent connections.
Note: Please verify the exact pin numbers against your specific iLevil Installation Manual revision to ensure correct wiring, as third-party DB15 pinouts can occasionally vary by hardware generation.

7.18 Video Input Integration (Camera Support)

In a Navia system equipped with Navia Displays, the Navia Core Pro supports high-definition digital video input. Unlike legacy systems that rely on analog composite video, the Navia architecture utilizes modern digital networking via Gigabit PoE or Wi-Fi.

Camera Applications and Display
Digital video input can be used with various supported IP cameras or wireless action cameras to monitor the aircraft's exterior surroundings, landing gear, or cabin. The live video feed can be seamlessly displayed on a dedicated Multi-Function Display (MFD) page, or as an inset window directly on the Primary Flight Display (PFD). Wireless remote control of supported action cameras is also integrated, allowing recording to be started or stopped directly from the Navia touchscreen.

This options is not available in present state of the software. We will update this section of manual with the list of supported devices.

Connection Methods

- **PoE IP Cameras:** Connect compatible Power-over-Ethernet network cameras directly to an available port on the **Navia Hub**. The Navia Hub will provide the required 48V power and route the high-speed video data back to the Navia Core Pro.
- **Wi-Fi Action Cameras:** Connect supported wireless action cameras directly to the Navia Core Pro's internal Wi-Fi Access Point (SSID: *"Navia Core xxxxx"*). Once paired, navigate to **Airplane Settings > Devices** to configure the camera feed and control options.

7.19 Connector J100 Pinout (D-Sub 44 female)

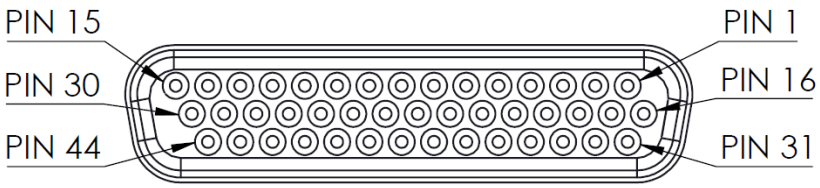

Figure 8. J100, as viewed looking at connector on unit

Pin	Name	Description
1	RS232_RX1	RS232 receive (data in)
2	RS232_TX1	RS232 transmit (data out)
3	+5V	5V Power supply for external device like Navia Sense (500mA fuse)
4	RS232_RX2	RS232 receive (data in)
5	RS232_TX2	RS232 transmit (data out)
6	+Do not connect	Reserved for future use
7	Do not connect	Reserved for future use
8	Do not connect	Reserved for future use
9	Do not connect	Reserved for future use
10	AUDIO_IN_SIG	Audio input from radio or audio panel
11	AUDIO_IN_GND	Audio input signal ground
12	SPEAKER_POS3	Chanel 3 audio out (speaker, headset) mono +
13	SPEAKER_NEG3	Chanel 3 audio out (speaker, headset) mono -
14	SPEAKER_POS4	Chanel 4 audio out (speaker, headset) mono +
15	SPEAKER_NEG4	Chanel 4 audio out (speaker, headset) mono -
16	GND	Ground
17	GND	Ground
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground
26	GND	Ground

Pin	Name	Description
27	GND	Ground
28	GND	Ground
29	SPEAKER_NEG1	Chanel 1 audio out (speaker, headset) mono -
30	SPEAKER_NEG2	Chanel 2 audio out (speaker, headset) mono -
31	ANALOG_IN1	Analog input 1 (0 - 3.3V)
32	ANALOG_IN2	Analog input 2 (0 - 3.3V)
33	+5V	5V Power supply for external device like Navia Sense (500mA fuse)
34	GPIO_1	Digital input / output 1(3.3V logic level)
35	GPIO_2	Digital input / output 2(3.3V logic level)
36	GPIO_3	Digital input / output 3(3.3V logic level)
37	GPIO_4	Digital input / output 4(3.3V logic level)
38	GPIO_5	Digital input / output 5(3.3V logic level)
39	MIC_PILOT1	Front or Left pilot microphone input
40	MIC_PILOT2	Rear or Right pilot microphone input
41	MIC_PILOT1	Front or Left pilot microphone input
42	MIC_PILOT2	Rear or Right pilot microphone input
43	SPEAKER_POS1	Chanel 1 audio out (speaker, headset) mono +
44	SPEAKER_POS2	Chanel 2 audio out (speaker, headset) mono +

7.20 Connector J101 Pinout (D-Sub 25 male)

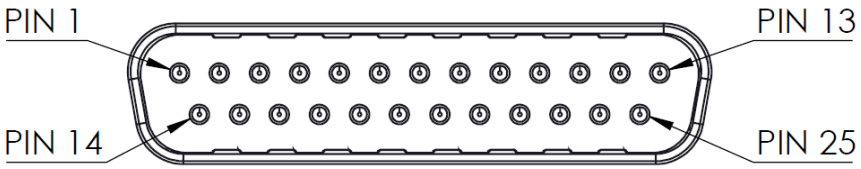

Figure 9. J101, as viewed looking at connector on unit

Pin	Name	Description
1	POWER_IN_1	Power supply input 1
2	POWER_IN_2	Power supply input 2
3	POWER_IN_3	Power supply input 3
4	POWER_OUT1	Managed power supply output (eg. radio)
5	POWER_OUT2	Managed power supply output(eg. transponder)
6	POWER_OUT3	Unmanaged (always on) power supply output - always on (eg. Navia Traffic)
7	AUX_POWER_IN	Backup system power supply input
8	POWER_EN	Power on switch (GND == disabled)
9	RS232_RX3	RS232 receive (data in)
10	RS232_RX4	RS232 receive (data in)
11	RS232_RX5	RS232 receive (data in)
12	RADIO_PTT1	Push-to-talk line 1
13	RADIO_INTERCOM	Toggle intercom connection
14	GND	Ground
15	GND	Ground
16	GND	Ground
17	GND	Ground
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	RS232_TX3	RS232 transmit (data out)
22	RS232_TX4	RS232 transmit (data out)
23	RS232_TX5	RS232 transmit (data out)
24	GND	Ground
25	RADIO_PTT2	Push-to-talk line 2

Antenna Installation

The Navia Core Pro is equipped with 5 dedicated radio frequency (RF) antenna ports. All of these ports utilize standard **SMA connectors**.

WARNING

It is absolutely critical to connect the correct type of antenna to its corresponding port as labeled on the device chassis. Powering on the Navia Core Pro and allowing its internal modems to transmit without an antenna securely connected can cause permanent damage to the internal RF transmitters.

Coaxial Cable & SMA Handling

Coaxial cables (used for LTE, GPS, and Wi-Fi antennas) require strict handling procedures:

- **Bend Radius:** Strictly maintain the minimum bend radius for all coaxial cables (typically 6 to 10 times the cable diameter). Bending coax too sharply crushes the internal dielectric, changing the cable's impedance and severely degrading signal transmission.
- **Connector Torque (Hand-Tighten Only): Do not use tools to tighten the SMA antennas or connectors.** They should simply be tightened firmly by hand. If tools are used, there is a high chance of over-tightening the connection. Later, when attempting to untie or remove the connector, this excessive torque can cause the internal SMA receptacle to loosen and spin within the chassis. This will result in twisting the delicate internal coaxial cable and, in the worst-case scenario, detaching the internal connection or completely breaking the cable.

8.1 Cellular LTE Communication (2 Ports)

Two SMA ports are dedicated to the internal Cellular LTE modem, which provides internet connectivity via the built-in global SIM. This system utilizes MIMO (Multiple Input Multiple Output) technology, requiring both antennas to be connected for optimal bandwidth and reception.

Placement Guidelines:

- **Material Clearance:** RF signals cannot penetrate metal or carbon fiber. If your aircraft has a metal or carbon fiber fuselage, the antennas must be mounted externally or positioned near a non-conductive window (e.g., fiberglass/plexiglass canopy) with an unobstructed view of the outside.
- **Orientation:** Mount the LTE antennas vertically for the best polarization match with terrestrial cell towers.

- **Separation:** If using two separate individual antennas (rather than a combined dual MIMO puck), mount them at least a few inches apart to ensure proper spatial diversity.

8.2 Wi-Fi Access Point & Bluetooth (1 Port)

One SMA port is dedicated to the combined Wi-Fi Access Point and Bluetooth module. This antenna allows the Navia Core Pro to broadcast its own local Wi-Fi network (for connecting your tablets, phones, or smart glasses) and pair with Bluetooth devices.

Network SSID and Password
When active, the system will provide an access point with the SSID **"Navia Core xxxxx"**, where *xxxxx* stands for your device's unique serial number. Each Navia Core has a unique password to access this provided network. You can find this password by navigating to the **Network** subsection of the Dashboard on your Navia Screen. This menu is also where you can check your cellular connection status and connect the Navia Core to other available Wi-Fi networks.

Data Usage and Updates
Please note that major software updates require a stable Wi-Fi connection. The internal cellular data connection is optimized and strictly used for downloading database updates and daily files, such as weather forecasts, present weather conditions, and live traffic data. To unlock the full functionality of the system, including these cellular data features, an active subscription plan is required.

Placement Guidelines:

- **Internal Focus:** Since this antenna communicates exclusively with devices inside the cockpit, it should be mounted with a clear "line-of-sight" to the pilot and passenger seating areas.
- **Avoid Shielding:** Mounting behind a fiberglass instrument panel or a plastic glare shield is perfectly fine, but avoid enclosing the antenna inside a metal box, placing it directly behind heavy metal flight instruments, or burying it deep within a carbon fiber console.

8.3 Wi-Fi Client (2 Ports)

The remaining two SMA ports are dedicated to the Wi-Fi Client module. This module allows the Navia Core Pro to connect to external wireless networks, such as airport/hangar Wi-Fi for downloading database updates on the ground, or connecting to a pilot's smartphone mobile hotspot in flight.

Placement Guidelines:

- **Dual Purpose:** Because this module needs to connect both to ground infrastructure (hangar Wi-Fi) and internal devices (mobile hotspots), a balanced placement is ideal.

- **Visibility:** Similar to the LTE antennas, if you rely heavily on ground-based airport Wi-Fi, ensure these antennas have a decent view through a canopy or window. If you primarily use a phone hotspot inside the cabin, standard behind-panel mounting (away from metal and carbon fiber) will suffice.
- **Separation:** Like the LTE MIMO setup, keep the two Wi-Fi client antennas slightly separated to maximize signal reception stability.

Global Cellular Coverage

The Navia Core Pro utilizes advanced internal **eSIM technology**. There is no user-replaceable physical SIM card to install or manage. The device is equipped with a global cellular modem, which seamlessly allows you to travel to other countries without needing to swap SIM cards or manually reconfigure network settings.

WARNING
Cellular Signal and Altitude Limitations:
Please note that cellular signal strength depends heavily on the quality of your antenna installation, its placement within the airframe, and the specific geographic region.
Furthermore, cellular data might not be available while flying at higher altitudes. This is especially true in flat geographic areas where ground stations utilize highly directional, downward-tilted antennas designed to cover communication exclusively on the ground.

Supported Countries and Regions
The global eSIM provides coverage across a vast international network. As of **March 2026**, seamless cellular connectivity is supported in the following countries and regions, organized by continent:

Africa

Algeria	Equatorial Guinea	Morocco	South Africa
Angola	Gabon	Mozambique	Tanzania
Benin	Ivory Coast	Nigeria	Togo
Burkina Faso	Libya	Réunion	Tunisia
Cabo Verde	Mauritius	Senegal	
Egypt	Mayotte	Sierra Leone	

Asia

Afghanistan	Indonesia	Macau	Singapore
Armenia	Iraq	Malaysia	Sri Lanka
Azerbaijan	Israel	Mongolia	Taiwan
Bahrain	Japan	Nepal	Tajikistan
Bangladesh	Jordan	Oman	Thailand
Cambodia	Kazakhstan	Palestine	Turkey
China (Mainland)	Kuwait	Philippines	United Arab Emirates
Georgia	Kyrgyzstan	Qatar	Uzbekistan
Hong Kong	Laos	Republic of Korea	Vietnam
India	Lebanon	Saudi Arabia	

Europe

Albania	Finland	Kosovo	Portugal
Andorra	France	Latvia	Romania
Austria	Germany	Liechtenstein	Russia
Belarus	Gibraltar	Lithuania	Serbia
Belgium	Great Britain	Luxembourg	Slovak Republic
Bosnia & Herzegovina	Greece	Malta	Slovenia
Bulgaria	Guernsey	Moldova	Spain
Croatia	Hungary	Monaco	Sweden
Cyprus	Iceland	Montenegro	Switzerland
Czech Republic	Ireland	Netherlands	Ukraine
Denmark	Isle of Man	North Macedonia	
Estonia	Italy	Norway	
Faroe Islands	Jersey	Poland	

North America (incl. Caribbean)

Anguilla	Curacao (Neth. Antilles)	Jamaica	Saint Lucia
Antigua & Barbuda	Dominica	La Désirade (Fr. Ant.)	Saint Martin (Fr. part)
Aruba	Dominican Republic	Les Saintes (Fr. Ant.)	St. Vincent & Grenadines
Bahamas	El Salvador	Marie Galante (Fr. Ant.)	Sint Maarten (Neth. Ant.)
Barbados	Greenland	Martinique (Fr. Antilles)	Trinidad and Tobago
Bermuda	Grenada	Mexico	Turks & Caicos Islands
Bonaire (Neth. Antilles)	Guadeloupe (Fr. Antilles)	Montserrat	US Virgin Islands
British Virgin Islands	Guatemala	Nicaragua	USA
Canada	Haiti	Panama	
Cayman Islands	Honduras	Puerto Rico	
Costa Rica		Saint Barthelemy	
Cuba		Saint Kitts & Nevis	

South America

Argentina	Colombia	Paraguay	Venezuela
Bolivia	Ecuador	Peru	
Brazil	French Guiana	Suriname	
Chile	Guyana	Uruguay	

Oceania

Australia	Guam	New Caledonia	Palau
French Polynesia	Mariana Islands	New Zealand	Papua New Guinea

Software Updates

To ensure maximum reliability and minimize downtime, the Navia Core Pro employs a robust, fail-safe A/B partition system for all software updates.

A/B Partition and Rollback System
When a software update is initiated, the system securely downloads and installs the new software onto the inactive partition (e.g., Partition B) while the Navia Core continues to run uninterrupted on the active partition (e.g., Partition A). Once the complete update image is retrieved, the system performs a strict integrity check to verify that the received files perfectly match the expected content. Only after passing this verification will the system switch the active partition and reboot into the new software.

Because the previous software version is always preserved on the alternate partition, the system allows for a rapid rollback. If you ever need to revert to the previous state, you can quickly roll back to the older version without needing to redownload any files.

Connected Device Updates
A Navia Core Pro software update is comprehensive; it contains the necessary firmware updates for all external Navia devices. During the update cycle, the Navia Core will automatically update connected ecosystem devices, such as the **Navia Grip** and **Navia Sense**, to ensure all components are running fully compatible versions.

Update Intervals
Users can opt into different software update channels based on their preference for stability versus access to new features. You can select from the following update intervals in the system settings:

- **Regular (Stable):** The standard and recommended interval. This channel provides the most stable versions that have successfully passed all rigorous testing phases.
- **Advanced:** Follows a 2-week development cycle. These versions contain the latest features and developments but have not yet completed the full testing phase.
- **Aggressive (Daily):** Provides updates on a daily basis. This channel is primarily intended for development purposes and specific flight testing.

System Boot Sequence and Indicators

Because the Navia Core Pro is a "headless" server unit typically mounted out of sight, it relies on network indicators and connected peripherals to signal its operational status.

Boot Sequence and Timing
A typical boot-up process for the Navia Core Pro takes approximately **1 minute**. Once power is applied, the system initializes its internal network, peripheral interfaces, and data routing services.

WARNING
Booting After an Update:
If the system has just completed a software update, the subsequent boot process may take significantly longer as it verifies and unpacks the new partition. **Ensure you keep the power on** uninterrupted until you see an active login screen on your connected displays. Removing power during this critical phase can interrupt the update process.

Operational Indicators
You can verify that the system is booting and operating correctly through the following physical and digital indicators:

- **Wi-Fi Access Point:** The primary and most reliable indication that the system is fully operational is the broadcast of its internal Wi-Fi Access Point (SSID: *"Navia Core xxxxx"*).
- **PoE Port Lights:** When a PoE device (such as a Navia Display or Navia Hub) is connected, the small LED lights on the Navia Core's PoE RJ45 connector will illuminate and start blinking, indicating successful power delivery and active data communication.
- **Internal Cooling Fan:** You may hear the subtle sound of the internal cooling fan operating. Note that this fan is temperature-controlled; if the ambient temperatures are sufficiently low, the fan will safely remain inactive.
- **Audio Chime:** When the system has fully booted and all background services are running, a distinct audio sound will be played through your connected headsets or cabin speakers. This chime is the definitive signal that the user can start using the system.

Display Power Management
By default, when you apply power to the Navia Core, any connected Navia Display will automatically turn on alongside it. However, users have the flexibility to disable this automatic turn-on behavior via the system settings. This feature is particularly useful in double-seater aircraft, allowing the rear pilot to keep their display powered off independently to preserve overall battery capacity.

Initial System Configuration (Commissioning)

Once the Navia Core Pro has successfully booted and the physical wiring is verified, the system requires a first-time setup to tailor the software to your specific airframe. This commissioning process is performed directly on the connected Navia Display via the **Airplane Settings** dashboard, which allows you to control and set up your airplane's main systems from one place.

WARNING

Access Permissions:

The **Airplane Settings** menu is highly privileged and is available **only** to registered owners or system administrators of the airplane. Other standard users, pilots, or guests are not able to access this menu or change critical values in this section.

Navigate to the **Airplane Settings** dashboard to work through the dedicated "First Time Setup" checklist:

- **Aircraft & Flight Envelope:** Navigate to **Airplane Settings > Aircraft**. Here you must set the Aircraft Registration (Tail Number), basic aircraft details, and critical **Flight Envelope Settings** (such as V_{NE}, V_{NO}, V_A, best climb speeds, and limit load factors). If applicable, you can also configure **Polar Parameters** and **Flap positions and load limitations**.
- **Network Setup:** Navigate to **Airplane Settings > Interface** to configure basic network setups, Wi-Fi connections, and data routing protocols.
- **Sensors & Compass Calibration:** Navigate to **Airplane Settings > Sensors** to execute the initial **Compass Calibration**. Performing this calibration in a magnetically clean area on the ramp is strictly required for accurate AHRS and heading performance.
- **I/O & Power Configuration:** Verify your physical wiring by assigning analog inputs (e.g., Flap sensor on Analog Channel 0, Brightness/Ambilight on Analog Channel 1) under **I/O Configuration**. Next, configure your battery types and backup UPS under **Power Settings**.
- **Screen Management:** If using multiple displays, use **Screen Management** to set parent-child screen hierarchies and assign user roles (e.g., Navigation profile, seat ID).
- **Audio:** Navigate to **Airplane Settings > Audio** to map your Speaker and Headset outputs to specific channels and set base volume levels.

Post-Installation Checkout & Ground Testing

Before the aircraft is released for flight, a comprehensive ground test must be performed to verify the integrity of the installation and ensure all integrated systems are communicating correctly with the Navia Core Pro.

1. Power and Backup System Verification
Power on the aircraft's Avionics Master switch and confirm the Navia Core Pro boots normally. Navigate to **Airplane Settings > Power Settings** and verify the main voltage is reading correctly. Next, turn off the Avionics Master to simulate a main power failure. If a backup battery or Navia UPS is installed, verify that the Navia Core seamlessly transitions to auxiliary power without rebooting, and check that the estimated remaining battery time is displayed accurately.

2. Audio and Spatial Sound Check
Put on your connected aviation headsets. Navigate to **Airplane Settings > Audio**. Use the built-in test function to verify audio output. Confirm that the volume levels are balanced and, if using a multi-speaker or stereo headset setup, ensure that Spatial Audio alerts correctly originate from the intended directional channels (Left, Right, Front, Rear).

3. Radio Communication and PTT
Tune your connected radio to a local ground control or test frequency. Press the primary Push-To-Talk (PTT) button and verify that the radio transmits (you should hear your own voice via the sidetone). If installing in a double-seater, repeat this test for the secondary PTT and microphone inputs to ensure both occupants can transmit.

4. AI Voice Assistant Functionality
With your headset microphone active, trigger the AI Voice Assistant. Speak a clear command, such as *"Tune active to 121.90,"* and verify that the connected radio correctly updates its frequency. This confirms the data flow from the Navia Core to the radio is functioning properly.

5. External Interfaces and VP-X Testing
Navigate to the **Devices** status page on the Navia display.

- **Sensors & Traffic:** Verify that valid data streams (GPS lock, AHRS attitude, traffic targets) are being received from devices like the Navia Sense, Navia Traffic, or iLevil units.
- **VP-X Control:** If a Vertical Power VP-X is installed, manually toggle a non-critical circuit (e.g., Pitot Heat or Landing Light) via the Navia touchscreen and physically verify the system turns on.

Weight and Balance Data

After installing the Navia Core Pro and any associated Navia Family devices, 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.
Once the new empty weight and CG have been physically calculated and logged in the aircraft's official records, the owner/admin must update the Navia software so it can accurately compute dynamic Weight and Balance for the pilot during pre-flight:

1. Navigate to **Airplane Settings > Aircraft > Weight & Balance Settings**.
2. Enter the updated Maximum Takeoff Mass, Maximum Landing Mass, and Zero Fuel Mass. If you do not have separate values, set them all to the same maximum mass.
3. Define the **C.G. Envelope** limits.
4. Add or edit your **Stations** (e.g., Pilot, Passenger, Baggage, Fuel, Water) by specifying the arm, default mass, and maximum/minimum mass limits for each station.

Navia Open Platform (Developer API)

At LX navigation, we believe that your flight data belongs to you. Rather than locking our avionics behind a closed ecosystem, the Navia Core Pro was fundamentally designed around an **Open Data Concept**. This forward-thinking architecture empowers pilots, builders, and software developers to push the boundaries of what their avionics can do and seamlessly integrate their own custom innovations.

Bidirectional WebSocket and REST API
Every piece of data captured by the Navia system—from high-resolution AHRS telemetry and engine parameters to live traffic and GPS data—is readily available over the local network via standard **WebSocket** and **REST API** protocols.
Crucially, this Open Data Concept is fully **bidirectional**—we do not just serve data; we accept it. Anybody can create a custom sensor or unique hardware device that sends data back to the provided API. The Navia Core Pro will seamlessly accept, process, and route this incoming telemetry alongside its native sensors. Users can take full advantage of this open architecture to build custom software solutions, design bespoke secondary displays, or integrate highly specialized, homebuilt equipment tailored to their exact needs.

Hardware Development Board
For users who want to go a step further and create their own physical devices, LX navigation provides a dedicated hardware development board. This allows makers and homebuilders to easily prototype, test, and deploy their own modular hardware that communicates natively with the Navia Core Pro ecosystem.

Open Source Resources and Sample Code
To help you get started immediately, we have made our entire developer ecosystem publicly accessible. Our official GitHub repository contains comprehensive API documentation, integration guides, and ready-to-use sample code for various applications.
You can explore the project, download the sample code, and join the developer community here:
https://github.com/LXNavigation/navia-open-platform

Instructions for Continued Airworthiness

Because the Navia Core Pro is designed with solid-state components and requires no internal maintenance, the instructions for continued airworthiness are straightforward. There are no user-serviceable parts, internal backup batteries to replace, or cooling fans that require periodic lubrication within the core unit itself.

Routine Maintenance Checks
During the aircraft's standard annual condition inspection (or equivalent routine maintenance cycle), the following visual inspections are sufficient to ensure the continued safe operation of the system:

- **Mounting Security:** Visually inspect the Navia Core Pro and any associated mounting brackets or racks to ensure all fasteners remain secure and the unit is rigidly attached to the airframe.
- **Wiring Harness Integrity:** Inspect the J100 and J101 quick-release D-Sub connectors to ensure they are fully seated and locked. Verify that the wiring harnesses show no signs of chafing, extreme bending, or heat damage.
- **Antenna Connections:** Verify that all coaxial cables are securely routed and the SMA connectors remain properly torqued on the unit's receptacles.
- **PoE Connections:** Ensure any Ethernet cables connected to the PoE ports are fully clicked into place and that their locking tabs are intact.

Support and Remote Diagnostics

To ensure that your Navia Core Pro continues to operate flawlessly, LX navigation has built an advanced remote diagnostic tool directly into the system using a secure Reverse VPN.

How Reverse VPN Works
If you encounter an issue or require a complex remote software update, you can explicitly grant our support team access to your device. By navigating to the support menu and enabling the Reverse VPN, your Navia Core Pro will establish a secure, encrypted tunnel directly to the LX navigation servers.

Security and Privacy
This system is designed with your security and privacy as the highest priority:

- **User-Initiated Only:** The connection can **only** be established when you manually enable it from your cockpit display. We cannot access your device without your explicit permission.
- **Closed Network:** The Reverse VPN connects exclusively to our secure LX navigation servers. It does not open your device to the public internet.

Using the Support Feature
When instructed by our technical support team, enable the Reverse VPN on your Navia display while connected to a stable Wi-Fi network or cellular data. Once the connection is confirmed on your screen, contact us so we can securely access your device, troubleshoot any potential issues, or perform necessary remote updates.

Typical System Block Diagrams

The following section provides high-level conceptual block diagrams representing typical Navia system architectures for various aircraft configurations. These diagrams are intended to illustrate the logical interconnection of the primary avionics building blocks and peripheral devices within the Navia ecosystem.

NOTE
Detailed Wiring Schematics:
The block diagrams below do not contain specific pin-to-pin wiring information. Fully detailed, point-to-point electrical wiring schematics for each of these typical installations are available for download on the official LX navigation portal at **downloads.lxnavigation.com**.

18.1 Single Seater Glider Installation

This configuration represents a standard, highly integrated avionics suite for a high-performance single-seat glider. The system utilizes a single Navia Display controlled by a Navia Grip, with a dedicated Navia Indicator for continuous variometer readouts. The Navia Sense provides primary flight data, while the Navia MOP monitors engine/sustainer parameters.

Included Devices

Qty	Product Name	Part Number	Description
1	Navia Core Pro	LX02000490	Central avionics server and data router.
1	Navia Display 7	LX02000530	Primary flight and navigation display.
1	Navia Grip	LX02000560	Remote stick control and Voice AI trigger.
1	Navia Indicator 57	LX02000820	Dedicated variometer display.
1	Navia Sense Gliding Pro	LX02000510	Primary AHRS and air data sensor.
1	Navia MOP	LX02000570/71	Means of Propulsion sensor (Jet or Electro).
1	Navia Traffic	LX02000750	Collision avoidance and traffic receiver.

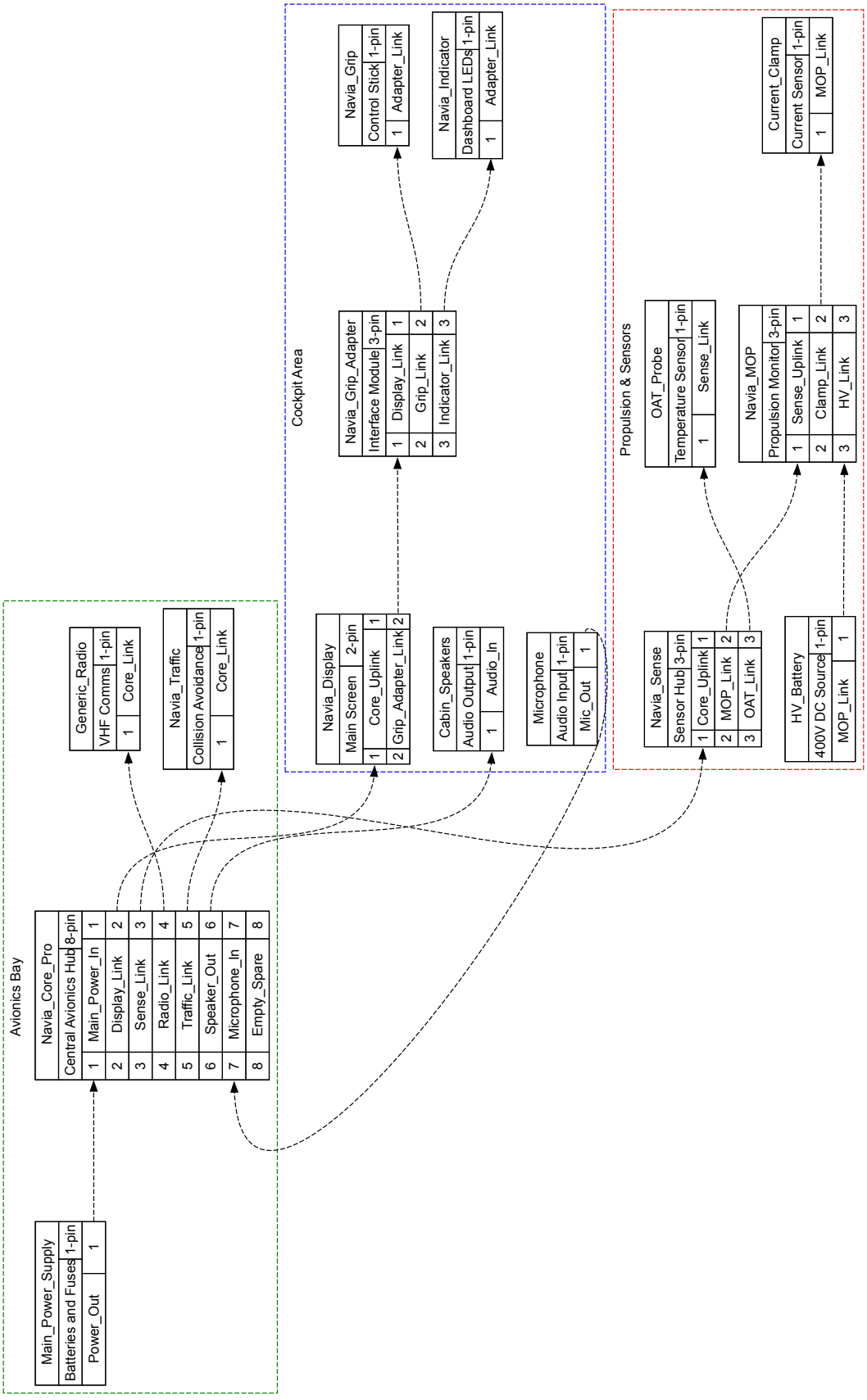

Figure 10. Conceptual Block Diagram: Single Seater

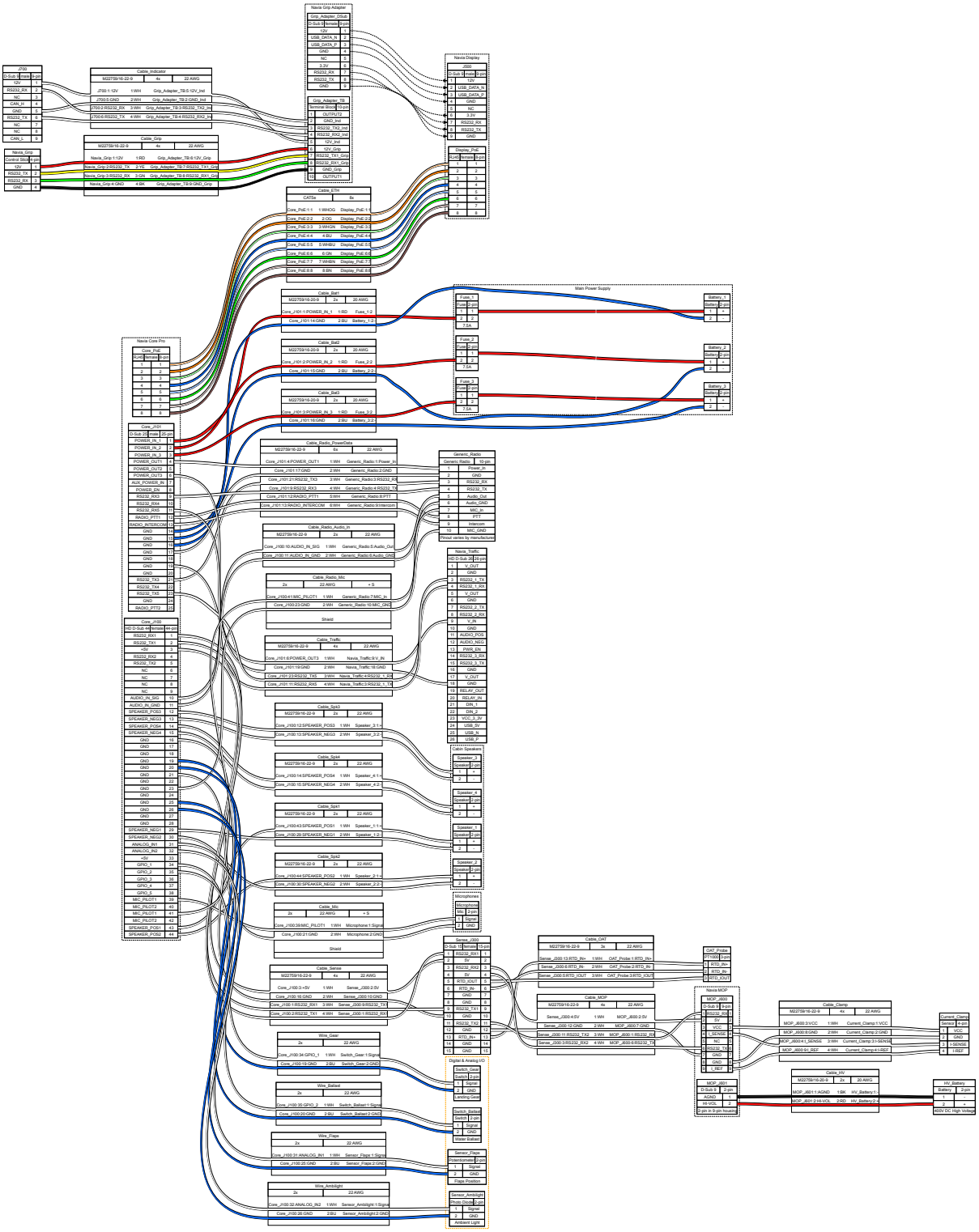

Figure 11. Detailed Wiring Schematic: Single Seater

18.2 Double Seater Tandem Installation

This configuration is designed for tandem double-seat gliders. It expands upon the single-seat architecture by utilizing the Navia Hub. The Hub securely delivers data and Power over Ethernet (PoE) to independent Navia Displays, Grips, and Indicators for both the front and rear cockpit stations.

Included Devices

Qty	Product Name	Part Number	Description
1	Navia Core Pro	LX02000490	Central avionics server and data router.
1	Navia Hub	LX02000500	Network expansion switch for PoE devices.
2	Navia Display 7	LX02000530	Primary flight displays (Front and Rear).
2	Navia Grip	LX02000560	Remote stick controls (Front and Rear).
2	Navia Indicator 57	LX02000820	Dedicated variometer displays (Front and Rear).
1	Navia Sense Gliding Pro	LX02000510	Primary AHRS and air data sensor.
1	Navia MOP	LX02000570/71	Means of Propulsion sensor (Jet or Electro).
1	Navia Traffic	LX02000750	Collision avoidance and traffic receiver.

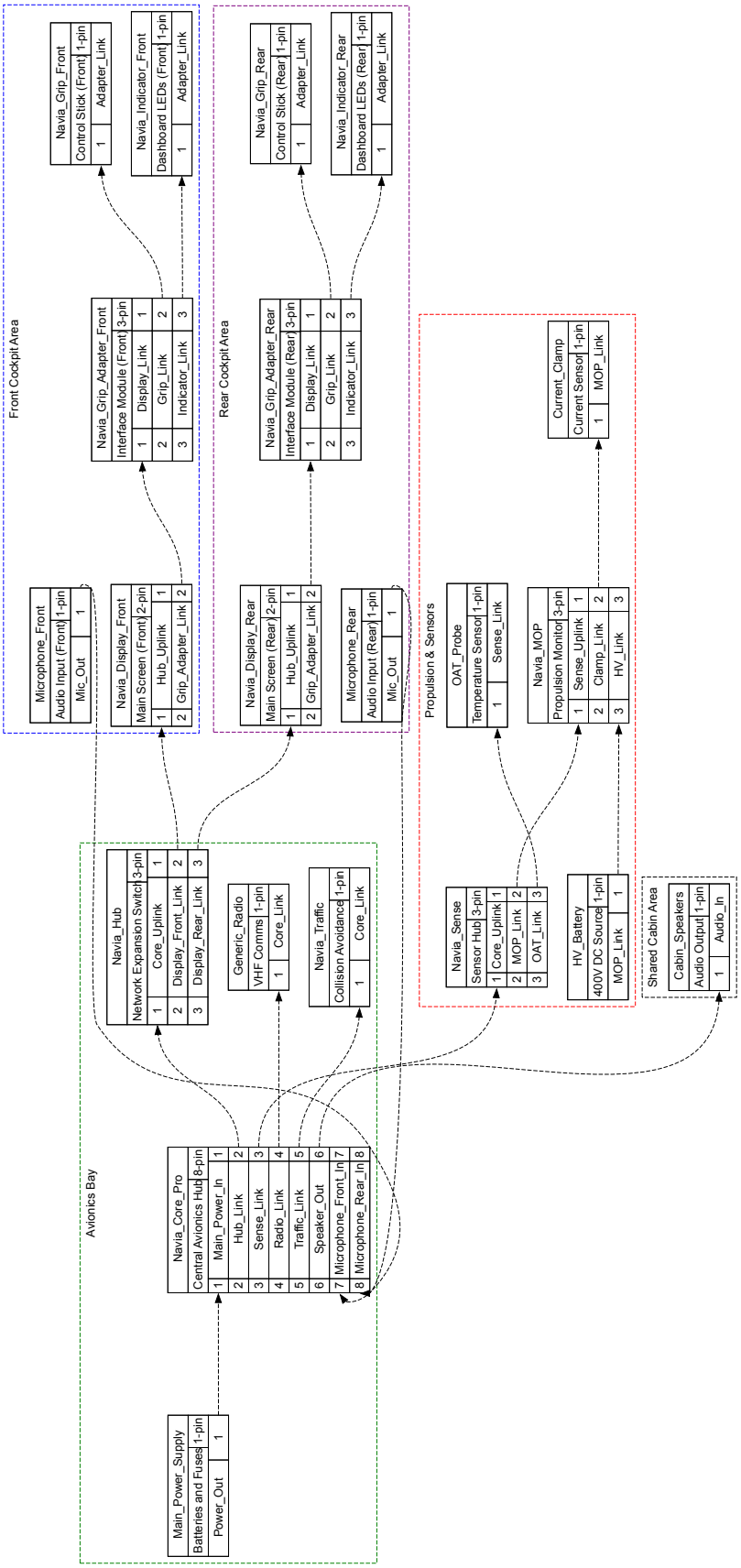

Figure 12. Conceptual Block Diagram: Double Seater Tandem

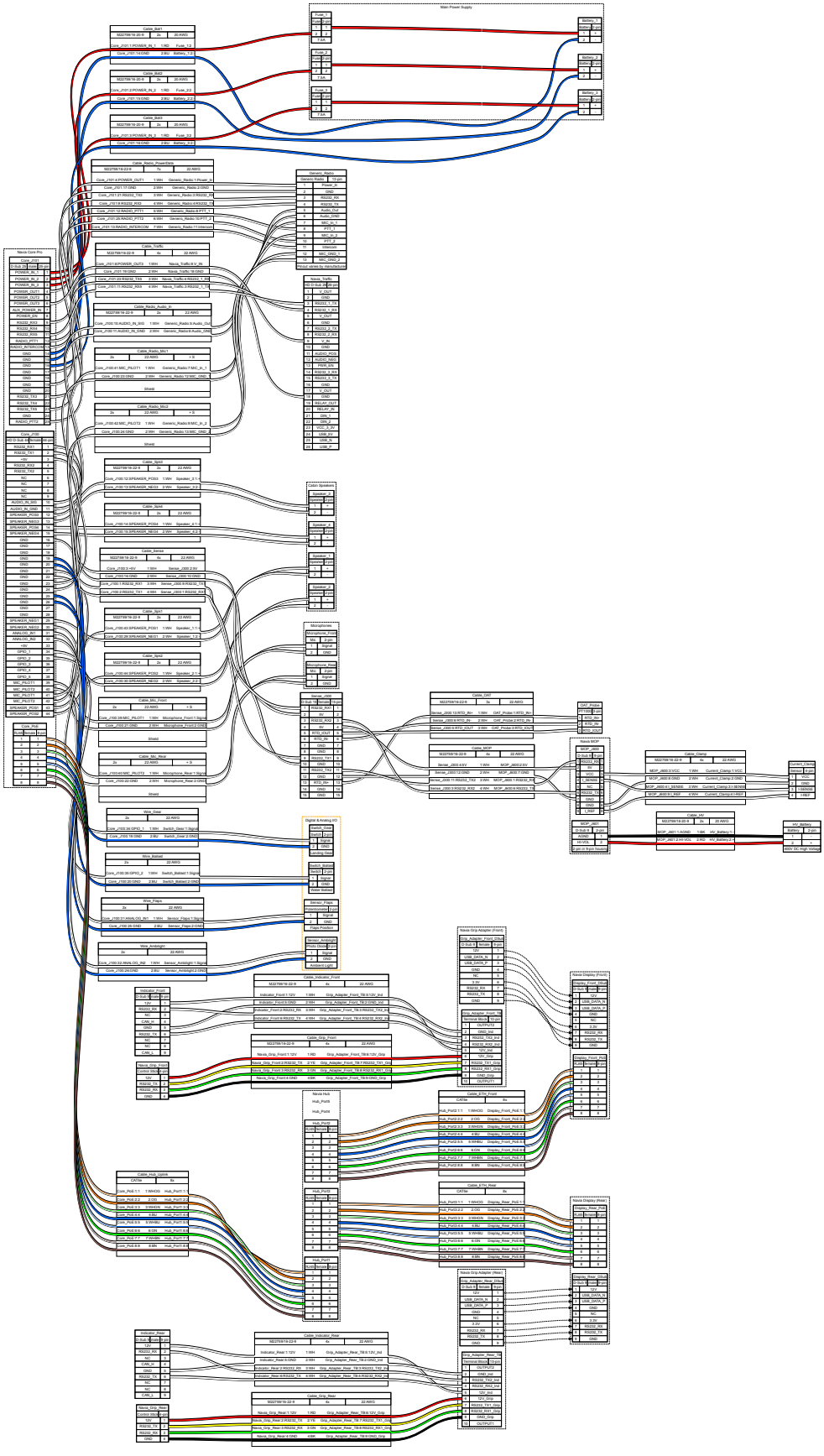

Figure 13. Detailed Wiring Schematic: Double Seater Tandem

18.3 Side-by-Side Motor Installation

Tailored specifically for modern side-by-side motorized aircraft, this extensive architecture features three Navia Displays (Pilot, Center Console, and Co-Pilot) connected via the Navia Hub. It removes the glider-specific MOP and Vario Indicators, instead relying on the Navia EMU (Engine Monitoring Unit) for high-resolution engine telemetry.

Included Devices

Qty	Product Name	Part Number	Description
1	Navia Core Pro	LX02000490	Central avionics server and data router.
1	Navia Hub	LX02000500	Network expansion switch for PoE devices.
2	Navia Display 12	LX02000540	Main PFDs for Pilot and Co-Pilot.
1	Navia Display 7	LX02000530	Shared MFD for the Center Console.
2	Navia Grip	LX02000560	Remote stick controls for Pilot and Co-Pilot.
1	Navia Sense Airplane Pro	LX02000730	High-speed AHRS and air data sensor.
1	Navia EMU	LX02000810	Real-time Engine Monitoring Unit.
1	Navia Traffic	LX02000760	Dual Flarm/ADSB traffic receiver.

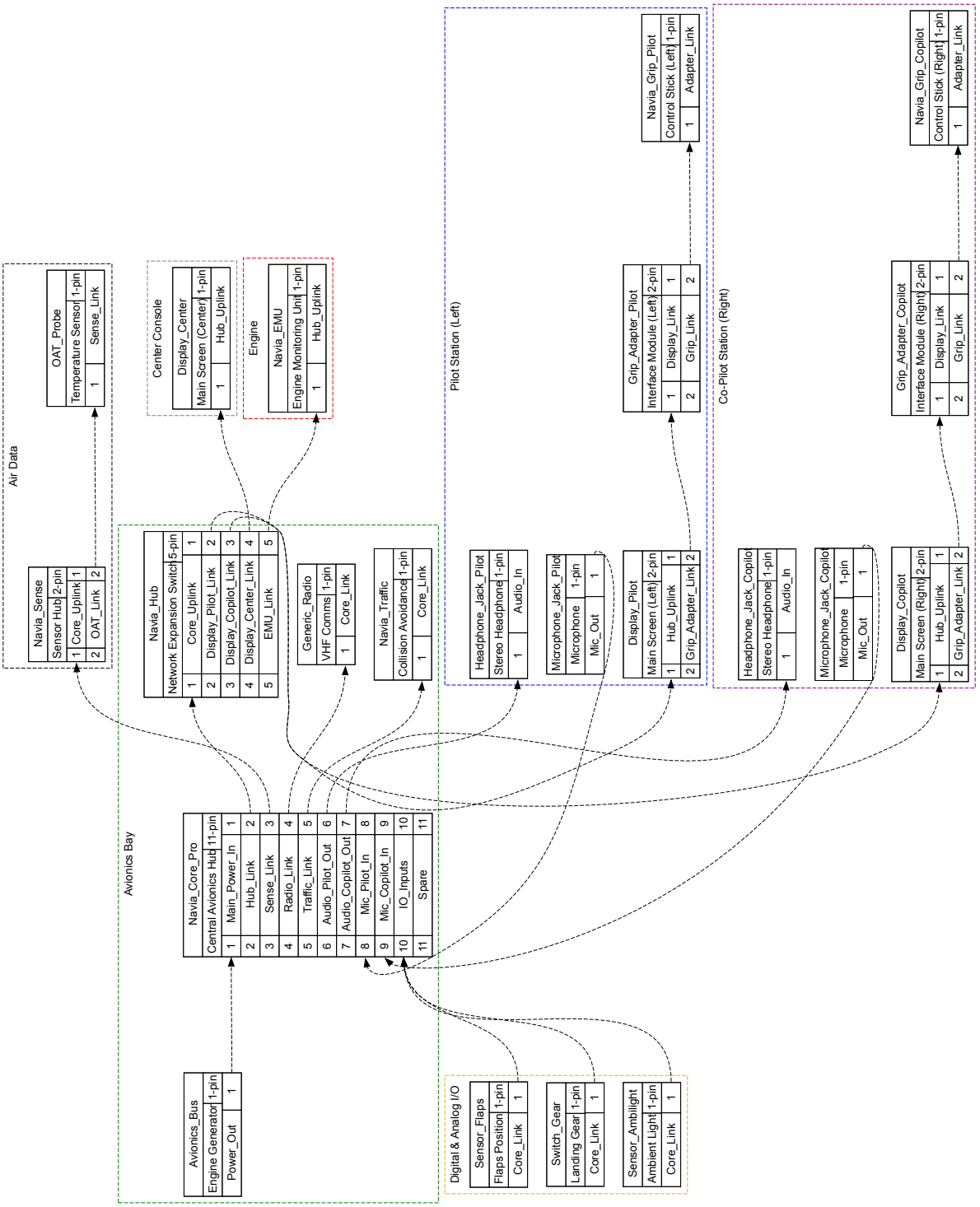

Figure 14. Conceptual Block Diagram: Side-by-Side Motor

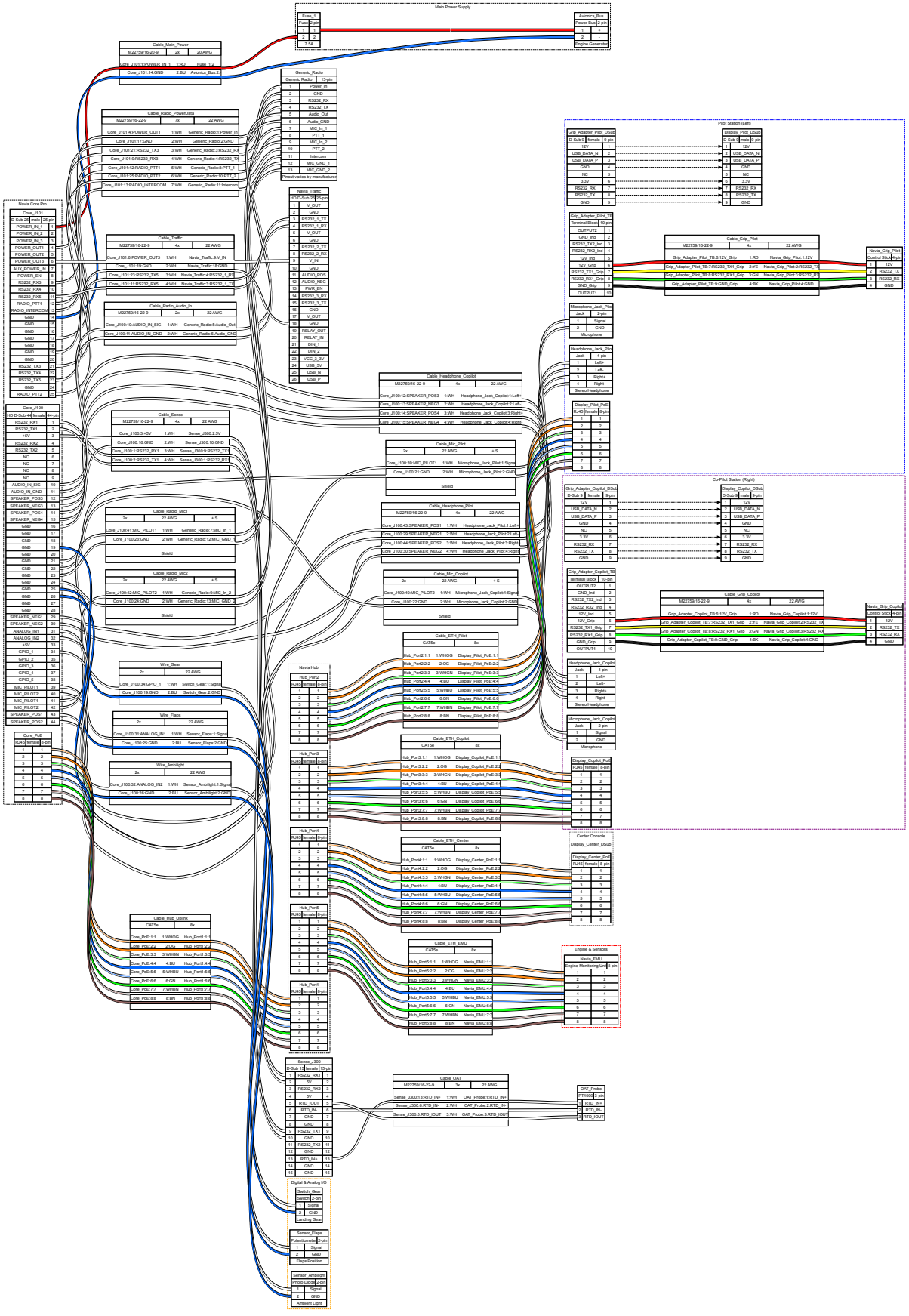

Figure 15. Detailed Wiring Schematic: Side-by-Side Motor

Technical specification

Description	Unit	Value
Dimensions	[mm]	41.5 x 104 x 101
Power supply	[V DC]	10.0 - 32.0
Nominal Voltage	[V DC]	13.8
Average Power Consumption	[W]	2.35
Mass	[g]	315g
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 Core Pro
Part Number(s): LX02000490

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.

24.1 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.

24.2 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.

24.3 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.

24.4 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.

24.5 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.

24.6 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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