



FPH-462™ Field Power Hub

Smart Data And Power Distribution Unit For Field Operations

Designed in Norway • Manufactured in Norway

- **Advanced Power Distribution**
One platform to convert, distribute, and share power.
- **Interoperable connectivity**
Integrates with NATO and allied systems through versatile **Nett Warrior** connectors (**STANAG4851, STANAG4695**)
- **Remote monitoring and control**
Monitor status and configure ports.

Created in cooperation with Norwegian Defence Research Establishment (FFI)



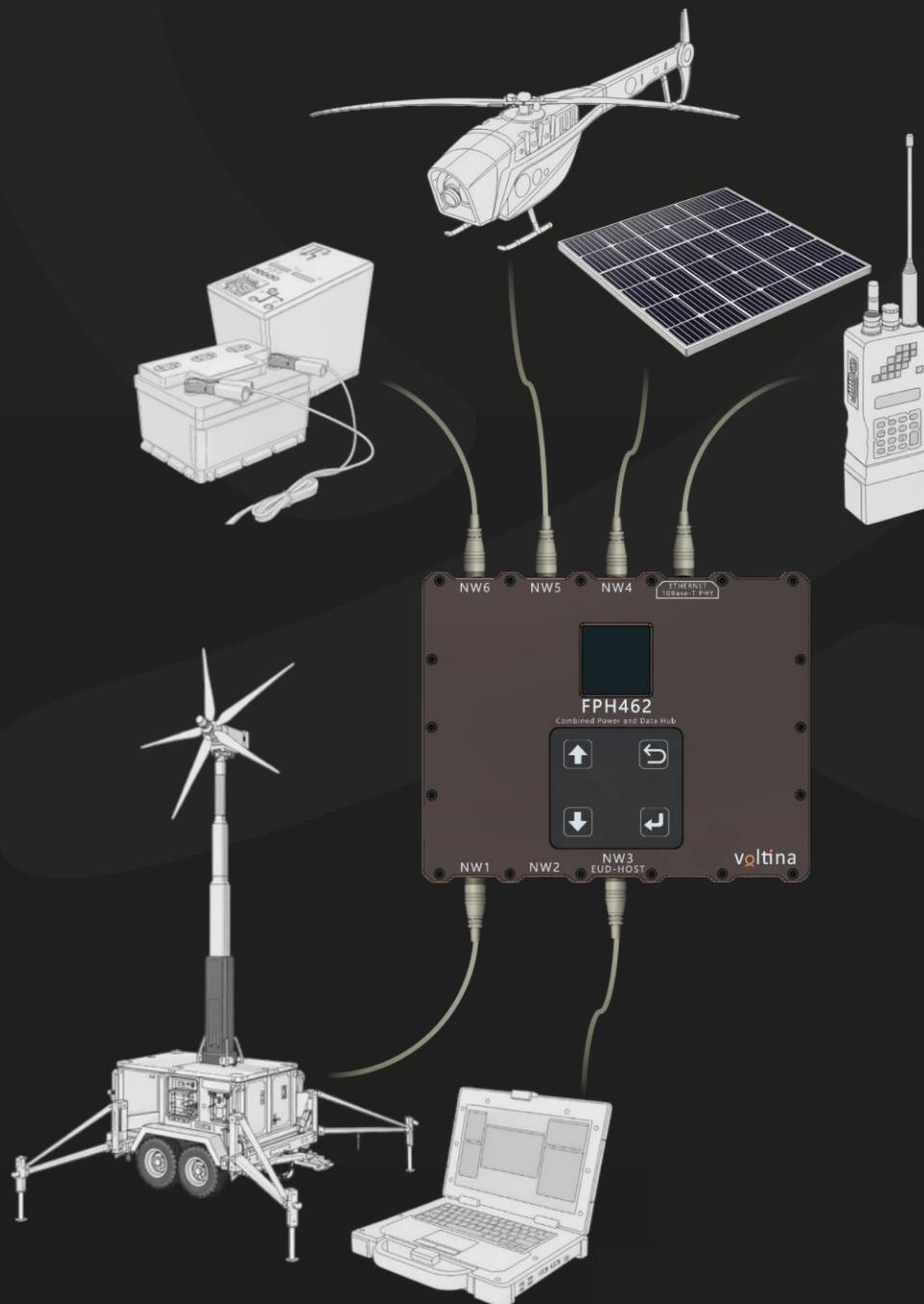
voltage

DISTREBUTED NETWORK

Modern field teams rely on radios, sensors, navigation devices, tactical EUDs, and mission computers working together in the same setup. When this equipment is spread across teams, vehicles, observation posts, and temporary command posts, power and connectivity quickly become harder to manage. This is the kind of mission arrangement often described as off-body, platform-near, or vehicle-near.

FPH-462 simplifies this by acting as a central power and data hub. It converts and distributes DC power while enabling communication between connected devices. Each port automatically adapts within 3.3–62 V, supplying or receiving power while continuously monitoring voltage, current, and system safety.

Built around the Nett Warrior connector environment and STANAG 4695 / STANAG 4851 interoperability, FPH-462 supports a shared power and data infrastructure with less setup and lower complexity.



Unmatched Compatibility

Configurable ports support common field sources and loads across a wide DC voltage range.

Safe and Protected

Continuous monitoring with hardware protections for reverse polarity, overcurrent, overvoltage, short circuit, and overtemperature.

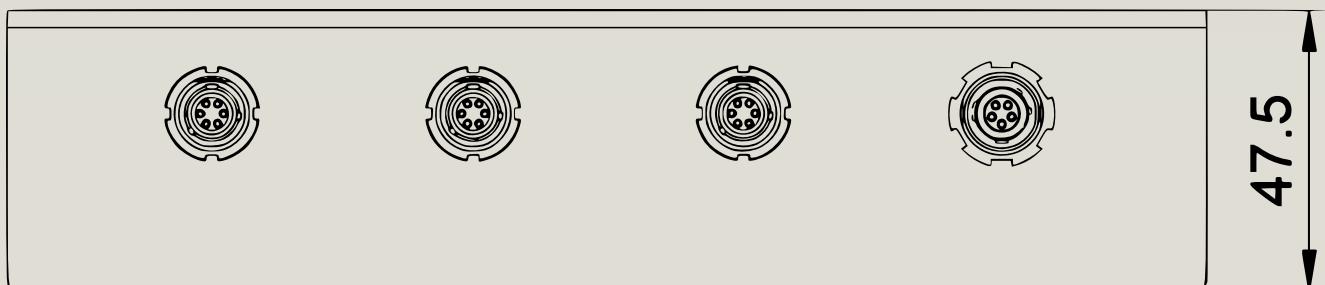
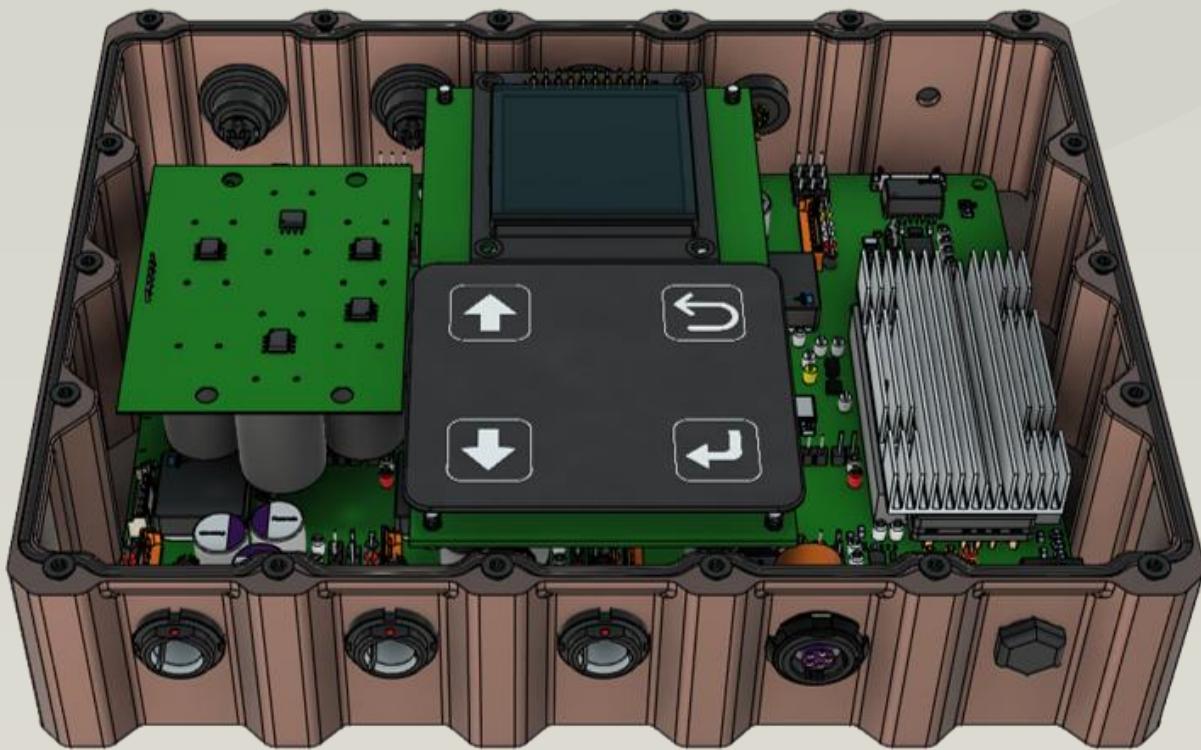
Easy Operation

Plug-and-play setup with automatic supervision, port-level control and instant setup time.

POWER & DATA LIFELINE

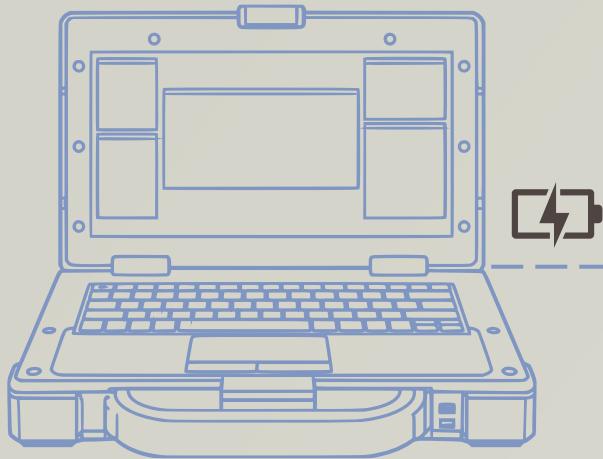
Modern military operations depend on reliable power and data connectivity across today's C4ISR environment. Radios, sensors, navigation systems, tactical EUDs, and other mission equipment often use different voltages, battery types, and communication interfaces, which increases the burden on soldiers and small teams. PAN connectivity works well on the body, but many missions also need that network to extend outward to nearby equipment, batteries, and sensors.

FPH-462 is designed for that role. As an off-body, semi-mobile hub, it extends the soldier's Personal Area Network into a rucksack node, sensor kit, or platform-near setup, allowing mission equipment to be powered, charged, and monitored through one rugged system. This makes it well suited for JTAC mission kits, deployable team setups, reconnaissance kits, and vehicle integration where several devices must work together without adding unnecessary setup time.



USB USE CASE EXAMPLE

This example shows how a car battery (dumb source) can safely power and charge a computer (smart load) through the FPH-462.



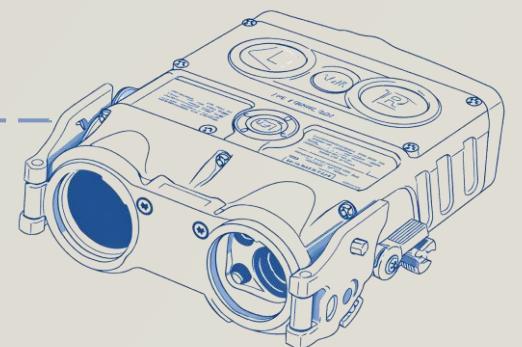
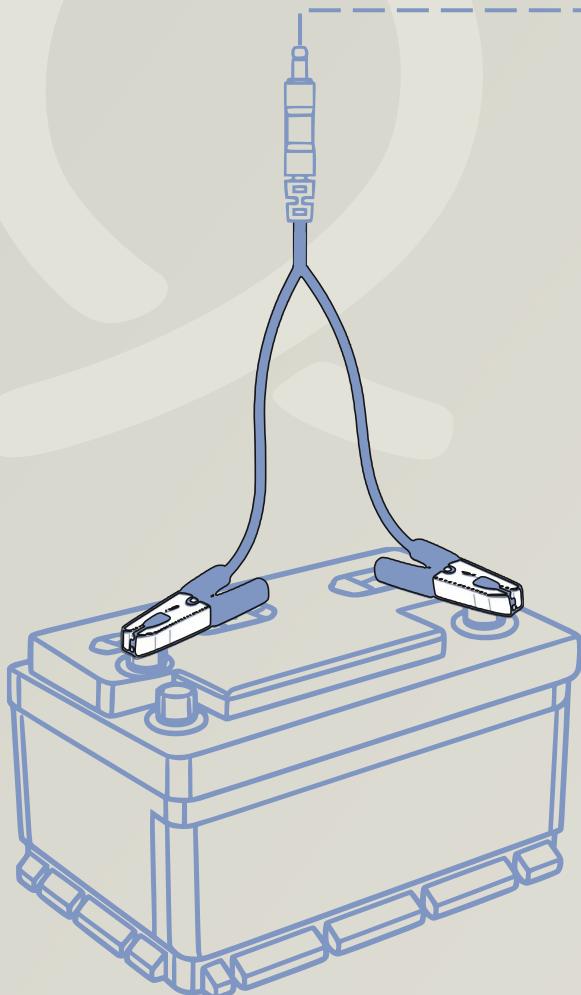
Charging via USB

When a USB device is connected, the device and FPH-462 negotiate the required **voltage and current** using USB protocol

Important

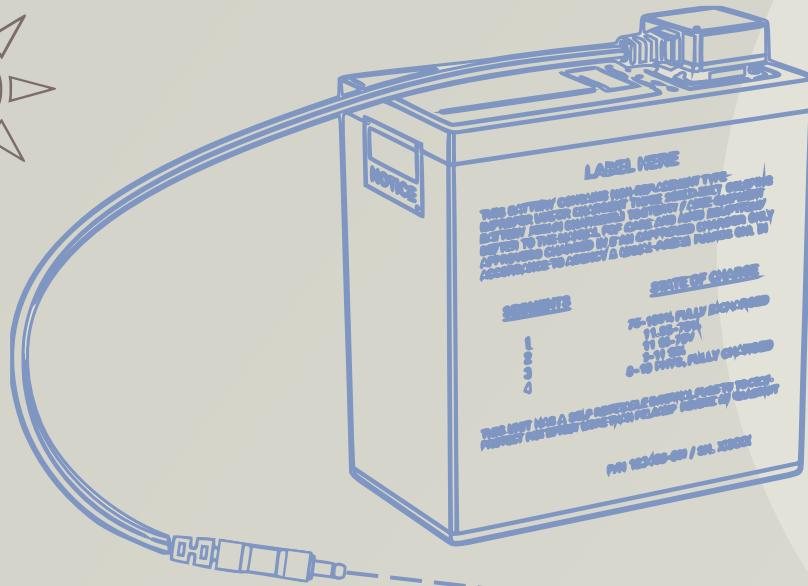
Plug and Play & Foolproof

FPH-462 enables plug-and-play connection of smart and non-smart sources with automatic detection and confirmation in display. If a source is connected with reversed polarity, power flow is blocked, preventing sparks and damage, together with a warning in the display.



NON-SMART TO SMART CHARGING EXAMPLE

This example shows how FPH-462 turns a solar panel(dumb source) into stable charging power for BB2590 (smart battery).



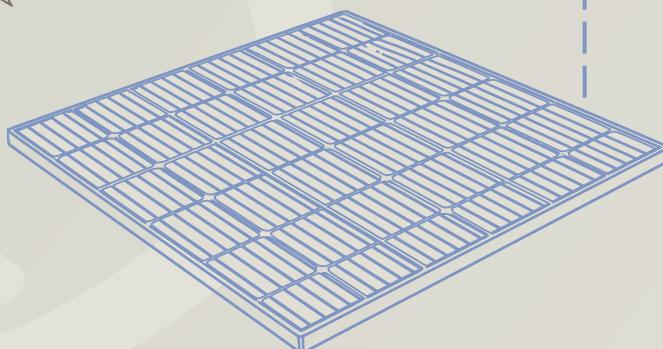
Battery-aware charging over SMBus

When a smart battery (e.g., BB2590) is connected, it communicates its charging requirements over SMBus. FPH-462 reads these parameters and configures the power stage to deliver appropriate charge voltage/current, while enforcing safety limits.



Maximize harvested energy (MPPT)

FPH-462 supports MPPT (Maximum Power Point Tracking) to operate the solar panel near its optimal point as conditions change.



Solar panel → smart battery charging

A solar panel is a non-communicative source. FPH-462 conditions this input power and makes it usable for charging smart batteries and powering loads.

USE CASE EXAMPLE: DATA HUB

FPH-462 is both a power hub and a data hub. In this example, it routes data between the connected devices and units using USB protocol.

All-In-One Hub

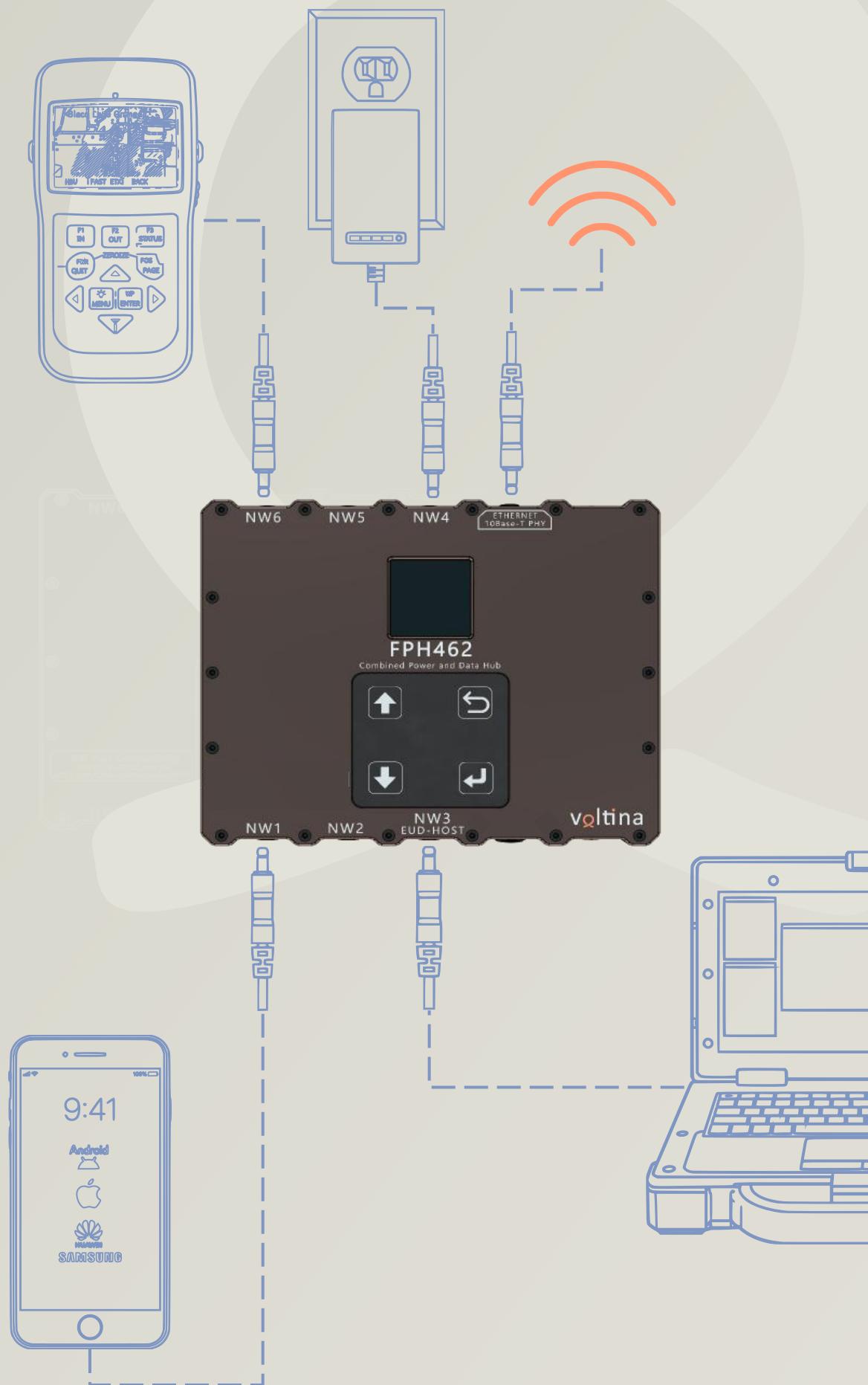
FPH-462 can provide power and connectivity at the same time. A connected computer can charge while being linked to the local network (Ethernet/LAN), allowing data transfer and power delivery through a single hub connection.

EUD-HOST (NW3 port)

when an End User Device (computer) is connected to the NW3 (EUD-HOST) port, FPH-462 acts as a data hub. Connected devices can be exposed and controlled by the computer, enabling access to sensor data and other system information through the hub.

Multi-protocol communication

FPH-462 supports more than USB. It interfaces with common field protocols such as USB, SMBus, enabling communication with a wide range of batteries, sensors, and equipment.



HIGH RESOLUTION TOUCH DISPLAY

FPH-462 features a high-resolution LTPS (Low-Temperature Polysilicon) AMOLED display for wide-temperature, daylight-readable operation. Its intuitive user interface supports glove operation through resistive touch, with physical buttons available as a backup control method.

Parameters	Value
Display	3.92" Color AMOLED
Resolution	1080×1200 (419 PPI)
Contrast	10,000:1 (typ.)
Viewing angle	80° / 80° / 80° / 80° (typ.)
Response time	≤ 2 ms
Operating temperature	-40 to +85 °C
Brightness	600 nits (HBM)
Input methods	Resistive touch + buttons

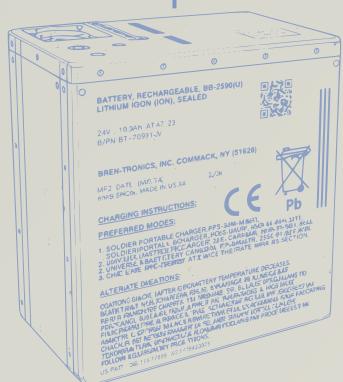


NW1 Smart battery

Displays battery status and live measurements when supported by the battery smart interface (e.g., SMBus for BB-2590).

NW2 Solar Panel

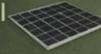
Displays the measured solar input. Since solar voltage is variable, the live reading can be used to adjust panel position for improved output.

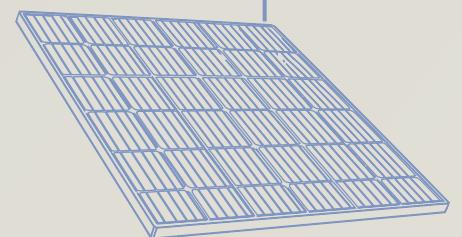


NW 1 Port

Device: BB-2590 
 Protocol: SMBus
 Source/Sink: Sink
 Voltage: 14.3V
 Current: 3.0A
 Actual Voltage: 14.2V
 Actual Current: 2.9A
 Power: 72W
 Temperature: 40°(Good)
 Humidity: 30%(Good)
 Capacity: 65% 

NW 2 Port

Device: Solarpanel 
 Protocol: MPPT
 Source/Sink: Source
 Voltage: -
 Current: -
 Actual Voltage: 30.4V
 Actual Current: 5.0A
 Power: 152W
 Temperature: 45°(Good)
 Humidity: 27%(Good)
 Capacity: -%



FOOLPROOF POWER I/O DESIGN

Safety is a core design goal of FPH-462. In stressful field conditions, power connections must be fast and reliable. FPH-462 is designed so common wiring mistakes do not damage the hub or connected equipment, and so unsafe conditions are detected and blocked automatically.

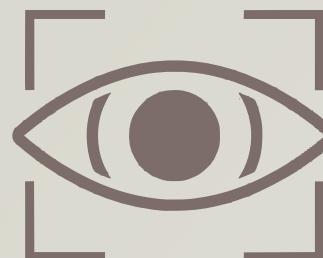
Keyed connectors

FPH-462 uses distinct connectors for each function, power I/O, Ethernet, and HVDC link, to prevent incorrect connections. Standardized (STANAG4851, STANAG4695), keyed interfaces ensure that if a cable connector mates correctly, it is connected to the intended port. If the connector fits, it works.



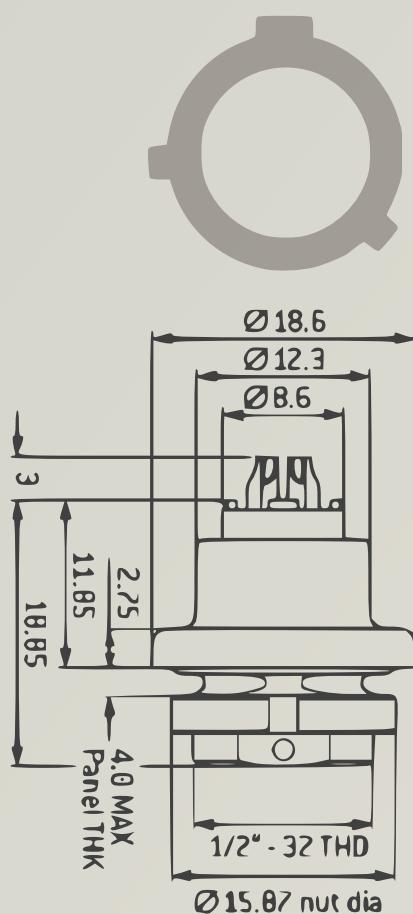
Per-port monitoring and protection

Each port is independently monitored and protected against overcurrent, overvoltage, overtemperature, and reverse polarity. If a DC source such as a car battery is connected with reversed polarity, power flow is blocked, preventing sparks and damage, and the display indicates that the connection must be reversed.

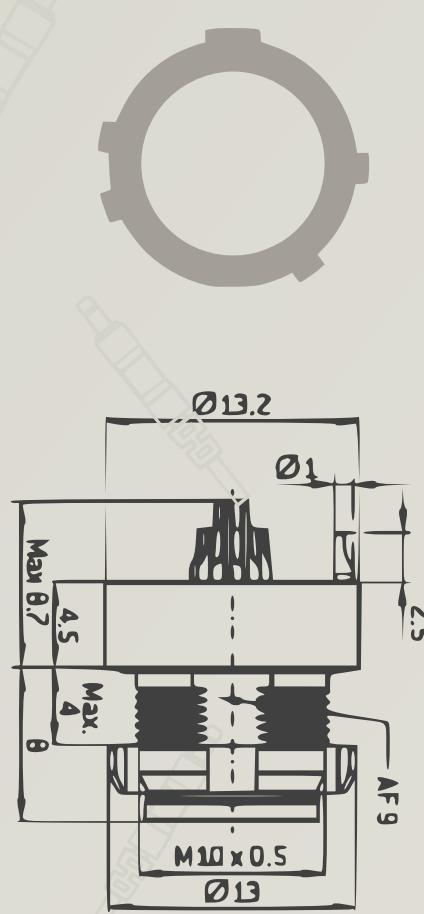


Connector Keying

Nett Warrior Connector



Ethernet Connector



Result:

Safer setup, fewer failures, and reliable operation even when connections are made quickly under pressure

POWERFULL PROSSESOR

Powerful MCU control enables plug-and-play operation while supervising, protecting, logging, and managing communication across connected devices.

System-wide protection and isolation

FPH-462 uses controllable switches and protection logic to isolate faults and keep both the user and hardware safe. Critical functions are managed so the unit remains stable and recoverable in field use. The user and system is always safe.



Real-time control enables plug-and-play

FPH-462 continuously measures voltage/current/temperature per port and controls power routing in real time. This is what enables safe, plug-and-play connection of different sources and loads without manual tuning.

Operational logging and analysis

FPH-462 logs key operating data such as power usage over time, port configuration states, and environmental conditions, including internal humidity and temperature tracked throughout the operational life of the unit. This supports analysis of system behavior over time, battery performance across charge and discharge cycles, and long-term condition monitoring. The system includes 16 MB of extended flash memory for storage of logged information.

Secure MCU platform

FPH-462 is built on the STM32U5A9 family (Arm Cortex-M33) with a security architecture designed for authenticated firmware and secure operation. The system also includes a battery-powered real-time clock with calendar (RTC). Time is synchronized when network connectivity is available.



TECHNICAL SPECIFICATIONS

ENVIRONMENTAL

Temperature	Operating Temperature: -40 °C to +80 °C	MIL-STD-810G, Procedure I of Method 501
	Storage Temperature: -55 °C to +85 °C	MIL-STD-810G, Procedure I of Method 501
	Thermal Shock Resistance	MIL-STD-810G, Method 503.5
Ingress Protection (IP) Rating	IP68 -2 m / 24 h	MIL-STD-810G, Procedure I of Method 512
Shock Resistance	40 G, 11 ms	MIL-STD-810G, Method 516.6
Vibration	7.7 Grms, 1 h per axis	MIL-STD-810G, Procedure I of Method 514.7
Weather	Solar radiation resistance	MIL-STD-810G, Method 505, Procedure I
	Salt fog resistance	MIL-STD-810G, Method 509, Procedure I
	Sand and dust resistance	MIL-STD-810G, Method 510, Procedure I/II
	Fungus resistance	MIL-STD-810G, Method 508
	Rain and water resistance	MIL-STD-810G, Method 506, Procedure I
EMI/EMC Compliance	CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103	MIL-STD-461G

MATERIAL AND MECHANICAL

Enclosure Material	Recycled high-strength 6061 aluminum alloy
Protective Silicone Layer	Shock-absorbing Polysiloxane (VMQ) Silicone Rubber with Hexagonal Cell Structure
Weight	~1 Kg
Dimensions	162 mm (Length) × 202 mm (Width) × 45 mm (Height)
Mounting Options	Compatible with MOLLE system via screw attachments
Finish (Coating)	Hard Anodized Surface with Anti-Corrosion and Anti-Reflective Properties





FPH-462™

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CONNECT

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THE TEAM

