

PNTGUARD™

TECHNICAL FLYER



LEGAL DISCLAIMER AND CONDITION OF USE

This document contains information for PntGuard ADU and accompanying accessories (“Product”), which is provided “as is.” Reasonable effort has been made to make the information in this document reliable and consistent with specifications, test measurements and other information. However, NAL Research Corporation DBA NAL Technologies and its affiliated companies, directors, officers, employees, agents, trustees or consultants (“NAL Technologies”) assume no responsibility for any typographical, technical, content or other inaccuracies in this document. NAL Technologies reserves the right in its sole discretion and without notice to you to change Product specifications and materials and/or revise this document or withdraw it at any time. User assumes the full risk of using the Product specifications and any other information provided. PntGuard ADU is not suitable for use in locations where children are likely to be present. Do not open or modify PntGuard ADU in any manner. All internal maintenance shall only be done by an NAL Technologies authorized service professional.

NAL Technologies makes no representations, guarantees, conditions or warranties, either express or implied, including without limitation, any implied representations, guarantees, conditions or warranties of merchantability and fitness for a particular purpose, non-infringement, satisfactory quality, non-interference, accuracy of informational content, or arising from a course of dealing, law, usage, or trade practice, use, or related to the performance or nonperformance of any products, accessories, facilities or services or information except as expressly stated in this guide and/or the Product and/or satellite service documentation. Any other standards of performance, guarantees, conditions and warranties are hereby expressly excluded and disclaimed to the fullest extent permitted by the law. This disclaimer and exclusion shall apply even if the express limited warranty contained in this guide or such documentation fails of its essential purpose.

In no event shall NAL Technologies be liable, whether in contract or tort or any other legal theory, including without limitation strict liability, gross negligence or negligence, for any damages in excess of the purchase price of the Product, including any direct, indirect, incidental, special or consequential damages of any kind, or loss of revenue or profits, loss of business, loss of privacy, loss of use, loss of time or inconvenience, loss of information or data, software or applications or other financial loss caused by the Product (including hardware, software and/or firmware) and/or the Iridium satellite, or arising out of or in connection with the ability or inability to use the Product (including hardware, software and/or firmware) and/or the Iridium satellite to the fullest extent these damages may be disclaimed by law and whether advised of the possibilities of such damages. NAL Technologies is not liable for any claim made by a third party or made by you for a third party.

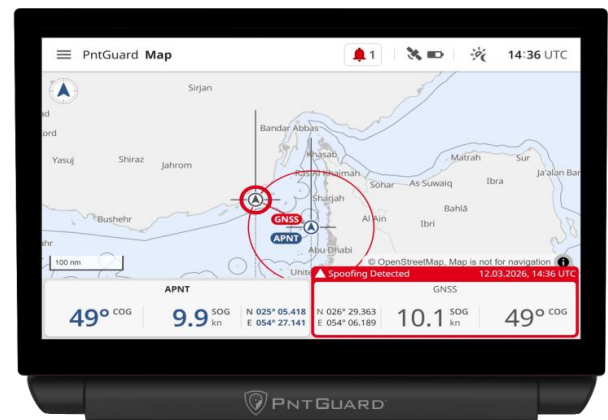
This document contains NAL Technologies proprietary information which may not be used, reproduced, or disclosed without written approval from NAL Technologies.



BELOW DECK UNIT

Features

- Crew and cargo security
- Jamming and spoofing detection
- Visual and audible alarms
- Alternative coordinates provided to bridge
- Night mode
- Touch screen
- NMEA0183 output



ABOVE DECK UNIT

Features

- Fully protected from GPS/GNSS spoofing
- Jamming resilient
- Real-time vessel tracking
- NAL APNT technology
- Encrypted transmission



Powered by NAL's market-leading assured positioning, navigation and timing (APNT) technology, built on the Iridium® PNT service. **PntGuard™** delivers continuous, authenticated and alternative data that operates independently of GNSS. This self-contained maritime-security system forms a trusted navigation backbone - detecting spoofing, overcoming jamming and keeping vessels safely on track. Constantly comparing the ship's GNSS feed with an authenticated signal across the Iridium LEO network, it issues instant visual and audible alerts when falsified data is detected.

Prevent collisions, groundings, unintended entry into restricted waters and course deviations with **PntGuard™**.

BELOW DECK UNIT

Dimensions

- Display size: 13.3" - Active area 293.47 (W) x 165.08mm (H)
- Dimensions: 323.2 (W) x 201 (H) x 54.74mm (D)
- Weight: 2700g (2.7kg)

Environment

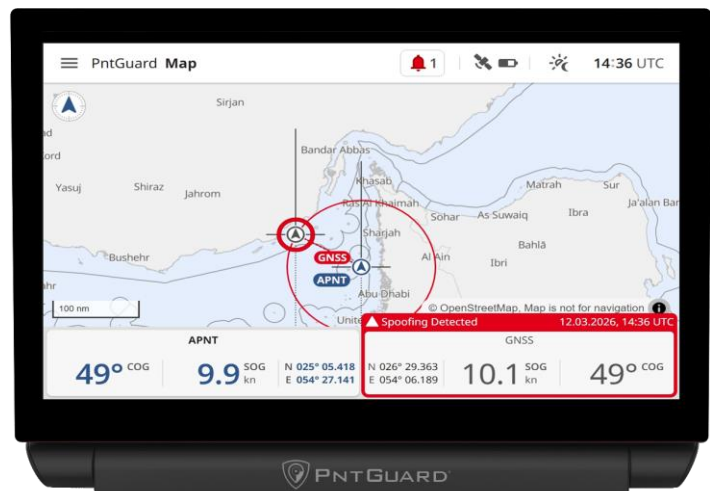
- Operating temperature: -15°C to + 70°C
- Storage temperature: -15°C to + 70°C
- Enclosure protection: IP67 from front

Input / Output

- 1x USB 3.1 Gen2 Type C
- 2x USB 3.1 Gen2 Type A
- 1x RS232 (9-pin DSUB)
- 1x RS422 (9-pin DSUB)

Other

- Resolution: Max 1920 x 1080 pixels
- Response time: 25ms (typ)
- Contrast ratio: 800:1
- CPU: Intel®Atom x6425E @2.0 GHz (2.7GHz)
- Light intensity: 400 cd/m2 (typ)
- Graphics: Intel® UHD Graphics (Gen11)
- Viewing angle: ±89°
- Storage: 64GB eMMC 5.1 onboard flash
- Supply voltage: Wide range 9-36 VDC
- Power consumption: Approx. 38W
- RAM: 8GB 3733 MT/s LPDDR4x onboard memory
- Glass type: 3.0 mm tempered, antireflective
- 2x 10/100/1000 ethernet RJ45 with TPM 2.0
- 1x display port (DP++) output
- Backlight life: 50.000 hours (typ)
- Dimming range: 0-100%
- OS supported: Windows/Linux
- Touch: 10 point PCAP multi-touch
- IEC 60945, IEC 62288, IACS E10, EMC Directive-2014/30/EU, ROHS, REACH



ABOVE DECK UNIT

Dimensions

- Size: 162.8 x 64.5 x 190.0mm
- Device weight: 630g (1.39lbs)
- Mounting bracket weight: 1500g (1.39lbs)

Environment

- Operating temperature: -30°C to + 70°C ambient
- Operating temperature: -30°C to + 70°C (Battery)
- Storage temperature: -40°C to +85°C
- Battery type: Li-ion
- Battery charge temperature: -40°C to +85°C
- Fast charge: -20°C to +50°C @ 250mA
- Slow charge:
 - 40°C to -20°C and +50°C to +85°C @ 100mA
- Battery capacity: 9.45Ah @ 25C
- Electronics-conformal: Coated
- COTS enclosure: IP67/68/69 rated
- Mechanical Vibration and Shock: IEC 60945

Supported systems

- GPS/QZSS: L 1 C/A (1575.420 MHz), L5 (1176.450 MHz)
- GLONASS: L 1OF (1602 MHz + $k \cdot 562.5$ kHz, $k = -7, \dots, 6$)
- Galileo: E1-B/C (1575.420 MHz), E5a (1176.450 MHz)
- BeiDou: B1I (1561.098 MHz), B2a (1176.450 MHz)
- NavIC: SPS-LS (1176.450 MHz)
- Iridium: L-band

Corrections supported

- SBAS

Input / Output

- M12 Female 10/1 00BASE Ethernet Data Port
- M12 Male External Power port

Regulatory

- IEC60945, FCC, CE, REACH/ROHS

Input voltage range

- Input voltage range: + 7V to +32V DC
- Average current@ 7V input: 573mA;
- Average current@ 12V input: 301 mA
- Average current@ 24V input: 150mA
- Average current @32V input: 113mA
- Peak current@ 7V: 1.73A
- Peak current@ 12V: 1A
- Peak current@ 24V: 505mA
- Peak current @ 32V: 379mA

Electrical protection

- Input overvoltage threshold: 33.5V to 36.5V across operation temperature
- 6A fuse (4-hour blow at 100% current, 5s blow at 200% current)
- Overcurrent threshold: 4A typical, 140µs delay
- Short circuit protection: 20A, 3µs delay
- Load dump protection: 200V unsuppressed event, 130ms clamp with auto reset
- Reverse polarity protection: Down to -32V
- ESD classification: 15kV air discharge, 8kV contact
- Battery overvoltage/over current/over discharge/temp protection with resettable PTC fuse

Hardware





www.pnt-guard.com