NPUT

Lifting Tug Operations to the Next Level

Navicom Dynamics' Non-Portable Positioning Unit for Tugs (NPUT) is purpose-built for permanent installation on tugs. Compact and robust, the NPUT delivers high-precision position, heading, speed, and rate-of-turn data, with additional inputs for depth and towing winch information.

Receive accurate and real-time vessel dynamics information on any number of screens to equip the vessels' navigational crew and key personnel and synchronise operations and communication.

The NPUT has been selected by the Panama Canal Authority for use in their tug operations, following a highly competitive international tender.

Renowned for its scale, precision, and the extraordinary volume of daily transits, the Panama Canal demands technology that ensures safe and efficient manoeuvring under the most challenging conditions. The NPUT meets that standard - engineered to be accurate, robust, intelligent, and purpose-built for environments where reliability is essential.

A completely independent mGNSS dual antenna system.


UHF Antenna


AIS Antenna


Secondary GNSS Antenna


Primary GNSS Antenna

Performance Features & Usability

Independent of vessel	The system is entirely independent of the vessel. It is a secondary source of vital vessel information that supports critical decision-making during manoeuvres.
Critical information source/data points	Get accurate Position, Heading, Rate-of-turn, COG, SOG and other useful data to create to create a stable image of the vessel on the chart display software with optional future vessel path predictions.
Situational awareness	Increased situational awareness of the vessel and it's surroundings made available on as many displays as required (to equip entire crew).
Portability	Information available on portable displays, allows the crew to easily walk around the bridge or any location that has been set up.
Extendibility	Add-on any number of screens to interface with NPUT to provide the same accurate & real-time information to additional crew members for a synchronised operation. Add-on shore based data points from a server to the software appear as integrated information to the user (with the original data points from the PPU)
Premium Quality	High quality sensors with advanced technology to form state-of-the-art systems that are accurate, reliable and user-friendly.
User-oriented, feature-rich software	A number of useful features to improve training, usability, safety and for personal enhancement.

NPUT - Product Specifications

Physical Specifications

Dimensions & Weight	186 x 81 x 250mm (WxHxD) I 3.5 kg
Power Requirements	90-240 VAC / 24 VDC 15W
Battery Back-up	6 hours of operation

External Interfaces

GNSS Antennas x2	TNC Jack	USB (device only)	USB Type B
UHF Antenna	N Jack	Mains Power	3-pin IEC C14 Inlet
VHF Antenna	SO239 Jack (mates to PL259)	DC Power	2-pin Terminal Block w Screw Lock
Wi-Fi Antenna	RP-SMA Jack		

Environmental Specifications

Operating Temperature	-20°C to +74°C (-4°F to +165°F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Humidity	95% (non-condensing)
RoHs	NPUT meets the directive for Restriction of Hazardous substances

Whats Included

Navicom Dynamics NPUT **(1 no)** I GNSS Antenna (L1/L2/L5) **(2 nos)** I VHF Antenna (162 MHz) **(1 no)**
UHF Antenna (454.325 MHz) **(1 no)**

Technical Specifications

GNSS Antenna

Signals Received	GPS L1/L2/L5, GLONASS G1/G2, BeiDou B1/B2/B3, SBAS, L-band, Galileo E1/E5a and b
LNA Gain	37 dBm
LNA Noise	≤1.8 dB, typical
Enclosure Rating	IP69K
Shock/Vibration	EP455

GNSS Receiver (primary)

Position Source (Frequencies)	L1C/A, L2C, L1OF, L2OF, E1, E1B/C, E5b, B1I, B2I
Tracked Systems	GPS, QZSS, Galileo, GLONASS, BeiDou
Correction Source	RTCMv3 (Wifi/ UHF), SBAS
Position Accuracy (RMS)	RTK: 0.008m +/s 1ppm, SBAS: 0.3m
Heading	HDG Accuracy: 0.02° (5m baseline)
Rate of Turn	ROT Accuracy: 0.1°/min
Speed Accuracy	0.03 m/s
Anti-jamming	'Cygus' anti-jamming technology

GNSS Receiver (auxilary)

Anti-jamming	RF interference and jamming detection and reporting
Anti-spoofing	Spoofing detection and reporting

RTK/DGNSS Corrections

Network DGNSS Corrections	Using RTCMv3 over Wifi connection (NTRIP: Port 2102)
UHF DGNSS Corrections	Using RTCMv3 over UHF connection (454.325 MHz)

IMU (Inertial measurement unit)

IMU Gyro Bias Instability	1.2°/hr
IMU Angular Random Walk	0.08°/√hr
Degree of Freedom	6 DOF: Triple Gyroscope, Tri-Axis Accelerometer

UHF Antenna (Pre-tuned to 454.325 MHz using TrimTalk 450S to receive RTCMv3 DGNSS corrections)

Frequency	410 – 480 MHz
Occupied Bandwidth	6.25, 12.5, 25 kHz
Modulation Type/Protocol	GMSK, Trimtalk 450S (+ others on request)
Receiver Sensitivity	-115 dBm

VHF Antenna

Frequency	162 MHz
VSWR	1.5:1

AIS Receiver

Dual Frequency	161.975 & 162.025 MHz
Receiver Sensitivity	< -107dBm at 20% packet error rate

Wi-Fi

Access Point	IEEE 802.11 a/b/g/n
Security	WPA2

Data / Connectivity

Data Output (NMEA/AIS)	GGA, VTG, HDT, ROT, GSA, GSV, VDM, PTMSX, PTMSG
Data Protocol	NMEA-0183 (compatible with Trelleborg SafePilot)
Connectivity	Wi-Fi, Ethernet
UDP Port	17608

Real time vessel information on display with ECS


Docking


Navigation


Route Planning


Path Prediction


Situational Awareness

Fully independent systems are used by many industries and customers world-wide. Some of these are:

- Australian Defence Force , Australia
- New Zealand Defence Force, New Zealand - Royal Navy, United Kingdom
- Royal Australian Navy, Australia
- Gladstone Ports Corporation, Australia
- Sabine Pilots, Texas, USA
- Maranhão Pilots, Sao Luis, Brazil
- Port of Dover, United Kingdom

Navicom's **Fixed & Portable systems are used by many industries and customers world-wide. Some of these are:**

- FSO Liberdade, Conoco Philips, Australia
- FPSO Pyrenees, BHP Billiton, Australia
- FPSO OKHA, Woodside Energy, Australia
- Mundra SPM, HMPL, India
- Mangalore SPM, MRPL, India
- FPSO Peregrino, Statoil, Brazil
- FPSO John Agyekum Kufuor, Konsberg Eni & Yinson, Ghana
- FPSO Sanha LPG, Chevron, Angola

The Royal Navy


HarbourPilot Lightweight on HMS Queen Elizabeth

Cargo Vessels


Ships pilots receive accurate data on portable displays

Offshore Oil and Gas operations


A fixed installation on the server rack on Banyu Urip FPSO

Commercial Vessels


Neopanamax vessels transiting Panama Canal

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