MarinePak7

Marine-certified enclosure for assured positioning

Optimised for harsh environments

Built on proven OEM7 technology, the MarinePak7 is designed for marine professionals who require highly reliable and assured positioning, navigation and timing. With multi-constellation and multi-frequency support paired with Oceanix precise point positioning (PPP) corrections, this receiver offers the highest satellite availability for users in hydrographic survey, dredging, marine construction and more.

Multi-layered positioning

Oceanix Correction Services available through the MarinePak7 deliver PPP corrections for marine applications with centimetre-level accuracy and 99.999% availability—meaning corrections are always available with near-instant convergence and reconvergence. The NovAtel Application Suite provides an inside look to monitor receiver, constellation and frequency health, real-time positioning output and early notifications when interference is detected through the Suite's GRIT Monitor.

Maximised accuracy and reliability

With dual-antenna input and ALIGN firmware, the MarinePak7 outputs accurate heading and pitch for dynamic applications.

Benefits

- Multi-constellation receiver with enhanced reliability for harsh environments

- PPP for always available corrections and near-instant convergence and reconvergence

- Intuitive interface through NovAtel Application Suite reduces setup time and streamlines monitoring position, interference, outages and more

Features

- Multi-constellation, multi-frequency, marine-certified receiver

- Supports PPP, RTK, SBAS and MSK Beacon. Tracks multiple Oceanix correction satellites for service redundancy

- Compatible with NovAtel Application Suite for streamlined configuration, monitoring and expansion to include ALIGN, SPAN GNSS+INS technology and interference detection

- Includes Wi-Fi support, removable internal battery and optional GNSS heading

GNSS module[1]

Signal tracking
Primary RF[2]

GPS	L1 C/A, L1C, L2C, L2P, L5
GLONASS[3]	L1 C/A, L2 C/A, L2P, L3, L5
Galileo[4]	E1, E5 AltBOC, E5a, E5b
BeiDou	B1I, B1C, B2I, B2a, B2b
QZSS	L1 C/A, L1C, L1S, L2C, L5
NavIC (IRNSS)	L5
SBAS	L1, L5
L-Band	up to 5 channels

Secondary RF[2]

GPS	L1 C/A, L1C, L2C, L2P, L5
GLONASS[3]	L1 C/A, L2 C/A, L2P, L3, L5
Galileo[4]	E1, E5 AltBOC, E5a, E5b
BeiDou	B1I, B1C, B2I, B2a, B2b
QZSS	L1 C/A, L1C, L1S, L2C, L5
NavIC (IRNSS)	L5

Horizontal position accuracy (RMS)

Single point L1	1.5 m
Single point L1/L2	1.2 m
SBAS[5]	60 cm
DGPS	40 cm
Oceanix[6]	2.5 cm (95%)
RTK	1 cm + 1 ppm

ALIGN GNSS heading accuracy

Baseline	Accuracy (RMS)
2m	0.08°
4m	0.05°

Maximum data rate

Measurements	up to 20 Hz
Position	up to 20 Hz

Time to first fix[7]

Cold start	<34 s
Hot start	<20 s

Signal reacquisition

L1	<0.5 s (typical)
L2	<1.0 s (typical)

Time accuracy[8]   <5 ns RMS

Velocity accuracy   0.03 m/s RMS

Velocity limit[9]   600 m/s

SPAN technology

GNSS+INS integration with marine profile

Supported IMUs
- IMU-ISA-100C
- IMU-uIMU-IC

Attitude & velocity performance
Refer to IMU product sheets for values

Heave performance[10]

Instantaneous Heave	5 cm or 5%
Delayed Heave	3.5 cm or 3.5%
Post-Processed Heave[11]	2.5 cm or 2.5%

MSK beacon module

2-channel parallel tracking

Frequency range	283.5 to 325.0 kHz
Channel spacing	500 Hz
Demodulation	Minimum Shift Keying (MSK)

GSM/GPRS module

Frequency band	Quad Band (850/900/1800/1900 MHz)
Data	GPRS Class 12 (max 85.6 kbps uplink & downlink)

Sensitivity

GSM850	-109dBm
GSM900	-109dBm
DCS1800	-109dBm
PCS1900	-109dBm

UHF module (model dependant[12])

Dual band multi-mode UHF transceiver

Radio options

400 MHz	
Frequency band:	410 to 475 MHz
900 MHz	
Frequency Band:	902 to 928 MHz
Modulation	4-GFSK, GMSK

Physical and electrical

Dimensions

Without shroud	205 x 200 x 80 mm
With shroud	205 x 254 x 80 mm

Weight   3 kg

Power

Input voltage	+12 to +24 VDC
Power consumption[13]	12 W

Battery (optional)
Removable Smart Li-ION

Capacity:	6.8 Ah @ 7.2 V
Typical duration:	4 hours

2 antenna LNA power outputs

Output voltage	12 VDC ±5%
Maximum current	500 mA

Connectors

2 GNSS antenna	TNC
GSM/GPRS	SMA
UHF	TNC
Wi-Fi	SMA
USB host	Type A
Serial	DB9
Ethernet	RJ45
PPS	SMA
Expansion	12 pin Lemo
Power	4 pin Lemo

Communication ports

3 RS-232/RS-422 selectable	up to 460,800 bps
1 USB 2.0 (host)	HS
1 Ethernet	10/100 Mbps
1 Wi-Fi	
1 Event inputs	
1 Event outputs	
1 Pulse Per Second output	

Colour display
Sunlight readable TFT
320 x 240 pixels, 24-bit True Colour

Environmental

Temperature

Operating	-15°C to +55°C
Storage	-20°C to +60°C

Humidity	95% non-condensing
Waterproof	IEC 60529 IPX7
Dust	IEC 60529 IP6X
Vibration (operating)	IEC 60945

Compliance
FCC, CE, UKCA, IEC 60945 (Protected), AS/NSZ

Features
- NovAtel OEM7 positioning engine
- Standard 32 GB internal storage
- Built-in Wi-Fi support
- Integrated Web GUI
- NovAtel Application Suite support

Firmware solutions
- ALIGN
- SPAN
- RTK
- RTK ASSIST
- Oceanix PPP

Included accessories
- 3 DB9 to DB9 serial data cable
- 1 RJ45 Ethernet cable
- 1 Power supply
- 1 UK power supply cable
- 1 EU power supply cable
- 1 US power supply cable

Optional accessories
- Li-ion battery
- PPS cable (SMA to BNC)
- High Density serial port expansion cable
- External DC power cable
- V560 Marine GNSS-LBand-MSK antenna
- GNSS-850 GNSS-LBand antenna
- GPS-713-GGGL GNSS-LBand antenna
- GrafNav/GrafNet
- Inertial Explorer

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1. *Typical values under ideal, open sky conditions.*
2. *Signal availability based on model configuration. See manual for details.*
3. *Hardware ready for L5.*
4. *E1bc support only.*
5. *GPS only.*
6. *Requires a subscription to Oceanix correction service.*
7. *Cold start: no almanac or ephemerides and no approximate position or time.*
   Hot start: almanac and recent ephemerides saved and approximate position and time entered.
8. *Time accuracy does not include biases due to RF or antenna delay.*
9. *Export licensing restricts operation to a maximum of 600 metres per second, message output impacted above 585 m/s.*
10. *Requires SPAN Marine Profile.*
11. *Post-processing results using Waypoint Inertial Explorer.*
12. *Available on MP7720U model.*
13. *Typical value. Consult the MarinePak7 User Manual for power supply considerations.*

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