

Specifications

Trimble MPS865 GNSS Heading Receiver



Receiver Name	MPS865 GNSS Heading Receiver
Configuration Option	
Type	Modular, dual antenna capable
Base and rover interchangeability	Yes
Base operation	Yes, optional
Rover operation	Yes, optional
Heading and Moving Base operation	All models ⁵
Rover position update rate	up to 20Hz
Rover maximum range from base	Unlimited
Rover operation within a VRS™ network	Yes
Factory options	See Receiver Upgrades below
General	
Keyboard and display	OLED display. LED status light On/Off key for one-button startup. Audible beeper 4 arrow keys (up, down, left, right) and central OK key
Dimensions (L × W × D)	16.5 cm (6.5 in) × 20.6 cm (8.1 in) × 6.5 cm (2.6 in) including
Weight	1.66 kg (3.66 lb) receiver only
Antenna Options	
GA830	Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BeiDou), MSS (RTX, OmniSTAR), MSK Beacon
Zephyr™ Model 3 Series	Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BeiDou),
Temperature	
Operating	−40 °C to +65 °C (−40 °F to +149 °F) ¹
Storage	−40 °C to +95 °C (−40 °F to +203 °F)
Humidity	Damp Heat 100% humidity, +40 °C (104 °F) IEC 60945:2002
Waterproof	IP67 waterproof and dustproof IEC 60529
Shock and Vibration	
Pole Drop	Designed to survive a 1 m (3.3 ft) pole drop onto a hard surface
Shock	MIL-STD 810F (Fig 516.5-10) (01/2000). Sawtooth (40g/11ms)
Vibration	MIL-STD 810F (Fig 514.5C-17) (01/2000)
Measurements	
	480 GNSS tracking channels (see Receiver Upgrades): GPS L1, L1P(Y), L2P(Y), L2C, L5, L1C GLONASS L1, L1P, L2, L2P, L3, L1/L2 CDMA Galileo E1, E5a, E5b BeiDou B1, B2, B3 QZSS L1, L1 SAIF, L1C, L2C, L5 SBAS L1, L5 DGNS corrections via MSK Beacon reception Patented method to track encrypted GPS P(Y) Strobe™ Correlator for reduced GNSS multi-path 2-channel SBAS (WAAS/EGNOS/MSAS/GAGAN) GNSS-centric fully independent signal tracking including GPS
SBAS (WAAS/EGNOS/MSAS) Positioning³	
Horizontal accuracy	± 0.50m (1.6ft)
Vertical accuracy	± 0.85m (2.8 ft)
Code Differential GPS Positioning²	
Correction source	DGNSS Base via radio, Internet or MSK Beacon
Horizontal accuracy	±(0.25m + 1 ppm) RMS ±(0.8 ft + 1 ppm)
Vertical accuracy	±(0.50m + 1 ppm) RMS ±(1.6 ft + 1 ppm)
CenterPoint® RTX Positioning⁷	
Accuracy	Horizontal 4cm (0.13 ft) RMS, Vertical 9cm (0.30 ft) RMS
Convergence time for specified precisions	5 minutes in select regions, and typically 30 minutes worldwide

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RTK Positioning²

Horizontal accuracy	8 mm + 1 ppm RMS (0.026 ft + 1 ppm RMS)
Vertical accuracy	15 mm + 1 ppm RMS (0.05 ft + 1 ppm RMS)

Trimble VRS⁸

Horizontal accuracy	8 mm + 0.5 ppm RMS (0.026 ft + 0.5 ppm)
Vertical accuracy	15 mm + 0.5 ppm RMS (0.05 ft + 0.5 ppm)

Precise Heading²

Heading accuracy 2m baseline	0.09° RMS ???
Heading accuracy 10m baseline	0.05° RMS ??

Power

Internal	Removable internal battery 7.4V 3.7 Ah Li-Ion battery Integrated charging circuitry - Battery will charge from external power source
External	9-36 V DC external power input (EN2282, ISO7637-2). Over-voltage protection Receiver automatically turns on when connected to external power
Power consumption	5.9 W in rover mode with internal receive radio 12.9 W in base station mode with internal transmit radio

Operation Time on Internal Battery

Rover	6 hours
Base station with UHF transmitting	4 hours

Regulatory Approvals

FCC: 47 Part 15
CE Mark (R&TTE Directive): EN 301 489-1/-5/-17/-24, EN 300 440-1/-2, EN 300 328, EN 300 113-2, EN 60950-1, EN 50371 61000-3-2/-3, EN 55032, EN 550024, EN 301 908-1, ISO7637-2
Canadian ICES-003. Cet appareil numérique de la classe B est
RoHS - 2 compliant
WEEE compliant
Galvanic Insulation 500V (Except USB)

Communications

Lemo (Serial 1) - Port A	RS232, external power input. Use for UHF radio configuration
Serial 2 - Port B	9 pin Male. RS232. Switchable to RS422
Serial 3 - Port F	9 pin Male. RS232 and 1PPS
1PPS (1 pulse-per-second)	Available on Port F. User settings for period, offset, active edge
USB	1 USB OTG
Ethernet	RJ45 connector
WiFi	802.11 b/g/n. SMA connector for WiFi/Bluetooth external antenna
Bluetooth wireless technology	Bluetooth v4.0+EDR/LE, Bluetooth v2.1+EDR SMA connector for WiFi/Bluetooth external antenna
Cellular	3.5G quad band GSM (850/1800/1900 MHz) / penta-band UMTS module (800/850/900/1900/2100 MHz). SMA connector for
Network Protocols	
HTTP (web browser GUI)	Yes, via Wi-Fi, Ethernet, or cellular
NTP Server	Yes
TCP/IP or UDP	Yes
NTRIP	NTRIP v1 and v2, Client mode. FTP server. Caster is optional
RTK Networks	VRS, FKP, MAC
mDNS/uPnP Service discovery	Yes
Dynamic DNS	Yes
eMail alerts	Yes
Network link to Google Earth	Yes
Supported data formats	
Correction Inputs	CMR™, CMR+™, CMRx, RTCM 2.x, RTCM 3, ATOM
Correction Outputs	CMR™, CMR+™, RTCM 2.x, RTCM 3, ATOM
Data Outputs	NMEA, 1PPS Time Tags, ATOM
External GSM/GPRS, cell phone support	Supported for Trimble IBSS and VRS services

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Integrated radios (optional)

Channel spacing (450 MHz)
Sensitivity (450 MHz)
Internal MSK Beacon receiver

Internal MSK Beacon⁶ and 450 MHz (UHF) or Internal MSK Beacon only
12.5 kHz or 25 kHz spacing available
-114 dBm (12 dB SINAD)
Frequency range 283.5–325.0 kHz
Channel spacing 500 Hz
MSK bit rate 50, 100, and 200 bps
Demodulation minimum shift key (MSK)

Receiver Upgrades

Constellation
Frequency
Precision
Function

IRNSS
Triple Frequency
Precision 7/2 Rover, Precise GNSS
Precise Base, Precise Rover, Data logging, 50 Hz

Data Logging

Memory limit

8 Gb internal memory (option). Expandable through external USB sticks

Notes

- 1 Receiver will operate normally to -40°C .
- 2 Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, interference and atmospheric conditions. Always follow recommended practices.
- 3 Depends on SBAS system performance.
- 4 Bluetooth type approvals are country specific. For more information, contact your local Trimble office or representative.
- 5 Two of the supported antennas (See Antenna Options) must be connected for heading.
- 6 One of the antennas must be a MSK Beacon capable one such as GA830 for beacon signal reception.
- 7 Receiver accuracy and convergence time varies based on GNSS constellation health, level of multipath, and proximity to obstructions such as trees and buildings.
- 8 Networked RTK PPM values are referenced to the closest physical base station

Specifications subject to change without notice.

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Trimble Heavy Civil Construction Division

10368 Westmoor Drive
Westminster, Colorado 80021
USA
800-361-1249 (Toll Free)
+1-937-245-5154 Phone
+1-937-233-9441 Fax

www.trimble.com

Trimble Authorized Distribution Partner

