Specifications

Trimble SPS461
Modular GPS Heading Receiver

Receiver Name	**SPS461 GPS Heading Receiver**
Configuration Option	**Location RTK PV (Precise Vertical)**
Type	Modular
Base and rover interchangeability	No, rover only
Base operation	N/A
Rover operation	All models
Heading and Moving Base operation	All models[5]
Rover position update rate	1 Hz, 2 Hz, 5 Hz, 10 Hz, 20Hz
Rover maximum range from base	Unlimited
Rover operation within a VRS™ network	Yes
Factory options	
General	
Keyboard and display	VFD display 16 characters by 2 rows On/Off key for one-button startup Escape and Enter keys for menu navigation 4 arrow keys (up, down, left, right) for option scrolls and data entry
Dimensions (L × W × D)	24 cm (9.4 in) × 12 cm (4.7 in) × 5 cm (1.9 in) including connectors
Weight	1.22 kg (2.70 lb) receiver only 1.37 kg (3.00 lb) receiver with internal radio
Antenna Options	
Internal Antenna (Smart Antenna)	
GA510 (Discontinued)	L1/L2 GPS, SBAS, and OmniSTAR (optimized for OmniSTAR)
GA530, Rugged GA530	L1/L2 GPS, MSK Beacon, SBAS, and OmniSTAR
GA810	L1/L2/L2C GPS, SBAS and OmniSTAR (optimised for OmniSTAR)
GA830	L1/L2/L2C GPS, MSK Beacon, SBAS and OmniSTAR
L1/Beacon, DSM 232 (Discontinued)	Not supported
Zephyr™ Model 2	L1/L2 GPS, SBAS, and OmniSTAR
Zephyr Geodetic™ Model 2	L1/L2 GPS, SBAS, and OmniSTAR
Zephyr Model 2 Rugged	L1/L2 GPS, SBAS, and OmniSTAR
Temperature	
Operating	–40 °C to +65 °C (–40 °F to +149 °F)[1]
Storage	–40 °C to +80 °C (–40 °F to +176 °F)
Humidity	MIL-STD 810F, Method 507.4
Waterproof	IP67 for submersion to depth of 1 m (3.3 ft), dustproof
Shock and Vibration	
Pole Drop	Designed to survive a 1 m (3.3 ft) pole drop onto a hard surface
Shock – Non-operating	To 75 g, 6 ms
Shock – Operating	To 40 g, 10 ms, saw-tooth
Vibration	Tested to Trimble ATV profile (4.5 g RMS): 10 Hz to 300 Hz: 0.04 g/Hz;[2] 300 Hz to 1,000 Hz; –6 dB/octave

Trimble

Specifications

Trimble SPS461
Modular GPS Heading Receiver

Measurements	
	Advanced Trimble Maxwell™ 5 Custom GPS chip
	High-precision multiple correlator for L1/L2 pseudo-range measurements
	Unfiltered, unsmoothed pseudo-range measurements data for low noise, low multipath error, low-time domain correlation, and high-dynamic response
	Very low noise carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
	L1/L2 signal-to-noise ratios reported in dB-Hz
	Proven Trimble low elevation tracking technology
	72-channel L1 C/A code, L1/L2 Full Cycle Carrier
	Trimble EVEREST™ multipath signal rejection
	2-channel MSK Beacon (Optional)
	4-channel SBAS (WAAS/EGNOS/MSAS)
SBAS (WAAS/EGNOS/MSAS) Positioning[3]	
Horizontal accuracy	± 0.50m (1.6ft)
Vertical accuracy	± 0.85m (2.8 ft)
Code Differential GPS Positioning[2]	
Correction type	DGPS RTCM 2.x
Correction source	DGPS Base via radio or Internet
Horizontal accuracy	±(0.25m + 1 ppm) RMS ±(0.8 ft + 1 ppm)
Vertical accuracy	±(0.50m + 1 ppm) RMS ±(1.6 ft + 1 ppm)
OmniSTAR Positioning	
VBS service accuracy	Horizontal <1 m (3.3 ft)
XP service accuracy	Horizontal 0.2 m (0.66 ft), Vertical 0.3 m (1.0 ft)
HP service accuracy	Horizontal 0.1 m (0.33 ft), Vertical 0.15 m (0.5 ft)
CenterPoint RTX Positioning[12]	
Horizontal accuracy	
Vertical accuracy	
Convergence time for specified precisions	
xFill Positioning	
Horizontal accuracy	
Vertical accuracy	
RTK Positioning[2]	
Horizontal accuracy	0.07 m + 1 ppm RMS (0.23 ft + 1 ppm RMS)
Vertical accuracy	0.02 m + 1 ppm RMS (0.065 ft +1 ppm RMS)
Precise Heading[2]	
Heading accuracy	
2 m antenna separation	0.09° RMS
10 m antenna separation	0.05° RMS
Power	
Internal	N/A
External	Power input on the 26-pin D-sub connector is optimized for lead acid batteries with a cut-off threshold of 11 V DC
	11 V DC to 28 V DC external power input with over-voltage protection
	Receiver automatically turns on when connected to external power
Power over Ethernet (PoE)	44 V DC to 57 V DC, IEEE802.3af compliant device
Power consumption	6.0 W in rover mode with internal receive radio

Trimble

Specifications

Trimble SPS461
Modular GPS Heading Receiver

Operation Time on Internal Battery	
Rover	N/A
Base station	N/A
450 MHz systems	
900 MHz system	
Regulatory Approvals	
	FCC: Part 15 Subpart B (Class B Device) and Subpart C, Part 90
	Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
	Canadian RSS-310, RSS-210, and RSS-119. Cet appareil est conforme à la norme CNR-310, CNR-210, et CNR-119 du Canada.
	R&TTE Directive: EN 301 489-1/-5/-17, EN 300 440, EN 300 328, EN 300 113, EN 60950, EN 50371
	ACMA: AS/NZS 4295 approval
	C-tick mark and CE mark compliance
	RoHS compliant
	WEEE compliant
Communications	
Lemo (Serial)	N/A
Modem 1 (Serial)	26-pin D-sub, Serial 2, Full 9-wire RS232, using adaptor cable
Modem 2 (Serial)	26-pin D-sub, Serial 3, 3 wire RS-232, using adaptor cable
1PPS (1 pulse-per-second)	Available
USB	
Ethernet	Through a multi-port adaptor
WiFi	
Bluetooth wireless technology	Fully-integrated, fully-sealed 2.4 GHz Bluetooth module[4]
Network Protocols	
HTTP (web browser GUI)	Yes
NTP Server	Yes
TCP/IP or UDP	Yes
Ntrip	NTRIP v1 and v2, Client and Caster modes
mDNS/uPnP Service discovery	Yes
Dynamic DNS	Yes
eMail alerts	Yes
Network link to Google Earth	Yes
PPP and PPPoE	Yes
Supported data formats	
Correction Inputs	CMR™, CMR+™, CMRx, RTCM 2.x, RTCM 3
Correction Outputs	Repeat DGPS RTCM from MSK Beacon or OmniSTAR VBS source
Data Outputs	NMEA, GSOF, 1PPS Time Tags
External GSM/GPRS, cell phone support	Supported for Trimble IBSS and VRS services
Integrated radios (optional)	Fully-integrated, fully-sealed internal MSK Beacon and 450 MHz (UHF) Rx only, Internal MSK Beacon only or Internal 900 MHz Rx only
Channel spacing (450 MHz)	12.5 kHz or 25 kHz spacing available
Sensitivity (450 MHz)	-114 dBm (12 dB SINAD)
Internal MSK Beacon receiver	If internal MSK Beacon Radio is installed[6]
	Frequency range 283.5–325.0 kHz
	Channel spacing 500 Hz
	MSK bit rate 50, 100, and 200 bps
	Demodulation minimum shift key (MSK)

Trimble

Specifications

Trimble SPS461
Modular GPS Heading Receiver

Receiver Upgrades
- Constellation
- Frequency
- Precision
- Function

Data Logging
- Memory limit

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 GA530 for MSK Beacon signal reception.

Specifications subject to change without notice.

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

Trimble