

# Specifications

# Trimble SPS356 Modular GNSS Receiver



<b>Receiver Name</b>	<b>SPS356 DGNS/Beacon Receiver</b>
<b>Configuration Option</b>	
Type	Modular
Base and rover interchangeability	Not supported
Base operation	Not supported
Rover operation	Yes
Heading and Moving Base operation	N/A
Rover position update rate	1 Hz, 2 Hz, 5 Hz, 10 Hz
Rover maximum range from base	Unlimited
Rover operation within a VRS™ network	RTCM DGPS only
Factory options	See Receiver Upgrades below
<b>General</b>	
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 x W x D)	17.5 cm (6.9 in) x 12.8 cm (5.0 in) x 5.9 cm (2.3 in) including connectors
Weight	1.15 kg (2.54 lb) receiver only
<b>Antenna Options</b>	
Internal Antenna (Smart Antenna)	N/A
GA510 (Discontinued)	L1 GPS, L1 SBAS
GA530, Rugged GA530	L1 GNSS (GPS, Glonass, Galileo, BeiDou, QZSS), MSK Beacon, L1 SBAS
GA810	L1 GNSS (GPS, Glonass, Galileo, BeiDou, QZSS), L1 SBAS
GA830	L1 GNSS (GPS, Glonass, Galileo, BeiDou, QZSS), MSK Beacon, L1 SBAS
L1/Beacon, DSM 232 (Discontinued)	Not supported
Zephyr™ Model 2	L1 GNSS (GPS, Glonass, Galileo, BeiDou, QZSS), L1 SBAS
Zephyr Geodetic™ Model 2	L1 GNSS (GPS, Glonass, Galileo, BeiDou, QZSS), L1 SBAS
Zephyr Model 2 Rugged	L1 GNSS (GPS, Glonass, Galileo, BeiDou, QZSS), L1 SBAS
<b>Temperature</b>	
Operating	-40 °C to +65 °C (-40 °F to +149 °F)
Storage	-40 °C to +80 °C (-40 °F to +176 °F)
Humidity	MIL-STD 810F, Method 507.4 IMO A.694/5 [EN 60945 4.4 b) ]
Waterproof	IP67 for submersion to depth of 1 m (3.3 ft), dustproof
<b>Shock and Vibration</b>	
Pole Drop	Designed to survive a 1 m (3.3 ft) drop onto a hard surface
Shock – Non-operating	To 75 g, 6 ms, saw-tooth
Shock – Operating	To 40 g, 10 ms, saw-tooth
Vibration	Tested to Trimble Survey profile (2.6 g RMS): 5 Hz–500 Hz: 0.15 g/Hz <sup>2</sup> 350 Hz to 500 Hz; -6 dB/octave

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## Measurements

Advanced Trimble Maxwell™ 6 Custom GNSS chip  
L1 signal-to-noise ratios reported in dB-Hz

Unfiltered, unsmoothed pseudo-range measurements data for low noise, low multipath error, low-time domain correlation, and high-dynamic response

Trimble EVEREST™ multipath signal rejection

220-channel L1 C/A code

2-channel MSK Beacon

3-channel SBAS (WAAS/EGNOS/MSAS)

## SBAS (WAAS/EGNOS/MSAS) Positioning<sup>3</sup>

Horizontal accuracy  $\pm 0.50\text{m}$  (1.6ft)  
Vertical accuracy  $\pm 0.85\text{m}$  (2.8 ft)

## Code Differential GPS Positioning<sup>2</sup>

Correction type DGPS RTCM v2.3, DGNSS RTCM v2.4  
Correction source Internal MSK Beacon, DGPS Base via ext. radio, NTRIP via IBSS or VRS  
Horizontal accuracy  $\pm(0.30\text{m} + 1 \text{ ppm})$  RMS  $\pm(1.0 \text{ ft} + 1 \text{ ppm})$   
Vertical accuracy  $\pm(0.50\text{m} + 1 \text{ ppm})$  RMS  $\pm(1.6 \text{ ft} + 1 \text{ ppm})$

## OmniSTAR Positioning

VBS service accuracy N/A  
XP service accuracy N/A  
HP service accuracy N/A

## CenterPoint RTX Positioning<sup>12</sup>

Horizontal accuracy  
Vertical accuracy  
Convergence time for specified precisions

## xFill Positioning

Horizontal accuracy  
Vertical accuracy

## RTK Positioning<sup>2</sup>

Horizontal accuracy N/A  
Vertical accuracy N/A

## Precise Heading<sup>2</sup>

Heading accuracy N/A  
2 m antenna separation  
10 m antenna separation

## Power

Internal Optional integrated internal battery 7.4 V, 3900 mA-hr, Lithium-ion  
Internal battery operates as a UPS in the event of external power source failure

Internal battery will charge from external power source when input voltage is  $>12 \text{ V}$

Integrated charging circuitry

External

Power input on 7-pin 0-shell Lemo connector is optimized for lead acid batteries with a cut-off threshold of 11 V DC

Power input on the 26-pin D-sub connector is optimized for Trimble lithium-ion battery input (P/N 49400) with a cut-off threshold of 10.5 V  
12 V DC to 28 V DC external power input with over-voltage protection

Receiver will automatically turn on when connected to external power

Power over Ethernet (PoE) N/A

Power consumption 4.95 W (VFD 100%), 3.7 W (VFD 12.5%) at 18 V, in rover mode

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## Operation Time on Internal Battery

Rover	7 hours; varies with temperature
Base station	N/A
450 MHz systems	N/A
900 MHz system	N/A

## Regulatory Approvals

FCC Part 15 Subpart B (Class B Device) and Subpart C  
CAN ICES-3(B)/NMB-3(B), RSS-Gen, RSS-310 and RSS-210

R&TTE Directive: EN 301 489-1/-3/-5/-17, EN 300 440, EN 300 328, EN 300 330,  
EN 60950, EN 50371

ACMA Regulatory Compliance Mark (RCM)

CE mark compliance

UN ST/SG/AC.10.11/Rev. 3, Amend. 1 (Lithium-ion Battery)

UN ST/SG/AC. 10/27/Add. 2 (Lithium-ion Battery)

WEEE and RoHS compliant

## Communications

Lemo (Serial)	7-pin 0S Lemo, Serial 1, 3-wire RS-232
Modem 1 (Serial)	26-pin D-sub, Serial 2, 5-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)	Yes
USB	1 USB 2.0 (Type B) Device via multi-port adaptor (57167)
Ethernet	Through a multi-port adaptor
WiFi	Simultaneous Client and Access point (AP) modes
Bluetooth wireless technology	Fully-integrated, fully-sealed 2.4 GHz Bluetooth module <sup>4</sup>
Network Protocols	
HTTP (web browser GUI)	Yes
NTP Server	Yes
TCP/IP or UDP	Yes
Ntrip	NTRIP v1 and v2, Client mode
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 RTCM from internal Beacon source
Data Outputs	NMEA, GSOF, 1PPS Time Tags
External GSM/GPRS, cell phone support	Supported for Internet-based correction streams (VRS, IBSS) – directly using the external SNM940.
Integrated radios (optional)	N/A
Channel spacing (450 MHz)	
Sensitivity (450 MHz)	
Internal MSK Beacon receiver	Frequency range 283.5–325.0 kHz Channel spacing 500 Hz MSK bit rate 50, 100, and 200 bps Demodulation minimum shift key (MSK)

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## Receiver Upgrades

Constellation	Glonass, BeiDou, Galileo
Frequency	N/A
Precision	N/A
Function	N/A

## Data Logging

Memory limit	N/A
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## Notes

*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.*

*Specifications subject to change without notice.*

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