

DSM12/212 Product Family

Integrated, cost-effective and reliable sub-meter positioning for your marine application

Key features and benefits

- Compact
- Easy Installation
- High Position Output Rate With Low Latency
- Easy To Use & Setup
- Low Power Consumption
- Increased Jamming Resistance
- Optional Everest Multipath Rejection
- Isolated Power Supply

The DSM12/212 Product Family targets marine professionals in need of sub-meter positioning during applications such as precise positioning, dredging, hydrographic surveying, high speed vessel positioning, and many more.

Complete System Solution

The product family includes three mobile receivers and one reference station receiver:

- DSM12™ – DGPS receiver
- DSM212L™ – Integrated GPS/MSK receiver, 1Hz output
- DSM212H™ – Integrated GPS/MSK receiver, 10Hz output
- DSM12RS™ – DGPS Reference Station receiver

Cost Effective

The family of 12 channel GPS receivers use Trimble's latest technology to achieve sub-meter positioning accuracy. These receivers maintain their high performance in environments where GPS availability and accuracy are sometimes an issue. Everest™ technology improves results in high multipath environments and locations where other radio frequencies could jam the GPS signals such as harbors, oil platforms, and construction sites. The DSM12, DSM212L & DSM212H can all accept RTCM SC-104 differential corrections from an external source through a serial interface. The DSM212L & DSM212H also include an integrated dual-channel low-noise MSK beacon receiver.



Integrated GPS and dual-channel MSK beacon receiver, DSM212H

The MSK beacon receiver provides superior weak-signal reception performance, allowing differential corrections to be received at long distances from the reference station and during challenging weather conditions. The dual-channel capability allows for intelligent and seamless switching between beacons.

Superior Integration

The DSM12, DSM212L and DSM212H are easy to connect with other onboard equipment such as integrated bridge systems, radars, autopilots and plotters. Through one of the two serial ports, these receivers output standard NMEA-0183 messages, including position, velocity and status information. The DSM12 & DSM212L receivers output position reports once a second.

The DSM212H outputs position reports at an increased output rate of 10 Hz, with a maximum latency of 0.1 second. The second serial port is for setup, control and data output using Trimble Standard Interface Protocol (TSIP). For easy setup, a Windows-based Trimble Navigation software, TSIP Talker™ is included. The receivers also feature a 1 PPS output available on either serial port and offer a differential speed accuracy of better than 0.1 Knot.

Reference Station

The DSM12RS is a cost-effective solution for providing high quality DGPS corrections. The corrections are generated in the standard RTCM SC-104 format for broadcast.

DSM12/212 Product Family

Integrated, cost-effective and reliable sub-meter positioning for your marine application

STANDARD FEATURES

Standard Configuration

- 12-channel GPS receiver
- Integrated GPS and dual channel MSK beacon receiver (DSM212L & DSM212H)
- External RTCM SC-104 input
- Isolated power supply
- Positioning based on carrier-phase filtered L1 pseudo-ranges
- Two programmable RS-232 serial ports:
 - NMEA-0183 output or RTCM SC-104 output
 - RTCM SC-104 input
 - TSIP Input & Output
- 1PPS output
- Windows Configuration software
- DSM12/212 Operation manual
- Compact L1 GPS antenna (DSM12)
- Compact L1 Geodetic GPS antenna with removable groundplane (DSM12RS)
- Combined L1 GPS and MSK H-field loop antenna (DSM212L & DSM212H)
- 15 meter RG58 antenna cable (DSM12, DSM212L, & DSM212H)
- 30 meter RG213 antenna cable (DSM12RS)
- Power/data cable
- 12Pin to Split I/O Cable (DSM12)
- 12Pin to Split RTCM Cable (DSM12RS)
- 12Pin to Data Cable (DSM212L & DSM212H)

PHYSICAL CHARACTERISTICS

Receiver

Size:	14.5cmW x 5.1cmH x 19.5cmD (5.7"W x 2.0"H x 7.7"D)
Weight:	0.76kg (1.68 lb.)
Power:	5W (max.), 10 to 32 VDC
Operating temp:	-30°C to +65°C
Storage temp:	-40°C to +85°C
Humidity:	100% condensing, unit fully sealed

Combined Antenna (DSM212L & DSM212H)

Size:	15cmD x 15.5cmH (5.8"D X 6.0"H)
Weight:	4.9kg (2.2 lb.)
Operating temp:	-40°C to +65°C
Humidity:	100%-fully sealed

Compact Dome Antenna (DSM12)

Size:	15.4cmD x 8.9cmH (6"D X 3.5"H)
Weight:	0.29kg (0.645 lb.)
Operating temp:	-40°C to +70°C
Humidity:	100%-fully sealed

Compact L1 Geodetic Antenna (DSM12RS)

Size:	48cmD x 9cmH (19"D X 3.5"H)
Weight:	2.6kg (5.7 lb.)
Operating temp:	-40°C to +65°C
Humidity:	100% - fully sealed

PERFORMANCE CHARACTERISTICS

GPS Receiver

General:	12-channel, parallel tracking, L1 C/A code with carrier phase filtered measurements and multi-bit digitizer
Output rate:	1 Hz standard (DSM12, DSM12RS, & DSM212L) 10 Hz standard (DSM212H)
Differential speed accuracy:	0.1 kn (0.1 MPH, 0.16 km/h, 5.6cm/s)*
Differential position accuracy:	Less than 1 meter horizontal RMS* (At least 5 satellites, PDOP <4 and RTCM SC-104 standard format broadcast from a Trimble DSM12RS or equivalent reference station.)
Time to first fix:	<30 seconds, typical
NMEA messages:	ALM, GGA**, GLL, GSA, GSV, VTG**, ZDA, RMC, MSS **Default messages

MSK beacon Dual-channel Receiver

Frequency range:	283.5 KHz to 325.0 KHz
Channel spacing:	500 Hz
MSK modulation:	50, 100 & 200 bits/second
Signal strength:	10 µV/meter minimum @ 100BPS
Dynamic range:	100 dB
Channel selectivity:	70 dB >500 Hz offset
Frequency offset:	17 ppm maximum
3rd order intercept:	+15 dBm @ RF input (min. AGC setting)
Beacon acquisition time:	<5 sec, typical

OPTIONS

- High Output Rate
- Everest Multipath Rejection
- Reference Station
- Carrier Phase Output
- Extended hardware warranty
- Firmware update service

*To achieve differential speed and position, the unit must be operating within the broadcast area of a reference station conforming to the International Association of Lighthouse Authorities Standards. All non-differential GPS receivers are subject to degradation of position and velocity accuracy under U.S. Department of Defense-imposed Selective Availability (S/A). Positions may be degraded up to 100 meters 2D RMS.

Trimble follows a policy of continuous product improvement. Specifications are thus subject to change without notice.



Trimble Navigation Limited
Corporate Headquarters
645 North Mary Avenue
Sunnyvale, CA 94086
+1-408-481-8000
+1-408-481-2000 Fax
www.trimble.com

Trimble Navigation Europe Limited
Trimble House,
Meridian Office Park
Osborne Way
Hook, Hampshire RG27 9HX U.K.
+44 1256-760-150
+44 1256-760-148 Fax

