

4000IM MSK Integrity Monitor

Differential GPS with MSK Receiver

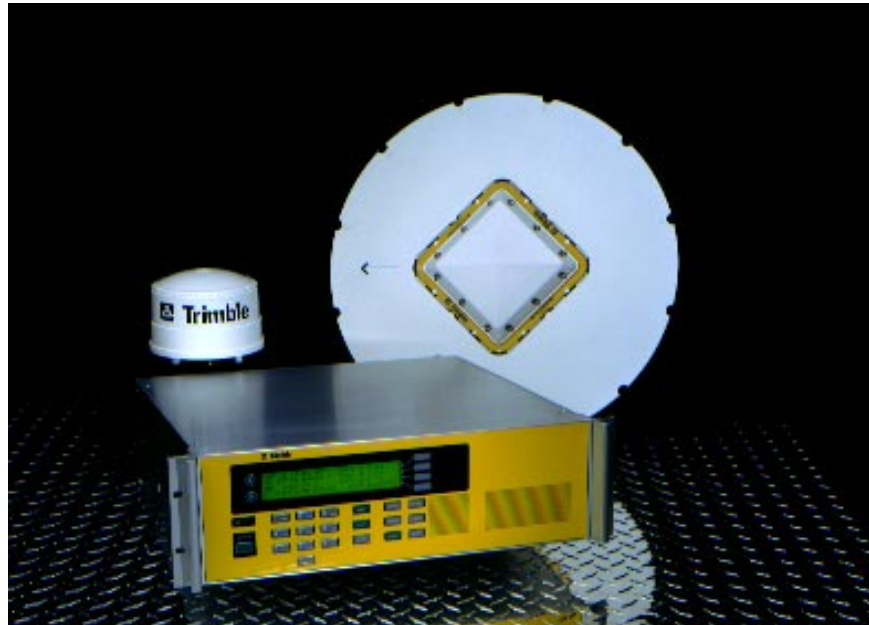
Key features and benefits

- **RTCM RSIM compliant**
- **L1 or L1/L2 versions**
- **Near or Far Field versions**
- **Super-trak signal processing technology**
- **Improved performance in poor RF conditions**
- **Everest Multipath Rejection Technology**
- **Fully upgradeable**

The 4000IM MSK Integrity Monitor receiver combines Trimble's latest GPS and marine band Minimum Shift Keying (MSK) receiver technologies into one unit. Designed specifically for use in marine radiobeacon DGPS systems, the 4000IM MSK Integrity Monitor, combined with the 4000MSK DGPS Reference Station and the Beacon Control System Software (BCS), provides the most straightforward means of establishing a differential GPS service utilizing either existing or new radiobeacon sites.

The 4000IM MSK Integrity Monitor's GPS engine, based on Trimble's industry leading Series 4000™SSi receiver, incorporates Trimble's Super-trak™ technology for superior signal acquisition, superior signal tracking, and increased immunity to jamming due to radio frequency interference. The GPS engine also includes patented Everest™ Multipath Rejection technologies for rejection of reflected GPS signals before they can affect measurements and positions. The result is low noise C/A code measurements that can be used for real-time sub-meter DGPS integrity monitoring, navigation and positioning.

The integral fully digital MSK receiver operates in the 283.5 to 325.0 kHz marine radiobeacon band and provides the highest near or far field signal



The integrated solution for marine radiobeacon DGPS systems.

receiving performance possible.

The Integrity Monitor receiver can operate in a variety of system configurations, providing integrity monitoring functions as a stand-alone unit monitoring distant radiobeacon sites (far field), or incorporated into a system employing a number of radiobeacons with multiple Integrity Monitors and Reference Stations per site (near field). Remote control of the receiver is available through the serial ports with RTCM RSIM commands for greater system configuration flexibility.

The Integrity Monitor receiver offers the utmost in convenience and reliability. The unit is housed in a rugged, aluminum rackmount chassis with both universal AC and

DC power inputs and four RS-232/422 serial ports for receiver control and data archiving. With Flash EPROM technology, the unit can be upgraded to maintain compliance to standards with a simple firmware change.

The International Association of Lighthouse Authorities (IALA), DGPS service providers worldwide and the Radio Technical Commission for Maritime Services (RTCM) continue to refine international standards for DGPS broadcasts. Trimble has worked closely with these groups and others to ensure adherence to existing and future standards, as well as to provide the latest in technological innovation.

Trimble

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STANDARD FEATURES

- Full RTCM, RSIM and IALA Compatibility
- Autonomous operation – automatic resumption after power restoration
- Firmware upgrades via serial port
- Four RS-232/RS-422 ports, user selectable
- Dual operating mode – simultaneous RTCM Input and GPS data generation
- Geodetic quality antenna with 30 m cable
- H-field MSK antenna
- Remote control command set
- AC and DC power inputs with auto changeover
- One year warranty

OPTIONS

- Choke Ring Geodetic GPS Antenna
- Far field MSK antenna, H-field
- Dual Frequency, GPS code and carrier
- Additional 30 m antenna cable with in-line amplifier

PHYSICAL CHARACTERISTICS

Rack mount unit

Size	427 mm W × 406 mm D × 134 mm H (16.8" W × 16" D × 5.25" H)
Weight	6.8 kg (15 lbs.)
Power	AC: 100, 120, 220, 240 Volts; 40 Watts DC: 10–36 Volts; 30 Watts
Operating temp	0°C to +50°C
Storage temp	-20°C to +60°C
Humidity	95% RH non-condensing

Geodetic antenna

Size	406 mm D × 89 mm H (16" D × 3.5" H)
Weight	2.6 kg (5.7 lbs.)
Operating temp	-40°C to +65°C
Storage temp	-55°C to +75°C
Humidity	100% RH – fully sealed

DGPS INTEGRITY MONITOR SPECIFICATIONS

Signal Processing	Multibit Super-trak; Maxwell chip architecture with Everest Multipath Rejection Technology; very low noise C/A code processing
Tracking (Std)	12 channels L1 C/A code and carrier
(Opt)	12 channel L1+12 channel L2 code and carrier
Startup time	<2 minutes after cold start
Display	Backlit LCD with four lines of forty alphanumeric characters; Large, easy-to-read characters – 2.8 mm × 4.9 mm; Total viewing area 32 cm ² ; Adjustable backlight and viewing angle
Keyboard	Alphanumeric, function and softkey entry
Data recording	RTCM corrections, RSIM messages and all data available via serial port
Remote control	Full RSIM and TNL Data Collector Interface

MSK RECEIVER SPECIFICATIONS

Frequency Range	283.5–325.0 kHz
Channel Spacing	500 Hz
Frequency Offset:	10 ppm maximum (200 bits/sec) 40 ppm maximum (100, 50, 25 bits/sec)
RF Bit Rate	25, 50, 100, 200 bits/second
Signal Strength (Near Field)	0.18 to 4 µA/meter
Channel Selectivity	60 dB @ 500 Hz offset
3rd order intercept	+15 dBm @ RF input (min. AGC setting)

ORDERING INFORMATION

4000IM MSK Integrity Monitor L1 only	Part Number 26541-30
Near Field MSK	
4000IM MSK Integrity Monitor L1/L2	Part Number 26541-32
Near Field MSK	
4000IM MSK Integrity Monitor FF	Part Number 26541-34
Far Field MSK	



THE GPS SOLUTION

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