



A Complete Solution for Marine Construction

Trimble Marine Construction Systems

TRANSFORMING THE WAY THE WORLD WORKS



A Complete Solution for Marine Construction

Trimble marine construction systems deliver the accuracy and reliability you need.



Trimble marine GNSS receivers and antennas offer cost-effective solutions for permanent or temporary installations. Shown here: SPS356 GNSS Beacon Receiver.

Trimble Site Positioning Systems optimally partner with Trimble HYDROpro™ marine software. Trimble HYDROpro features dedicated configurations for specific applications, as well as for single beam hydrographic surveys and environmental data collection and processing.

The advanced, extremely rugged Trimble Site Tablet works with HYDROpro software, a GNSS receiver, and other sensors to provide an efficient, highly portable marine positioning solution for a wide range of applications. For shore-based work, the Trimble Site Tablet also runs Trimble SCS900 Site Controller Software for measurement and stakeout operations.

Trimble® Site Positioning Systems GNSS receivers and antennas are advanced positioning systems developed by the leader in GNSS technology for marine solutions. Trimble offers flexible, high-performance positioning systems to meet your unique marine construction needs on both simple and complex projects. Our solutions include both hardware and software, and can be easily integrated into third-party systems.

PRECISE GPS FOR TIDE

The Trimble SPS855 GNSS Modular Receiver provides the capability for monitoring tidal and other water level changes in real-time, providing a more precise and cost-effective solution than conventional methods. Tide gauges and associated radio links are no longer essential.

MSK BEACON SUPPORT

The MSK Beacon service is a free-to-air correction signal, and MSK transmissions are available in many coastal regions and inland waterways around the world. A receiver such as the SPS356 with internal DGNSS Beacon receiver makes effective use of MSK Beacon service.

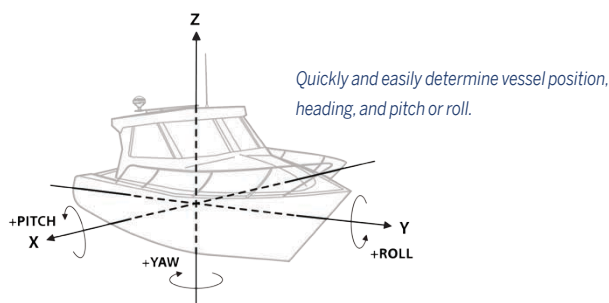
RAPID DEPLOYMENT, EASY INTEGRATION

JUST ONE RECEIVER FOR FAST INSTALLATION

Perhaps your business requires a permanently installed GNSS heading and positioning solution. Or do changing application needs demand a flexible system that can be quickly deployed to different vessels? Trimble offers a range of receivers offering cost-effective solutions for permanent or temporary installations.

EASY INTEGRATION WITH OTHER SYSTEMS

Trimble Site Positioning Systems receivers share a common interface and accessories. Each receiver integrates seamlessly with other Trimble systems so you can reuse data and accessories across multiple applications. Users who are familiar with one Trimble system require minimal training and can quickly begin working with new receivers.



HIGH-PRECISION HEADING... FAST

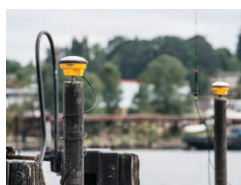
DUAL FREQUENCY ANTENNAS: KEY TO PRECISION, FLEXIBILITY

The Trimble SPS361 and SPS461 DGPS Heading Receivers with MSK Beacon are modular, dual-frequency solutions employing separate plug-in dual-frequency antennas. This antenna configuration offers significant benefits over single-frequency and fixed baseline systems:

- ▶ More precise GNSS heading—flexible antenna separation enables users to maximize precision.
- ▶ Dual-frequency ensures faster initialization and re-acquisition of satellites.

EASILY DETERMINE THE POSITION OF OTHER SENSORS ON A VESSEL

ONE SYSTEM DELIVERS POSITION, HEADING, AND ATTITUDE



The dual antennas of the Trimble GNSS receivers provide vessel position, heading, and pitch or roll. So just one cost-effective system is needed. You can then use Trimble HYDROpro software in combination

with the receiver data and other sensors, for example, an echosounder, to determine real-time position, heading, and precise elevation of the target surface.

THE POSITION ACCURACY YOU NEED

FLEXIBLE, SCALABLE, UPGRADABLE

Trimble GNSS receivers provide a range of accuracy upgrades to meet your project needs. Simply upgrade to the level of precision you require. The portfolio of Site Positioning Systems receivers supports the following correction types:

- ▶ Precision GNSS (RTK) base station
- ▶ Trimble Internet Base Station Service (IBSS)
- ▶ Virtual Reference Station (VRS)
- ▶ CenterPoint RTX (for inland waterways and port applications)
- ▶ MarineSTAR VBS, XP, or HP (for inland waterways and port applications)
- ▶ MSK Beacon (free-to-air)
- ▶ DGPS using UHF radio links (RTCM)
- ▶ Satellite-based Augmentation Systems such as WAAS, EGNOS, MSAS, and QZSS

Corrections are accessible via internal radio, internal demodulator, external radio, and cellular/Internet connectivity. The Trimble TDL 450 Series Radios provide robust UHF frequency solutions for use as repeaters or for work at longer ranges.

PUT TRIMBLE TECHNOLOGY AND EXPERIENCE TO WORK

Trimble marine systems meet the demands of a wide range of marine construction and hydrographic survey applications, including:

- ▶ Precise placement of marine structures such as breakwaters, bridges, caissons, piles, marina piers and coastal defences
- ▶ Dredge vessel positioning
- ▶ Positioning and tracking of barges, tugs and other construction vessels
- ▶ Offshore-rig-positioning and anchor-handling applications
- ▶ Hydrographic surveys for applications such as channel maintenance, dredging progress, environmental surveys, and bed erosion



Trimble heading receivers provide precise navigation that is vessel-centric. Marine operators receive simple forward/back, port/starboard, and clockwise/anti-clockwise guidance, which allows them to position the vessel quickly and efficiently.



Driving piles into a seabed requires great accuracy in a harsh environment. Trimble Site Positioning Systems utilize precision GNSS heading sensors, and integrated software to get the job done right.



The Trimble Site Positioning Systems provide the 3D position of the dredge head and displays it with the channel design. Precise information gives marine operators "eyes under water", to see exactly where material should be dredged.



Trimble Site Positioning Systems support a diverse range of hydrographic surveys, including port and harbor maintenance, environmental, cable and pipe maintenance, and buoy mooring.

Trimble Marine Construction Systems

Precise, rugged, and flexible positioning solutions for the most challenging environments. Talk to your local Trimble Marine distributor for more information on the system integration potential of Trimble receivers.



PRODUCTS IN THE COMPLETE MARINE SOLUTION FROM TRIMBLE

TRIMBLE SITE POSITIONING SYSTEM RECEIVERS

		SPS356	SPS361	SPS461	SPS555H	SPS855	BX982	SPS585	SPS985
Precision Capability	Precise RTK Rover			O		O	O	O	O
	Precise RTK Base					O			O
	Limited Rover (10/2)			O		O	O	O	O
	Limited Rover (10/10)			O		O	O	Y	O
	Limited Rover (30/30)	Y	Y	Y			Y		O
	DGPS/DGNSS Base					O			O
	Heading/Moving Base		Y	Y	Y	O	Y	Y	O
Frequency	Single Frequency	Y	Y	Y	Y	Y	Y	Y	Y
	Dual Frequency			O	Y	Y	Y	Y	Y
	Triple Frequency				O	O	Y		O
Constellation	GLONASS	Y			Y	O	Y	Y	O
	Galileo	Y			Y	O	O	Y	O
	BeiDou	Y			Y	O	O	Y	O
	QZSS	Y	Y	Y	Y	Y	Y	Y	Y
	SBAS	Y	Y	Y		Y	Y	Y	Y
Correction Services*	xFill					Y		Y	Y
	CenterPoint RTX					Y	Y	Y	Y
	MarineSTAR VBS		Y	Y		Y	Y		Y
	MarineSTAR HP/XP			O		Y	Y		Y
	Beacon	Y	Y	Y					
General Options	Data logging	O	O	O	O	O	O		O
	1PPS	Y	Y	Y	Y	Y	Y		
	VRS/IBSS/NTRIP	Y	Y	Y		Y	Y	Y	Y
	Max Data rate	10 Hz	20 Hz	20 Hz	20 Hz	20 Hz	20 Hz	5 Hz	20 Hz
	Wi-Fi	Y						Y	Y

1 * Some correction services require a certain level of precision capability and also may require a subscription. Contact your local Trimble Marine Dealer for more information.

TRIMBLE ANTENNAS

	GA830	Zephyr™ 2	Zephyr 2 Rugged	Zephyr 2 Geodetic
Beacon	Y			
SBAS	Y	Y	Y	Y
CenterPoint RTX (MSS)	Y	Y	Y	Y
MarineSTAR (MSS)	Y	Y	Y	Y
Dual/Triple Frequency	Y	Y	Y	Y
GLONASS	Y	Y	Y	Y
Galileo	Y	Y	Y	Y
BeiDou	Y	Y	Y	Y
QZSS	Y	Y	Y	Y

HYDROpro APPLICATIONS

	HYDROpro Navigation	HYDROpro Construction	Terramodel HDMS	Business Center-HCE
Navigation / Survey	Y	Y		
Dredging	Y	Y		
Piling		Y		
Rig/Barge		Y		
NavEdit	Y	Y	Y	
Chart Plotting			Y	O
Channel design			Y	O
Volume calculations			Y	Y

Y – Yes
O – Optional
MSS – Mobile Satellite Services

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