

MBX-3

- Dual-channel tracking ensures that you receive the best signal
- ¥ Fast cold start and short signal-acquisition period saves you time
- ¥ Wide input voltage range accommodates a variety of power sources
- ¥ Low power consumption extends battery life for portable applications
- ¥ Automatic tuning mode permits hands-free operation
- ¥ Integrated signal splitter outputs GPS signal from combined differential antennas
- ¥ Front-panel interface permits detailed status monitoring and receiver configuration



Industry Leader

CSI Wireless is an industry leader in the development and manufacture of differential radiobeacon receivers. The MBX-3S differential beacon receiver employs CSI Wireless' proven technology to receive free differential beacon signals available throughout the world.

World Beacon Network

Navigation authorities around the world have invested in differential radiobeacon networks to supplement GPS positioning, improving positioning accuracy and furthering user safety. Each station transmits industry-standard RTCM SC 104 correction data over a medium frequency signal. Access to each of these high-quality networks is available to the public free of charge as a navigation service.

CSI Wireless' MBX-3S differential beacon receiver is fully compatible with these supplemental networks and surpasses the performance requirements mandated by the governing authorities. This extends the effective operating range and increases the rate of successful demodulation in harsh environments.

Digital Technology

The MBX-3S employs advanced digital signal processing techniques to ensure consistent signal reception even in noisy environments. This advanced design is complemented by high-performance dynamic signal processing algorithms to achieve the highest performance possible.

Quick Installation

The MBX-3S requires only power, data and antenna connections, and can be fully installed and operational in just minutes.

Hassle-Free Upgrading

The MBX-3S supports firmware upgrades as improvements to firmware or changes to the global beacon table are made. These upgrades are easily loaded into the receiver through the serial port using a PC computer.

Data Interface

The MBX-3S data interface uses a standard serial port to ensure the widest possible compatibility range. The data port supports communication in either RS-232 or RS-422 protocols.

Antenna

The MBX-3S receiver is fully compatible with all CSI Wireless antennas, including the E-field whip antenna, H-field loop antenna, and combination GPS/beacon antennas.

Electric field (or E-field) antennas require a ground connection to achieve optimal performance. For this reason, they are recommended for marine applications and static positioning.

Magnetic field (or H-field) antennas do not require a ground connection, and are therefore ideal for portable applications. They are also less susceptible to E-field noise, including precipitation static.

The AVL-1 vehicle antenna coupler enables the MBX-3S to receive differential corrections using an automotive AM/FM radio antenna. The AVL-1 provides signals to both your AM/FM radio and the MBX-3S without performance degradation.

Operating Modes

In its default configuration, the MBX-3S receiver automatically tunes to track the strongest beacon station without user intervention. In manual tracking mode, the receiver tracks a user-specified beacon station. The front-panel interface permits the user to change between these operating modes simply and quickly.

Hands-Free Operation

In automatic tuning mode, the MBX-3S uses two independent channels to cooperatively maintain lock on the best DGPS beacon signal available. While the primary channel decodes differential corrections, the secondary channel continuously scans the range of beacon frequencies to determine whether a stronger signal exists. If a superior signal is found, the primary channel tunes to track the new beacon station.

Monitoring Software

CSI Wireless freely distributes DGPS Command Centre, a Windows-based software used to configure and monitor the operation of the MBX-3S receiver. This program is available for free public download from the CSI Wireless website: www.csi-wireless.com.

Warranty

CSI Wireless is committed to our customers and to our products. We offer a limited one-year warranty on parts and labor.

Contact CSI Wireless today to discover how the MBX-3S can complete your differential positioning system.



Quality System Registration

MBX -3

Receiver Specifications

Channels:	2 independent channels
Channel Spacing:	500 Hz
Frequency Range:	283.5 to 325.0 Hz
MSK Bit Rates:	50, 100, 200 bps
Cold Start Time:	<1 min
Warm Start Time:	<2 seconds
Demodulation:	Minimum shift keying
Sensitivity:	2.5 V/m for 10 dB SNR
Dynamic Range:	100 dB
Frequency Offset:	±5 Hz
Adjacent Channel Rejection:	60 dB
Correction Output Protocol:	RTCM SC-104
Input Status Protocol:	NMEA 0183

Communications

Interface:	RS-232C or RS-422
Baud Rates:	2400, 4800, 9600

Environmental Specifications

Operating Temperature:	-30°C to +70°C
Storage Temperature:	-40°C to +80°C
Humidity:	95% non-condensing
EMC:	EN 60945 EN 50081-1 EN 50082-1 FCC: Part 15, sub-part J, class A digital device

Power Specifications

Input Voltage Range:	9 to 40VDC
Nominal Power:	2.5W
Nominal Current:	210 mA
Antenna Voltage Output:	10VDC (5VDC optional)

Mechanical Specifications

Dimensions:	150 mm L x 125 mm W x 51 mm H (5.90 L x 4.90 W x 2.00 H)
Weight:	0.64 kg (1.4 lb)
Display:	2-line x 16-character LCD
Keypad:	3-key switch membrane
Power Connector:	2-pin circular locking
Data Connector:	DB9-S
Antenna Connector:	BNC-S
Optional GPS Output Port:	TNC-S

Distributed by:

Navtech GPS Supply
6121 Lincolnia Rd. #400
Alexandria, VA 22312 USA
ph. (800) 628-0885 or (703) 256-8900
gpsteach@navtechgps.com
www.navtechgps.com

Operating Modes

MBX -3 Mode (Default):	LRTCM SC-104 correction and NMEA status message output (Default Mode)
MBX -E Mode:	RTCM SC-104 correction and NMEA status message output and GPS NMEA message input for position and satellite status display

NMEA 0183 I/O

- ✚ Receiver Automatic and Manual tune command
- ✚ Frequency and data rate query
- ✚ Receiver performance and operating status queries
- ✚ Automatic search almanac queries (proprietary)
- ✚ Baud rate selection command
- ✚ Receiver tune command
- ✚ Force cold start command (proprietary)
- ✚ Software upgrade command (proprietary)
- ✚ Configuration up-load command (proprietary)

Accessories

Antenna:	Various
Power Cables:	Various
Antenna Cables:	Various
Data Cables:	Various
CSI Beacon Command Center:	MS Windows 95™ beacon control software

Pin-out

RS, 232C (DB9 PIN #)	
Pin 2	TXD, RTCM SC-104/Status Output
Pin 3	RXD, configuration input
Pin 5	Signal return
RS-422 (DB9 PIN #)	
Pin 1	TXD +, RTCM SC-104 / Status Output
Pin 2	TXD -, RTCM SC-104 / Status Output
Pin 4	RXD -, configuration input
Pin 5	Signal return
Pin 7	RXD +, configuration input

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