GBX SERIES

Differential GPS/Beacon Receivers

Combination GPS/Beacon Receivers

FEATURES

- 8 or 12-channel GPS receiver
- Dual channel beacon receiver
- State-of-the-art digital architecture
- 2-line by 16-character LCD display and 3-switch keypad
- GPS and beacon status information
- Fast satellite and beacon acquisition
- 1 PPS timing signal
- External RTCM input
- Global beacon table listing
- Wide input voltage range
- Low power consumption
- Automatic and manual beacon modes
- Single “Smart” port for GPS and beacon receiver configuration

Combined DGPS Receiver

The CSI GBX Series differential GPS receivers combine the performance of proven GPS engines with CSI’s third generation digital beacon receiver technology, in a single convenient enclosure.

The GBX Series receivers utilize free GPS satellite and 300 kHz beacon signals to calculate differentially corrected 3D positions with a horizontal accuracy of better than two to five meters (95%). The internal beacon receiver supplies differential GPS corrections to the GPS engine in the RTCM SC-104 format. Various authorities around the world broadcast free differential correction information on radiobeacon transmissions that meet the stringent integrity and reliability requirements mandated by the International Association of Light House Authorities (IALA).

The GBX also provides the facility for correction input from an external RTCM source. The GBX includes a second differential input port so that external RTCM input does not interfere with bi-directional communications on the main serial port.

Ease of Operation

The GBX Series receivers are designed with ease of operation in mind, incorporating a 2-line by 16-character LCD display and 3-switch keypad for configuration and operation of the internal beacon and GPS receivers. A “Smart” data port on the back panel provides access to both internal devices, through the same serial connector.

CSI’s MGL-3 Combination GPS/Beacon Loop antenna simplifies installation by combining an L1 GPS patch antenna, ground plane, and an H-field beacon Loop antenna in one package. For added flexibility, you may use separate GPS and beacon antennas in conjunction with CSI’s External Signal Combiner which converts two antenna outputs into a single input to the GBX.

Advanced Beacon Receiver Technology

Advanced digital signal processing techniques are the mainstay of CSI’s beacon receiver products. The GBX receivers will operate reliably in the noisy environments characteristic of many DGPS installations.

The GBX is able to operate in automatic or manual beacon tune modes. In automatic mode, the two channels of the internal beacon receiver cooperatively construct and maintain a table composed of available radiobeacons in your area. The receiver automatically locks to the station with the highest quality signal.

Configuration Software

CSI offers custom Windows 95® software for GPS and beacon receiver configuration and monitoring of receiver status. Data logging capability and a terminal interface are also included.

Warranty

CSI is committed to supporting its products and offers a one-year warranty on parts and labor.

Contact us to discover how the GBX receivers can meet the positioning requirements of your application.

GBX Series – *Differential GPS/Beacon Receivers*

GPS Receiver Specifications

Channels:	8 or 12-channel, parallel tracking
Horizontal Diff. Accuracy:	2 – 5 m (95% confidence)
Differential Input:	RTCM SC-104
Input/Output Messages:	NMEA 0183

- Please contact CSI for GPS receiver specifications.

Beacon Receiver Specifications

Channels:	2 independent channels
Frequency Range:	283.5 to 325.0 kHz
Channel Spacing:	500 Hz
MSK Bit Rates:	50, 100, and 200 bps
Cold Start Time:	< 1 minute
Warm Start Time:	< 2 seconds
Demodulation:	Minimum shift keying
Sensitivity:	2.5 µV/m for 10 dB SNR
Dynamic Range:	100 dB
Frequency Offset:	± 5 Hz
Adjacent Channel Rejection:	60 dB @ f_o ± 500 Hz

GBX Communications

Interface Level:	RS-232C
Baud Rates:	2400, 4800, 9600
Correction Output Protocol:	RTCM SC-104
Input/Status Protocol:	NMEA 0183
Timing:	1 PPS

GBX 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

GBX Power Specifications

Input Voltage:	9 - 40 VDC
Nominal Power:	4.4 W
Antenna Voltage Output:	10 VDC (5 VDC optional)

GBX Mechanical Specifications

Dimensions:	150 mm L x 125 mm W x 51 mm H (5.9" L x 4.9" W x 2.0" H)
Weight:	<0.73 kg (<1.6 lb)
Display:	2-line by 16-character LCD
Keypad:	3-key switch membrane
Power Connector:	2-pin circular locking
Data Connector:	DB9-S
Antenna Connector:	BNC-S

GBX Operating Modes

GBX-3 Mode (Default):	GBX outputs GPS NMEA messages (Default Mode)
MBX-3 Mode:	GBX outputs RTCM for use by an external GPS receiver
GBX-E Mode:	Correction input from an external RTCM source

Pin-Out, RS-232C

DB9 Pin #	Description
2	TXA, GBX NMEA 0183 output
3	RXA, GBX NMEA 0183 input
5	Signal return
8	RXB, external RTCM input
9	1 PPS output (TTL logic level, 75Ω)

GBX Accessories

Antenna:	MGL-3
Power Cables:	Various
Antenna Cables:	Various
Data Cables:	Various
CSI GPS Command Center:	MS Windows 95® GPS control software
CSI Beacon Command Center:	MS Windows 95® beacon control software

MGL-3 Combination Antenna

Beacon Frequency Range:	283.5 to 325.0 kHz
Beacon LNA Gain:	34 dB
GPS Frequency Range:	L1 (1575 MHz)
GPS LNA Gain:	30 dB
Dimensions:	128 mm square x 84 mm H (5.1" square x 3.3" H)
Weight:	0.45 kg (1.0 lb)
Antenna Connector:	TNC-S
Enclosure:	PVC plastic
Mount:	1-14-UNS-2B (marine std.)
Input Voltage:	4.9 to 13.0 VDC
Input Current:	50 to 60 mA
Operating Temperature:	-30°C to +70°C
Storage Temperature:	-40°C to +80°C
Relative Humidity:	100% condensing

CSI Authorized Dealer

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