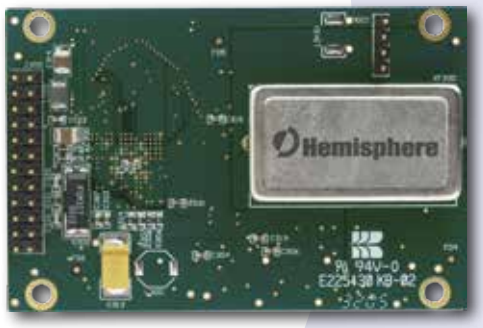
SBX-4™

The Worlds Most Popular DGPS Beacon Module

key features

- **Certified IEC 61108-4 compliant**
- **Dual-channel design allows strongest signal or closest station tracking**
- **Dual serial ports accommodate separate RTCM and NMEA communications**
- **Patented ceramic filter blocks out-of-band signals, optimizing reception**
- **Low power consumption extends battery life**
- **Power and signal lock LEDs permit visual verification of receiver status**
- **Reverse-compatibility ensures operation in existing SBX–2 and SBX–3 integrations**
- **Boot loader provides firmware upgrade reliability**



Provide a reliable source of differential corrections with the SBX-4™radiobeacon board that augments a separate GPS receiver with free accuracy-improving correction data from networks of beacon stations located throughout the world.

With dual-channel architecture to ensure the best station is always being decoded, the SBX-4 delivers high performance reception and a wide range of functionality including the capability to be tuned to signal strength or station distance.

The SBX-4 outputs the industry standard RTCM SC-104 format accepted by differential-ready GPS receivers and can also be configured and monitored with NMEA 0183 protocol.

Hemisphere®

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SBX-4

Operating Specifications

Channels:	2-channel parallel tracking
Frequency Range:	283.5 to 325.0 kHz
Channel Spacing:	500 Hz
MSK Bit Rates:	50, 100, and 200 bps
Operating Modes:	Manual, automatic and database
Cold Start Time:	< 1 minute typical
Reacquisition Time:	< 2 seconds typical
Demodulation:	Minimum shift keying (MSK)
Sensitivity:	2.5 µV/m for 6 dB SNR @ 200 bps
Out of Band Rejection:	60 dB < 204 kHz and > 404 kHz
Spurious Response:	< -55 dB (0.1 MHz to 1.6 MHz)
Ripple (in-band):	3 dB
Dynamic Range:	100 dB
Frequency Offset:	± 8 Hz (~ 27 ppm)
Adjacent Channel Rejection:	61 dB ± 1 dB @ fo ± 400 Hz
Antenna Input Impedance:	50 Ω

Communications

Serial Ports:	2 full-duplex
Interface Level:	HCMOS, tracks input voltage
Baud rates:	4800, 9600, 19200, 38400, and 57600
Correction Input / Output Protocol:	RTCM SC-104, NMEA 0183

Environmental

Operating Temperature:	-30°C to +70°C (-22˚F to +158˚F)
Storage Temperature:	-40°C to +80°C (-40˚F to +176˚F)
Humidity:	95% non-condensing
EMC:	EN50081-4-2 ESD

Power

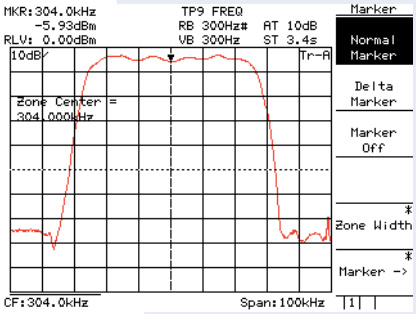
Input Voltage Range:	3.3 to 5.5 VDC
Power Consumption:	< 0.25 W @ 3.3 VDC (no antenna)
Current Consumption:	< 70 mA @ 3.3 VDC (no antenna)
Antenna Voltage Output:	5 VDC applied externally

Mechanical

Dimensions:	7.6 L x 5.1 W x 1.4 H (cm) 3.0 L x 2.0 W x 0.54 H (in)
Weight:	30 g (1.1 oz)
Connector J1:	1 x 4 pin header, 0.1" spacing
Connector J2:	2 x 12 pin header, 0.1" spacing

Patented front-end filter response

The front-end filter in the SBX-4 passes beacon frequencies at a consistent strength while blocking out-of band signals. The result is low-noise, high performance beacon reception. The following figure illustrates the frequency response of this filter.



Proprietary commands

- Select operating mode
- Query receiver performance and operating status
- Specify communication baud rate up to 57600 bps
- Reset receiver from operation to simulate a cold start
- Tabulate and output results of frequency scan

Pin-out

J200 connector

Pin(s)	Signal
1,3	Analog ground
2	Antenna input
4	Antenna power output

J300 connector

Pin(s)	Signal
1,2	Antenna power input
3,4	Power supply input
14	TXD0, output
15	TXD1, output
16	Lock indicator (active high)
17	RXD0, input
18	RXD1, input
19	External reset input (active low)
21,22,23,24	Digital ground

Authorized Distributor:

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