



BlueSeis-3A

Rotational Seismometer

Broaband & High-Grade 3-component Rotational Seismometer for land applications

iXblue offers now to geosciences the possibility to explore rotational ground motion. Recognized throughout the industry for its mastery of Fiber Optic Gyroscope (FOG), the iXblue group stands as a global leader in several high-grade applications such as inertial navigation, hydrography and satellite gyroscopes. Based on its 30 years' unchallenged expertise, iXblue revolutionizes geosciences by offering a brand-new product that seismology has always been looking for. BlueSeis-3A is today the best and most reliable answer to the rotational seismometer need: 3-axis, broadband, low-noise, high dynamic range and flat passband solution with "geosciences-ready" interfaces including digitizer and time stamping.

APPLICATIONS

Seismic tomography • Volcanology
 Earthquake physics • Geophysical exploration

Features

- 3 Interferometric Fiber Optical Gyroscope (I-FOG) for low self-noise and broadband measurement
- DC signal for absolute rotation measurement
- High dynamic range
- Embedded digitizer and GNSS time stamping
- Field-proven technology

Benefits

- Rotation as a new observable in seismology!
- Easy to deploy: no calibration, no tilt range limitation, insensitive to enviromental conditions
- Heading provided by the system
- 2-in-1: "weak motion" low-noise + "strong motion" dynamic
- Plug and play interfaces

Preliminary Technical Specifications

PERFORMANCE

	10 ⁻³ Hz	10 ⁻² Hz	10 ⁻¹ Hz	1 Hz	10 Hz	100 Hz
Sensor self-noise in rad/s/√Hz	1.10 ⁻⁷	2.10 ⁻⁸	2.10 ⁻⁸	2.10 ⁻⁸	2.10 ⁻⁸	1.10 ⁻⁷ ⁽¹⁾
Angular Random Walk	< 15. 10 ⁻⁹ rad/s/√Hz (50 μ°/√h)					
Passband	Flat from DC to 100Hz					
DC rotation rate accuracy	< 5 μrad/s (1 °/h)					
Heading	< 4° x secant(lat) ⁽²⁾					
Scale factor stability	< 1% guaranted for life					
Calibration	Not needed					
Settling time	< 1 minute					

OPERATING RANGE / ENVIRONMENT

Operating / storage temperature	-10 to 50°C / -40 to 80°C
Rotation rate dynamic range	100 000 μrad/s
Operational tilt range	Any
Acceleration susceptibility	None
Pressure susceptibility	None
MTBF	100,000 hours

PHYSICAL CHARACTERISTICS

Ingress protection	IP66
Dimensions (L x W x H)	300 x 300 x 280 mm
Weight	20 kg

INTERFACES

Hardware interfaces	Ethernet + RS232/422 + 1 TTL input pulse for PPS
Output format	miniSEED (TCP/UDP)
Input format	NMEA (ZDA) / NTP / PTP for time stamping
Data output rate	Up to 200 Hz
Power supply / consumption	24 VDC / < 20 W
Man Machine Interface (MMI)	Web-based interface for configuration

(1) Optional extra: open-loop process capability to keep flat self-noise at 2.10⁻⁸ rad/s/√Hz between 10Hz and 100Hz. Long-term performances are no longer guaranteed. Calibration needed. // (2) secant(lat) = 1 / cos(latitude) : 4° at 0° latitude, 4° x √2 = 5,6° at 45° latitude.