

Hydrophone Specification

Part Number:	BII-7183FG	BII-7183PG
Sensitivity @ 1kHz:	-224 + Preamp Gain, dB V/μPa, Variation ± 3 dB.	
Free-field Voltage Sensitivity:	Refer to Graph of FFVS vs. Frequency .	
Usable Frequency in Water:	200 Hz ~ 1.2 MHz	
Usable Frequency in Air:	200 Hz ~ 26kHz at -3dB V/μPa.	
Bespoke Preamp Gain (dB):	Fixed Gain: Default 40 dB, 0 to +40 dB available.	Digitally Programmable Gain Preamp: 0, 20, 40, 60 dB.
Gain Selection Voltage:	N/A	CMOS/TTL Compatible. Logic Low 0: Gain Selection Wire to COM or 0 to +0.8 VDC. Logic High 1: Gain Selection Wire Open or +2.4 VDC to Vs. Vs: Power Supply Voltage. COM: Power Supply Common.
Built-in Bandpass Filter:	1. Default: -3 dB Bandwidth 20 Hz to 2 MHz. 2. Bespoke, specify when ordering.	1. Default: -3 dB Bandwidth 20 Hz to 1 MHz. 2. Bespoke, specify when ordering.
Directivity Pattern:	Conical Beam	
Beam Width:	$\theta_{-3dB} = 29450^\circ/f(\text{kHz})$; $\theta_{-6dB} = 40641^\circ/f(\text{kHz})$; $\theta_{-10dB} = 53010^\circ/f(\text{kHz})$. f: Operating Frequency in kHz.	
Side Lobes:	< -17.8 dB with $\theta_{-3dB} \leq 49^\circ$; No side lobe with $\theta_{-3dB} > 49^\circ$.	
Maximum Output V_{omax}:	(Supply Voltage Vs - 4) Vpp	(Supply Voltage Vs - 3.4) Vpp
Overload Pressure Level:	$20 \cdot \log(V_{omax}/2.828)$ - Sensitivity, in dB μPa.	
Output Type:	Single Ended.	
Axial Acceleration Sensitivity:	131.6 dB μPa/(m/s ²)	
Maximum Operating Depth:	50 m and limited by the cable length if the cable has wire leads or a non-waterproof connector.	
Mounting Options:	<ol style="list-style-type: none"> Free Hanging (FH) Free-hanging with Male Underwater Connector (FHUWC) Thru-hole Mounting with Single O-ring (THSO) Thru-hole Mounting with Double O-ring (THDO) Bolt Fastening Mounting (Plastics) (BFMP) Bolt Fastening Mounting (Stainless Steel) (BFMSS) Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details.	
Cable:	Four Conductor Shielded Cable (SC)	Six Conductor Shielded Cable (SC) or Cable Bundle
Cable Length:	<ol style="list-style-type: none"> Default: 10 m. Custom-fit up to 200 m. 	
Connector:	<ol style="list-style-type: none"> Default: Wire Leads (WL) Male BNC (BNC) (Max. Diameter Φ14.3 mm). SMA (Plug, Male Pin) (SMA), Voltage Rating: 335 V_{RMS} Continuous. (Max. Diameter Φ9.24 mm). SMC (Plug, Female Socket) (SMC), Voltage Rating: 335 V_{RMS} Continuous. (SMC) (Max. Diameter Φ6.4 mm). XLR (pin) (XLR) (Max. Diameter Φ20.2 mm). LEMO (Plug Male Pins) (LEMO) (Max. Diameter Φ9.5 mm with 3 contacts), for SE or DF. Underwater Mateable Connector (pin) (UMC) (Max. Diameter Φ21.5 to Φ35 mm), for SE or DF. +9VDC Battery Snap (BS) (Exclusive to preamplified hydrophone) Customized, buyer specifies the connector. (Custom) Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.	
Current (Quiescent):	8 mA	10 mA
Supply Voltage Vs:	+8.5 to +30 VDC	+8.2 to +30 VDC
Suggested DC Supply:	+9VDC Battery, Marine Battery, Automobile Battery, Fixed DC Linear Power Supply, Not Included. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use switching mode DC power supply.	
Size:	Sensing Element: ΦD=Φ3.5 mm; Solid Support: ΦDxL=Φ8x38.1 mm; Preamp Housing: ΦDxL=Φ21x40 mm. Varies with options.	
Weight:	0.56 kg with 10m cables, Varies with options.	
Operation Temperature:	-10 °C to +60 °C or 14 °F to 140 °F.	
Storage Temperature:	-20 °C to +60 °C or -4 °F to 140 °F.	

Sound Measurement in Air: The hydrophones can be used to detect sounds in air. Receiving sensitivity in air is same to the one in water in low frequency range.

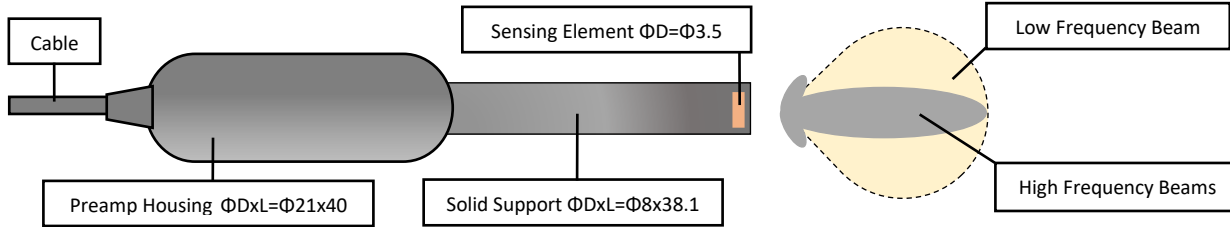
Wiring of Single Ended Output:	Wire Leads	BNC Male/SMA/SMC and 9V Battery Snap	Underwater Connector	XLR Plug and 9V Battery Snap
+VDC	Red	Female Snap	Pin 3	Battery Female Snap
Common	Black	Male Snap	Pin 1	Battery Male Snap
Signal	White	Center Pin or Contact	Pin 2	XLR Pin 2
Signal Common	Blue, Green, or Yellow	BNC/SMA/SMC Shield	Pin 4	XLR Pin 1 and Pin 3
Shielding	Shield	N/A	N/A	XLR Metal Shell

Wiring Information of Hydrophones with Two-bit Programmable Gain Preamps:

Wiring of Single Ended Output:	Wire Leads	9V Battery Snap and BNC Male/SMA/SMC	Underwater Connector	XLR Plug + 9V Battery Snap
+VDC	Red	Battery Female Snap	Pin 3	Battery Female Snap
Common	Black	Battery Male Snap	Pin 1	Battery Male Snap
Digital Common		Black		Black
Digital A1 (Gain Selection)	Yellow or Brown	Yellow or Brown	Pin 5	Yellow or Brown
Digital A0 (Gain Selection)	Blue	Blue	Pin 6	Blue
Output Signal	White	BNC/SMA/SMC Center	Pin 2	XLR Pin 2
Output Signal Common	Green	BNC/SMA/SMC Shield	Pin 4	XLR Pin 1 and Pin 3

Shielding	Shield	Shield	N/A	XLR Metal Shell
Selecting Sensitivity of Digitally Programmable				
Gain Selection Wire A1	Gain Selection Wire A0		BII-7183PG Sensitivity at 1kHz	
0 (Logic Low)	0 (Logic Low)		224.0 + 0 dB V/ μ Pa	
0 (Logic Low)	1 (Logic High)		224.0 + 20 dB V/ μ Pa	
1 (Logic High)	0 (Logic Low)		224.0 + 40 dB V/ μ Pa	
1 (Logic High)	1 (Logic High)		224.0 + 60 dB V/ μ Pa, frequency \leq 400 kHz.	

Physical Size (Dimension Unit: mm): Varies with options.



Customization of Length Reduction of the Hydrophone:

1. Solid support can be customized to be shorter.
2. Hydrophone can be made as "L" shape with solid support perpendicular to the housing wall.
Appending "L" to the part number (BII-7183FGL and BII-7183PGL) when ordering to specify L-shaped Hydrophone.

Free-field Voltage Sensitivity (Bespoke):

