Hydrophone Specification

Part Number:	BII7188FG	BII7188PG
Sensitivity @ 1kHz:	-204 + Preamp Gain, (dB V/µPa), ± 2 dB Variation.	
Free-field Voltage Sensitivity:	Refer to Graph of **FFVS vs. Frequency**.	
Usable Frequency in Water:	200Hz ~ 700kHz at ±3dB V/µPa.	
Usable Frequency in Air:	200Hz ~ 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 or 20, 40, 60, 80 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 V_s. V_s: Power Supply Voltage. COM: Power Supply Common.
Built-in Bandpass Filter:	1. Default: -3 dB Bandwidth 50 Hz to 2MHz. 2. Bespoke, specify when ordering.	1. Default: -3 dB Bandwidth 50 Hz to 1MHz. 2. Bespoke, specify when ordering.
Directivity Pattern:	Conical Beam	
Beam Width:	θ_{-3dB} = 29450°/f(kHz); θ_{-6dB} = 40641°/f(kHz); θ_{-10dB} = 53010°/f(kHz). f: Operating Frequency in kHz.	
Side Lobes:	< -17.8 dB with $\theta_{-3dB} \leq 49°$; No side lobe with $\theta_{-3dB} > 49°$.	
Maximum Output Vomax:	(Supply Voltage V_s - 4) Vpp	(Supply Voltage V_s - 3.4) Vpp
Overload Pressure Level:	204 or 20*log(Vomax/2.828) - Sensitivity, in dB µPa, whichever is less.	
Output Type:	Single Ended.	
Axial Acceleration Sensitivity:	143.6 dB µPa/(m/s²)	
Maximum Operating Depth:	50 m and limited by the cable length if the cable has wire leads or a non-waterproof connector.	
Mounting Options:	1. Free Hanging (FH) 2. Free-hanging with Male Underwater Connector (FHUWC) 3. Thru-hole Mounting with Single O-ring (THSO) 4. Thru-hole Mounting with Double O-ring (THDO) 5. Bolt Fastening Mounting (Plastics): (BFMP) 6. Bolt Fastening Mounting (Stainless Steel): (BFMSS) 7. Thread Mounting with Single O-Ring (TMSO) 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:	1. Default: 10 m. 2. Custom-fit up to 200 m.	
Connector:	1. Default: Wire Leads (WL) 2. Male BNC (BNC) (Max. Diameter Φ14.3 mm). 3. SMA (Plug, Male Pin) (SMA), Voltage Rating: 335 V_{RMS} Continuous. (Max. Diameter Φ9.24 mm). 4. SMC (Plug, Female Socket) (SMC), Voltage Rating: 335 V_{RMS} Continuous. (SMC) (Max. Diameter Φ6.4 mm). 5. 1/8" (3.5mm) TRS Plug (TRS35) (Max. Diameter Φ10.5 mm). 6. XLR (pin) (XLR) (Max. Diameter Φ20.2 mm). 7. MIL-5015 Style (pin) (5015) (Max. Diameter Φ30 mm with 3 contacts). 8. LEMO (Plug Male Pins) (LEMO) (Max. Diameter Φ9.5 mm with 3 contacts). 9. Underwater Mateable Connector (pin) (UMC) (Max. Diameter Φ21.5 to Φ35 mm). 10. +9VDC Battery Snap (BS) (Exclusive to preamplified hydrophone) 11. 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 V_s:	+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 Information of Hydrophones with Fixed-gain Preamps:

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

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

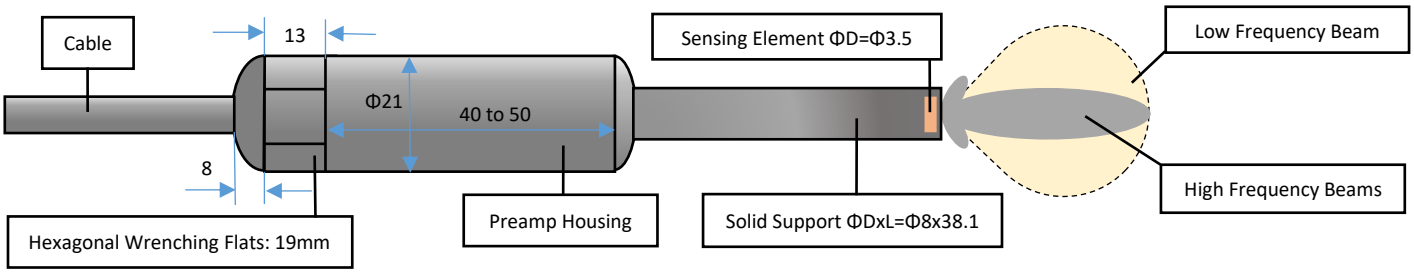
Wiring of Single Ended Output:	**Wire Leads**	**9V Battery Snap and BNC Male/SMA/SMC**	**Underwater Connector**	**XLR Plug + 9V Battery Snap**	**TRS Plug + 9V Battery Snap**
+VDC	Red	Battery Female Snap	Pin 3	Battery Female Snap	Battery Female Snap
Common	Black	Battery Male Snap	Pin 1	Battery Male Snap	Battery Male Snap
Digital Common		Black		Black	Black

Digital A1 (Gain Selection)	Yellow or Brown	Yellow or Brown	Pin 5	Yellow or Brown	Yellow or Brown
Digital A0 (Gain Selection)	Blue	Blue	Pin 6	Blue	Blue
Output Signal	White	BNC/SMA/SMC Center	Pin 2	XLR Pin 2	TRS Tip
Output Signal Common	Green	BNC/SMA/SMC Shield	Pin 4	XLR Pin 1 and Pin 3	TRS Ring and Sleeve
Shielding	Shield	Shield	N/A	XLR Metal Shell	N/A

Selecting Sensitivity FFVS of Two-bit Digitally Programmable

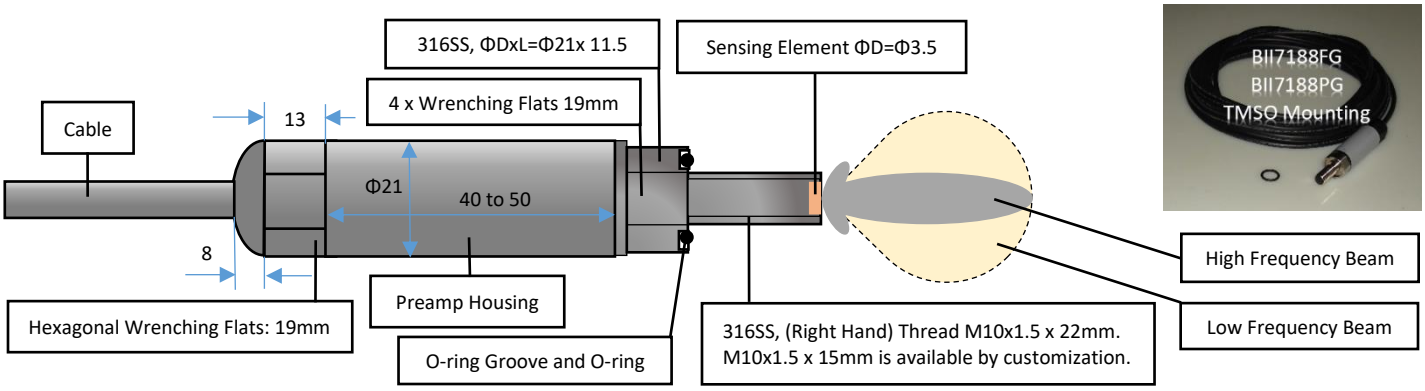
Gain Selection Wire A1	Gain Selection Wire A0	BII7188PG Sensitivity
0 (Logic Low)	0 (Logic Low)	204.0 + 0 dB V/µPa
0 (Logic Low)	1 (Logic High)	204.0 + 20 dB V/µPa
1 (Logic High)	0 (Logic Low)	204.0 + 40 dB V/µPa
1 (Logic High)	1 (Logic High)	204.0 + 60 dB V/µPa, frequency ≤ 400 kHz.

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



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 (BII7188L)

Thread Mounting with Single O-Ring (TMSO) (Dimension Unit: mm): Varies with options.



Free-field Voltage Sensitivity (Bespoke):