

Benthowaye Instrument Inc.

Underwater Sound Solutions

www.benthowave.com



BII7180 Series Miniature Probe Hydrophone and AE Sensor: Φ1.0 to Φ3.0mm Aperture

BII7180 Series Miniature Probe Hydrophone and AE Sensor

Underwater Sounds: BII7180 series are miniature hydrophones with small aperture size and usable up to 3 MHz. Conical and omnidirectional directivity patterns are available. Multiple miniature probe hydrophones can be configured as a vector hydrophone (vector sensor) or array for uses in extraction of directional information (source location), measurement of particle velocity, particle acceleration and pressure gradient.

The probe hydrophones are practical and handy tools for research and application of Helmholtz Integral Equation in underwater acoustics and for the measurement of pressure or intensity distribution of near-field and far-field radiated from vibrational and acoustical sound sources underwater.

NDT in Solids: receiving audible and ultrasonic sounds, acoustic emission (AE), structural health monitoring (SHM), metallurgical properties of metals, etc... The couplant such as water or gel is a must-have material to provide efficient acoustic coupling between the receiving face of the hydrophone and the piece under test (the subject). The hydrophones can be glued on or inside subject permanently with adhesives such as epoxy.

NDT in Fluids: uses in waterlike and airlike fluids for the analysis of their macroscopic and microscopic, physical and chemical properties.

BII7180 series should not be used with flammable and/or explosive materials, and not used in Solvents such as hydrochloric acid, isopropyl alcohol, ethyl lactate, acetone, xylene, Iso hexanes, mineral spirits, etc...

Technical Notes:

Particle Velocity in x direction ux = $-1/(j\omega \rho)^*(ap/ax)$; p: Density; ap/ax: Pressure Gradient in the x direction.

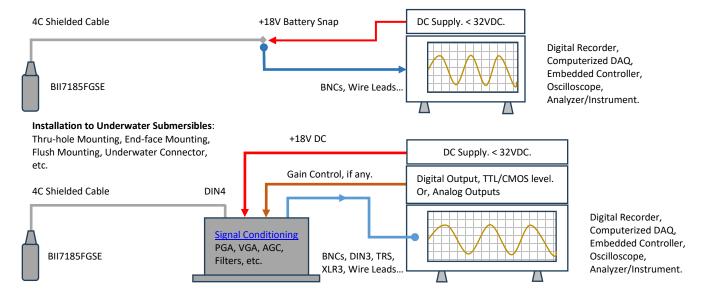
Dipole Vector Hydrophone: Voltage Response V= $M^*(d/\lambda)^*\cos\theta$; M: Amplitude Constant related to element sensitivity; d: spacing distance between two elements; θ : Arriving angle from the axis of the two elements.

$$\text{Helmholtz Integral: } p(\vec{r}) = \frac{1}{4\pi} \iint \left[\frac{e^{-jkR}}{R} j\omega \rho u(\overrightarrow{r_0}) + p(\overrightarrow{r_0}) \frac{\partial}{\partial n_0} (\frac{e^{-jkR}}{R}) \right] dS_0$$

Typical Applications

. / p		
Study of Acoustic Radiation Field	General Purpose Hydrophone, Reference Hydrophone	
Ultrasonic Testing and Analysis	Acoustic Emission (AE), Structural Health Monitoring (SHM), Thermoacoustic Tomography	
Helmholtz Integral in Acoustics	Near-field Calibration and Measurement	
Elements of Vector Hydrophones/Array	High Sound Level Measurement (Warning: Cavitation will damage hydrophone)	
Research in Boundary Element Acoustics	Trouble-shooting, Maintenance and Development of Transducers and Array	

System Configuration of Receiving Sounds and Waves.



Specification

The hydrophone is tested in water unless stated otherwise.			
FG: Fixed Gain; PG: Programmable Gain; DF: Differential Output; SE: Single Ended Output; BPF: Band Pass Filter; HPF: High Pass Filter; LPF: Low Pass Filter.			
Part Number:	BII7184FGSE		
Sensitivity @ 1 kHz:	-170.0 + Preamp Gain, \pm 3 dB V/ μ Pa.		
FFVS:	Refer to Graph of FFVS vs. Frequency. Free-field Voltage Sensitivity.		
	Bespoke HPF. Minimum high pass filter f _{-3dB} = 600 Hz.		
Built-in Filters	1. Reduce Noise. Both ocean ambient noises and the self-noises of electronic devices decrease when frequency increases. It is recommended to choose a built-in high pass filter to reject noises in low frequency range. For example, if you are interested in the signals greater than 100 kHz, you may specify a high pass filter with -3dB cut-off frequency at 10 kHz to improve signal to noise ratio of the signals of the interest.		



Benthowaye Instrument Inc.

Underwater Sound Solutions

www.benthowave.com

supply contained an overments of the platform, it is recommended to specify a high pass filter to avoid hydrophone saturation in thes low frequency ranges. Washe Frequency Annage: Maker: 600 Hz - 3.5 MHz. Preamp: Yes, Bull in Bill 1000 parts prompt. If your profice need extra signal conditioning before data acquisition, please refer to <u>signal conditioning</u> , and order separately. I programmable Gain Amelifier Piol. (9/20/40/60 db, etc.) 2. Variable Gain Amelifier (9/4): 00 to 70 d8 Raino Dynamic Range. 3. Automatic Gain Country (AGC) Amplifier: 100 db Gain Dynamic Range. 4. Amplifiers with Bull-in (1)(E-1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 4. Amplifiers with Bull-in (1)(E-1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 4. Amplifiers with Bull-in (1)(E-1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 4. Amplifiers with Bull-in (1)(E-1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 4. Amplifiers with Bull-in (1)(E-1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 4. Amplifiers with Bull-in (1)(E-1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 4. Amplifiers with Bull-in (1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 4. Amplifiers with Bull-in (1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 5. Amplifiers with Bull-in (1)(E-1) Country (AGC) Amplifier: 100 db Gain Dynamic Range. 5. Amplifiers with Bull-in (1)(E-1) Country (1)(E		Onderwater Sound Solutions www.benthowave.com
Low Merculeuncy ranges In Water 1901 Hz = 3.5 MHz		2. Avoid Saturation. When there are strong low frequency noises, disturbances, and/or vibrations, resulting from rough surface waves
Usable Frequency In Air 600 Hz - 3.5 MHz. Preamp: Ves, Bull Hill Bill 1009 Jerice Preamp. Ves Bull Hill Bill 1009 Jerice Preamp. Ves Bull Hill Bill 1009 Jerice Preamp. Ves Bull Hill Bill 1009 Jerice Preamp. Jerice Preamp. Automatic Gain Control (ACC) Amplifier 100 d8 Gain Oparanic Range. Circular Planaria Face Corcular Planaria Face Signal Output Type: Washington Original Visual State		and/or mechanical movements of the platform, it is recommended to specify a high pass filter to avoid hydrophone saturation in these
Pricearp: NYE. Built-in Bill All Series Freemp.		low frequency ranges.
Preamp: Ves: Built-in BUILDO Series Preamp If your project need exits signal Conditioning before data acquisition, please refer to signal conditioning, and order separately. If your project need exits signal conditioning before data acquisition, please refer to signal conditioning, and order separately. If corrampable Gain Amplifier PGA, 0/20/40/60 db, etc. 2. Variable Gain Amplifier PGA, 0/20/40/60 db, etc. 2. Variable Gain Amplifier (PGA) Exit Do db Gain Dynamic Range. 4. Amplifier with Builti-in, High-pass, Love-pass, and Band-pass Fitters. Packages: Standalone Devices for portable uses, and Coated PCB with Wire Bundles for underwater submersibles. Circular Planar Face: Circular Planar Face: Circular Planar Face: Conical Beam Beam Width: Side Lobes: Conical Beam Sam Width: Coperating Fricquency in MHz. Side Lobes: Signal Output Type: Maximum Output Type: Signal Output Type: Signal Output Type: Signal Output Type: Signal Output Type: Acceleration Sensitivity: Overload Pressure Level: For example, with 1-240/CD supply, Overload Pressure Level = 20^log([24-4]/2.828) - (-170) = 187 dB µPa. Acceleration Sensitivity: Operating Depth: 3. The Acceleration Sensitivity: Non-Acceleration Sensitivit	Usable Frequency	in Water: 600 Hz ~ 3.5 MHz.
If your project need extra signal conditioning before data acquisition, please refer to signal conditioning, and order separately. 1. Programmable Gain Annual Righe Fesh, 0/20/40/50 db, etc. 2. Variable Gain Annual Righer Fesh, 0/20/40/50 db, etc. 3. Automatic Gain Control (AGC) Amplifier 10/60 db Gain Dynamic Range. 4. Amplifiers with Built-in, High-pass, Low-pass, and Band-pass Filters. Packages: Standalone Devices for portable uses, and Coated PCB with Wire Bundles for underwater submersibles. Description of the Committee of Committee	Range:	in Air: 600 Hz ~ 3.5 MHz.
1. Procrammable Gain Amplifier PGA, 07/20/40/50 dis, etc.	Preamp:	Yes, Built-in BII1040 series Preamp.
Signal Conditioning: 2. Variable Gain Amplifier (VGA); 60 to 70 of Range. 3. Automatic Gain Control (AGC) Amplifier; 100 dis Gain poramic Range. 4. Amplifiers with Bult-lin, High-pass, Low-pass, and Band-pass Filtres. Packages: Standalone Devices for portable uses, and Coated PCB with Wire Bundles for underwater submersibles.		If your project need extra signal conditioning before data acquisition, please refer to signal conditioning, and order separately.
Signal Conditioning: 3. Automatic Gain Control (AGC) Amplifier; 20.0 dis Gain Dynamic Range. 4. Amplifiers with Built-in, High pass, Low-pass, and Band-pass, filters. Packages: Standalone Devices for portable uses, and Coated PCB with Wire Bundles for underwater submersibles. Receiving Face: Circular Planar Face Circular Planar Face Conical Beam		1. Programmable Gain Amplifier PGA, 0/20/40/60 dB, etc.
A Amplifiers with Bull-lin, High-pass, Love-pass, and Band-pass Filters. Packages: Standalone Devices for portable uses, and Coated PCB with Wire Bundles for underwater submersibles. Circular Planar Face Circular Planar Face Conical Beam Oass = 44175*/flkHz); θ _{-0.00} = 60961.5*/flkHz); θ _{-1.000} = 799515*/flkHz). f. operating Frequency in kHz. Side Lobes: <a (hkt);="" 1="" 8ye='60961.5"' 8yes='79515"' coperating="" coperating<="" frequency="" href="https://linkhz.ps.//linkh</td><td></td><td>2. Variable Gain Amplifier (VGA): 60 to 70 dB Range.</td></tr><tr><td>Receiving Face: Packages: Standalone Devices for portable uses, and Coated PCB with Wire Bundles for underwater submersibles. Conical Beam Conical Be</td><td>Signal Conditioning:</td><td>3. Automatic Gain Control (AGC) Amplifier: 100 dB Gain Dynamic Range.</td></tr><tr><td> Receiving Face: Circular Planar Face Circular Planar Face Circular Planar Face Conscientivy Pattern: Conscientivy Pattern: Conscientive Pattern: Conscientive</td><td></td><td>4. Amplifiers with Built-in, High-pass, Low-pass, and Band-pass Filters.</td></tr><tr><td> Receiving Face: Circular Planar Face Circular Planar Face Circular Planar Face Conscientivy Pattern: Conscientivy Pattern: Conscientive Pattern: Conscientive</td><td></td><td></td></tr><tr><td>Directivity Pattern: Conical Beam Width: Seam Width: Seam Width: Seam Width: Seam Width: Seam Width: F. Operating Frequency in kHz. Signal Output Type: Signal Output Type: Signal Output Type: Supply Voltage Vz 4, in Vpp. Overload Pressure Level: Conection: Acceleration Sensitivity. Acceleration Sen</td><td>Receiving Face:</td><td></td></tr><tr><td>Beam Width: 3-ye = 44175" hz.="" in="" td="" =""><td></td><td></td>		
F. Operating Frequency in kHz.	Directivity : atterni	
Side Lobes: < < -17.8 dB with θ_{am} ≤ 49"; No side lobe with θ_{am} > 49". Signal Output Type: Signal Output V _{amax} . Overload Pressure Level: For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For example, with 20" log(Year, 2.828) - Sensitivity, in dB μPa. (For exa	Beam Width:	
Signal Output Type: Maximum Output V _{mini} : Supply Voltage V. 4, in Vpp. Overload Pressure Level: Acceleration Sensitivity: Acceleration Sensitivity: Acceleration Sensitivity: Operating Depth: 30 mor 3MPa, and limited by the cable length if the cable has wire leads or a non-waterproof connector. 1. Default: Free Hanging (FH) 2. Thrn-hole Mounting with Single O-ring (THM-M10, THM-7/16", or THM-5/8".) 3. Thrn-hole Mounting with Double O-ring (THM-M10, THM-7/16", or THM-5/8".) 3. Thrn-hole Mounting with Single O-ring (THMO-M10, THM-7/16", or THM-5/8".) 5. Bolf Fastening Mounting (Plastics) (BRMP-M12, or BFM-5/8".) 5. Bolf Fastening Mounting (Plastics) (BRMP-M12, or BFM-5/8".) 6. Thread Mounting with Single O-Ring (TMSO-M10, TMM-7/16", or BFM-5/8".) 7. Free-hanging with Male Underwater Connector (FHUW-G4P) Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details. Cable Orientation: Cable Length: 1. Default: 10m (32.8ft) for Non-Underwater Connector (FHUW-G4P) Perpendicular to end face of hydrophone. 2. Custom fit Cable Length up to 50m. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom fit Cable Length up to 50m. Connector: 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (MAx. Diameter Ф14.3 mm). 3. DIN Receptacle with 4 Male Pins (DINA), (Max. Diameter Ф21.5 to Ø35 mm). UMC is from global manufacturers of underwater connectors; Its part number is listed in quote in detail. 5. Hydro Castery Shang (85), for 49/DC or +18VDC power supply). 6. 4mm Bannan Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connector (4 pins) (UMAQ) (Max. Diameter G14.3 mm). 3. ONT use available connector (4 pins) (UMAQ) (Max. Diameter G15.5 to Ø35 mm). UMC is from global manufacturers of underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill-Concelman" is a miniature quick connect fide (1 pins) (UMAQ) (Max. Diamete	Sida Labos:	
Maximum Output V _{main} : Overload Pressure Level: For example, with ±24/DC supply, Overload Pressure Level = 20*log((24-4)/2.828) – (-170) = 187 dB μPa. Acceleration Sensitivity: Non-Accusta Axis: 130 dB μPa/m/s²). Operating Depth: 300 m or 3MPa, and limited by the cable length if the cable has wire leads or a non-waterproof connector. 1. Default: Free Hanging (FH) 2. Thru-hole Mounting with Diable Oring (THM-M10, THM-716", or THM-5/8".) 3. Thru-hole Mounting with Diable Oring (THM-M10, THM-716", or THM-5/8".) 3. Thru-hole Mounting with Diable Oring (THM-M10, THM-716", or THM-5/8".) 4. Bolt Fastering Mounting (Stainless Steel) (BFM-716", or SFM-5/8".) 5. Bolt Fastering Mounting (Pastol) (SFMP-M12, or SFM-5/8".) 6. Thread Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x22.) 7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accussic Chystem. Page 187 (PHUW-4P) Please refer to online document Accuss Page 187 (PHUW-4P) Please refer to online document		
Overload Pressure Level: 20*log(Vama/2, 828) - Sensitivity, in dB μPa. Acceleration Sensitivity: Acceleration Sensitivity: Operating Depth: 30 on or 3MPa, and limited by the cable length if the cable has wire leads or a non-waterproof connector. 1. Default: Free Hanging (FH) 2. Thru-hole Mounting with Single O-ring (THM-M10, THM-7/16", or THM-5/8".) 3. Thru-hole Mounting with Single O-ring (THM-M10, THM-7/16", or THM-5/8".) 4. Bott Fastening Mounting (Flastics) (BFMP-M12, or BFM-5/8".) 5. Bott Fastening Mounting (Flastics) (BFMP-M12, or BFM-5/8".) 6. Thread Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x22.) 7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document Acoustic/System.pdf for a complete list of Mounting Options and more details. Cable Options: Cable Options: Cable Length: 1. Default: Wire Leads (WI) 2. Male BNCs (BNC) (Max. Diameter Ф14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIMA), (Max. Diameter Ф21.5 to Ф35 mm). UMC is from global manufacturers of underwater Connector; s. Expart number is listed in quote in detail. 5. +99VO Castlery Sng (Ss), for 99VO or +18VO C power supply. 6. 4 mm Banana Plug Pair (Red and Black Color) (BP), for Dc power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for aday long light, Pype: Threaded. Supply Voltage V: 91 - 14 - 15 - 15 - 15 - 15 - 15 - 15 - 1		
Coverage Pressure Level: For example, with +24VDC supply, Overload Pressure Level = 20*log((24-4)/2.828) – (-170) = 187 dB μPa.	Maximum Output V _{omax} :	
Acceleration Sensitivity: Acceleration Sensiti	Overload Pressure Level:	
Operating Depth: 300 m or 3MPa, and limited by the cable length if the cable has wire leads or a non-waterproof connector.		
Non-Acoustic Asis: \$1.20 dis re ju*Ps/(m/s*). Operating Depth: 30 mor 3MPa, and limited by the cable length if the cable has wire leads or a non-waterproof connector. 1. Default: Free Hanging (FH) 2. Thru-hole Mounting with Single O-ring (THM-M10, THM-7/16", or THM-5/8".) 3. Thru-hole Mounting with Single O-ring (THM-M10, THM-7/16", or BFM-5/8".) 5. Bolf Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 5. Bolf Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 5. Bolf Fastening Mounting (Plastics) (BFMP-M12, or BFM-PMP13/8".) 6. Thread Mounting with Single O-Ring (TMSO-M10x12, TMSO-M10x22.) 7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details. Four Conductor Shielded Cable (SC) Cable Options: Four Conductor Shielded Cable (SC) Cable Length: 2. Custom-fit Cable Length up to 50m. 2. Custom-fit Cable Length up to 50m. 2. Lostom-fit Cable Length up to 50m. 2. Lostom-fit Cable Length up to 50m. 3. Din Receptacle with A Male Pins (DINA), (Max. Diameter Ф17 mm). 3. Din Receptacle with A Male Pins (DINA), (Max. Diameter Ф17 mm). 4. Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter Ф21.5 to Ф35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4 mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply NOLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 4 contacts, 92 Dom mid diameter, use of or adioi, 8F, digital, and DC AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 4 contacts, 92 Dom mid diameter, use of or adioi, 8F, digital, and DC AC power signals. Fastening Type: Threaded. Supply Voltage V: 49 to +26 VDC. Warning: The device will be destroyed with V≥	Acceleration Sensitivity:	
1. Default: Free Hanging (FH) 2. Thru-hole Mounting with Single O-ring (THM-M10, THM-7/16", or THM-5/8".) 3. Thru-hole Mounting with Double O-ring (THDO-7/16") 4. Bolt Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 5. Bolt Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 6. Thread Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x22.) 7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details. Cable Options: 6. Der Conductor Shielded Cable (SC) Cable Corientation: 7. Perpendicular to end face of hydrophone. Cable Length: 8. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 9. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 1. Default: Wire Leads (WL) 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Φ14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ17 mm). 4. Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. ±9YDC Battery Snap (BS), for ±9YDC or ±18VDC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V: 9 to ±26 VDC. Warning: The device will be destroyed with Vs ± ±32 VDC. 9 VDC 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 variable power supply with Vs ± ±32 VDC. 12 mA with	•	
2. Thru-hole Mounting with Single O-ring (THM-M10, THM-7/16", or THM-5/8".) 3. Thru-hole Mounting with Double O-ring (THDO-7/16") 4. Bolt Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 5. Bolt Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 6. Thread Mounting with Single O-ring (THDO-7/16") 7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document Acoustic/system.pdf for a complete list of Mounting Options and more details. Cable Options: 6. Four Conductor Shielded Cable (SC) Cable Orientation: Perpendicular to end face of hydrophone. 1. Default: Wire Leads (WL) 2. Male BNCs (BROK) (Max. Diameter Onnector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BROK) (Max. Diameter Opt.7 mm). 4. Underwater Mateable Connector (4 pins) UNMC4P) (Max. Diameter 021.5 to 035 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply ONLY. Underwater Mateable Connector (4 pins) UNMC4P) (Max. Diameter 021.5 to 035 mm). UMC is from global manufacturers of underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, 020mm diameter, used for adulo, RF, digital, and DC or AC power signals. Fastening Type: Threaded. 5. Supply Voltage V: 9 to +26 VDC. Warning: The device will be destroyed with Vs 2 +32VDC. 9 to +26 VDC. Warning: The device will be destroyed with Vs 2 +32VDC. 9 to +26 VDC. Warning: The device will be destroyed on Mounting Parts. 8. 0 ma with +12 VDC. 10. 5 ma with +18 VDC. 12 mA with +24 VDC. 5 sensing Element: 00 = 03.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting T	Operating Depth:	
3. Thru-hole Mounting (Stainless Steel) (BFM-7/16") 4. Bolt Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 5. Bolt Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 6. Thread Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x22.) 7. Free-hanging with Male Underwater Connector (FHUMC-4P) Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details. Cable Options: Cable Options: Cable Length: 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to Som. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Φ14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ17 mm). 4. Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +990CB Battery Span (BS), for +990C or +1890C power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Ø20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Ø20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V: 49 to +26 VDC. Warning: The device will be destroyed with Vs ± +32VDC. 5. ON OT use switching mode DC power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use witching mode DC power supply. 8.0 mA with +12 VDC. 10. mA with +12 VDC. 10. mA with +12 VDC. 11. mA with +12 VDC. 12. mA with +24 VDC. 13. mA with +12 VDC. 14. ma with +24 VDC. 15. ma with +24 VDC. 15. ma wit		
## A Bolt Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".) 5. Bolt Fastening Mounting (Plastics) (BFMP-M12, or BFMP-NPT3/8".) 6. Thread Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x22.) 7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details. Cable Options: Cable Options: Cable Cable Orientation: Perpendicular to end face of hydrophone. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Φ14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ17 mm). 4. Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater uses. Other connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill-Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V:		
S. 8.0 It Fastening Mounting (Plastics) (BFMP-N12, or BFMP-NPT3/8".) 6. Thread Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x22.) 7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document ΔcousticSystem.pdf for a complete list of Mounting Options and more details. Cable Options: Cable Orientation: Perpendicular to end face of hydrophone. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Ф14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Ф21.5 to Ф35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. 49VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, Rf, digital, and DC or AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, Rf, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V: 49 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. 49VDC 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 variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use with +18 VDC.		3. Thru-hole Mounting with Double O-ring (THDO-7/16")
S. BOIT rasterling Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x2). 6. Thread Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x2). 7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details. Four Conductor Shielded Cable (SC) Cable Options: Cable Options: Perpendicular to end face of hydrophone. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Ф14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Ф17 mm). 4. Underwater Mateable Connector (4 pins) (UMCAP) (Max. Diameter Ф21.5 to Ф35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill-Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Ø20mm diameter, used for audio, Rf, digital, and DC or AC power signals. Fastening Type: Threaded. Suggested DC Supply: 5. HyDC 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 variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose	Mounting Ontions:	4. Bolt Fastening Mounting (Stainless Steel) (BFM-7/16", or BFM-5/8".)
7. Free-hanging with Male Underwater Connector (FHUWC-4P) Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details. Cable Options: Pour Conductor Shielded Cable (SC) Cable Orientation: Perpendicular to end face of hydrophone. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custorn-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Ф14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Ф17 mm). 4. Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter Ф21.5 to Ф35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, 020mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, 020mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Suggested DC Supply: Suggested DC Supply: 0 NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +18 VDC. 28.8 mA with +12 VDC. 29.5 ma with +18 VDC. 20.5 ma with +18 VDC. 20.5 ma with +18 VDC. 20.6 sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Varies with options. Other Mounting Types	Widditing Options.	5. Bolt Fastening Mounting (Plastics) (BFMP-M12, or BFMP-NPT3/8".)
Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details. Cable Options: Cable Options: Cable Orientation: Perpendicular to end face of hydrophone. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Φ14.3 mm). 3. DIN Receptacle with 4 Male Pinis (DIN4), (Max. Diameter Φ17 mm). 4. Underwater Mateable Connector (4 pins) (UMCAP) (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plup Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for oaudio, RF, digital, and DC or AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for oaudio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V: 49 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +99VDC Battery, Marine Battery, Automobile Battery, Fixed DC Linear Power Supply, Not Included. Do NOT use switching mode DC power supply. 8.0 mA with +9 VDC. 10.5 mA with +18 VDC. 10.5 mA with +24 VDC. 10.6 to 40° C or 14° Ft o 140° F. Varies with options. Other Mounting Types: actual length depe		6. Thread Mounting with Single O-Ring (TMSO-M10x15, TMSO-M10x22.)
Cable Options: Cable Options: Cable Corientation: Cable Length: Cable Length: 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Φ14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill-Concellamn" is a miniature quick connect/fdisconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. 49VDC 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 variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use with +18 VDC. 10.5 mA with +18 VDC. 12 mA with +18 VDC. 22 mA with +18 VDC. 23 mA with +18 VDC. 24 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -0.0 °C to 4-60 °C or 1-4 °F to 140 °F.		7. Free-hanging with Male Underwater Connector (FHUWC-4P)
Cable Orientation: Cable Length: 1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Φ14.3 mm), 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ21.5 to Φ35 mm), UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. ±9VDC Battery Snap (Bs), for ±9VDC or ±18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V ₁ : 49 to ±26 VDC. Warning: The device will be destroyed with VS ≥±32VDC. 49VDC 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 variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use switching mode DC power supply. 8.0 mA with ±12 VDC. 10.5 mA with ±12 VDC. 10.5 mA with ±14 VDC. 11.5 mA with ±14 VDC. 12.5 mA with ±14 VDC. 13.5 mA with ±14 VDC. 14.5 mA with ±14 VDC. 15.5 mA with ±14 VDC. 16.5 mA with ±14 VDC. 17.5 mA with ±14 VDC. 18.5 may be a maximum supply voltage is higher than the rated voltage. 10 °C to ±60 °C or 14 °F to ±40 °F. 10 °C to ±60 °C or 14 °F to ±40 °F. 10 °C to ±60 °C or 14 °F to ±40 °F. 10 °C to ±60 °C or 14 °F to ±40 °F.		Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details.
1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors. 2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Φ14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +24 VDC. 5 sensing Element: OD = Φ3.0 mm; Solid Support: ΦDXL = Φ7.5x30 mm; Preamp Housing: ΦDXL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0. 386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.	Cable Options:	Four Conductor Shielded Cable (SC)
2. Custom-fit Cable Length up to 50m. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Φ14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ21.5 to Φ35 mm). 4. Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0. 386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -10°C to +60°C or -4°F to 140°F.	Cable Orientation:	Perpendicular to end face of hydrophone.
2. Custom-int Cable Length Up to Sum. 1. Default: Wire Leads (WL) 2. Male BNCs (BNC) (Max. Diameter Ф14.3 mm). 3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Ф21.5 to Ф35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Ф20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V₁: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ФD = Ф3.0 mm; Solid Support: ФDxL = Ф7.5x30 mm; Preamp Housing: ФDxL = Ф21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0. 386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -10°C to +60°C or -4°F to 140°F.	Cabla Lavath.	1. Default: 10m (32.8ft) for Non-Underwater Connector; 0.6m (2ft) for Underwater Connectors.
2. Male BNCs (BNC) (Max. Diameter Ф14.3 mm). 3. DIN Receptacle with 4 Male Pins (DINA), (Max. Diameter Ф21.5 to Ф35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill-Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V: 49 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ФD = Ø3.0 mm; Solid Support: ФDxL = Ф7.5x30 mm; Preamp Housing: ФDxL = Ф21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0. 386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: - 20 °C to +60 °C or -4 °F to 140 °F. Storage Temperature: - 20 °C to +60 °C or -4 °F to 140 °F.	Cable Length:	2. Custom-fit Cable Length up to 50m.
3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ17 mm). 4. Underwater Mateable Connector (4 pins) (UMCAP) (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, Rf, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V ₅ : 49 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.		1. Default: Wire Leads (WL)
3. DIN Receptacle with 4 Male Pins (DIN4), (Max. Diameter Φ17 mm). 4. Underwater Mateable Connector (4 pins) (UMCAP) (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, Rf, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V ₅ : 49 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.		
4. Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter Φ21.5 to Φ35 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V₃: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. 12 mA with +24 VDC. 13 mA with +24 VDC. 14 mA with +24 VDC. 15 mA with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -10 °C to +60 °C or 14 °F to 140 °F. Storage Temperature: -10 °C to +60 °C or 4 °F to 140 °F.		
UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage Vs: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +24 VDC. 12 mA with +24 VDC. 25 sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.		
5. +9VDC Battery Snap (BS), for +9VDC or +18VDC power supply. 6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V₂: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +24 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. -10 °C to +60 °C or 14 °F to 140 °F. Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F.	Connector:	
6. 4mm Banana Plug Pair (Red and Black Color) (BP), for DC power supply ONLY. Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V₂: 49 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. 49VDC 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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.		
Underwater Mateable Connectors are for underwater uses. Other connectors/wire leads are for dry uses and are not waterproofed. 1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V₃:		
1. BNC: "Bayonet Neill—Concelman" is a miniature quick connect/disconnect radio/audio frequency connector used for coaxial cable. Fastening Type: Bayonet Lock 2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage Vs: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. 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.		
2. DIN: Electrical cylindrical connectors, 3 to 14 contacts, Φ20mm diameter, used for audio, RF, digital, and DC or AC power signals. Fastening Type: Threaded. Supply Voltage V₃: +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -10 °C to +60 °C or -4 °F to 140 °F. Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F.	1 RNC: "Bayonet Neill-Cor	
Supply Voltage V _s : +9 to +26 VDC. Warning: The device will be destroyed with Vs ≥ +32VDC. +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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.	•	
+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. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.	•	
Suggested DC Supply: DO NOT use variable power supply whose maximum supply voltage is higher than the rated voltage. DO NOT use switching mode DC power supply. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +24 VDC. Size: Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.	Supply voltage v _s .	
DO NOT use switching mode DC power supply. 8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Size: Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.	Constant DC Constant	
8.0 mA with +9 VDC. 8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC. Size: Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.	Suggested DC Supply:	
Current (Quiescent):8.8 mA with +12 VDC. 10.5 mA with +18 VDC. 12 mA with +24 VDC.Size:Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm.Varies with options. Other Mounting Types: actual length depends on Mounting Parts.Weight:0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length.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.		
10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.	Current (Quiescent):	
10.5 mA with +18 VDC. 12 mA with +24 VDC. Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.		
Sensing Element: ΦD = Φ3.0 mm; Solid Support: ΦDxL = Φ7.5x30 mm; Preamp Housing: ΦDxL = Φ21x95 mm. Varies with options. Other Mounting Types: actual length depends on Mounting Parts. 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.		
Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.		
Varies with options. Other Mounting Types: actual length depends on Mounting Parts. Weight: 0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length. 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.	Size.	
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.		
Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F.	Weight:	0.386 kg with 10m cable. Actual weight depends on Mounting Parts, Cable Types and Length.
	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	r: The hydrophones can be used to detect sounds in air. The sensitivity in air is same to the one in water in low frequency range.

How to Order Standard Hydrophones. BII Keeps Standard Products in Stock.

FG: Fixed Gain; SE: Single-ended Output; BPF: Band Pass Filter; HPF: High Pass Filter; LPF: Low Pass Filter.				
Part Number	-High Pass Filter	-Mounting	-Cable Length	-Connectors for Signal/DC Supply
BII7184FGSE	Default: 600 Hz. Bespoke: > 600 Hz.	FH: Free Hanging.	10 m (32.8 ft)	WL, BNC, DIN, BS.
Example of Part Number:	Description			
BII7184FGSE-FH-10m-WL	BII7184FGSE Hydrophone, Free Hanging, 10m Shielded Cable, Connector: None, Wire leads.			
BII7184FGSE-FH-10m-BNC/BS	BII7184FGSE Hydrophone, Free Hanging, 10m Shielded Cable, Connector: BNC for Signal, 9V Battery Snaps for DC Supply.			
BII7184FGSE-FH-10m-DIN4 BII7184FGSE Hydrophone, Free Hanging, 10m Shielded Cable, Connector for Signal and DC Supply: DIN4.				



Benthowave Instrument Inc.

Underwater Sound Solutions

www.benthowave.com

BII7184FGSE-100kHz-FH-10m-	BII7184FGSE Hydrophone, High Pass Filter: 100kHz. Free Hanging, 10m Shielded Cable, Connector: BNC for Signal, 9V Battery
BNC/BS	Snaps for DC Supply.

Wiring Information of Hydrophones with Fixed-gain Preamps:

Single-ended Output:	Wire Leads	UMC4P	BNC + Two 9V Battery Snaps	DIN4
+VDC	Red	Pin 3	Battery Female Snap	Pin 4
Common	Black	Pin 1	Battery Male Snap	Pin 1
Signal	White	Pin 2	BNC Center	Pin 3
Signal Common	Blue, Green, or Yellow	Pin 4	BNC Metal Shell	Pin 2
Shielding	Cable Shield	N/A	BNC Metal Shell	Metal Shell

Question:

What if the mating connector of my DAQ module or recording device is NOT available from BII? A bespoke connector adaptor might be assembled by BII and BII ships the adaptor to buyer as accessory of the device. Please contact BII for customizations. Many adaptors for standard connectors are available in worldwide electronic suppliers such as BNC to SMA, BNC to SMC, XLR to TRS, etc. Check out your local suppliers.

Is impedance matching necessary between hydrophones/sensors and preamplifiers/Recorders/Analyzers? it is NOT necessary to do impedance matching in low frequency range applications in which electromagnetic wave lengths are much greater than the cable length. High frequency transducers such as NDT pulsing transducers need 50Ω impedance matching among transducers, cables, and analyzers/digitizers.

Can BII explain why the capacitance of my hydrophone/transducer affect high pass filtering? (1). Hydrophone/transducer is high impedance devices in low frequency range. Its simplified complex impedance = $j/(2\pi fC_h)$, C_h is the capacitance of hydrophone/transducer, f is frequency in Hz. This impedance is in series with preamp R_i and can reach several M Ω to hundreds M Ω depending on C_h and f. (2). Most high-performance operational amplifiers (IC chips) can use input resistors R_i up to 1 to 200 M Ω to avoid bumping into saturation issue.

How to increase hydrophone sensitivity for extremely weak sounds?

BII low noise hydrophone with built-in preamp (Differential Output) -> Long Cable -> Standalone Preamp -> Analyzing Instrument or Recorder.

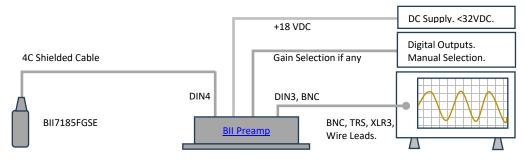
What components are necessary to compensate the propagation and spreading loss?

A low noise hydrophone + PGA amplifier with gain of 0/20/40/60 dB.

A low noise hydrophone + VGA amplifier with gain of 0 ~ 70 dB.

A low noise hydrophone + AGC amplifier with gain of -20 ~ 80dB.

Acoustic Receiving System of Programmable Sensitivity.



Digital Recorder, Computerized DAQ, Embedded Controller, Oscilloscope, Analyzer/Instrument.

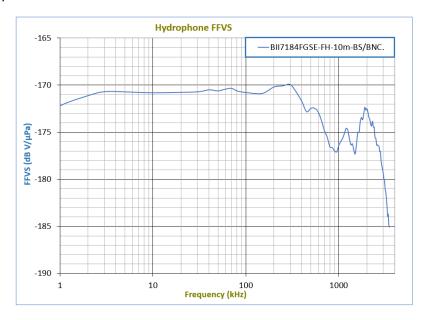
How do I use Gain Selection wires of a standalone PGA in field?

(1). Manual Gain Selection.

When a **Gain Selection wire** is floating or open, its digital logic is High or "1". When a **Gain Selection wire** is short to **Digital Common**, its digital logic is Low or "0". Sensitivity of a Hydrophone is fixed when its Gain Selection wires are fixed to **Digital Common** or open (floating) during operation.

(2). Gain Selection with Digital Outputs. Digital Outputs of a DAQ (data acquisition device) select gains with TTL/CMOS logic levels.

Free-field Voltage Response (FFVS):





Benthowaye Instrument Inc.

Underwater Sound Solutions

www.benthowave.com

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

