

Acoustic Transducers and Measurement Systems

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### **Omnidirectional Spherical Transducer**

BII-7520 series spherical transducers ranging from 2 to 300kHz provide omnidirectional directivity response and broadband response.

### **Typical Applications**

Remote Control, Telemetry, Drifting Array	Underwater Acoustic Network, Spherical Point Source
Artificial Acoustic Target, Echo-Repeater	Diver Communication, Underwater Telephone
Acoustic Deterrent to Marine Animals	Pinger/Tag/Locator/Transponder/Beacon/Acoustic Release
Playback Marine Animal Voices/Calls/Whistles/Songs/Clicks	Marine Animal Behavior Research, Bioacoustic Stimuli

#### **Related Products**

Sonar Signal Generation Pulse Signal **BII5000** Power Amplifier <u>BII8030</u> Underwater Acoustic Transmitter <u>BII-8080</u> Transmitting & Receiving System

### Specification

Transducer:	BII7526	ΒΙΙ7526-ΙΜ50Ω				
Resonant Frequency f <sub>s</sub> :	75 kHz ± 10%					
	$f_s \pm 20\% * f_s$	$f_s \pm 25\% * f_s$				
Transmitting Frequency:	Minimum Transmitting Frequency: None.	Minimum Transmitting Frequency: TBD. To be determined.				
Transmitting Frequency.	Operating Frequency < Minimum Transmitting Frequency: transd					
	power amplifier, and results in overheat issue (damage) to power	amplifier and the transducer.				
	No	Built-in, Impedance matching to $50\Omega$ by default.				
	TVR and FFVS variation of a transducer with built-in Impedance N					
Impedance Matching:	1. When R <sub>IM</sub> < 1/G, TVR increases, FFVS decreases. Generally, this					
	2. When R <sub>IM</sub> > 1/G, TVR decreases, FFVS increases. Generally, this					
Construct	R <sub>IM</sub> : Impedance-Matched Resistance such as 50 Ω. G: Transducer	Conductance at Operating Frequency.				
Signal Type:	Pulsed SINE, Chirp, PSK, FSK, Pulsed Square Waveform, etc.					
Directivity Pattern:	Conical Beam/Toroidal Beam/Omnidirectional Beam/Hemispheric	cal Beam at is. Refer to Graph of <b>Directivity Pattern.</b>				
2 dD Doore Middle	Omnidirectional at f ≤ f <sub>omni</sub> or Omnidirectional at f << f <sub>s</sub> .  Omnidirectional					
-3dB Beam Width:						
Side Lobe Level:	No side lobes or $\leq$ -17.7 (dB) (-3dB Beam Width $<$ 50°).	1				
Free Capacitance C <sub>f</sub> :	14.0 nF ± 10% @ 1 kHz	N/A				
Dissipation D:	0.004 @ 1 kHz	N/A				
Quality Factor Q <sub>m</sub> at f <sub>s</sub> :	4.0	4.0				
Quanty ractor Qiii at 131	-3dB bandwidth $\Delta f = f_s/Q_m$ . Qm determines the transient response	e or the rise and fall rings of steady-state response.				
η <sub>ea at fs</sub> at f <sub>s</sub> :	0.67 in Water, Electroacoustic Efficiency, Load Medium Depender	nt.				
	at f << fs, $\eta_{ea}$ / $\eta_{ea}$ at fs $\approx$ 0.1225*(k* $\Phi$ D)². Wave Number k = $2\pi/\lambda$ ; (					
		s gradually at $f > f_s$ , so it is NOT recommended for transducers to				
$\eta_{ea}$ at f << f <sub>s</sub> :	emit high power sounds at frequencies far from fs. Otherwise, tr					
		om $f_s$ . For example, input power $P_i \le \eta_{ea} * MIPP$ at $f \le 0.8 * f_s$ and $P_i \le 0.8 * f_s$				
Danier Faster at f	0.2*MIPP at f ≥ 1.3*f <sub>s</sub> .  0.87	≥ 0.94				
Power Factor at f <sub>s</sub> :						
TVR at f <sub>s</sub> :	146.0 ± 2 dB μPa/V@1m.	146.5 ± 2 dB μPa/V@1m for BII7526-IM50 $\Omega$ .				
Radiation Sound Level SL:	SL = $20*logV_i + TVR$ , dB $\mu$ Pa@1m. Driving Voltage $V_i$ is in unit of V					
A discittance on longer design	C (67 m) D 404 m) O fo	1. Default: $Z = 50*e^{j\theta}$ , in $\Omega$ , and Phase Angle $ \theta  \le 20^{\circ}$ at fs.				
Admittance or Impedance:	G <sub>max</sub> = 6.67 mS, B = 4.84 mS @ fs.	2. Customization: refer to Impedance Matching at f <sub>s</sub> .  Refer to <b>Z-0 Graph</b> .				
	Pulsed Driving Signal and Duty Cycle D < 100%:	Pulsed Driving Signal and Duty Cycle D < 100%:				
	$V_{imax} = V(MIPP/G_{max})$ or <b>300</b> , whichever is less, in $V_{rms}$ .	$V_{\text{imax}} = v(\text{MIPP * }  Z )$ , in $V_{\text{rms}}$ . Z is impedance at fs.				
Driving Voltage V <sub>i</sub> at f <sub>s</sub> :	Continuous Operation at 100% Duty Cycle:	Continuous Operation at 100% Duty Cycle:				
(V <sub>imax:</sub> Maximum V <sub>i.</sub> )	$V_{imax} = v(MCIP/G_{max})$ , in $V_{rms}$ .	$V_{imax} = V(MCIP *  Z )$ , in $V_{rms}$ .				
	To achieve higher sound level, built-in impedance matching is recommended to step up driving voltage inside the transducer.					
Input Power P <sub>i</sub> :	$P_i = V_i^2 * G$ . Refer to <b>G-B Graph:</b> G is conductance. $P_i = V_i^2 / Z$ at $f_s$ . Z is impedance at $f_s$ .					
MIPP at f <sub>s</sub> :	Maximum Input Pulse Power at $f_s$ : $P_i = V_i^2 * G_{max}$ or 330 Watts, whichever is less.					
MPW at MIPP and fs:	10 Seconds, Maximum Pulse Width at MIPP and at fs.					
MCIP at f <sub>s</sub> :						
·	th, duty cycle and off-time with input pulse power (peak power)	ntf:				
mow to determine pulse wit	acii, aacy cycle and on-time with input puise power (pear power)	ne 15.				

- 1. Determine the input pulse power (IPP, peak power) with sound intensity required by the project. IPP MUST be less than MIPP.
- 2. Pulse Width  $\leq$  (MIPP \* MPW\*(120°c-T)/103°c)/IPP. T: Water Temperature in °c.
- 3. Duty Cycle D  $\leq$  MCIP\*(120°c-T)/103°c)/IPP.
- 4. Off-time  $\geq PW^*(1-D)/D$ .

FFVC -+ f	-202.4 ± 2 dB V/μPa.	-203.0 $\pm$ 2 dB V/μPa for BII7522-IM50Ω.
FFVS at f <sub>s</sub> :	Sensitivity Loss over extension cable at $f_s(dB) = 20 * \log \{0\}$	$(1 + 2\pi f_s C_c/B)/\sqrt{[G^2 + (B + 2\pi f_s C_c)^2]/(G^2 + B^2)}$



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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 (THMO-716°) 3. Thru-hole Mounting with Double O-ring (THMO-716°) 4. Both Fastening Mounting (Stainles Steel) (BRM-716°) 5. Both Fastening Mounting (Stainles Steel) (BRM-716°) 5. Both Fastening Mounting with Free Hanging (BRM-878°) 6. Both-Fastening Mounting with Free Hanging (BRM-878°) 6. Both-Fastening Mounting with Free Hanging (BRM-878°) 7. Free-hanging with Male Underwater Connector (HBMW-3P, PHUWC-4P, PHUWC-6P). 7. Free-hanging with Male Underwater Connector (HBMW-3P, PHUWC-4P, PHUWC-6P). 7. Free-hanging with Male Underwater Connector (HBMW-3P, PHUWC-4P, PHUWC-6P). 7. Free-hanging with Male Underwater Connector (HBMW-3P, PHUWC-4P, PHUWC-6P). 7. Free-hanging with Male Underwater Connector (HBMW-3P, PHUWC-4P, PHUWC-6P). 7. Free-hanging with Male Underwater Connector (HBMW-3P, PHUWC-4P, PHUWC-6P). 7. Free-hanging with Male Underwater Connector (HBMW-3P, PHUWC-4P, PHUWC-6P). 7. Free-hanging with Male Underwater Connector (BRC-4P). 7. Free-hanging with Male Underwater Connector (BRC-4P). 7. Free-hanging with Male Underwater Connector (BRC-4P). 7. Free-hanging with Male Phus (PHC-4P). 7. Free-handing Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable. 7. Free-handing Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable. 7. Free-handing Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable. 8. Default: 5 m. 2. Custom-fit. 8. Default: 5 m. 2. Custom-fit. 9. Default: 5 m. 2. Custom-fit.	SE=SL-TL+AG-NL	Acoustic Transducers and Measurement Systems	www.bentnowave.com			
200.0 ± 2 88 Vyl#s Sensitivity loss over Extension Cable (dB) ± 20*log(Cy/Cs-Cy) Variation for hydrophone without preampiller. Co. Hydrophone Capacitance, Cp. Capacitance of Extension Cable is of 100 pt/meter roughly.  8 ± 20*logy. FPV/S dB) #s Receiving Variation of Extension Cable is of 100 pt/meter roughly.  8 ± 20*logy. FPV/S dB) #s Receiving Variation of Extension Cable is of 100 pt/meter roughly.  8 ± 20*logy. FPV/S dB) #s Receiving Variation of Extension Cable is of 100 pt/meter roughly.  8 ± 25/8**I.  9 Life 1.5**I.  9 Life 1.5**I.  1. Default. Modifier of MPB Pressure.  1. Default. Modifier of MPB Pressure.  1. Default. Roll of the cable has wire leads or a non-waterproof connector.  1. Default. The cable has wire leads or a non-waterproof connector.  1. Default. The Roll of Pressure of Pressure.  1. Default. Roll of the Mountage with Double Oring (TRM-7/16")  2. Thrus-hole Mountage with Double Oring (TRM-7/16")  3. Thrus-hole Mountage with Double Oring (TRM-7/16")  4. Bolt Fastering Mounting With Free Hanging (BRP-7/16")  4. Bolt Fastering Mountage with Pressure of Pressu			- · · · · · · · · · · · · · · · · · · ·			
FFKS at F. 6.1:  Sensitivity Loss over Extension Cable (dals = 20*log(Cr/Cs-Cs), Valid for hydrophone without preamplifier. C: Hydrophone Capacitance (Festivanion Cable), Cable of 1/00 pF/meter roughly.  Receiving Sound Level St.  8. = 20*log/K., FFXX, 6th p8. Receiving Votage V, is in unit of Vis  Receiving Texture (1.1 to 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5		-	T :			
Receiving Sound Level St.  S. 2-10/20/pcv. PTVS, dipl. ps. Levelving Voltage V, is in unit of Vov.  Receiving Frequency:  1. 1s to 1.5*f.  Moviming Option:  Moviming Options:  Moviming Options:  All 1s to 1.5*f.  Intra-hole Moviming with Single O-Ing (FMM-7)E*f)  3. Thrus-hole Moviming with Single O-Ing (FMM-7)E*f)  3. Thrus-hole Moviming with Single O-Ing (FMM-7)E*f)  3. Thrus-hole Moviming with Single O-Ing (FMM-7)E*f)  4. Bolt Fastering Moviming (Stainless Stee) (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Nationg (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Nationg (IPRM-7)E*f)  6. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming with Proc Leving (IPRM-7)E*f)  5. Solt Fastering Work Mide Moviming Work Mide Moviming Work Mide Work M	EE\/\$ a+ f < < f :	• • • • • • • • • • • • • • • • • • • •	•			
Receiving Focusion:  3. Feb. 12 - 2019(a)V., FFVX, 6dt pibs. Receiving Voltage V. is in until Of Vis- Receiving Focusion:  3. Feb. 12 - 15 - 15 - 15 - 15 - 15 - 15 - 15 -	II VS at I << Is.					
Departing Depth:	Receiving Sound Level SL:					
Maximum, 500 m or 6 MPa Pressure.   Maximum, 300 m or 3 MPa Pressure.						
United by the cable kength if the cable has wire leads or a non-waterproof connector.  1. DeBout: There Hanging (FP) 1. Thru-hole Mounting with Single O-ning (THM-7/16") 1. Thru-hole Mounting with Single O-ning (THM-7/16") 1. Thru-hole Mounting with Double O-ning (THM-7/16") 1. Soll T-astening Mounting (Stanless Steel) (BFM-7/16") 1. Soll T-astening Mounting (Stanless Steel) (BFM-7/16") 1. Soll T-astening Mounting (Stanless Steel) (BFM-7/16") 1. Two Conductors Shiedder Cable (SCR, Rubber or PVC Labett. 2. Two Conductors Shiedder Cable (SCR, Rubber or PVC Labett. 2. So On RSS Cox (RSS3) 3. SO O RSIZ/RU Coxe (RSIZ) (Operating Temperature Range: '70°C To +200°C) 5. Shiedder Cable with Twisted Pair and Tellon (PTFE) Jacket, 00°-3.2 mm (SC2I), up to 200°C, AWG26 Conductors (Not Waterproofed, Out For by Are Labett. 2. So On RSIZ/RU Coxe (RSIZ) (Operating Temperature Range: '70°C To +200°C) 5. Shiedder Cable with Twisted Pair and Tellon (PTFE) Jacket, 00°-3.2 mm (SC2I), up to 200°C, AWG26 Conductors (Not Waterproofed, Out For by Are Labett. 3. So On RSIZ/RU Coxe (RSIZ) (Operating Temperature Range: '70°C To +200°C) 5. Shiedder Cable with Twisted Pair and Tellon (PTFE) Jacket, 00°-3.2 mm (SC2I), up to 200°C, AWG26 Conductors (Not Waterproofed, Out For by Are Labett. 3. Shiedder Cable with Twisted Pair and Tellon (PTFE) Jacket, 00°-4.0 mm (SC4I), up to 200°C, AWG20 Conductors (Not Waterproofed, Out For by Are Labett. 3. Default: 15 m. Z. Custom-fit. 4. Default: 15 m. Z. Custom-fit. 4. Default: 15 m. Z. Custom-fit. 5. Default: 15 m. Z. Custom-fit. 6. Default: 15 m. Z. Custom-fit. 7. Public Market Waterplace Connector (pin) (MuCSP) (						
1. Default: Free Hanging [FH] 2. Thru-hole Mounting with Single O-ring [THM-7/16"] 3. Thru-hole Mounting with Double O-ring [THM-7/16"] 4. Bolk Fastering Mounting (Stainless Stee) [BFM-5/16"] 5. Bolk Fastering Mounting (Stainless Stee) [BFM-5/16"] 5. Bolk Fastering Mounting (Stainless Stee) [BFM-5/16"] 5. Bolk Fastering Mounting (Stainless Stee) [BFM-5/16"] 7. Free hanging with Male Underwater Connector [HDW-3P, FHUWC-6P). Plasse refer to online document Agovatis-System_Bill For a complete its of Mounting Options and more details. 1. Two Conductors Shielded Cable (SD, Rubber or PVC Tacket). 2. 50 IR RGSS Coal (RGSS) 3. 50 IR SGS Coal (RGS	Operating Depth:					
2. Thrus-hole Mounting with Single Do-Jing (THM-7)16*) 3. Thrus-hole Mounting with Double-Oring (FHM-7)16*) 4. Bolt Fastening Mounting (Stainless Stee) (BRM-7)16*) 5. Bolt-Fastening Mounting (Stainless Stee) (BRM-7)16*) 6. Bolt-Fastening Mounting (Stainless Stee) (BRM-7)16*) 7. Freet-hanging with Male Underwater Connector (FHLUWC-4P, FHLUWC-4P, FHLUWC-6P). Please refer to online document Acoustic/System.pdf for a complete list of Mounting Options and more details. 1. Two Conductors Sincider Cable (SS), Rubber or PVC Tacket. Sc with Two Conductors for transmit signal; SC with 4 conductors for receive signal. 2. 50 In RGSS Coax (RGS) 3. 50 In RG174/10 Coax (RG174) 4. 50 In RG174/10 Coax (RG174) 4. 50 In RG174/10 Coax (RG174) 5. 50 In RG174/10 Coax (RG174) 6. Shelded Cable with Twisted Pair and Tellon (PTFE) Jacket, 4D=32 mm (SG32), up to 200°C, AWG26 Conductors (Not Water-proofe, Onthictor Unshelded Cable (USC) 7. Two Conductor (Jame) (UMCAP) (Max. Diameter Q115 to Q35 mm). 7. Two Conductor (Jame) (UMCAP) (Max. Diameter Q115 to Q35 mm). 7. Two Conductor (Jame) (UMCAP) (Max. Diameter Q115 to Q35 mm). 7. Two Conductor (Jame) (UMCAP) (Max. Diameter Q115 to Q35 mm). 7. Two Conductor (Jame) (UMCAP) (Max. Diameter Q115 to Q35 mm). 7. Two Conductor (Jame) (UMCAP) (Max. Diameter Q115 to Q35 mm)		-	nate. proof commession			
Mounting Options:  4. Bolt Fastening Mounting (Stalielss Steel) (BRM-7)(4°) 5. Bolt-Fastening Mounting (Staliels Steel) (BRM-5)(8°) 6. Bolt-Fastening Mounting (Staliels Steel) (BRM-5)(8°) 7. Free-hanging with Male Underwater Connector (FHUWC-49), PHUWC-49) Please refer to online document Acoustic/System.pdf for a complete list of Mounting Options and more details. 1. Two Conductors Finelded Cable (SC), Rubber or PVC Lacket. Sc with Two Conductors for transmit signal; SC with 4 conductors for receive signal. 2. 50 of Rost Scox (Rost) 3. 50 of Rost PA/U Coax (Rost) 4. 50 of Rost PA/U Coax (Rost) 4. 50 of Rost PA/U Coax (Rost) 4. 50 of Rost PA/U Coax (Rost) 5. Shielded Cable with Twisted Pari and Teflon (PTFE) Jacket, OD=3.2 mm (SC32), up to 200°C, AWG26 Conductors (Not Waterprofee), ONLY for Dry Air Use) 6. Shielded Cable with Twisted Pari and Teflon (PTFE) Jacket, OD=3.0 mm (SC40), up to 200°C, AWG20 Conductors (Not Waterprofee), ONLY for Dry Air Use) 7. Two Conductor Unshielded Cable (USC) Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  Cable Length: 1. Default: Sim 2. Custom-fit. 1. Default: Sim 2.		5 5 7				
S. Bolt Fastening Mounting (Stalinics Steel) (BRM-S/8")   6. Bolt-Fastening Mounting (Stalinics Steel) (BRM-S/8")   6. Bolt-Fastening Mounting (Stalinics Steel) (BRM-S/8")   7. Free-hanging with Male Underwater Connector (FMUWC-3P, FHUWC-3P, FHUWC-6P)   Please refer to online document Acoustic/Syeth-mgff for a complete list of Mounting Options and more details.   1. Two Conductor Shielded Cable (SC), Rubber or PVC Lasket.   S. With Two Conductor Shielded Cable (SC), Rubber or PVC Lasket.   S. With Two Conductor Shielded Cable (SC), Rubber or PVC Lasket.   S. Shielded Cable with Twisted Pair and Tellon (PTFE) Jacket. 200-22 mm (SC32), up to 200°C, AWG26 Conductors (Not Waterproofed, ONL' for Dry Air Use).   6. Shielded Cable with Twisted Pair and Tellon (PTFE) Jacket. 200-32 mm (SC32).   7. Two Conductor Unshielded Cable (USC)   Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.   1. Default: 15 m. 2. Custom-fit.   1. Default: 15 m. 2. Custom-fit.   1. Default: Wire Lead S(WL), for Transmit, Receive Signal, and DC Power Supply.   2. Underwater Mateable Connector (3 pins) (UMC3P) (Max. Diameter 02.15 to 035 mm).   Underwater Mateable Connector (3 pins) (UMC3P) (Max. Diameter 02.15 to 035 mm).   Underwater Mateable Connector (3 pins) (UMC3P) (Max. Diameter 02.15 to 035 mm).   Will Soil Style (3 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (3 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (4 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (4 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (3 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (4 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (4 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (4 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (4 pin) (WILBP) (Max. Diameter 02.15 to 030 mm).   Will Soil Style (4 pin) (WILBP) (Max. Diameter 02.15 to 030		3. Thru-hole Mounting with Double O-ring (THDO-7/16")				
Solir Assterning Mounting with Free Hanging (BFM-FH)  7. Free-hanging with Male Underwater Connector (PMW-SP, PHUWC-4P, PHUWC-6P).  Picase refer to online downwest Connector (PMW-SP, PHUWC-4P, PHUWC-6P).  1. Two Conductor Shielded Cable (SC), Rubber or PVC Jacket.  S. With Two Conductor Shielded Cable (SC), Rubber or PVC Jacket.  S. With Two Conductor Shielded Cable (SC), Rubber or PVC Jacket.  S. With Two Conductor Shielded Cable (SC), Rubber or PVC Jacket.  S. With Two Conductor for transmit signals.  2. 50 O RGSS COSR (RGSS)  3. 50 D RGST/PVI Cose (RGC19)  4. 50 D RGT/PVI Cose (RGC19)  4. 50 D RGT/PVI Cose (RGC19)  4. 50 D RGT/PVI Cose (RGC19)  5. 50 Shielded Cable with Twisted Para and Teflon (PTFE) Jacket, OD=3.2 mm (SG22), up to 200°C, AWG26 Conductors (Not Water-open Confed, ONLY for Pyrt VI Line).  6. Shielded Cable with Twisted Para and Teflon (PTFE) Jacket, OD=4.0 mm (SG40), up to 200°C, AWG20 Conductors (Not Water-open Confed, ONLY for Pyrt VI Line).  7. Two Conductor Unshielded Cable (USC)  Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  Cable Length:  1. Default: Sim z. Custom-fit.  1. Default: Sim z. Custom-fit.  1. Default: Wire Leads (WL), for Transmit, Receive Sgral, and DC Power Supply.  2. Underwater Matabable Connector (a pins) (JMCAP) (Max. Diameter 02.15 to 035 mm).  1. UNC is from global manufacturers of underwater connectors: its part number is listed in quote in detail.  3. MIL-501s Style (a pin) (MILAP) (Max. Diameter 02.15 to 035 mm).  2. MIL-501s Style (a pin) (MILAP) (Max. Diameter 02.15 to 035 mm).  3. MIL-501s Style (a pin) (MILAP) (Max. Diameter 02.15 to 035 mm).  4. XIR Receptade with 3 Maile Pins (XLRA), (Max. Diameter 02.10 to 030 mm).  4. XIR Receptade with 3 Maile Pins (XLRA), (Max. Diameter 02.00 cm), for Sic or DF.  5. Male BMC (BMC) (Mix. Diameter 02.15 to 030 mm).  4. XIR Receptade with 3 Maile Pins (XLRA), (Max. Diameter 02.00 cm), for Sic or DF.  5. Male BMC (BMC) (Mix. Diameter	Mounting Ontions:					
7. Free-hanging with Male Underwater Connector (PHUWC-8P, PHUWC-8P). Please refer to online document Acousticystem.pdf for a complete list of Mounting Options and more details.  1. Two Conductor Shielded Cable (SCI, Bubber or PVC Jacket. S. with Two Conductor Shielded Cable (SCI, Bubber or PVC Jacket.) S. Shielded Cable with Vac Conductors for transmit signal; SC with 4 conductors for receive signal. 2. 50 A RG38 COOK (RGS8) 3. 50 A RG174/J Coax (RG174) 4. 50 A RG174/J Coax (RG174) 5. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, ©D-3.2 mm (SG20), up to 200°C, AWG26 Conductors (Not Waterproofed, ONLY for Dry Air Use). 6. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, ©D-4.0 mm (SG40), up to 200°C, AWG20 Conductors (Not Waterproofed, ONLY for Dry Air Use). 7. Two Conductor Unshielded Cable (USC) Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not beed the cable.  Cable Length:  1. Default: 15 m. 2. Custom-fit. 1. Default: 15 m. 3. Custom-fit. 1. D	Mounting Options.					
Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and more details.  1. Two Conductor Shelded Cable (SG, Hubber or PVC Lacket: SC with Two Conductors for transmit signal; SC with 4 conductors for receive signal. 2. 50 n Set Stay U. Coax (RG174) 4. 50 n Set Stay U. Coax (RG174) 5. Shielded Cable with Twisted Pair and Tellon (PTFE) Jacket, ΦD=3.2 mm (SC32), up to 200°C, AWG20 Conductors (Not Waterprofeed, ONLY for Dry Air Use). 7. Two Conductor Unshielded Cable (USC) 7. Two Conductor Unshielded			FILLING AD FILLING CD)			
1. Two Conductor Shielded Cable (SC), Rubber or PVC Jacket. S. Swith Two Conductors for transmit signal, SC with 4 conductors for receive signal. 2. 50 R RGS8 Coas (RGS8) 3. 50 R RG174/U Coax (RG174) (Operating Temperature Range: -70°C to +200°C) 5. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, 400-8.2 mm (SC42), up to 200°C, AWG26 Conductors (Not Waterproofed, ONLY for Dry Air Use). 6. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, 400-8.2 mm (SC40), up to 200°C, AWG26 Conductors (Not Waterproofed, ONLY for Dry Air Use). 7. Two Conductor Unblisheded Cable (USC) Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  Cable Length: 1. Default: ST n. 2. Custom fit. 1. Default: Write Loads (WM), for Transmit, Receive Signal, and DC Power Supply. 2. Underwater Mateable Connector (3 pins) (JUMC4P) (Max. Diameter 021.5 to 035 mm), Underwater Mateable Connector (7 pins) (JUMC4P) (Max. Diameter 021.5 to 035 mm), UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 3. MIL-5015 Style (a pin) (MILAP) (Max. Diameter 030 a mm), for Stor DF. 5. Male RMC (RMC) (Max. Diameter 030 a mm), for Stor DF. 5. Male RMC (RMC) (Max. Diameter 030 a mm), for Stor DF. 5. Male RMC (RMC) (Max. Diameter 030 a mm), for Stor DF. 5. Male RMC (RMC) (Max. Diameter 030 a mm), for Stor DF. 5. Male RMC (RMC) (Max. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diameter 030 a mm), for Stor DF. 6. 1/8° (3 mm) 178 (pins) (MAX. Diam		·	·			
SC with Two Conductors for transmit signal; SC with 4 conductors for receive signal. 2. 50 n RGSS Cox, RGSS 29 3. 50 n RGST-A/U Cox (RGSS) 3. 50 n RGST-A/U Cox (RGSS) 3. 50 n RGST-A/U Cox (RGSS) 4. 50 n RGST-B/U Cox (RGSS) 4. 50 n RGST-B/U Cox (RGSS) 5. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, OD=3.2 mm (SG32), up to 200°C, AWG26 Conductors (Not Waterproofed, ONLY for Dry Aff Use). 6. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, OD=4.0 mm (SC40), up to 200°C, AWG20 Conductors (Not Waterproofed, ONLY for Dry Aff Use). 7. Two Conductor Unshielded Cable (USC) Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable. 7. Default: 15 m. 2. Custom-fit. 8. Default: Wire Leads (WL), for Transmit, Receive Signal, and DC Power Supply. 8. Underwater Mateable Connector (3 pins) (UMG2P) (Max. Diameter 021.5 to 035 mm). 9. Underwater Mateable Connector (3 pins) (UMG2P) (Max. Diameter 021.5 to 035 mm). 9. Underwater Mateable Connector (3 pins) (UMG2P) (Max. Diameter 021.5 to 035 mm). 9. UNC is from global manufacturers of underwater connectors: Its part number is listed in quote in detail. 9. MIL-5015 Style (3 pin) (MIMI3P) (Max. Diameter 0210 to 030 mm). 9. ALX Receptacle with 3 Male Pins (KLRA), (Max. Diameter 020.2 mm), for SE or DF. 9. XLR Receptacle with 3 Male Pins (KLRA), (Max. Diameter 020.2 mm), for SE or DF. 9. XLR Receptacle with 4 Male Pins (KLRA), (Max. Diameter 020.2 mm), for SE or DF. 9. XLR Receptacle with 4 Male Pins (KLRA), (Max. Diameter 020.2 mm), for SE or DF. 9. Male BMC (MRC) (Max. Diameter 020.3 mm), for SE or DF. 9. Male BMC (MRC) (Max. Diameter 020.3 mm), for SE or DF. 9. Male BMC (MRC) (Max. Diameter 020.3 mm), for SE or DF. 9. Male BMC (MRC) (Max. Diameter 020.3 mm), for SE or DF. 9. Male BMC (MRC) (Max. Diameter 020.3 mm), for SE or DF. 9. Male BMC (MRC) (Max. Diameter 020.3 mm), for SE or DF. 9. Male BMC (MRC) (Max. Diameter 020.3 mm), for SE or DF. 9. Male BMC (MRC) (Max. Diameter 020			blete list of Mounting Options and more details.			
2. 50 O RGSS Coax (RGSS) 3. 50 O RG174/U Coax (RG178) (Operating Temperature Range: -70°C To +200°C) 5. Shelded Cable with twisted Pair and Tefnon (PTFE) Jacket, ФD=3.2 mm (SC32), up to 200°C, AWG26 Conductors (Not Waterproofed, ONLY for Dry Air Use) 6. Shelded Cable with twisted Pair and Tefnon (PTFE) Jacket, ФD=4.0 mm (SC40), up to 200°C, AWG26 Conductors (Not Waterproofed, ONLY for Dry Air Use) 6. Shelded Cable with twisted Pair and Tefnon (PTFE) Jacket, ФD=4.0 mm (SC40), up to 200°C, AWG20 Conductors (Not Waterproofed, ONLY for Dry Air Use) 6. Shelded Cable with twisted Pair and Tefnon (PTFE) Jacket, ФD=4.0 mm (SC40), up to 200°C, AWG20 Conductors (Not Waterproofed, ONLY for Dry Air Use) 7. Two Conductor Unshielded Cable (USC) Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  Cable Length: 1. Default: Sim: 2. Custom-fit. 2. Mill: Sim: 2. Sim: 2. Custom-fit. 2. Sim: 2. Sim: 2. Sim: 2. Custom-fit. 2. Sim: 2		, ,	ctors for receive signal			
3. SO Ω RG174/U Coax (RG174) 4. SOO RG178/U Coax (RG178) 5. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, ΦD=3.2 mm (SG32), up to 200°C, AWG26 Conductors (Not Waterproofed, ONLY for Dry Art Use) 5. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, ΦD=4.0 mm (SC40), up to 200°C, AWG20 Conductors (Not Waterproofed, ONLY for Dry Art Use) 6. Shielded Cable with Twisted Pair and Teflon (PTFE) Jacket, ΦD=4.0 mm (SC40), up to 200°C, AWG20 Conductors (Not Waterproofed, ONLY for Dry Art Use) 7. Two Conductor Unbinelded Cable (USC) Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  1. Default: 15 m. 2. Custom-fit. 1. Default: Wire Leads (WL), for Transmit, Receive Signal, and DC Power Supply. 2. Underwater Mateable Connector (3 pins) (UMCAP) (Max. Diameter Ф215 to 0355 mm). UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail. 3. MIL-S015 Style (3 pin) (MILAP) (Max. Diameter 0310 to 030 mm). 4. XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter 020 to 030 mm). 4. XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 020 2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 030 20 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter 030 20 mm), for SE or DF. XLR Receptacle with 4 Male P		9 '	ctors for receive signal.			
S. Shielded Cable with Twisted Pair and Tefon (PTFE) Jacket, ΦD=3.2 mm (Sc32), up to 200°C, AWG26 Conductors (Not Waterproofed, ONLY for Dry Air Use).  6. Shielded Cable with Twisted Pair and Tefon (PTFE) Jacket, ΦD=4.0 mm (SC40), up to 200°C, AWG20 Conductors (Not Waterproofed, ONLY for Dry Air Use).  7. Two Conductor Unshielded Cable (USC) Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  1. Default: 35 m. 2. Custom-fit. 1. Underwater Mateable Connector (3 pins) (UMCaP) (Max. Diameter 021.5 to 035 mm). 1. Undice Service (4 pins) (MILAP) (Max. Diameter 021.5 to 035 mm). 1. Undice Service (4 pins) (MILAP) (Max. Diameter 021.5 to 035 mm). 1. Undice Service (4 pins) (MILAP) (Max. Diameter 021.5 to 035 mm). 1. Undice Service (4 pins) (MILAP) (Max. Diameter 021.5 to 035 mm). 1. Will-So15 Style (4 pins) (MILAP) (Max. Diameter 021.5 to 035 mm). 1. Will-So15 Style (4 pins) (MILAP) (Max. Diameter 021.5 to 035 mm). 1. Will-So15 Style (4 pins) (MILAP) (Max. Diameter 021.5 to 035 mm). 1. Will-So15 Style (4 pins) (MILAP) (Max. Diameter 020.2 mm), for SE or DF. 2. XIR Receptacle with 3 Malle Pins (XIRA), (Max. Diameter 020.2 mm), for SE or DF. 2. XIR Receptacle with 3 Malle Pins (XIRA), (Max. Diameter 020.2 mm), for SE or DF. 2. XIR Receptacle with 3 Malle Pins (XIRA), (Max. Diameter 020.2 mm), for SE or DF. 3. Malle BNC (BNC) (Max. Diameter 020.2 mm), for SE or DF. 3. Malle BNC (BNC) (Max. Diameter 020.2 mm), for SE or DF. 3. Malle BNC (BNC) (Max. Diameter 020.2 mm), for SE or DF. 3. Malle BNC (BNC) (Max. Diameter 020.2 mm), for SE or DF. 3. Malle BNC (BNC) (Max. Diameter 020.2 mm), for SE or DF. 3. Malle BNC (BNC) (Max. Diameter 020.2 mm), for SE or DF. 3. Malle BNC (BNC) (Max. Diameter 020.2 mm), for SE or DF. 3. Malle BNC (BNC) (Max. Di		` ,				
proofed, ONLY for Dry Air Use).		4. 50 Ω RG178/U Coax (RG178) (Operating Temperature Range:	-70°C To +200°C)			
6. Shelded Cable with Twisted Pair and Teflon (PTFE) Jacket, ΦD=4.0 mm (SC40), up to 200°C, AWG20 Conductors (Not Waterproofed, ONLY for Dry Air Use).  7. Two Conductor Unshelded Cable (USC)  Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  2. Default: 15 m. 2. Custom fit.  1. Default: 15 m. 2. Custom fit.  2. Underwater Mateable Connector (1 a Jins) (UMC4P) (Max. Diameter 021.5 to 0.35 mm).  Underwater Mateable Connector (1 a Jins) (UMC4P) (Max. Diameter 021.5 to 0.35 mm).  Underwater Mateable Connector of Underwater connectors. Its part number is listed in quote in detail.  3. Mill-5015 Style (3 pin) (Milla?) (Max. Diameter 019 to 0.30 mm).  Mill-5015 Style (3 pin) (Milla?) (Max. Diameter 019 to 0.30 mm).  4. XIR Receptacle with 3 Male Pins (XIR3), (Max. Diameter 020.2 mm), for SE or DF.  5. Male BNC (BNC) (Max. Diameter 014.3 mm), for Transmit or Receive Grounded Signal.  BNC with RG178 Coax: Service Temperature up to 165°C or 329°F.  6. 1/8° (3.5mm) Tifs Plug (TRS) (Max. Diameter 010.5 mm), for Receive Grounded Signal.  BNC with RG178 Coax: Service Temperature up to 165°C or 329°F.  6. 1/8° (3.5mm) Tifs Plug (TRS) (Max. Diameter 010.5 mm), for Receive Signal ONLY.  7. +990C Battery Snap (BS), +990C or +1890C power supply for Built-in T/R Switch Module.  8. 4mm Banana Plug Pair (Red and Black Color) (BP), Cop ower supply for Built-in T/R Switch Module.  Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  4. Custal weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  4. Operation Temperature:  2. 0.95 kg with 15 m cable.  2. 0.95 kg with 15 m cable.  2. 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT	Cable Ontions:		ΦD=3.2 mm (SC32), up to 200°C, AWG26 Conductors (Not Water-			
Proofed, ONLY for Dry Air Use).   7. Two Conductor Unshielded Cable (USC)   Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.   1. Default: 15 m. 2. Custom-fit.   1. Default: Wire Leads (WL), for Transmit, Receive Signal, and DC Power Supply.   2. Underwater Mateable Connector (3 pins) (UMC3P) (Max. Diameter 02.1.5 to 035 mm).   Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter 02.1.5 to 035 mm).   Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter 02.1.5 to 035 mm).   Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter 02.1.5 to 035 mm).   Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter 02.1.5 to 035 mm).   UNC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail.   3. Mil. 5015 Style (4 pin) (MIL4P) (Max. Diameter 0210 to 030 mm).   4. XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter 020.2 mm), for 55 or DF.   XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter 020.2 mm), for 55 or DF.   XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter 020.2 mm), for 55 or DF.   S. Male BNC (BNC) (Max. Diameter 0210.5 mm), for Receive Signal ONLY.   7. 4yDC Battery Snap (83), 49VDC or +18VDC power supply for Built-in T/R Switch Module.   8. 4mm Bannaa Plus Plus (TRS) (Max. Diameter 010.5 mm), for Receive Signal ONLY.   7. 4yDC Battery Snap (83), +9VDC or +18VDC power supply for Built-in T/R Switch Module.   8. 4mm Bannaa Plus Plus (RRS) (Max. Diameter 010.5 mm), for Receive Signal ONLY.   7. 4yDC Battery Snap (83), +9VDC or +18VDC power supply for Built-in T/R Switch Module.   8. 4mm Bannaa Plus Plus (RRS) (Max. Diameter 010.5 mm), for Receive Signal ONLY.   7. 4yDC Battery Snap (83), +9VDC or +18VDC power supply for Built-in T/R Switch Module.   8. 4mm Bannaa Plus Plus (RRS) (Max. Diameter 010.5 mm), for Receive Signal ONLY.   7. 4yDC Battery Snap (83), +9VDC or +18VDC power supply for Built-in T/R Switch Module.   8. 4mm Bann	cubic Options.					
7. Two Conductor Unshielded Cable (USC) Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  1. Default: 15 m. 2. Custom-fit. 1. Default: 10 m. 2. Defaul			ΦD=4.0 mm ( <b>SC40</b> ), up to 200°C, AWG20 Conductors (Not Water-			
Handling: Do not use the cable to support transducer weight in air and water if the transducer has a mounting part. Do not bend the cable.  Cable Length:  1. Default: 15 m. 2. Custom-fit. 1. Default: Wire Leads (WL), for Transmit, Receive Signal, and DC Power Supply. 2. Underwater Mateable Connector (3 pins) (UMC3P) (Max. Diameter Ø21.5 to Ø35 mm). Underwater Mateable Connector (4 pins) (UMC3P) (Max. Diameter Ø21.5 to Ø35 mm). Underwater Mateable Connector (4 pins) (UMC4P) (Max. Diameter Ø21.5 to Ø35 mm). UNC is from plobal manufacturers of underwater connectors. Its part number is listed in quote in detail. 3. MIL-5015 Style (4 pin) (MIL4P) (Max. Diameter Ф10 to Ø30 mm). MIL-5015 Style (4 pin) (MIL4P) (Max. Diameter Ф10 to Ø30 mm). MIL-5015 Style (4 pin) (MIL4P) (Max. Diameter Ф10 to Ø30 mm). MIL-5015 Style (4 pin) (MIL4P) (Max. Diameter Ф10 to Ø30 mm). MIL-5015 Style (4 pin) (MIL4P) (Max. Diameter Ф10.20 mm), for SE or DF. XLR Receptacle with 1 Male Pins (XLR3), (Max. Diameter Φ20.2 mm), for SE or DF. S. Male BNC (BNC) (Max. Diameter Ф10.5 member Ф20.2 mm), for SE or DF. Max BNC with RG178 Coax: Service Temperature up to 165°C or 329°F.  6. 1/8" (3.5mm) TRS Plug (TRS) (Max. Diameter Ф10.5 mm), for Receive Signal ONLY. 7. +9VDC Battery Snap (BS), +9VDC or +18VDC power supply for Built-in T/R Switch Module. Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  4. De 4 Ø28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc. 2. Ø.95 kg with 15 m cable.  2. Ø.95 kg with 15 m cable.  2. 1. Default: -10 °C to +60 °C or 14 °F to 140 °F. 2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  1. Default: -10 °C to +60 °C or -4 °F to 140 °F. 2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  1. Default: No built-in temperature sensor. 2. Built in temperature sensor. 3. Built i						
the cable.  1. Default: Sm. 2. Custom-fit.  1. Default: Wire Leads (WL), for Transmit, Receive Signal, and DC Power Supply.  2. Underwater Mateable Connector (a pins) (UMCaP) (Max. Diameter 021.5 to 035 mm).			n air and water if the transducer has a mounting part. Do not bend			
1. Default: 15 m. 2. Custom-fit. 1. Default: Wire Leads (WL), for Transmit, Receive Signal, and DC Power Supply. 2. Underwater Mateable Connector (3 pins) (UMC3P) (Max. Diameter Φ21.5 to Φ35 mm).     Under Strong Mateable Connector (4 pins) (UMC3P) (Max. Diameter Φ21.5 to Φ35 mm).     Under Strong Updoal maunifacturers of underwater connectors. Its part number is listed in quote in detail. 3. MIL-5015 Style (4 pin) (MILDP) (Max. Diameter Ф19 to Ф30 mm).     MIL-5015 Style (4 pin) (MILDP) (Max. Diameter Ф19 to Ф30 mm). 4. XLR Receptacie with 3 Male Pins (XLR3), (Max. Diameter Ф20.2 mm), for SE or DF.     XLR Receptacie with 4 Male Pins (XLR3), (Max. Diameter Ф20.2 mm), for SE or DF.     S. Male BNC (BNC) (Max. Diameter Ф14.3 mm), for Transmit or Receive Grounded Signal.     BNC with RG178 Coax: Service Temperature up to 165°C or 329°F. 6. 1/8' (3.5 mm) TRS Ping (TRS) (Max. Diameter Ф10.5 mm), for Receive Signal ONLY. 7. +990C Battery Snap (BS), +990C or +1890C power supply for Built-in T/R Switch Module. Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  Op = Φ28.5 mm, Length ≥ 40 mm. Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc. ≥ 0.95 kg with 15 m cable. 2 0.95 kg with 15 m cable. 2 0.95 kg with 15 m cable. 3 0.95 kg with 15 m cable. 4 0.00 = Φ28.5 mm, Length ≥ 40 mm. Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc. 2 0.95 kg with 15 m cable. 3 0.95 kg with 15 m cable. 4 0.00 = Φ28.5 mm, Length ≥ 40 mm. 4 0.00 = Φ28.5 mm, Length ≥ 40 mm. 4 0.00 = Φ28.5 mm, Length ≥ 40 mm. 4 0.00 = Φ28.5 mm, Length ≥ 40 mm. 4 0.00 = Φ28.5 mm, Length ≥ 40 mm. 5 0.00 = Φ28.5 mm, Length ≥ 40 mm. 5 0.00 = Φ28.5 mm, Length ≥ 40 mm. 6 0.00 = Φ28.5 mm, Length ≥ 70 mm. 6 0.00 = Φ28.5 mm, Length ≥ 70 mm. 7 0.00 = Φ28.5 mm, Length ≥ 70 mm. 8 0.00 = Φ28.5 mm, Length ≥ 70 mm. 8 0.00 = Φ28.5 mm, Length ≥ 70 mm. 9 0.00 = Φ28.5 mm, Length ≥ 70 mm. 9 0.00			if all alla water if the transaucer has a mounting part. Bo not belia			
1. Default: Wire Leads (WL), for Transmit Receive Signal, and DC Power Supply. 2. Underwater Mateable Connector (3 pins) (UMC3P) (Max. Diameter Φ21.5 to Φ35 mm).	Cable Length:	<u> </u>				
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.  3. Mil-5015 Style (4 pin) (MilaP) (Max. Diameter Ф19 to Φ30 mm).  Mil-5015 Style (4 pin) (MilaP) (Max. Diameter Ф19 to Ф30 mm).  4. KIR Receptacle with 3 Male Pins (KIRA), (Max. Diameter Ф20.2 mm), for SE or DF.  XIR Receptacle with 4 Male Pins (KIRA), (Max. Diameter Ф20.2 mm), for SE or DF.  5. Male BNC (BNC) (Max. Diameter Ф19.4.3 mm), for Transmit or Receive Grounded Signal.  BNC with RG178 Coax. Service Temperature up to 165°C or 329°F.  6. 1/8° (3.5mm) TRS Plug (TRS) (Max. Diameter Ф10.5 mm), for Receive Signal ONLY.  7. +9VDC Battery Snap (B8), +9VDC or +18VDC power supply for Built-in T/R Switch Module.  8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module.  Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterprorofed.  ΦD = Φ28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.  Deration Temperature:  Δ = ΦD = Φ28.5 mm, Length ≥ 40 mm.  Δ = ΦD = Φ28.5 mm, Length ≥ 10 mm.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  1. Default: -10°C to +60°C or -4°F to 140°F.  Storage Temperature:  2.0°C to +60°C or -4°F to 140°F.  Bilico00 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxΩ to the part number for integrating Bilico00 into the transducer and specify impedance in Ω at fs. For example, Bil7526-TiM80: Bil7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Bil1200 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -ITM to the part number for integrating Bil1200 into the transducer. For example, Bil7526-Trans			C Power Supply.			
UMC is from global manufacturers of underwater connectors. Its part number is listed in quote in detail.  3. MIL-5015 Style (3 pin) (MIL3P) (Max. Diameter Φ19 to Φ30 mm).     MIL-5015 Style (4 pin) (MIL3P) (Max. Diameter Φ19 to Φ30 mm).  4. XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter Φ20.2 mm), for SE or DF.  5. Male BNC (BNC) (Max. Diameter Φ14.3 mm), for Transmit or Receive Grounded Signal.     BNC with R6178 Coax: Service Temperature up to 165°C or 329°F.  6. 1/8° (3.5 mm) TRS Plug (TRS) (Max. Diameter Ф10.5 mm), for Receive Signal ONLY.  7. +9VDC Battery Snap (BS), +9VDC or +18VDC power supply for Built-in T/R Switch Module.  8. +mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module.  Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  ΦD = Φ28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  20 retain Temperature:  10 Default: -10 °C to +60 °C or 14 °F to 140 °F.  12 Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  13 Default: -10 °C to +60 °C or -4 °F to 140 °F.  14 Bil6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -1MxxΩ to the part number for integrating Bil6000 into the transducer and specify impedance in Ω at fs. For example, Bil7526-TRS Bil7526 transducer with built-in T/R Switch Module.  15 Default: No built-in temperature sensor.  16 Phase Angle [9] of Complex Impedance S20° at fs.  17 Phase Angle [9] of Complex Impedance S20° at fs.  18 Bil2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -1TR to the part number for integr		1				
3. MIL-5015 Style (4 pin) (MIL3P) (Max. Diameter Ф19 to Ф30 mm).  MIL-5015 Style (4 pin) (MIL4P) (Max. Diameter Ф19 to Ф30 mm).  MIL-5015 Style (4 pin) (MIL4P) (Max. Diameter Ф19 to Ф30 mm).  4. XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter Ф20.2 mm), for SE or DF.  S. Male BNC (BNC) (Max. Diameter Ф14.3 mm), for Transmit or Receive Grounded Signal.  BNC with RG178 Coax: Service Temperature up to 165°C or 32°9°F.  6. 1/8" (3.5mm) TRS Plug (TRS) (Max. Diameter Ф10.5 mm), for Receive Signal ONLY.  7. +9VDC Battery Snap (BS), +9VDC or +18VDC power supply for Built-in T/R Switch Module.  8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module.  8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module.  Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  Physical Size:  DD = Ф28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  2 . 9.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  Deraitin Temperature:  2. Default: -10 °C to +60 °C or 14 °F to 140 °F.  2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature:  1. Default: -10 °C to +60 °C or 14 °F to 140 °F.  2. Bespoke High Temperature Transducers and power amplifiers. Order Separately as standalone devices or append -IMvxC1 to the part number for integrating Bil6000 into the transducer and specify impedance in O at fs. For example, BIl7526-Transducer with built-in Impedance Matching unit as 80 load at fs.  Phase Angle   0  of Complex Impedance ≤ 20° at fs.  Bill200 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating Bil12100 into th						
MIL-5015 Style (4 pin) (MILAP) (Max. Diameter Φ19 to Φ30 mm). 4. XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter Φ20.2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter Φ20.2 mm), for SE or DF. 5. Male BNC (BNC) (Max. Diameter Ф14.3 mm), for Transmit or Receive Grounded Signal. BNC with RG178 Coax: Service Temperature up to 165°C or 329°F. 6. 1/8" (3.5mm) TRS Plug (TRS) (Max. Diameter Ф10.5 mm), for Receive Signal ONLY. 7. +9VDC Battery Snap (BS), +9VDC or +18VDC power supply for Built-in T/R Switch Module. 8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply Built-in T/R Switch Module. Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  Physical Size:  Physical Size:  Physical Size:  Weight in Air:  2 0.95 kg with 15 m cable. Actual length depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc. 2 0.95 kg with 15 m cable. Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc. 1. Default: -10°C to +60°C or 14°F to 140°F. 2. Bespoke High Temperature Transducer: -10°C to 120°C, or 14°F to 248°F. Append -HT to part number.  Storage Temperature:  -20°C to +60°C or -4°F to 140°F. Bli6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxC1 to the part number for integrating Bil6000 into the transducer and specify impedance in Ω at fs. For example, Bil7526-IM80. Bil7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs. Bil2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append. TR to the part number for integrating Bil2100 into the transducer. For example, Bil7526 transducer with built-in Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order						
A. XLR Receptacle with 3 Male Pins (XLR3), (Max. Diameter Φ20.2 mm), for SE or DF. XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter Φ20.2 mm), for SE or DF. S. Male BNC (BNC) (Max. Diameter Φ10.3 mm), for Transmit or Receive Grounded Signal. BNC with RG178 Coax: Service Temperature up to 165°C or 329°F. 6. 1/8° (3.5mm) TRS Plug (TRS) (Max. Diameter Ф10.5 mm), for Receive Signal ONLY. 7. +9YDC Battery Snap (BS), +9YDC or +18VDC power supply for Built-in T/R Switch Module. 8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module. Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  ΦD = Φ28.5 mm, Length ≥ 40 mm.  ΦD = Φ28.5 mm, Length ≥ 70 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -Tm, HM, +TT, etc. 2.095 kg with 15 m cable.  Δctual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, +HT, etc. 1. Default: -10°C to +60°C or 14°F to 140°F. 2. Bespoke High Temperature: 2.0°C to -60°C or -4°F to 140°F. 2. Bespoke High Temperature Transducer: -10°C to 120°C, or 14°F to 248°F. Append -HT to part number. 2.0°C to -60°C or -4°F to 140°F. BIBG000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxΩ to the part number for integrating BilG000 into the transducer and specify impedance in Ω at fs. For example, Bil7526-Transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs.  Bil2100 Transmitting & Receiving Switch Module with built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating Bil2100 into the transducer. For example, Bil7526-TR: Bil7526 transducer with built-in T/R Switch Module.  1. Default: No built-in temperature sensor. 2. Bullt-in temperature's sensor. Append -TS to part number (Bil7526-TS) for integrating a tempe			•			
XLR Receptacle with 4 Male Pins (XLR4), (Max. Diameter Φ20.2 mm), for SE or DF.  5. Male BNC (BNC) (Max. Diameter Φ14.3 mm), for Transmit or Receive Grounded Signal.  BNC with RG178 Coax: Service Temperature up to 165°C or 329°F.  6. 1/8" (3.5mm) TRS Plug (TRS) (Max. Diameter Φ10.5 mm), for Receive Signal ONLY.  7. +9VDC Battery Snap (BS), +9VDC or +18VDC power supply for Built-in T/R Switch Module.  8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module.  Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  ΦD = Φ28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  2 0.95 kg with 15 m cable.  Actual weight feepends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  2 0.95 kg with 15 m cable.  Actual weight feepends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  2 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  2 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  2 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  2 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  2 0.95 kg with 15 m cable.  3 0.95 kg with 15 m cable.  4 0.						
5. Male BNC (BNC) (Max. Diameter Φ14.3 mm), for Transmit or Receive Grounded Signal.  BNC with RG178 Coax: Service Temperature up to 165°C or 329°F.  6. 1/8" (3.5mm) TRS Plug (TRS) (Max. Diameter Ф10.5 mm), for Receive Signal ONLY.  7. +9VDC Battery Snap (BS), +9VDC or +18VDC power supply for Built-in T/R Switch Module.  8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module.  Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  Physical Size:  OD = Φ28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  ≥ 0.4 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  1. Default: -10 °C to +60 °C or 14 °F to 140 °F.  2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature:  -20 °C to +60 °C or -4 °F to 140 °F.  Bili6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -MmxQt to the part number for integrating Bili6000 into the transducer and specify impedance in Ω at fs. For example, Bil7526-IM8Ω: Bil7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle   Θ  of Complex Impedance ≤ 20° at fs.  Bil12100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating Bil12100 into the transducer. For example, Bil7526-TR: Bil7526 transducer with built-in T/R Switch Module.  1. Default: No built-in temperature sensor.  2. Built-in temperature sensor. Append -TS to part number (Bil7526-TS) for integrating a temperature sensor in the transducer. Portable T/R System:  Bil8300 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  Bil8300	Connector Options:					
BNC with RG178 Coax: Service Temperature up to 165°C or 329°F.  6. 1/8" (3.5mm) TRS Plug (TRS) (Max. Diameter Φ10.5 mm), for Receive Signal ONLY. 7. +9VDC Battery Snap (BS), +9VDC or +18VDC power supply for Built-in T/R Switch Module. 8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module. Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  DD = Φ28.5 mm, Length ≥ 40 mm.  DD = Φ28.5 mm, Length ≥ 70 mm. Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc. ≥ 0.95 kg with 15 m cable.  Default: -10 °C to +60 °C or 14 °F to 140 °F. 2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F. 2. Bespoke Impedance Matching at f₁:  Impedance Matching at f₁:  Bli6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxΩ to the part number for integrating Bli6000 into the transducer and specify impedance in Ω at fs. For example, Bli7526-IM80: Bli7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs.  Bli2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating Bli2100 into the transducer. For example, Bli7526-TR: Bli7526 transducer with built-in T/R Switch Module.  Temperature Sensor:  Bli2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating Bli2100 into the transducer. For example, Bli7526-TR: Bli7526 transducer with built-in T/R Switch Module.  Temperature Sensor:  Bli8000 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  Bli8000 Power Amplifiers for SONAR, ND	Commodici Optionis.					
7. +9VCC Battery Snap (BS), +9VDC or +18VDC power supply for Built-in T/R Switch Module. 8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module. Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  DD = Ф28.5 mm, Length ≥ 40 mm. Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc. ≥ 0.95 kg with 15 m cable. Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  Deration Temperature:  Doeration Temperature:  1. Default: -10 °C to +60 °C or 14 °F to 140 °F. 2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature:  1. Default: -10 °C to +60 °C or -4 °F to 140 °F. 2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature:  1. Default: -10 °C to +60 °C or -4 °F to 140 °F. 2. Bill6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxΩ to the part number for integrating Bill6000 into the transducer and specify impedance in Ω at fs. For example, Bil7526-IM80: Bil7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle   θ  of Complex Impedance ≤ 20° at fs.  Bill200 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating Bill2100 into the transducer. For example, Bil7526-TR: Bil7526 transducer with built-in T/R Switch Module.  1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. Append -TS to part number (Bil7526-TS) for integrating a temperature sensor in the transducer.  Portable T/R System:  Bil8030 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT						
8. 4mm Banana Plug Pair (Red and Black Color) (BP), DC power supply for Built-in T/R Switch Module.  Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  OD = Φ28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  1. Default: -10 °C to +60 °C or 14 °F to 140 °F.  2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature:  -20 °C to +60 °C or -4 °F to 140 °F.  Bli6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxΩ to the part number for integrating Bli6000 into the transducer and specify impedance in Ω at fs. For example, Bli7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs.  Bli2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating Bli2100 into the transducer. For example, Bli7526-TR: Bli7526 transducer with built-in T/R Switch Module.  Temperature Sensor:  1. Default: No built-in temperature sensor.  2. Built-in temperature sensor, Append -TS to part number (Bli7526-TS) for integrating a temperature sensor in the transducer.  Protable T/R System:  Bli8000 Power Amplifiers or SONAR, NDT, HIFU. Order Separately as standalone devices.  Portable T/R System:  Bli8000 Power Amplifiers bortable transmitters.  Bli8000 Power Amplifiers or Son Age in the part number (Bli7526-TS) for integrating a temperature sensor in the transducer.  Bli8000 Power Amplifiers bortable		, , , , , , , , , , , , , , , , , ,	S .			
Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not waterproofed.  De = Φ28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  1. Default: -10 °C to +60 °C or 14 °F to 140 °F. 2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature:  1. Default: -10 °C to +60 °C or -4 °F to 140 °F. 2. Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxΩ to the part number for integrating BII6000 into the transducer and specify impedance in Ω at fs. For example, BII7526-IM8Ω: BII7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs.  BII2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating BII2100 into the transducer. For example, BII7526-TR: BII7526 transducer with built-in T/R Switch Module.  1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. 3. Built-in temperature sensor. 4. Bii5000 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  Protable T/R System: 4. Bii8030 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable						
waterproofed.  D = Q28.5 mm, Length ≥ 40 mm.  Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  1. Default: -10 °C to +60 °C or 14 °F to 140 °F.  2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  -20 °C to +60 °C or -4 °F to 140 °F.  2. Bil6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxΩ to the part number for integrating BII6000 into the transducer and specify impedance in Ω at fs. For example, BII7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs.  Bil12100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating BII2100 into the transducer. For example, BII7526-TR: BII7526 transducer with built-in Tr/R Switch Module.  Temperature Sensor:  1. Default: No built-in temperature sensor.  2. Built-in temperature sensor. Append -TS to part number (BII7526-TS) for integrating a temperature sensor in the transducer.  Power Amplifier:  Bil6000 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  Bil8000 series portable acoustic transmitters.  Bil8000 series portable transmitters.  Bil8000 Series portable transmitters.  Bil8000 Power Amplifiers on the surface of the part number of the surface of the su						
Physical Size:  \[ \text{Physical Size:} \]  \[ \text{D = \phi 28.5 mm, Length \geq 40 mm.} \]  \[ \text{Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \geq 0.95 kg with 15 m cable. \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual Hength} \]  \[ \text{Actual Hength} \text{depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Actual Hength} \text{depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.} \]  \[ \text{Depends of C of \text{ 140 °F.} \text{ 140 °F.} \]  \[ \text{Bilbooo} \text{ Bilbooo} \text{ Bepower Amplifiers.} \text{ 140 °F.} \text{ 140 °F.} \]  \[ \text{Bilbooo} \text{ Bilbooo}  Beroat In mediants of C of 120 °C, or 14 °F			er. Other connectors and wire leads are for dry uses and are not			
Actual length depends on Mounting Parts and/or Add-on Parts such as -TR, -IM, -HT, etc.  ≥ 0.95 kg with 15 m cable.  Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  1. Default: -10 °C to +60 °C or 14 °F to 140 °F.  2. Bespoke High Temperature ransducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  -20 °C to +60 °C or -4 °F to 140 °F.  3. Bisooo Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxΩ to the part number for integrating BII6000 into the transducer and specify impedance in Ω at fs. For example, BII7526-IM8Ω: BII7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs.  BII2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating BII2100 into the transducer. For example, BII7526-TR: BII7526 transducer with built-in T/R Switch Module.  1. Default: No built-in temperature sensor.  2. Built-in temperature sensor. Append -TS to part number (BII7526-TS) for integrating a temperature sensor in the transducer.  BII5000 Power Amplifier:  BII8030 series portable acoustic transmitters.  BII8080 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable		·	ΦD = Φ28.5 mm Length > 70 mm			
≥ 0.95 kg with 15 m cable.   ≥ 1.4 kg with 15 m cable.   Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.	Physical Size:					
Actual weight depends on Mounting Parts, Cable Types and Length, and/or Add-on Parts such as -TR, -IM, -HT, etc.  1. Default: -10 °C to +60 °C or 14 °F to 140 °F. 2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature:  -20 °C to +60 °C or -4 °F to 140 °F.  BII6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxΩ to the part number for integrating BII6000 into the transducer and specify impedance in Ω at fs. For example, BII7526-IM8Ω: BII7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs.  BII2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating BII2100 into the transducer. For example, BII7526-TR: BII7526 transducer with built-in T/R Switch Module.  Temperature Sensor:  1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. Append -TS to part number (BII7526-TS) for integrating a temperature sensor in the transducer.  Power Amplifier:  BII5000 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  BII8030 series portable acoustic transmitters.  BII8030 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable						
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2. Bespoke High Temperature Transducer: -10 °C to 120 °C, or 14 °F to 248 °F. Append -HT to part number.  Storage Temperature:  -20 °C to +60 °C or -4 °F to 140 °F.  BII6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately as standalone devices or append -IMxxΩ to the part number for integrating BII6000 into the transducer and specify impedance in Ω at fs. For example, BII7526-IM8Ω: BII7526 transducer with built-in Impedance Matching unit as 8Ω load at fs.  Phase Angle  θ  of Complex Impedance ≤ 20° at fs.  BII2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating BII2100 into the transducer. For example, BII7526-TR: BII7526 transducer with built-in T/R Switch Module.  1. Default: No built-in temperature sensor.  2. Built-in temperature sensor. Append -TS to part number (BII7526-TS) for integrating a temperature sensor in the transducer.  Power Amplifier:  BII5000 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  BII8030 series portable acoustic transmitters.  Portable T/R System:  BII8080 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable			Ban, ana, or Add-on rates such as - ra, -ner, - Pr, Etc.			
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BII2100 Transmitting & Receiving Switch Module with Built-in Preamp and Bandpass Filter. Order Separately as standalone devices or append -TR to the part number for integrating BII2100 into the transducer. For example, BII7526-TR: BII7526 transducer with built-in T/R Switch Module.  1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. 3. Built-in temperature sensor. 4. Append -TS to part number (BII7526-TS) for integrating a temperature sensor in the transducer.  Power Amplifier:  BII5000 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  BII8030 series portable acoustic transmitters.  Portable T/R System:  BII8080 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable	Impedance Matching at fs:	IM8Ω: BII7526 transducer with built-in Impedance Matching un	it as $8\Omega$ load at fs.			
or append -TR to the part number for integrating BII2100 into the transducer. For example, BII7526-TR: BII7526 transducer with built- in T/R Switch Module.  1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. Append -TS to part number (BII7526-TS) for integrating a temperature sensor in the transducer.  Power Amplifier:  BII5000 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  Potable Transmitter:  BII8030 series portable acoustic transmitters.  Portable T/R System:  BII8080 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable		Phase Angle $ \theta $ of Complex Impedance $\leq 20^{\circ}$ at fs.				
in T/R Switch Module.  1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. Append -TS to part number (BII7526-TS) for integrating a temperature sensor in the transducer.  Power Amplifier:  BII5000 Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  Potable Transmitter:  BII8030 series portable acoustic transmitters.  Portable T/R System:  BII8080 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable						
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2. <u>Built-in temperature sensor.</u> Append -TS to part number (BII7526-TS) for integrating a temperature sensor in the transducer.  Power Amplifier: <u>BII5000</u> Power Amplifiers for SONAR, NDT, HIFU. Order Separately as standalone devices.  Potable Transmitter: <u>BII8030</u> series portable acoustic transmitters.  Portable T/R System: <u>BII8080</u> series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable						
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Potable Transmitter:  BII8030 series portable acoustic transmitters.  Portable T/R System:  BII8080 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable	Power Amplifier:					
Portable T/R System: BII8080 series portable transmit and receive systems.  WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable	· · · · · · · · · · · · · · · · · · ·		ciy as stalludiulle devices.			
WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable						
· ·		<u> </u>	NICH THE WIDES DECODE THE DDIVING SIGNAL IS SHIFT DOWN. Calle			
		· · · · · · · · · · · · · · · · · · ·	OCCULINE WINES BELONE THE DRIVING SIGNAL IS SHOT DOWN. CABLE			

shield must be grounded firmly for safety.

for 50Ω BNC connector, it is buyer's sole responsibility to make sure that the BNC shield of the signal source is firmly grounded for operating safety before hooking up transducer/hydrophone to the signal source. Coax with BNC is not intended for hand-held use at voltages above 30Vac/60Vdc.



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#### Wiring Information of a Transducer without T/R Switch.

Transducer Wiring:	Shielded Cable	Coax, BNC.	Underwater Connector UMC3P	MIL-5015 Connector MIL3P	XLR Plug XLR3P
Signal:	White or Red	Center Contact	Contact 2	Contact C or G	Pin 2
Signal Common:	Black	Shield	Contact 1	Contact B	Pin 3
Shielding and Grounding	Shield	Shield	Contact 3	Contact A	Pin 1

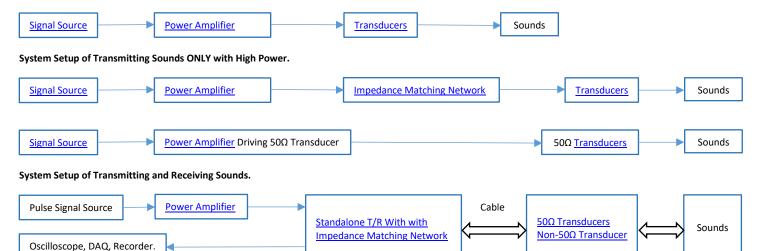
#### Wiring Information of Temperature Signal.

<b>Temperature Sensor Wiring:</b>	Shielded Cable	Coax, BNC	Underwater Connector UMC3P	XLR Plug XLR3P	TRS Plug
Signal:	White or Red	Center Contact	Contact 2	Pin 2	Tip
Signal Common:	Black	Shield	Contact 1	Pin 3	Ring
Shielding and Grounding	Shield	Shield	Contact 3	Pin 1	Sleeve

### How to Order Transducers without T/R Switches. The default options are for stock items which are regularly available

How to Order Transducers without 1/K Switches. The default options are for stock items which are regularly available.								
FH: Free Hangir	FH: Free Hanging. SC for Transmit: Shielded Cable (Rubber Jacket, 600V) with 2 conductors. Coax: 50 Ω Coaxial Cable. WL: Wire Leads.							
Part Number -Appendage -Mounting -Cable Length -Cable Type -Connector for signals of Transmit and Temperat								
BII7526	Default:	Defa	ult:	Default:	SC for low frequency signal.	Default: <b>WL</b> .		
BII/320	None.	BFM-	-FH.	15m.	Coax for high frequency signal.	Default. WL.		
Example:			Descrip	otion				
BII7526-BFM-F	H-15m-SC-WL		BII7526 Transducer, Bolt-Fastening Mounting with Free Hanging: BFM-FH, 15m Shielded Cable, Wire Leads.					
BII7526-BFM-5,	/8"-0.3m-SC-UMC	3P	BII7526 Transducer, Bolt Fastening Mounting BFM-5/8", 0.3m Shielded Cable, Male Underwater Mateable Connector.					
BII7526-HT-FH-	6m-RG178-BNC		BII7526 Transducer, Service Temperature: -10 °C to 120 °C, or 14 °F to 248 °F. Free Hanging, 6m RG178 Coax, BNC Male.					
BII7526-IM50Ω-FH-20m-RG58-BNC BII7526 Transducer, Built-in Impedance Matching Network as 50Ω load at fs, Free Hanging, 20m RG58 Coax,				as 50Ω load at fs, Free Hanging, 20m RG58 Coax, Male BNC.				
BII7526-IM8Ω-FH-10m-SC-XLR3P BII7526 Transducer, Built-in Impedance Matching Network as 8Ω load at fs, Free Hanging, 10m Shielded				as $8\Omega$ load at fs, Free Hanging, 10m Shielded Cable, XLR Plug.				
BII7526-TS-IM8Ω-FH-10m-SC-WL/TRS			BII7526 Transducer, Built-in Temperature Sensor, Built-in Impedance Matching Network to 8Ω at fs, Free Hanging, 10m					
BII/526-13-IIVI8	17-FH-10M-SC-WL	./ IKS	Shielde	Shielded Cable, Wire Leads for Transmit Signal, TRS for Temperature Signal.				

#### System Setup of Transmitting Sounds ONLY with Low Power.



#### Ouestion

What if the mating connector of my DAQ module or recording device is NOT available from BII?

- 1. Buyer may order BII products with wire leads, and buyer assembles the mating connector to the cable end.
- 2. A connector adaptor might be assembled by BII by customization, and BII ships the adaptor to buyer as accessory of the device. Please contact BII for customizations.
- 3. 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.

### What are the advantage and disadvantage of a built-in T/R Switch Module comparing to a standalone T/R Switch Module?

A built-in T/R Switch Module amplifies the received signal of the sensing element before the signal is polluted by EMI noises and system ground loop noises, and before it is attenuated by capacitance, inductance, and resistance of cables. But its price is a little bit higher than standalone T/R Switch Module.



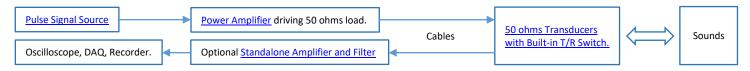
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Transducer Specifications with Built-in T/R Switch and 50Ω Impedance Matching for Sound Transmitting and Receiving.

•	BII7526-TR-IM50Ω.
Part Number:	Refer to <u>Transducer Specifications</u> for transducer specs. This table lists specifications of add-on part of TR Switches.
	<b>-IM50</b> $\Omega$ : Integrated inside transducer housing and transform its impedance to be 50 $\Omega$ at fs.
Impedance Matching at fs:	$Z = 50$ *e $^{i\theta}$ , in $\Omega$ , and Phase Angle $ \theta  \le 20$ ° at fs.
	-TR: Transmitting & Receiving Switch Module, a bespoke fixed gain preamp and a bespoke bandpass filter are built inside
	transducer housing to receive sounds.
Receiving Preamp and Filter:	1. Avoid saturation caused by strong sounds levels in low frequency range.
- '	2. Avoid signal loss over cable.
	3. Avoid signal loss caused by impedance matching network which is built inside transducers.
Sensitivity @ fs:	-202.4 + Preamp Gain, ± 2 dB V/μPa.
Sensitivity @ f << fs:	-200.0 + Preamp Gain, ± 2 dB V/μPa.
Sensitivity Loss:	No Sensitivity Loss over Cable.
D	1. Default: 40 dB
Preamp Gain:	2. Bespoke: 0 dB to 60 dB.
	1. Default: 2 to 100 kHz.
	2. Customized with fs, specify when ordering.
	Minimum -3dB cut-off frequency of high pass filter: 2 kHz.
	Band Pass Filter: 1st order, 20/Decade Roll-off.
	1. Reduce Noise. Both ocean ambient noises and the self-noises of electronic devices decrease when frequency increases. It is
-3dB Receiving Bandwidth:	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 20 kHz, you may specify a high pass filter with -3dB cut-off frequency at 2 to 5 kHz to improve signal to noise
	ratio of the signals of the interest.
	2. Avoid Saturation. When there are strong low frequency noises, disturbances, and/or vibrations, resulting from rough surface
	waves and/or mechanical movements of the platform, it is recommended to specify a high pass filter to avoid hydrophone
	saturation in these low frequency ranges.
Voltage Noise RTI e <sub>n</sub> :	7.0 nV/vHz at default gain.
Current Noise RTI in:	0.56 fA/VHz.
Input Dynamic Range:	≥ 100 dB at 100 kHz Bandwidth.
Output Signal Type:	Differential
Output Impedance:	10 Ω
Cable Drive Capability:	200 m
Cable:	Four Conductor Shielded Cable
Connector:	Refer to Connector Options.
Signal Conditioning:	Standalone Programmable Gain Amplifier and Filters to compensate the loss of sound propagation and spreading. Order separately.
<b>Power Supply of Receiving Cir</b>	cuit
Supply Voltage V <sub>s</sub> :	+8.5 to +32 VDC
Current (Quiescent):	6.8 mA
	+9VDC Battery, Marine Battery, Automobile Battery, Fixed DC Linear Power Supply, Not Included.
Suggested DC Supply:	DO NOT use variable power supply whose maximum supply voltage is higher than the above rated voltage.
	DO NOT use switching mode DC power supply.
DC Supply Cable:	Two Conductor Shielded Cable if the cable of Receiving Signal is Coax.
DC Supply Connector:	Refer to Connector Options.

### System Setup of Transmitting and Receiving Sounds.



### Wiring Information of Transmitting Sounds of a Transducer with T/R Switch.

Transducer Wiring:	Shielded Cable	Coax, BNC.	UMC3P	MIL3P	XLR3P			
Signal:	White or Red	Center Contact	Contact 2	Contact C	Pin 2			
Signal Common:	Black	Shield	Contact 1	Contact B	Pin 3			
Shielding and Grounding	Shield	Shield	Contact 3	Contact A	Pin 1			
Please contact us for bespo	Please contact us for bespoke wirings of differential transducers such as dipole, quadrupole, multimode rings, and flextensional sources.							

### Wiring Information of Receiving Sounds of a Transducer with T/R Switch.

Differential Output:	Wire Leads	UMC4P/XLR4P Connec	tor	XLR3P + 9V Battery Snap	TRS + 9V Battery Snap
+VDC	Red	Pin 3		Battery Female Snap	Battery Female Snap
Common	Black	Pin 1		Battery Male Snap	Battery Male Snap
Signal+	White	Pin 2		XLR Pin 2	TRS Tip
Signal-	Blue, Green, or Yellow	Pin 4	Pin 4		TRS Ring
Signal Common	N/A	N/A		XLR Pin 1	TRS Sleeve
Shielding	Shield	N/A		XLR Metal Shell	N/A
Cinalo Endad Outnuts	Wire Leads	BNC Male,	BNC Male, UMC4P/XLR4P		TRS Plug and
Single Ended Output:	wire Leads	9V Battery Snap Connector		9V Battery Snap	9V Battery Snap
+VDC	Red	Female Snap	Pin 3	Battery Female Snap	Battery Female Snap



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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 Shield	Pin 4	XLR Pin 1 and Pin 3	TRS Ring and Sleeve	
Shielding Shield N/A N/A XLR Metal Shell N/A						
4mm Banana Plug Pa	air: Red Plug for +VDC, Black Pl	ug for Common of the DC po	wer supply.			

How to Order Transducers with -TR-IM50Ω. The default options are for stock items which are regularly available.

FH: Free Hanging. SC for Low Frequency Transmit: Shielded Cable (Rubber Jacket, 600V) with 2 conductors. Coax for High Frequency Transmit: 50 Ω Coaxial Cable. SC for Low Frequency Receive: Shielded Cable with 4 conductors. Coax for High Frequency Receive: 50  $\Omega$  Coaxial Cable. WL: Wire Leads. HPF: -3dB High Pass Filter Frequency, LPF: -3dB Low Pass Filter Frequency, Cable of Temperature sensor is two-conductor shielded cable. Cable of DC Supply is two-conductor shielded cable in case that receive cable is coax.

Receiving Cable is fixed to be four-conductor Shielded cable. Transmitting cable can be customized to be Coax or two-conductor shielded cable.

Length of Transmitting	Length of Transmitting and receiving cables are same in default.					
Part Number	-Preamp Gain	-HPF/LPF	-Mounting	-Cable Length	- <u>Transmit Cable</u>	-Connector for signals of Transmit/ Receive/DC Supply/Temperature
BII7526-TR-IM50Ω Default: 40dB		-3dB Receive bandpass Frequencies. Default: <b>2kHz to 100kHz</b>	Default: BFM-FH.	Default: <b>15m.</b>	SC or Coax. Default: SC.	Default: <b>WL</b> .
Example:		Description				
BII7526-TR-IM50Ω-xxdE BFM-FH-15m-SC-WL	3-2kHz/100kHz-	Receive Bandpass Filter:	BII 7526 Transducer, Built-in T/R Switch, Built-in Impedance Matching Network as 50Ω load at fs, Receive Gain: xxdB, Receive Bandpass Filter: 2kHz to 100kHz. Bolt-Fastening Mounting with Free Hanging: BFM-FH, 15m cables, Transmitting Cable: Shielded Cable, Wire Leads.			
BII7526-TR-IM50Ω-xxdB BFM-FH-15m-SC-MIL3P <sub>/</sub>	•	BII7526 Transducer, Built-in T/R Switch, Built-in Impedance Matching Network as 50Ω load at fs, Receive Gain: xxdB, Receive Bandpass Filter: 2kHz to 100kHz. Bolt-Fastening Mounting with Free Hanging: BFM-FH, 15m cables, Transmitting Cable: Shielded Cable, 3 Pin MIL-5015 Connector for Transmit Signal, 4 Pin XLR for Receive Signal, 9V Battery Snap for DC Supply.				
BII7526-TR-IM50Ω-xxdB 10m-RG58-BNC/BNC/BS	•	BII7526 Transducer, Built-in T/R Switch, Built-in Impedance Matching Network as 50Ω load at fs, Receive Gain: xxdB, Receive Bandpass Filter: 2kHz to 100kHz. Free Hanging, 10m cables, Transmitting Cable: RG58 Coax, BNC Male Connector for Transmit Signal, BNC Male for Receive Signal, 9V Battery Snap for DC Supply, TRS for Temperature Signal.				
BII7526-TS-TR-IM50Ω-xx BFM-FH-15m-SC-MIL3P/	•	load at fs, Receive Gain: xx	dB, Receive Bassmitting Cable:	ndpass Filter: 5kH Shielded Cable, 3	z to 100kHz. Bolt-Fa Pin MIL-5015 Conne	mpedance Matching Network as 50Ω astening Mounting with Free Hanging: ector for Transmit Signal, 4 Pin XLR for

Cable and Connector Information for High Power Signals (from Power Amplifier and to Transducers), Non-III, Uses

Cable:	Wire and Cable Types	Ratings of Voltage, Current or Power, and Temperature.
	AWG18 Wires (WR)	3000 Vrms, 10 Arms.
	Two Conductor Shielded Cable (SC)	600 Vrms, 5 Arms.
	Two Two-conductor Shielded Cable Bundle (2SC)	600 Vrms, 10 Arms.
	High Temperature Shielded Cable (HTSC199)	600 Vrms, 6 Arms, up to +199°C or 390 °F, Non-waterproof.
	Coax RG58 (50Ω) ( <b>RG58</b> )	1400 Vrms, 4 Arms.
	Coax RG174/U (50Ω) ( <b>RG174</b> )	1100 Vrms, 1.6 Arms.
	Coax RG178B/U (50Ω) ( <b>RG178</b> ).	750 Vrms, 0.86 Arms, up to +200°C or 390°F.
Connector:	Connector Type	Ratings of Voltage, Current or Power, and Temperature.
	1. Wire Leads (WL)	Used for Cables or Wires.
	2. 50Ω BNC ( <b>BNC</b> ), Bayonet Lock. Panel Mount or In-line.	500Vrms, 316W.
	In-line BNC: Input uses Pin, output uses Socket.	-65°C to 165°C, or -53.9°F to 329°F.
	Panel Mount BNC: Both Input and Output use BNC Jacks.	Used for Grounded Signal with Metal Enclosures or Coax Cables.
	MIL-5015 Type Connector (MIL), Thread Fastening.     Panel Mount or In-line. Input uses Pin, output uses Socket.	500Vrms, 13 A; Up to +125°C or 257°F, or,
		900Vrms, 13 A; Up to +125°C or 257°F.
		Used for Metal Enclosures or Shielded Cables.
	4. XLR Connector (XLR), Positive Latchlock.	133Vrms, 15 A; -25°C to +75°C or -13°F to +167°F.
	Panel Mount or In-line. Input uses Pin, output uses Socket.	Used for Metal Enclosures or Shielded Cables.
	5. Underwater Mateable Connector (UMC), Thread Fastening.	600Vrms, 10A. Waterproof, IP68.
	Panel Mount or In-line. Input uses Pin, output uses Socket.	Used for Metal Enclosures or Shielded Cables.

How to choose cable and connector for BII devices: Driving Voltage  $V_{drive}$  ( $V_{rms}$ ) =  $\sqrt{RMS \ Power} * \frac{G}{G^2 + B^2}$ .

BII lists G-B data at fs and/or the graph of G-B vs Frequency in online datasheet.

Case 1. Deliver 1000 Wrms to 3 k $\Omega$  transducer at f<sub>s</sub>. Note:  $G/(G^2+B^2)=3$  k $\Omega$  is the resistive load of the transducer in load medium at f<sub>s</sub>. Driving voltage to transducer  $V_{drive} = \sqrt{1000 * 3000} = 1732 \text{ V}_{rms}$ . The current to 3 k $\Omega$  transducer I  $_{drive} = V_{drive}/R_L = 1732 \text{V}_{rms}/3000\Omega = 0.57733 \text{ A}_{rms}$ .

Therefore, AWG18 Wire and Wire leads are suitable

Case 2. Deliver 500 Wrms to 300  $\Omega$  transducer at  $f_s$ . Note:  $G/(G^2+B^2)=300 \Omega$  is the resistive load of the transducer in load medium at  $f_s$ .

Driving voltage to transducer  $V_{drive} = \sqrt{500*300} = 387.3 V_{rms}$ . The current to  $300 \Omega$  transducer  $I_{drive} = V_{drive}/R_L = 387.3 V_{rms}/300\Omega = 1.291 A_{rms}$ .

Therefore, Two Conductor Shielded Cable and MIL-5015 Type Connector or Underwater Mateable Connector (UMC) are suitable

Case 3. Deliver 300 Wrms to  $50~\Omega$  transducer at  $f_s$ .

Driving voltage to transducer  $V_{drive} = \sqrt{300*50} = 122.5 \text{ V}_{rms}$ . The current to 50  $\Omega$  transducer  $I_{drive} = V_{drive}/R_L = 122.5 \text{ V}_{rms}/50\Omega = 2.45 A_{rms}$ . Therefore,  $50\Omega$  RG58 Coax and BNC are suitable.

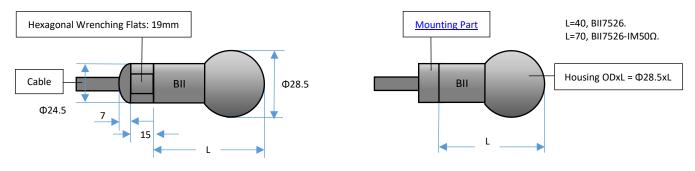
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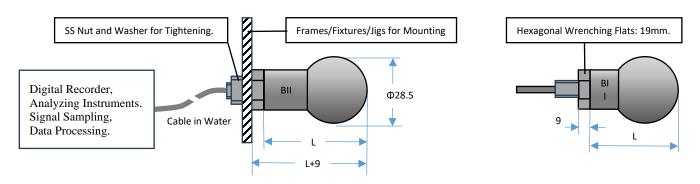
Physical Size (Dimensional Unit: mm): The overall length varies with the length of mounting parts. Please refer to online information of mounting options.

1.a. Size information of Free Hanging.

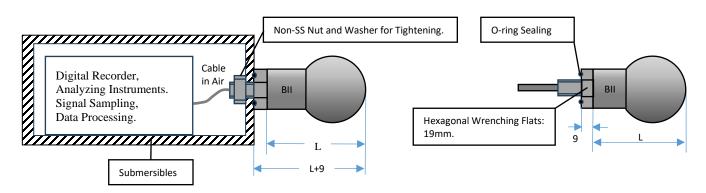
1.b. General Size information.



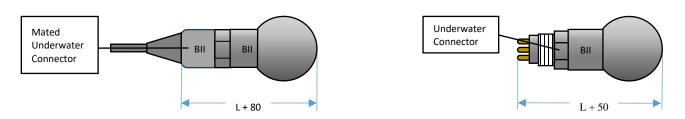
2. Bolt-Fastening Mounting BFM-7/16" (7/16"-20x22 UNF-2A) or BFM-5/8" (5/8"-18x22 UNF).



3. Thru-hole Mounting with Single O-ring Sealing THM-7/16" (7/16"-20x22 UNF-2A), or THM-5/8" (5/8"-18x22 UNF).



5. Free-hanging with Underwater Connector (FHUWC-3P), 3 Pins.

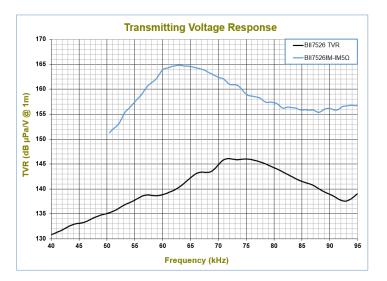


6. More Mounting/Installation Options: Please refer to online document AcousticSystem.pdf for a complete list of Mounting Options and details.

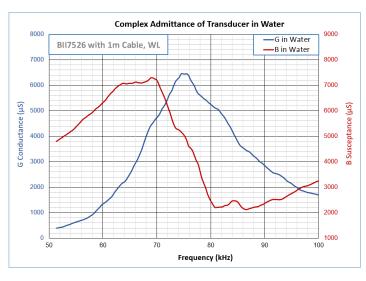
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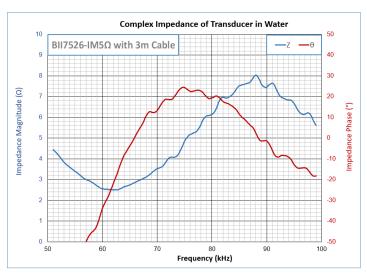
### Transmitting Voltage Response (TVR):



#### Admittance in Water:



### Impedance in Water:



### **Directivity Pattern:**

