

Acoustical Solutions: SONAR, NDT/AE, HIFU.

benthowave.com

Revised on 2025/04/19



#### **BII7140 Series Acoustic Array Elements**

Acoustic Elements for underwater and ultrasonic (air) Arrays, Streamers, Beacons, and Positioning. These acoustic elements feature small size, low cost and easy integration, and are ready to be assembled in discrete arrays such as linear (broadside, end-fire, Mills Cross), planar and 3-D arrays to implement different acoustic applications. Depending on the operating frequency, these elements can be treated as Points, Lines or Rectangle Aperture in array signal processing. Beam steering, array focusing, bearing measurement, side-lobe suppression, and user-defined beam pattern (broad or narrow) can be achieved by complex weighting (Digital or FFT Beamforming) technique. Differential output and shielded twisted pair cable provide great EMI noise rejection over long cable. Multiple elements can be combined in series or parallel to make up an array distributing hundreds meters in field.

BII manufactures two types of array elements: Omnidirectional (Toroidal) Beam Elements for Linear Array and Planar Array Elements for Planar Array.

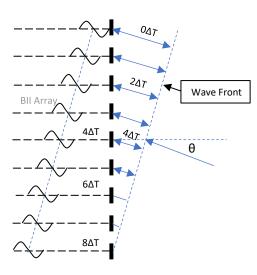
#### **Typical Applications:**

Oil-filled Streamer Element/Towed Array/Seabed Array.	Acoustic Beacons: Pingers, Tags and Remote Tracking; Acoustic Positioning.
Monitoring Seismic Sources/Airgun/Watergun/Seismology.	Array Focusing and Beam Steering, Vector Hydrophone Element.
Passive Acoustic Monitoring System (PAM System), Sonobuoy.	Marine Seismic Detector/Exploration/Borehole Seismic.

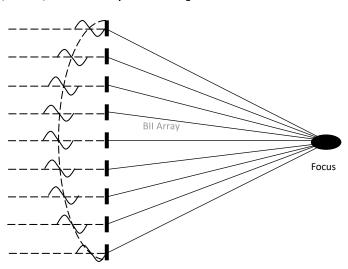
#### Related Products Hydrophone Preamplifier with Filters

#### Low Noise Broadband Hydrophone as Discrete Array Elements

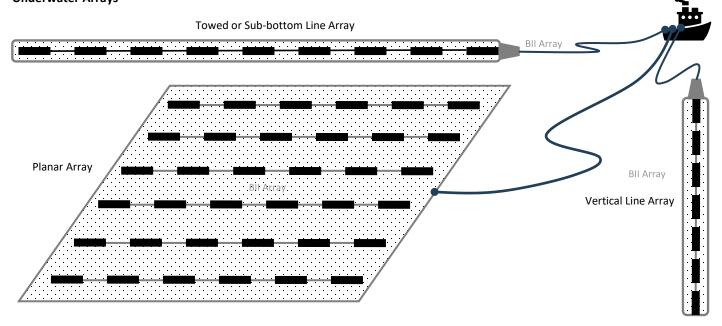
#### Linear (Rectangular) Array Beam Steering



#### Linear, Annular, and Planar Array Beam Focusing



### **Underwater Arrays**





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Specifications of O	mnidirectional (	Toroidal) Bea	am Directivity	/ Elements

Customization: Ac	coustic Eleme	into with larger					_ ' '			
Acoustic Array Ele	ement	BII7141	BII7142	BII7143	BII7144	BII7145	BII7146	BII7147	BII7148	
Aperture Size (ΦD	xL, mm):	Ф9.5х8	Ф9.5х8	Ф9.5х8	Ф9.5х8	Ф9.5х8	Ф7.5х7	Ф6х5	Ф4х4	
6 641		-202±2	-201±2	-207±2	-205±2	-185±2	-185±2	-205.5±1.5	-210±2	
Sensitivity@1kHz:			Sensitivity Loss over Extension Cable (dB) = $20*log[C_h/(C_h+C_c)]$ . $C_h$ : Hydrophone Capacitance; $C_c$ : Capacitance of Extension Cable. Shielded cable is of $100pF/meter$ roughly.							
(dBV/μPa)				0 1			-//			
				a BII7143 with 100			F/(13.4nF+10nF)	= -211.84 dBV/μF	a.	
Sensitivity Matchi	ing:			; b. ±1.0; c. ±0.5; d		•				
(at 1kHz)	la Matau	1. Sensitivity		Hz. 2. Hydrophone	es wnose sensit	1Hz~140kHz		-		
ŀ	In Water:			z~120kHz			1Hz~180kHz	1Hz~230kHz	10Hz~350kH	
Jsable	In Air:	laabla Francis		Hz ~ 9kHz	torf - 1//2-1	1Hz ~ 9kHz	1Hz ∼ 10kHz	1Hz ∼ 12kHz	10Hz ∼ 15kH	
requency	Minimum Usable Frequency depends on -3dB high pass filter $f_{-3dB} = 1/(2\pi R_i C_h)$ .  R <sub>i</sub> : Input Resistance or Impedance of Preamp. $C_h$ : Capacitance of hydrophone a									
±3dB V/μPa)	•			$R_i = 200 \text{ M}\Omega$ are use			ass fraguency of o	letection = 0 27 H	17	
		-		$R_i = 100 \text{ M}\Omega$ are use						
ļ	(Z) WHEH d			r is available by se				0.12		
Built-in Preamplifi	er:			eamp for uses in o	•					
ount in a compili		_		MPa. (2) Input/Out			wisted Pairs.			
Capacitance@1kH	z. ±10%:	2.92nF	1.5nF	13.4nF	2.26nF	0.27nF	0.12nF	0.54nF	0.34nF	
Dissipation@1kHz	-	0.011	0.008	0.02	0.005	0.008	0.008	0.005	0.005	
		33.1–10logf	31.0-10logf	33.0–10logf	35.3-10logf		27.6-10logf	31.0–10logf	34.4-10logf	
				requency which is o			ım FFVS.			
Noise Density at f	<< ts:	-		tasheet are calcula				asured in water.		
dB μPa/√Hz		3. As hydror	phones works	with preamps or	data acquisitio	n modules, total	noise density is	determined by	all noise source	
		Generally, th	ne total noise d	ensity is much high	ner than the on	es stated in this d	atasheet.			
Output Signal Type	e:	Diffe	rential	Single-	Ended	Single	e Ended	Diffe	erential	
Sensing Element:		Shi	elded	Shiel	ded	Unsl	nielded	Sh	ielded	
Unshielded sensin				and shallow water.				nt signal processir	ıg circuit.	
	Axial Plane	is XZ or Vertic	al Plan. <b>XY Pla</b> r	<b>ne</b> is Horizontal Pla	ne which is per	pendicular to acc	ustic axis.	_		
	Axial:	109.2	109.6	115.2	129.2	108.4	103.4	111.0	115.0	
Acceleration	XY:		≤ 80.0	≤ 113.0	≤ 127.0	≤ 110.6	≤ 106.0	≤ 80.0	≤ 80.0	
ensitivity:	Bespoke Vi	bration Compe	ensation availa	able upon request:	When suspend	led from a ship or	boat, buoy, or us	ed in towed array	, the hydrophon	
	etc The tr	anslational acc	celeration in ax	ced vibration resul ial direction can be lled). Spurious sign	e cancelled with	special design a	nd construction, a			
Jnderwater Proie	etc The tr directions a Acceleratio	ranslational acc are also lower (	celeration in ax partially cance ith Compensat	ial direction can be	e cancelled with nals caused by in B in axial direct	n special design and nduced vibration cion or XZ Plane. 2	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in	and acceleration s	ensitivity in othe	
	etc The to directions a Acceleratio ctor:	ranslational acc are also lower (	celeration in ax partially cance	ial direction can be lled). Spurious sign	e cancelled with nals caused by in B in axial direct	n special design an nduced vibration	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in	XY Pane.		
Resonance fs: (±59	etc The tr directions a Acceleratio ctor: %)	ranslational acc are also lower (	celeration in ax partially cance ith Compensati No	ial direction can be lled). Spurious sign	e cancelled with nals caused by in B in axial direct Yes. Do NOT	n special design and nduced vibration tion or XZ Plane. 2 drive projectors	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.	XY Pane.	ensitivity in oth	
Resonance fs: (±59 Quality factor Qm	etc The to directions a Acceleratio ctor: %) at fs:	ranslational acc are also lower (	celeration in ax (partially cance ith Compensati No N/A	ial direction can be lled). Spurious sign	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz	n special design and induced vibration ion or XZ Plane. 2 drive projectors 100kHz	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air. 130kHz	XY Pane.	ensitivity in other	
Resonance fs: (±5% Quality factor Qm Maximum Drive Vo	etc The tri directions a Acceleratio ctor: %) at fs: oltage:	ranslational acc are also lower (	celeration in ax (partially cance ith Compensati No N/A N/A	ial direction can be lled). Spurious sign	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz	a special design and a special design and and a special design and a spe	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air. 130kHz	XY Pane.	No N/A N/A	
Resonance fs: (±59 Quality factor Qm Maximum Drive Vo Maximum Pulse W	etc The tr directions a Acceleratio ctor: %) at fs: oltage: //dth:	ranslational acc are also lower (	celeration in ax (partially cance ith Compensati No N/A N/A N/A N/A	ial direction can be lled). Spurious sign	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0	a special design and acceptance of XZ Plane. 2 drive projectors in 100kHz 2.7 300 Vrms.	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7	XY Pane.	No N/A N/A N/A N/A	
Resonance fs: (±59 Quality factor Qm Maximum Drive Vo Maximum Pulse W	etc The tr directions a Acceleratio ctor: %) at fs: oltage: //dth:	ranslational acc are also lower (	celeration in ax (partially cance ith Compensati No N/A N/A N/A	ial direction can be lled). Spurious sign	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0	a special design and address of the spec	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7	XY Pane.	No N/A N/A N/A	
Resonance fs: (±55) Quality factor Qm Maximum Drive Vo Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m):	ranslational acc are also lower ( n Sensitivity w	celeration in ax (partially cance ith Compensation No N/A	ial direction can be lled). Spurious sigr ion: 1. ≤ 60 to 90 d	e cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maximum 100% at 10.6 134.6	a special design and duced vibration or XZ Plane. 2 drive projectors 100kHz 2.7 300 Vrms. 100 mS mum Drive Voltago Vrms. 137.0	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7	XY Pane.	No N/A N/A N/A N/A	
Resonance fs: (±5%) Quality factor Qm Maximum Drive Vo Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern	etc The tr directions a Acceleratio ctor: %) at fs: oltage: //idth: //cle: V@1m):	ranslational acc are also lower ( n Sensitivity w	celeration in ax (partially cance ith Compensation No N/A	ial direction can be lled). Spurious sign	e cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maximum 100% at 10.6 134.6	a special design and duced vibration or XZ Plane. 2 drive projectors 100kHz 2.7 300 Vrms. 100 mS mum Drive Voltago Vrms. 137.0	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7	XY Pane.	No N/A N/A N/A N/A N/A	
Resonance fs: (±5%) Quality factor Qm Maximum Drive Vo Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern	etc The tr directions a Acceleratio ctor: %) at fs: oltage: //idth: //cle: V@1m):	omnidirectic  Solve MΩ at	celeration in ax (partially cance ith Compensation No N/A	ial direction can be lled). Spurious sigr ion: 1. ≤ 60 to 90 d	e cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maximum 100% at 10.6 134.6	a special design and duced vibration or XZ Plane. 2 drive projectors 100kHz 2.7 300 Vrms. 100 mS mum Drive Voltago Vrms. 137.0	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7	XY Pane.	No N/A N/A N/A N/A N/A N/A	
Resonance fs: (±5%) Quality factor Qm Maximum Drive Vo Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern	etc The tr directions a Acceleratio ctor: %) at fs: oltage: //idth: //cle: V@1m):	omnidirectic > 500 MΩ at  1. Default:	celeration in ax (partially cance ith Compensation No N/A	ial direction can be lled). Spurious sign ion: 1. ≤ 60 to 90 d	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high freq	a special design and acceptance of XZ Plane. 2 drive projectors 1 100kHz 2.7 300 Vrms. 100 mS mum Drive Voltago Vrms. 137.0 puency range. Ref	nd construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  ge.  133.5  er to graph of Beauting and construction, a can be reduced.	XY Pane.  And acceleration s  XY Pane.  And acceleration s	No N/A N/A N/A N/A N/A	
Resonance fs: (±5% Quality factor Qm Maximum Drive Vo Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern	etc The tr directions a Acceleratio ctor: %) at fs: oltage: //idth: //cle: V@1m):	omnidirectic > 500 MΩ at 1. Default: Differentia	celeration in ax (partially cance ith Compensation No N/A	ial direction can be led). Spurious signion: 1. ≤ 60 to 90 d	e cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0 10% at Maxim 100% at 10.6 134.6 idal in high frequent of the conduct of the cause of t	a special design and address of the projectors of the projector	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  3.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5	XY Pane.  Am Pattern.  (SC26)	No N/A N/A N/A N/A N/A	
Resonance fs: (±5% Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern Electrical Insulatio	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: in:	omnidirectic > 500 MΩ at 1. Default: Differentia	celeration in ax (partially cance ith Compensation No N/A	ial direction can be led). Spurious signion: 1. ≤ 60 to 90 d	e cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0 10% at Maxin 100% at 10.6 134.6 idal in high frequency of the conducted Twisted Two	a special design and address of the projectors of the projector o	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  3.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5	XY Pane.  Am Pattern.  (SC26)	No N/A N/A N/A N/A N/A N/A	
Resonance fs: (±5% Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern Electrical Insulatio	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: in:	omnidirectic > 500 MΩ at 1. Default: Differentia Single End	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro ed Output: Shielde ed Output: Shielde ex RG174/U (ΦD=2	e cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high frequents at Two Conduct the Twisted Two .8mm) (RG174)	a special design and address of the control of the	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  3.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5	XY Pane.  Am Pattern.  (SC26)	No N/A N/A N/A N/A N/A N/A	
Resonance fs: (±5% Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern Electrical Insulatio	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: in:	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 2. Single End	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=2 ax RG178/U (ФD=1	e cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high freq d Two Conduct to Twisted Two .8mm) (RG174)	a special design and design and deced vibration or XZ Plane. 2 drive projectors 100kHz 2.7 300 Vrms. 100 mS mum Drive Voltago Vrms. 137.0 quency range. Ref	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5  133.5	am Pattern.  (SC26) C Jacket) (SC36)	No N/A N/A N/A N/A N/A N/A N/A	
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Resonance fs: (±5% Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern Electrical Insulation Shielded Cable, To Pair, Pins: Cable/Wire Lengt Electrical Leads: Mounting Options	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): : mr:	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 1. Default:	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=2 ex RG178/U (ФD=1 led Output: Twiste ed Output: Solder mized: up to 1 m.	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high freq d Two Conduct to Twisted Two .8mm) (RG174) .8mm) (RG178 d Pair, AWG26 Pins on Both En	a special design and induced vibration or XZ Plane. 2 drive projectors in 100kHz 2.7 300 Vrms. 100 mS mum Drive Voltage Vrms. 137.0 quency range. Reference Conductor Cable (DD=2.6 Conductor Cable (D	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz  2.7  3.5  133.5	am Pattern.  (SC26) C Jacket) (SC36)	No N/A N/A N/A N/A N/A N/A N/A	
Resonance fs: (±5% Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern Electrical Insulation Shielded Cable, To Pair, Pins: Cable/Wire Lengt Electrical Leads: Mounting Options	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): : mr:	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 4. Differentia 1. Default: Unifferentia 5. Differentia 1. Default:	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ded Output: Shielde ed Output: Shielde ex RG174/U (ФD=2 ex RG178/U (ФD=1 led Output: Twiste led Output: Solder mized: up to 1 m. 1. 2. Solder Pins (SP	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high frequency d Two Conduct d Twisted Two .8mm) (RG174) .8mm) (RG178) d Pair, AWG26 Pins on Both En 2). 3. BNC Male	a special design and address a	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz  2.7  3.5  are to graph of Be.  3.6  arm, TPU Jacket) (ΦD=3.6mm, PVi  by default or Te ith gold finish, Φ:	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)	No N/A	
Resonance fs: (±59) Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern Electrical Insulation Shielded Cable, Tv Pair, Pins: Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth:	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: mr:	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 4. Differentia 1. Default: Unifferentia 5. Differentia 1. Default:	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ded Output: Shielde ed Output: Shielde ex RG174/U (ΦD=2 ex RG178/U (ΦD=1 led Output: Twiste led Output: Solder mized: up to 1 m.  2. Solder Pins (SP  150 m if the cable has wi	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high frequency of Two Conducts of Twisted Two .8mm) (RG174) .8mm) (RG178) d Pair, AWG26 Pins on Both En	a special design and address a	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz  2.7  3.5  are to graph of Be.  3.6  arm, TPU Jacket) (ΦD=3.6mm, PVi  by default or Te ith gold finish, Φ:	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)	No N/A	
Lesonance fs: (±5% Quality factor Qm Maximum Drive Vo Maximum Pulse W Maximum Duty Cy VR at fs (dB µPa/ Directivity Pattern Electrical Insulation  Chielded Cable, To Pair, Pins:  Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cable)	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: wisted	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 4. Differentia 1. Default: Unifferentia 5. Differentia 1. Default:	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ded Output: Shielde ed Output: Shielde ex RG174/U (ΦD=1 led Output: Twiste led Output: Solder mized: up to 1 m.  2. Solder Pins (SP  150 m  if the cable has wi x Length = Φ12.6.5	cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0 10% at Maxin 100% at 10.6 134.6 idal in high freq d Two Conduct d Twisted Two .8mm) (RG174) .8mm) (RG178) d Pair, AWG26 Pins on Both En 2). 3. BNC Male 900 m re leads or a not x 25 mm	a special design and address a	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  133.5  133.5  133.5  133.5  133.5  133.6  133.6  133.6  133.6  133.7  130kHz 2.7	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)	No N/A N/A N/A N/A N/A N/A N/A Trequest) (WR)	
Resonance fs: (±59) Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Pulse W Maximum Duty Cy FVR at fs (dB µPa/ Directivity Pattern Electrical Insulation Shielded Cable, To Pair, Pins: Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cable) Overall Size (Solde)	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: wisted	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 4. Differentia 1. Default: Unifferentia 5. Differentia 1. Default:	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ded Output: Shielde ed Output: Shielde ex RG174/U (ΦD=2 ex RG178/U (ΦD=1 led Output: Twiste led Output: Solder mized: up to 1 m.  2. Solder Pins (SP  150 m if the cable has wi	cancelled with als caused by in B in axial direct Yes. Do NOT 120kHz 4.0 10% at Maxin 100% at 10.6 134.6 idal in high freq d Two Conduct d Twisted Two .8mm) (RG174) .8mm) (RG178) d Pair, AWG26 Pins on Both En 2). 3. BNC Male 900 m re leads or a not x 25 mm	a special design and address a	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  are to graph of Be.  3.5  are to graph of Be.  5.6  are to graph of Be.  5.7  5.8  5.8  5.9  5.9  6.9  6.9  6.9  6.9  6.9  6.9	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)  500 m	No N/A N/A N/A N/A N/A N/A N/A Trequest) (WR)	
Resonance fs: (±59) Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Pulse W Maximum Duty Cy FVR at fs (dB µPa/ Directivity Pattern Electrical Insulation Shielded Cable, To Pair, Pins:  Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cable) Overall Size (Solde)	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: wisted	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 2. Single End 3. Differentia 4. Differentia 1. Default: 0. 1. Default: Wree Hanging 150 m Limited by th	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ed Output: Shielde ed Output: Shielde ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=2 ax RG178/U (ФD=1 ed Output: Twiste ed Output: Solder mized: up to 1 m. 1. 2. Solder Pins (SP  150 m if the cable has wi x Length = Ф12.6.3 x Length = Ф12.6.3	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high frequency of Twisted Two .8mm) (RG174) .8mm) (RG178) d Pair, AWG26 Pins on Both En  9.0 m re leads or a not ax 25 mm x 30 mm	a special design and address a	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  133.5  133.5  133.5  133.5  133.5  133.6  133.6  133.6  133.7  130kHz 2.7  130kH	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)  500 m	No N/A N/A N/A N/A N/A N/A N/A  N/A  N/A	
Underwater Project Resonance fs: (±55) Quality factor Qm Maximum Drive Vo Maximum Pulse W Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern Electrical Insulatio  Shielded Cable, To Pair, Pins:  Cable/Wire Lengt! Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cabl Overall Size (Solde) Weight (in air):	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: wisted	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 4. Differentia 1. Default: Unifferentia 5. Differentia 1. Default: Unifferentia 1. Default: Uniferentia 1. D	celeration in ax (partially cance ith Compensation No N/A	uuency range, Toro  ed Output: Shielde ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=2 ex RG178/U (ФD=1 led Output: Twiste led Output: Solder mized: up to 1 m. i. 2. Solder Pins (SP  150 m if the cable has wi x Length = Ф12.6 3 y Length = Ф12.6 3 9 grams	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high frequency of Twisted Two .8mm) (RG174) .8mm) (RG178) d Pair, AWG26 Pins on Both En  9. 3. BNC Male  900 m re leads or a not caused to the service of the s	a special design and induced vibration induced vibration induced vibration in XZ Plane. Z drive projectors in 100 kHz	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  133.5  133.5  133.5  133.5  133.5  133.6  133.6  133.6  133.7  130kHz 2.7  130kH	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)  500 m	No N/A N/A N/A N/A N/A N/A N/A  N/A  N/A	
Resonance fs: (±59) Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Pulse W Maximum Duty Cy FVR at fs (dB µPa/ Directivity Pattern Electrical Insulation Shielded Cable, To Pair, Pins:  Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cable) Overall Size (Solde)	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: mr: wisted	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 2. Single End 3. Differentia 4. Differentia 1. Default: Unifferentia 5. Differentia 1. Default: Unifferentia 1. Sheelded Control of the Unifferentia 1. Sheelded Control of the Unifferentia 1. Sheelded Control of the Unifferential Officential Officent	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ed Output: Shielde ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=1 ed Output: Twiste ed Output: Twiste ed Output: Solder mized: up to 1 m. i. 2. Solder Pins (SP  150 m if the cable has wi x Length = Ф12.6; y Length = Ф12.6; 9 grams Cable Types and Le	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxin 100% at 10.6 134.6 idal in high frequency of Twisted Two .8mm) (RG174) .8mm) (RG178) d Pair, AWG26 Pins on Both En  900 m re leads or a not caused to the service of the se	a special design and induced vibration induced vibration induced vibration in XZ Plane. Z drive projectors in 100 kHz	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  133.5  133.5  133.5  133.5  133.5  133.6  133.6  133.6  133.7  130kHz 2.7  130kH	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)  500 m	No N/A N/A N/A N/A N/A N/A N/A  N/A  N/A	
Resonance fs: (±59) Quality factor Qm Maximum Drive V Maximum Pulse W Maximum Duty Cy FVR at fs (dB µPa/ Directivity Pattern Electrical Insulation  Shielded Cable, To Pair, Pins:  Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cablo Diverall Size (Solde Weight (in air):	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: mr: wisted	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 1. Default: Uniferentia 5. Default: 1. Default: 1. Default: 1. Default: 1. Default: 2. Single End 3. Differentia 4. Differentia 5. Differentia 6. Differentia 7. Default: 1. Default: 1. Default: 1. Default: 2. Augee 3. Differentia 4. Differentia 5. Default: 5. Default: 6. Default: 7. Default: 8. Default: 9. Def	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ded Output: Shielde ed Output: Shielde ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=1 ed Output: Twiste ed Output: Twiste ed Output: Solder mized: up to 1 m. 1. 2. Solder Pins (SP  150 m if the cable has wi x Length = Ф12.6; y Length = Ф12.6; y grams Cable Types and Le 4 Coax: -10°C to +3	acancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxii 100% at 10.6 134.6 idal in high frequency and Two Conducts at Two Con	special design and induced vibration ion or XZ Plane. 2 drive projectors in 100 kHz 2.7 300 Vrms. 100 mS mum Drive Voltago Vrms. 137.0 juency range. Reference (ΦD=2.6 Conductor Cable of the conductor Cable	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  133.5  133.5  133.5  133.5  133.5  133.6  133.6  133.6  133.7  130kHz 2.7  130kH	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)  500 m	No N/A N/A N/A N/A N/A N/A N/A  N/A  N/A	
Resonance fs: (±59) Quality factor Qm Maximum Drive Vo Maximum Pulse Wo Maximum Duty Cy TVR at fs (dB µPa/ Directivity Pattern Electrical Insulation Chielded Cable, Tv Pair, Pins: Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cable Overall Size (Solde Weight (in air):	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: mr: wisted h:	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 2. Single End 3. Differentia 4. Differentia 1. Default: Unifferentia 5. Default: Unifferentia 4. Differentia 5. Default: Unifferentia 5. Default: Unifferentia 6. Differentia 7. Default: Unifferentia 8. Differentia 9. Differentia 1. Default: Unifferentia 1. Default: Uniferentia 1. Default	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ed Output: Shielde ed Output: Shielde ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=2 ex RG178/U (ФD=1 led Output: Twiste led Output: Twiste led Output: Solder mized: up to 1 m. ed Output: Twiste ed Output: Twiste ed Output: Twiste ed Output: Toro ed Output: Shielde ex RG178/U (ФD=2 ex	acancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxii 100% at 10.6 134.6 idal in high frequency and Two Conducts at Two Con	special design and induced vibration ion or XZ Plane. 2 drive projectors in 100 kHz 2.7 300 Vrms. 100 mS mum Drive Voltago Vrms. 137.0 juency range. Reference (ΦD=2.6 Conductor Cable of the conductor Cable	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  3.5  133.5  133.5  133.5  133.5  133.5  133.6  133.6  133.6  133.7  130kHz 2.7  130kH	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)  500 m	No N/A N/A N/A N/A N/A N/A N/A  N/A  N/A	
Resonance fs: (±59) Quality factor Qm Maximum Drive Vo Maximum Pulse Wo Maximum Duty Cy VR at fs (dB µPa/ Directivity Pattern Electrical Insulation Chielded Cable, To Pair, Pins: Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cable Overall Size (Solde Veight (in air): Operation Temper	etc The tr directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): :: mr: wisted h:	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 1. Default: Uniferentia Single End 1. Default: Limited by th  Actual weigh 1. Shielded C 2. AWG26 W 3. RG178 Coc -20°C to +60°	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ed Output: Shielde ed Output: Shielde ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=2 ex RG178/U (ФD=1 led Output: Twiste led Output: Twiste led Output: Solder mized: up to 1 m. ed Output: Twiste ed Output: Twiste ed Output: Twiste ed Output: Toro ed Output: Shielde ex RG178/U (ФD=2 ex	acancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0  10% at Maxii 100% at 10.6 134.6 idal in high frequency and Two Conducts at Two Con	special design and induced vibration ion or XZ Plane. 2 drive projectors is 100kHz 2.7 300 Vrms. 100 mS mum Drive Voltago Vrms. 137.0 juency range. Reference (ΦD=2.6 Conductor Cable of Cable o	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz 2.7  ge.  133.5  er to graph of Be.  5mm, TPU Jacket) (ΦD=3.6mm, PVI)  t by default or Te ith gold finish, Φ:  950 m  nnector.  Φ11x25 Φ12.6 x 30 10 grams	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)  500 m	No N/A N/A N/A N/A N/A N/A N/A  N/A  N/A	
Resonance fs: (±59) Quality factor Qm Maximum Drive Vo Maximum Pulse W Maximum Duty Cy VR at fs (dB µPa/ Directivity Pattern Electrical Insulation Chielded Cable, To Pair, Pins: Cable/Wire Length Electrical Leads: Mounting Options Maximum Depth: Housing Size (Cable Overall Size (Solde Veight (in air): Operation Temper Extorage Temperat Customization:	etc The tri directions a Acceleration ctor: %) at fs: oltage: //idth: //cle: V@1m): : mr:  wisted  h: :: e & Wire): er Pins):  rature: ure:	Omnidirectic > 500 MΩ at 1. Default: Differentia Single End 3. Differentia 4. Differentia 4. Differentia 1. Default: Unifferentia 5. Differentia 4. Differentia 1. Default: Unifferentia 5. Default: Unifferentia 6. Differentia 7. Default: Unifferentia 8. Differentia 9. Differentia 1. Default: Unifferentia 1. Default: Uniferentia 1. Default: Unif	celeration in ax (partially cance ith Compensation No N/A	uency range, Toro  ded Output: Shielde ed Output: Shielde ed Output: Shielde ex RG174/U (ФD=1 ed Output: Twiste ed Output: Solder mized: up to 1 m. i. 2. Solder Pins (SP)  150 m if the cable has wi x Length = Ф12.6 o y grams Cable Types and Le 4 Coax: -10°C to +1 -105°C or 14°F to 2 pins: -10°C to +120° 10°F.	e cancelled with hals caused by in B in axial direct Yes. Do NOT 120kHz 4.0 10% at Maxin 100% at 10.6 134.6 idal in high frequence of Twisted Two 8mm) (RG174) 8mm) (RG178) d Pair, AWG26 Pins on Both En Pins	a special design and induced vibration induced vibration in XZ Plane. Z drive projectors in 100 kHz 2.7 300 Vrms. 100 mS mum Drive Voltage Vrms. 137.0 muency range. Reference (PVC Jacket and Services (PVC Jacket and Servi	and construction, a can be reduced. 2. ≤ 60 to 90 dB in n air.  130kHz  2.7  3.5  See.  133.5  The reduced of the see to graph of Beauty (De and the see to	am Pattern.  (SC26) C Jacket) (SC36)  flon Jacket upon 1x5 mm. (SP)  500 m  Ф9.5x18 N/A 7 grams	No N/A	



Acoustical Solutions: SONAR, NDT/AE, HIFU.

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Revised on 2025/04/19

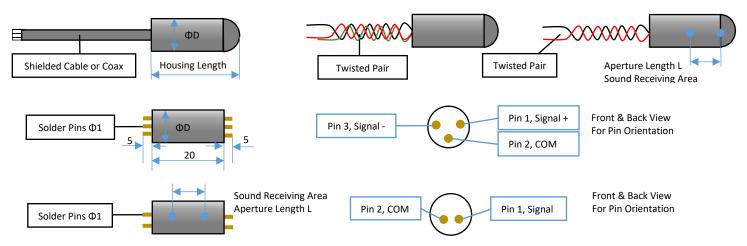
For 50Ω BNC Male connector, it is buyer's sole responsibility to make sure that the (female) BNC shield of the signal source is firmly grounded for operating safety before hooking up transducer/hydrophone to the signal source. Coax with BNC is not intended for hand-held use at voltages above 30Vac/60Vdc

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

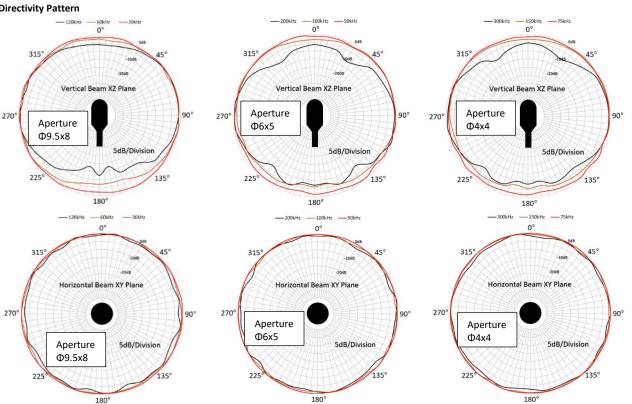
#### **How to Order and Hydrophone Wirings**

BII714x	-Cable Length in m	- <u>Cable</u>		-Connector	-	Sensitivity Match	ning Tolerance
Example of Part Number:	Description	Description					
BII7141-0.15m-SC36-WL-2dB	BII7141 Hydrophone, 0.15m S	BII7141 Hydrophone, 0.15m Shielded Twisted Cable (ΦD=3.6mm), Wire Leads. Sensitivity Matching Tolerance: ±2.0 dB.					
BII7141-1m-AWG26-WL-1dB	BII7141 Hydrophone, 1m AW	G26 Wires (T	hree 1m wires),	Wire Leads. Se	nsitivity Match	ing Tolerance: ±1	.0 dB.
BII7143-50m-RG174-BNC-1dB	BII7143 Hydrophone, 50m RG	174 Coax wit	th BNC male. Ser	nsitivity Matchi	ing Tolerance: ±	±1.0 dB.	
Wiring of Differential:	Two Conductor Shielded Cab	le	Twisted Pair		Solder Pins		
Signal +	White or Red		White		Pin 1		
Signal -	Black		Black		Pin 3		
Common & Shielding	Cable Shield		Green		Pin 2		
Wiring of Single Ended:	Two Conductor Shielded Cab	le	Twisted Pair		Coax with Wi	re Leads	Solder Pins
Signal	White or Red		White		Center Contac	ct	Pin 1
Signal Common	Black		Black		Cable Shield		Pin 2
Shielding	Cable Shield		N/A		Coax Shield	•	N/A

#### Physical Size (Dimensional Unit: mm):



#### **Directivity Pattern**





Acoustical Solutions: SONAR, NDT/AE, HIFU. benthowave.com Revised on 2025/04/19

**Specifications of Planar Array Elements (Conical Beam)** 

Specifications of Planar Array	Elements (Conical B	Beam)				
Acoustic Planar Array Element	BII7149		BII707	<b>0 Series Planar Array Eleme</b>	<u>nt</u>	
Typical Applications:	Linear and Planar Ar	ray.				
Aperture Size:	Length x Width = 6.5	x 6.5 mm, Square Planar Ape	ture.			
1		Loss over the cable, dB V/μPa.				
		r Extension Cable (dB) = 20*log				
Sensitivity @ 1kHz:	·	acitance; C <sub>c</sub> : Capacitance of Ex		s of 100 nE/meter roughly		
					09.1 dDV/::Do	
		vity of a BII7149 with 1m cable			/8.1 аву/µРа.	
Sensitivity Matching:	,	Default); b. ±1.0; c. ±0.5; d. ±0.3				
		ed at 1 kHz. 2. Hydrophones wh		•	ance are rejected.	
	No. Standalone prea	amplifier is available by separat	te order to drive long	cable.		
Built-in Preamplifier:	<b>Customized Standal</b>	one Preamp for uses in oil-fill	ed linear array:			
	(1) Potted, Depth Ra	ating: 5 MPa. (2) Input/Output	Options: Shielded Cab	le or Twisted Pairs.		
	in Water: 10 Hz ~ 5!	50 kHz at ±3dB V/μPa.				
	in Air: 10 Hz ~ 16 kH					
		an array is limited by geometr	v tolerance of installa	tion comparing to sound way	velength	
Usable Frequency:		equency depends on -3dB high			veiengui.	
	· ·	or Impedance of Preamp. Ch: C			5.1	
		a BII preamp of $R_i$ = 100 MΩ a	re used to detect sour	ids, -3dB high pass frequenc	y of detection = 5.62 Hz.	
Capacitance C <sub>h</sub> @ 1kHz:	0.286 nF ±10%					
Dissipation @ 1kHz:	0.026					
	44.6 – 10*log f					
	1. f in kHz: fs: Reson	ance Frequency which is close	to the frequency of m	aximum FFVS.		
Noise Density at f << fs:	· ·	this datasheet are calculated			d in water.	
dB μPa/VHz		works with preamps or data				
		noise density is much higher th			inica by an noise sources.	
O to t Cianal Tana	•	noise density is mach nigher ti	ian the ones stated in	tilis datasileet.		
Output Signal Type:	Single Ended					
Shielding of Sensing Element:	Shielded					
		stic axis; Other directions: ≤ 14				
	Bespoke Vibration C	Compensation, available upon	request: When suspe	nded from a ship or boat, bu	loy, or used in towed array,	
Acceleration Sensitivity:	the hydrophone exp	eriences a large movement and	d induced vibration res	sulting from surface waves, c	urrents, hydrodynamic flow	
· · · · · · · · · · · · · · · · · · ·	turbulence, cable m	ovement, etc The translation	nal acceleration in a	ial direction can be cancelle	ed with special design and	
μPa/(m/s²).	construction, and a	cceleration sensitivity in othe	r directions are also	lower (partially cancelled). S	Spurious signals caused by	
		in be reduced. Acceleration Se				
		axial direction of the hydropho			drophone.	
Underwater Projector:		ejectors in air to avoid damage		in other uncetions of the try	портопе.	
		ojectors in all to avoid damage.			_	
Resonance Frequency fs:	420 ± 5% kHz					
Quality factor Qm at fs:	3.5					
Maximum Drive Voltage:	1. Default: 300 Vrms	s. 2. Customized to 600 Vrms.				
Maximum Pulse Width:	100 mS					
Maximum Duty Cycle:	10% at Maximum Dr	rive Voltage. 100% at 10.6 Vrm	S.			
TVR at fs (dB μPa/V@1m):	≤ 150.0					
Directivity Pattern:	Conical Beam					
-3dB Beam Width:	9900°/f(kHz)					
-1		AC .				
Electrical Insulation:	> 500 MΩ at 500 VD					
Mounting Options:	Free Hanging (FH)					
Operating Depth:	Maximum: 300 m or	3 MPa pressure and limited b	y the cable length if th	ie cable has wire leads or a n	on-waterproof connector.	
Housing Size:	ΦD x Length = Φ12.6	6 x 20 mm				
Weight (in air):	10 grams, Actual we	ight depends on Cable Types a	nd Length.			
	1. Coax RG174/U (Φ					
	, ,	, , , ,				
Cable:	2. Coax RG178/U (ФD=1.8mm) (RG178).  3. Twisted Pair: Two AWG26 Wires (AWG26, PVC Jacket by default or Teflon Jacket upon request) (WR)					
Cable.	3. <b>Twisted Pair</b> : Two AWG26 Wires (AWG26, PVC Jacket by default or Teflon Jacket upon request) ( <b>WR</b> ).					
	<ol> <li>Shielded Twisted Two Conductor Cable (ΦD=3.6mm, PVC Jacket) (SC36).</li> <li>Shielded Two Conductor Cable (ΦD=2.6mm, TPU Jacket) (SC26)</li> </ol>					
		· · · · · · · · · · · · · · · · · · ·	J Jacket) ( <b>SC26</b> )			
Cable Length:	1. Default: 0.15 m. 2	. Customized: up to 10 m.				
	1. Default: Wire Lead	ds ( <b>WL</b> )				
	2. Male BNC (BNC) (Max. Diameter Φ14.3 mm).					
	3. SMA (Plug, Male Pin) ( <b>SMA</b> ), Voltage Rating: 335 VRMS Continuous. (Max. Diameter Φ9.24 mm).					
	4. SMC (Plug, Female Socket) ( <b>SMC</b> ), Voltage Rating: 335 VRMS Continuous. (SMC) (Max. Diameter Φ6.4 mm).					
Connector:	5. 1/8" (3.5mm) TRS Plug ( <b>TRS35</b> ) (Max. Diameter Φ10.5 mm).					
	6. Underwater Mateable Connector (pin) ( <b>UMC</b> ) (Max. Diameter Φ21.5 to Φ35 mm).					
	Note: Underwater Mateable Connector is for uses underwater. Other connectors and wire leads are for dry uses and are not					
	waterproofed.	100474.0	4.405 / 1555			
		d RG174 Coax: -10°C to +70°C				
Operation Temperature:		0°C to +105°C or 14°F to 221°F	•			
- perace. Temperature.	3. RG178 Coax: -10°C to +120°C or 14°F to 248°F.					
<u> </u>	Note: Limited by connector service temperature if any.					
Storage Temperature:	-20°C to +60°C or -4°	°F to 140°F.	·			
Customization:		customize BII7140 series for y	our specific acoustic r	projects.		
		,			TDC Unhological many	
Single Ended Output:	Wire Leads	Underwater Connector	BNC/SMA/SMC	Coax with Wire Leads	TRS Unbalanced mono	



Acoustical Solutions: SONAR, NDT/AE, HIFU.

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Signal	White or Red	Pin 2	Center Contact	Coax Center Contact	Tip
Signal Common	Black	Pin 1	Shield	Coax Shield	Ring & Sleeve
Shielding	Shield	Pin 3	Shield	Coax Shield	Ring & Sleeve

WARNING for Projector Applications: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable shield must be grounded firmly for safety.

For  $50\Omega$  BNC Male connector, it is buyer's sole responsibility to make sure that the (female) 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.

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

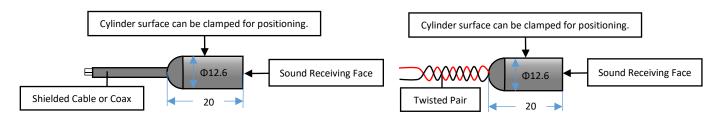
#### How to Order

Hydrophone	-Cable Length	-Cable	-Connector	-Sensitivity Matching Tolerance				
BII7149	in meter	Refer to Options	Refer to Options	Refer to Options. in dB V/μPa, at 1kHz.				
Example of Part Number:	Description	escription						
BII7149-1m-RG174-BNC-2dB	BII7149 Hydrophone, 1m RG	8117149 Hydrophone, 1m RG174/U Coax Cable, BNC Male, Sensitivity Matching Tolerance: ±2.0 dB.						
BII7149-1m-RG174-WL-1dB	BII7149 Hydrophone, 1m RG	174/U Coax Cable, Wire Le	ads. Sensitivity Matching Tol	erance: ±1.0 dB.				

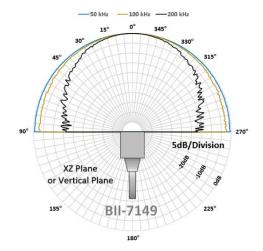
#### Physical Size (Dimensional Unit: mm):

The cylinder surface of the element can be used for clamps or jigs to position the element. To avoid damaging element surface:

- 1. The clamping force should be less than 5 N.
- 2. The surfaces of the clamps or jigs must be smooth and do not have any sharp and spike.



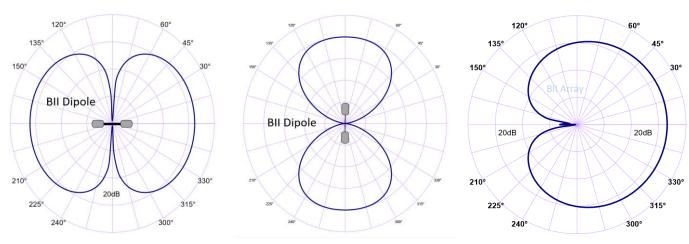
#### **Directivity Pattern**



#### Simple Array Consisting of 2 or 3 Hydrophones.

"Figure 8" Pattern of a Dipole (Pressure-Gradient).

Cardioid Pattern= Omnidirectional Hydrophone + Dipole.

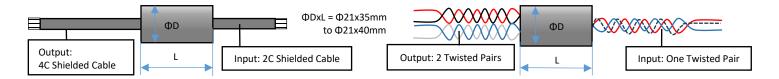


Acoustical Solutions: SONAR, NDT/AE, HIFU.

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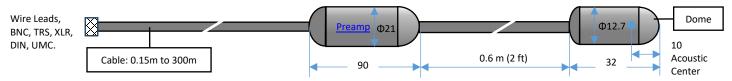
Revised on 2025/04/19

Customized Standalone Preamp for uses in oil-filled linear array, 5MPa (or 500m Water Depth) pressure rating. Physical Size (Dimensional Unit: mm):



Differential Input	2C Shielded Cable	One Twisted Pair	Differential Output and DC Supply Cable	4C Shielded Cable	Two Twisted Pair
Input +	White or Red Wire	Red Wire	Output +	White Wire	White Wire
Input -	Black Wire	Blue Wire	Output -	Blue Wire	Blue Wire
			DC Supply	Red Wire	Red Wire
			DC Supply Common and Output Common	Black Wire	Black Wire
Input Common & Shielding	Cable Shield	Black Wire	Shielding	Cable Shield	N/A
Single Ended Input	2C Shielded Cable	One Twisted Pair	Differential Output and DC Supply Cable	4C Shielded Cable	Two Twisted Pair
Input	White Wire	Red Wire	Output	White Wire	White Wire
Input Common	Black Wire	Blue Wire	Output Common	Black Wire	Black Wire
			DC Supply	Red Wire	Red Wire
			DC Supply Common	Black Wire	Black Wire
Shielding	Shielded	N/A	Shielding	Cable Shield	N/A

BII7013FGDF Hydrophone as Array Element: Free Hanging with Smooth Domes for an Linear Discrete Array. Illustration Only, Size Scale is NOT 1:1.



The streamlined hemispherical domes minimize drag forces and hydrodynamic noises caused by the hydrophone in motion or the flow past the hydrophone.