

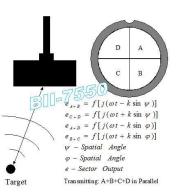
BII-7550 Series Split Beam Transducer: Target Angle Estimation

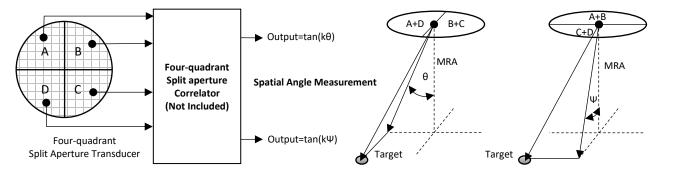
BII's Four-quadrant split beam transducers are designed to estimate bearing and locate underwater targets and support phase extraction or amplitude comparison methods to measure the bearing of the sound sources. That which method is used depends on the signal processing in software/electronic hardware and the signal properties. The quadrant array is separately beam formed. The signals from the direction (Ψ, Φ) will result in the phase contributions to the single-frequency directivity patterns functions of the array. With signal processing technologies, the spatial angle (Ψ, Φ) , which can be computed quantitatively, indicates the target direction.

Transmit: Four sectors are wired together in parallel to transmit sounds underwater.

Receive: Four sectors receive sounds underwater individually as a four quadrants receiver, or 4 sectors are wired together to receive sounds underwater as a single beam receiver.

A four-quadrant split beam transducer (BII-7550 Series) works with a four-quadrant split aperture correlator (**not included**) to estimate the direction of arrival of a plane wave sound (or, measure the spatial angle of the sound) and determine the angular position of the target relative to the acosutic axis of the transducer.





	tan(kθ) and tan(kΨ).		
	K: Angle Sensitivity = Phase Shift/Spatial Angle, transducer's parameter.		
Outputs of Four-quadrant Split aperture Correlator:	 kθ is phase difference between segments (A+D) and Segments (B+C); kΨ is phase difference between segments (A+B) and Segments (C+D). θ and Ψ: Spatial Angles of a Sound Source Relative to MRA of the Transducer. 		
Outputs of Four-quadrant spin aperture correlator.			
	MRA: Maximum Response Axis of Transducers, or Acoustic Axis.		

Typical Applications

Underwater Positioning	Measurement of Bearing	Tracking Moving Target	Sea-floor Mapping
Fishery Sounders	Split-Aperture Correlator	Marine Life Assessment	Direction-finding Sonar

Specification

0	ry Spatial Angle. I	III I . Waximam input			us input i ower, w	PW: Maximum Pu		
Transducer:	BII-7556/38	BII-7556/50	BII-7554/70	BII-7555/70	BII-7556/70	BII-7553/120	BII-7552/200	
Signal Types:	Pulse and burst SINE/Square/Chirp excitation.							
Operating Frequency fs:	38 kHz	50 kHz	70 kHz	70 kHz	70 kHz	120 kHz	200 kHz	
Quality Factor Q _m :	3.5	3.5	3.2	3.2	3.2	3.3	3.0	
	-3dB bandwidt	th ∆f = fs/Q _m						
Transmit: Sectors A+B+C+D	in parallel							
MIPP:	6500W	6700W	2900W	4500W	6500W	1300W	700W	
MPW @ MIPP:	50s	40s	28s	28s	28s	16s	10s	
MCIP:	65W	80W	45W	60W	95W	30W	20W	
Did too Maltanaa	Maximum, 600 Vrms.							
Driving Valtage	Maximum, 600	0 Vrms.						
Driving Voltage:		0 Vrms. her sound level, built-	in impedance match	ing is recommende	d to step up drivin	g voltage inside th	e transducer.	
5 5	To achieve hig				d to step up drivin	g voltage inside th	e transducer.	
5 5	To achieve hig	her sound level, built-			d to step up driving	g voltage inside th 9.5°	e transducer. 8.5°	
Admittance at fs:	To achieve hig Refer to admit	her sound level, built- ttance Graph, or the c	latasheet with the sh	nipment.	· · ·			
Admittance at fs: -3dB Beam Angle at fs:	To achieve hig Refer to admit 14.8° Conical	her sound level, built- ttance Graph, or the c	latasheet with the sh	ipment.	8°			
Admittance at fs: -3dB Beam Angle at fs: Directivity Pattern:	To achieve hig Refer to admit 14.8° Conical	her sound level, built- ttance Graph, or the c 11.3°	latasheet with the sh	ipment.	8°			
Admittance at fs: -3dB Beam Angle at fs: Directivity Pattern: Sidelobes:	To achieve higRefer to admit14.8°ConicalOne-way: ≤ -1°162.0	her sound level, built- ttance Graph, or the c 11.3° 7.5 dB, Two-way: ≤ -3:	latasheet with the sh 12° 5 dB. Note: Sidelobe 166.7	ipment. 10° suppression is not 170.5	8° available. 173.7	9.5°	8.5°	
Admittance at fs: -3dB Beam Angle at fs: Directivity Pattern: Sidelobes: TVR (dB µPa/V@1m): Sound Level SL:	To achieve higRefer to admit14.8°ConicalOne-way: ≤ -1°162.0	her sound level, built- ttance Graph, or the c 11.3° 7.5 dB, Two-way: ≤ -3: 167.0	latasheet with the sh 12° 5 dB. Note: Sidelobe 166.7	ipment. 10° suppression is not 170.5	8° available. 173.7	9.5°	8.5°	
Admittance at fs: -3dB Beam Angle at fs: Directivity Pattern: Sidelobes: TVR (dB µPa/V@1m): Sound Level SL: Receive:	To achieve hig Refer to admit 14.8° Conical One-way: ≤ -1° 162.0 Maximum SL is	her sound level, built- ttance Graph, or the c 11.3° 7.5 dB, Two-way: ≤ -3: 167.0	atasheet with the sh 12° 5 dB. Note: Sidelobe 166.7 mum driving voltage	ipment. 10° suppression is not 170.5	8° available. 173.7	9.5°	8.5°	
Admittance at fs: -3dB Beam Angle at fs: Directivity Pattern: Sidelobes: TVR (dB µPa/V@1m):	To achieve hig Refer to admit 14.8° Conical One-way: ≤ -1° 162.0 Maximum SL is Four Quadrant	her sound level, built- ttance Graph, or the c 11.3° 7.5 dB, Two-way: ≤ -3: 167.0 s determined by maxi	latasheet with the sh 12° 5 dB. Note: Sidelobe 166.7 mum driving voltage plit Beams.	ipment. 10° suppression is not 170.5	8° available. 173.7	9.5°	8.5°	



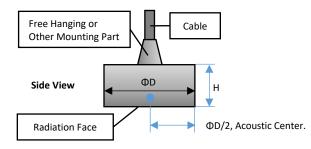
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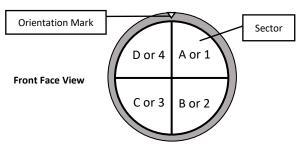
of 100 pF/meter roughly. Valid for a transducer without preamplifier. Angle Sensitivity K: 10.4 13.6 12.7 15.8 19.0 16.4 18.5 Sector Capacitance C: C. 55 n ± 10% 0.283 n ± 10% 0.098 n ± 10% 0.585 n ± 10% 0.31 n ± 10% Dissipation: 0.006 at 1 kHz 100 m 100 m 100 m 100 m 300 m Sector Capacitance O: C. Fistested at 1 kHz and is the capacitance of one sector. Total capacitance of four sector = 4 * C. 0.006 at 1 kHz. Maximum Depti: 1.00 m 100 m 100 m 100 m 300 m S. Bolt Tastening Mounting (Stanless Steel) (BFMS) 4. End-face Mounting (FM) 5. Flange Mounting (FM) 5. Flange Mounting (FM) S. Flange Mounting (FM) S. Flange Mounting (FM) 5. Flange Mounting (FM) 5. Flange Mounting (FM) Version 20 R-RSS Case (RSS). 3. Customized. 4. End-face Kase (RSS). 4. End-face Kase (RSS). Cable Length: 1. Default: Price Leask (WL) 2. So Case (RSS). 5. Custom (Custom) N. Customized. 1. Default: Mit L m.2. Custom. 5. Custom (Custom) 5. Custom (Custom) N. Custom	SE=SL-TL+AG-NL	Underwater Acoustic Solutions				www.benthowave.com			
of 100 pF/meter roughty, Vail dor a transducer without preamplifier. 1.9.0 16.4 18.5 Angle Sensitivity K: 10.4 13.6 1.2.7 15.8 1.9.0 16.4 18.5 Sector Capacitance C: C. Is tested at 118 transducer without present lenge of nor sector = 4 * C. 0.039 nf ±10% 0.039 nf ±10% 0.030 m 100 m 100 m 100 m 300 m Disspation: 0.000 mt 1.00 nt 100 m 100 m 100 m 300 m 1. Default: Free Hanging (H) 1.00 nt 100 m 100 m 300 m 300 m 4. End face Mounting (FAM) 5. Henge Mounting (FAM) 5. Henge Mounting (FAM) Fenge Mount		-182.6	-185.0	-183.7	-183.5	-183.9	-188.6	-186.3	
Angle Sensitivity K: 10.4 13.6 12.7 15.8 19.0 16.4 18.5 Sector Capacitance C; 0.75 for ±10.0% 0.938 for ±10.0%	FFVS (dB V/µPa):	Sensitivity Loss over Extension Cable (dB) = $20*\log[C_s/(C_s+C_c)]$. Cs: Sector Capacitance; C _c : Capacitance of Extension Cable. Cable is							
Sector Capacitance C: C. 15 tested #1 1.0K1 0.673 nF ±10% 0.673 nF ±10% 0.475 nF ±10% 0.385 nF ±10% 0.31 nF ±10% Dissipation: 0.008 at 1 kHz 100 m 100 m 100 m 100 m 300 m Dissipation: 0.008 at 1 kHz 100 m 100 m 100 m 100 m 300 m 1. Default: Free Hanging (FH) 2. In ru-hole Mounting With Single 0-ring (THSO) 3. Bot Fastering Mounting (FAM) 5. Flange Mounting (FAM)		of 100 pF/meter re	oughly. Valid for a tr	ansducer without p	reamplifier.		-	-	
Sector Lapacitatics 1: C. Is tested at 1 kHz and is the capacitance of none sector. Total capacitance of four sector = 4 * C. Maximum Depth: 100 m 100 m 100 m 100 m 300 m Maximum Depth: 1.0 Graduit: Free Hanging (FH) 2. Thru-hole Mounting (Stanless Steel) (BFMSS) 4. Ind-face Mounting (FM) 2. Thru-hole Mounting (FM) 2. Thru-hole Mounting (FM) 3. Bok Fastening Mounting (FM) 5. Fange Mounting (FM) 5. Fange Mounting (FM) 9. Fange Mounting (FM) 5. Fange Mounting (FM) 6. Stanless Steel) (BFMSS) 4. Ind-face Mounting (FM) 9. Fange Mounting (FM) 5. Fange Mounting (FM) 6. Stanless Steel (BFMSS) 6. Stanless Steel (BFMSS) 4. Ind-face Nounting (FM) 5. Fange Mounting (FM) 8. Stanless Steel (SS). 7. Corr Wo-Conductor-Shelded Cables (SC). 2. Four SO -DRCS& Coak (GSS). 2. Lorot Two-Conductor-Shelded Cables (SC). 7. Corr SO -DRC Stanless Steel (SS). 8. Lorotmized. Cable: 1. Default: Im 2. Custom. 1. Default: Im 2. Custom. 1. Default: Im 2. Custom. 1. Default: Im 2. Custom. 1. Default: Im 2. Custom. 1. Default: Im 2. Custom. 1. Default: Im 2. Custom. 1. Default: Im 2. Custom. 0.168x50 0.8x36	Angle Sensitivity K:	10.4	13.6	12.7	15.8	19.0	16.4	18.5	
Dissipation: 0.008 at 1 M/z Dissipation: 0.00 m 100 m 100 m 100 m 300 m Image: Construct Test Adjust Construction Step (SFNS) 1.00 m 1.00 m 300 m 300 m Maximum Depth: 1.00 m 100 m 100 m 100 m 300 m Mounting Options: A construct Test Adjust Construction Step (SFNS) 4. End-face Mounting (SENING) 5. Fange Mounting (SENING) Stange Mounting (SFM) S. Fange Mounting (SENING) 5. Fange Mounting (SENING) 5. Fange Mounting (SENING) Cable Bundles with A cables: 1. Four Two-Conductor-Shielded cables (SC). 7. Four SD 0-R668 Const (RGSS). 3. Customized. Cable Length: 1.00 Fault: Lin .2. Custom. 1.00 Fault: Lin .2. Custom. 1.00 Fault: Lin .2. Custom. Cable Lingth: 1.00 Fault: Lin .2. Custom. 1.00 Fault: Lin .2. Custom. 0.168x50 0.168x50 0.069x36 0.60x30 Stree (POxH mm): 0.168x50 0.168x55 0.114x50 0.168x50 0.96x36 0.60x30 Stree (POxH mm): 0.168x50 0.168x55 0.114x50 0.168x50 0.96x36 0.60x30 Storage Temperature: -0.70 C to 4.60 C or 1.4 T to 1.40 °F.	Sector Canacitanco C :							0.31 nF ±10%	
Maximum Depth: 100 m 300 m Mounting Options: 1. Default: Free Hanging (FH) 2. Thru-hole Mounting Stanless Steel) (BFMSS) 4. End-face Mounting (FM) 9. Find-face Mounting (FM) S. Flange Mounting (FGM) Please refer to online document AccousticSystem.pdf for a complete list of Mounting Options and more details. Cable Bundles with 4 Cables: 1. For two-Conductor-Shielded Cables (SC). 2. Four SO-ORGS8 Coax (RSS). 3. Customized. Gable: 1. Default: Tim 2. Custom. 1. Default: Tim 2. Custom. 1. Default: Wire Leads (VL) 2. So D RNC Male (BNC) S. Custom (custom) Nut-Sol3 Style (SO15) 5. Custom (custom) 0. Default: Wire Leads (VL) 2. So D RNC Male (BNC) Stee (DDxH mm): 0168x50 0168x55 0114x50 0164x50 049x36 060x30 Stee (DDxH mm): 0168x50 0168x55 0114x50 0168x50 049x36 060x30 Stee (DDxH mm): 0168x50 0168x55 0114x50 0168x50 089x36 060x30 Stee (DDxH mm): 0168x50 0148x50 0141x50 0168x50 049x36 060x30 Stee (DDxH mm): 0168x50 <td>Sector capacitance cs.</td> <td>C_s is tested at 1 kH</td> <td>z and is the capacit</td> <td>ance of one sector</td> <td>. Total capacitance</td> <td>of four sector = 4</td> <td>* Cs.</td> <td></td>	Sector capacitance cs.	C _s is tested at 1 kH	z and is the capacit	ance of one sector	. Total capacitance	of four sector = 4	* Cs.		
1. Default: Free Hanging (FH) 2. Thru-hole Mounting (Stainless Steel) (BFMSS) 4. End-face Mounting (FM) 5. Flange Mounting (FM) 5. Flange Mounting (FM) 6. Flange Mounting (FM) 9. Torus Toru	Dissipation:								
Absolution 2. Thru-hole Mounting (Stahles Steel) (BFMS) Abouting (Difusion: 4. End-face Mounting (EFM) Abouting (EFM) 5. Fange Mounting (EFM) Please refer to online document AcoustiCsystem.pdf for a complete list of Mounting Options and more details. Cable Eundles with 4 Cables: 1. Four Two-Conductor-Shielded Cables (SC). 3. Customized. 3. Customized. Handling: Do not use the cable to support transducer weight in air and water. Do not bend the cable. Cable Length: 1. Default: 1m. 2. Custom. 1. Default: 1m. 2. Custom. 5. Customized. Connector: 4. MIL-SDIS Style (SDIS) 5. Custom (used) 0.10erwater Mateable Connector (IMC) 4. MIL-SDIS Style (SDIS) 0.114x50 0.168x50 0.88x36 060x30 Weight: 2.2 kg with Four x10 m. cable bundles. Actual weight depends on Mounting Parts, Cable Types and Length. 0.050x30 Operation Temperature: -30° C1 or 40° C or 41° F to 140° F. 5 5 5 Storage Temperature: -30° C1 or 40° C or 41° F to 140° F. 5 5 5 5 Impedance Matching: Difa8x50 to m cable bundles. Actual weight depends on Mounting Parts, Cable Types and Length. 0 5 0 0	Maximum Depth:			100 m	100 m	100 m	100 m	300 m	
Cable: 1. Four Two-Conductor-Shielded Cables (SC). 2. Four 50 0-RGS8 Coax (RGS8). 3. Customized. Handling: Do not use the cable to support transducer weight in air and water. Do not bend the cable. Cable Length: 1. Default: 1.m. 2. Custom. 1. Default: 1.m. 2. Custom. 3. Gustomized. 4. MIL-SD15 Style (S015) 5. Custom (custom) Note: Underwater Mateable Connector (UMC) 4. MIL-SD15 Style (S015) 5. Custom (custom) Note: Underwater Mateable Connector is for underwater uses. Other connectors and wire leads are for dry uses and are nor waterproof. Size (ФDXH mm): Φ168x50 Φ114x50 Φ168x50 Φ89x36 Φ60x30 Weight 2 2 kg with Four x 10 m cable bundles. Actual weight depends on Mounting Parts, Cable Types and Length. Opperation Temperature: -10 ⁻¹ C to +60 ⁻¹ C or -4 ⁻¹ F to 140 ⁻¹ F. Each sector has its own impedance matching unit, total four impedance matching units are built inside the transducer. Impedance Matching: Bil-6000 Respoke Impedance Matching ubtexen transducers and power amplifiers. Order Separately. Append IM to the pain number for integrating Bil-6000 in the transducer, and seecify impedance in 0. For example, Bil-xoxdMS00: Bil-xoxx transduce with four built-in Impedance Matching ubtes and each sector is a 50 O load. TBinebedance Bance: Standalone Bil	Mounting Options:	 2. Thru-hole Mounting with Single O-ring (THSO) 3. Bolt Fastening Mounting (Stainless Steel) (BFMSS) 4. End-face Mounting (EFM) 5. Flange Mounting (FGM) 							
1. Default: Wire Leads (WL) 2. S0 BNC Male (BNC) 3. Underwater Mateable Connector (UMC) 4. MIL-S015 Style (S015) 5. Custom (custom) Note: Underwater Mateable Connector is for underwater uses. Other connectors and wire leads are for dry uses and are nor waterproof. Size (DDxH mm): Φ168x50 Φ168x55 Φ114x50 Φ141x50 Φ168x50 Φ60x30 Weight: > 2 kg with Four x 10 m cable bundles. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -10 °C to +60 °C or 14 °F to 140 °F. Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F. Each sector has its own impedance matching unit. total four impedance matching units are built inside the transducer. BII-6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately. Append IM to the pain number for integrating BII-6000 in the transducer, and specify impedance in Ω. For example, BII-xxxxtTansducer with four built-in Impedance Matching units and each sector is a 50 Ω load. TR Switch: Standalone BII-2100 Transmitting & Receiving Switch. Not included. Order Separately. 1. Default: No built-in temperature sensor. 1. Befault: No built-in temperature sensor. 2. Built-in the input pluse power (PP, peak power) with sound intensity required by the project. IPP MUST be less than MIPP. 2. Pulse Width (VIVY *100'C)/JPP. 1. Default: No built-in tempedance mat	Cable:	Cable Bundles with 4 Cables: 1. Four Two-Conductor-Shielded Cables (SC). 2. Four 50 Ω-RG58 Coax (RG58). 3. Customized.							
2. 50 0 BNC Male (BNC) 3. Underwater Mateable Connector (UMC) 4. MIL-5015 Style (5015) 5. Custom (custom) Note: Underwater Mateable Connector is for underwater uses. Other connectors and wire leads are for dry uses and are nor waterproof. Size (ФDxH mm): Ф168x50 Ф168x55 Ф114x50 Ф168x50 Ф89x36 Ф66x30 Weight: ≥ 2 kg with Four x 10 m cable bundles. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -20 °C to +60 °C or 14 °F to 140 °F. Storage Temperature: -20 °C to +60 °C or 14 °F to 140 °F. Each sector has its own impedance matching unit. total four impedance matching units are built inside the transducer. Bil-6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately. Append IM to the pain number for integrating Bil-6000 in the transducer, and specify impedance in 0. For example, Bil-xxxxIMS000: Bil-xxxx transducer TR Switch: Standalone Bil-2100 Transmitting & Receiving Switch. Not Included. Order Separately. Temperature Sensor: 1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. Append TS to part number (Bil-xxxxTS) for integrating a temperature sensor in the transducer. 2. Deuse Width VW W1(20°C-T)/103°C)/IPP. Y. Water Temperature in °C. 3. Duty Cycle J S MCIP* (120°c-T)/103°C)/IPP. Y. Water Temperature in °C.	Cable Length:	1. Default: 1 m. 2.	Custom.						
Size (ΦDxH mm): Φ168x60 Φ168x55 Φ114x50 Φ141x50 Φ168x50 Φ89x36 Φ60x30 Weight: ≥ 2 kg with Four x 10 m cable bundles. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -10 °C to +60 °C or 14 °F to 140 °F. Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F. Impedance Matching: Each sector has its own impedance matching unit. total four impedance matching units are built inside the transducer. Bil-6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately. Append IM to the part number for integrating Bil-6000 in the transducer, and specify impedance in Ω. For example, Bil-xxxxIM50Ω: Bil-xxxx transduce with four built-in Impedance Matching units and each sector is a 5 0 Ω Dad. TR Switch: Standalone Bil-2100 Transmitting & Receiving Switch. Not Included. Order Separately. Loefault: No built-in temperature sensor. 2. Built-in temperature sensor. 2. Dubt yCitcl 20° <-T)/103° ()/IPP. T: Water Temperature for safety. DD NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable shield Must be grounded firmly for safety. 3. Duty Cycle D SMC Male connector, it is buyer's sole responsibility to make sure that the (female) BNC shield of the signal source. Coax with BNC is not intended for hand-held use at voltage above 30Vac/60Vdc. Transducer Miring: Two Conductor Shielded Cable Contact C Contact C 0. Diffic	Connector:	 2. 50 Ω BNC Male (BNC) 3. Underwater Mateable Connector (UMC) 4. MIL-5015 Style (5015) 5. Custom (custom) Note: Underwater Mateable Connector is for underwater uses. Other connectors and wire leads are for dry uses and are non- 							
Weight: ≥ 2 kg with Four x 10 m cable bundles. Actual weight depends on Mounting Parts, Cable Types and Length. Operation Temperature: -10 °C to +60 °C or -4 °F to 140 °F. Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F. Impedance Matching: Each sector has its own impedance matching unit. total four impedance matching units are built inside the transducer. BII-6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately. Append IM to the pain number for integrating BII-6000 in the transducer, and specify impedance in Ω. For example, BII-xxxxIM50Ω: BII-xxxx transduce with four built-in Impedance Matching units and each sector is a 50 Ω load. TR Switch: Standalone BII-2100 Transmitting & Receiving Switch. Not Included. Order Separately. 2. Built-in temperature sensor. 2. Built-in temperature sensor. 2. Built-in temperature sensor. 2. Built-in temperature sensor. 2. Built-in temperature sensor. 2. Built-in temperature sensor. 3. Dety Cycle D ≤ MCIP*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. 3. Duty Cycle D ≤ MCIP*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. 3. Duty Cycle D ≤ MCIP*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. 3. Duty Cycle D ≤ MCIP*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. 4. Off-time ≥ PW*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. 3. Duty Cycle D ≤ MCIP*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. 3. Duty Cycle D ≤ MCIP*(120°c-T)/	Size (ODxH mm):		Φ168x55	Φ114x50	Φ141x50	Φ168x50	Ф89x36	Ф60x30	
Operation Temperature: -10 °C to +60 °C or 14 °F to 140 °F. Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F. Impedance Matching: Each sector has its own impedance matching unit. total four impedance matching units are built inside the transducer. BII-6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately. Append IM to the pain number for integrating BII-6000 in the transducer, and specify impedance in Ω. For example, BII-xxxxIM50Ω: BII-xxxx transducer with four built-in Impedance Matching units and each sector is a 50 Ω load. TR Switch: Standalone BII-2100 Transmitting & Receiving Switch. Not Included. Order Separately. 1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. 2. Built-in temperature sensor. 2. Built-in temperature sensor. Append TS to part number (BII-xxxxTS) for integrating a temperature sensor in the transducer. How to determine pulse width, duty cycle and off-time with input pulse power (peak power): . 2. Pulse Width ≤ (MIPP * MPW*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. . 3. Duty Cycle D ≤ MCIP*(120°c-T)/103°c)/IPP. . 4. Off-time ≥ PW*(1-D)/D. . WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cabl shield must be grounded firmly for safety. for S00 BNC Male connector, it is buyer's sole responsibility to make sure that the (female) BNC shield of the signal source is firmly grounded f							and Length		
Storage Temperature: -20 °C to +60 °C or -4 °F to 140 °F. Each sector has its own impedance matching unit. total four impedance matching units are built inside the transducer. BII-6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately. Append IM to the pain number for integrating BII-6000 in the transducer, and specify impedance in Ω. For example, BII-xxxxIM50Ω: BII-xxxx transducer TR Switch: Standalone BII-2100 Transmitting & Receiving Switch. Not Included. Order Separately. 1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. Append TS to part number (BII-xxxxIS) for integrating a temperature sensor in the transducer. How to determine pulse width, duty cycle and off-time with input pulse power (peak power): 1. Default: No built-in temperature sensor. Append TS to part number (BII-xxxxIS) for integrating a temperature sensor in the transducer. 2. Built-in temperature sensor. 2. Built-in temperature sensor. Append TS to part number (BII-xxxXIS) for integrating a temperature sensor in the transducer. 4. Determine the input pulse power (IPP, peak power) with sound intensity required by the project. IPP MUST be less than MIPP. 2. Pulse Width ≤ (MIPP * MPW*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. 3. Duty Cycle D ≤ MCIP*(120°c-T)/103°c)/IPP. 4. Off-time ≥ PW*(1-D)/D. WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cabl shield must be grounded firmly for safety.	•			/ lotadi melBirt dep					
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TR Switch: Standalone BII-2100 Transmitting & Receiving Switch. Not Included. Order Separately. Temperature Sensor: 1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. 2. Built-in temperature sensor. Append TS to part number (BII-xxxxTS) for integrating a temperature sensor in the transducer. How to determine pulse width, duty cycle and off-time with input pulse power (peak power): 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 ≤ (MIPP * MPW*(120°c-T)/103°c)/IPP. T: Water Temperature in °c. 3. Duty Cycle D ≤ MCIP*(120°c-T)/103°c)/IPP. 4. Off-time ≥ PW*(1-D)/D. WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cabl shield must be grounded firmly for safety. 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 safet before hooking up transducer/hydrophone to the signal source. Coax with BNC is not intended for hand-held use at voltages above 30Vac/60Vdc. Transducer Wiring: Two Conductor Shielded Cable Coax/BNC Underwater Connector MIL-5015 Connector Signal White or Red Center Contact Contact 2 Contact C Signal Common Black Shield Contact 1 Contact C	Impedance Matching:	Each sector has its own impedance matching unit. total four impedance matching units are built inside the transducer. BII-6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately. Append IM to the part number for integrating BII-6000 in the transducer, and specify impedance in Ω. For example, BII-xxxxIM50Ω: BII-xxxx transducer							
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Transducer Wiring: The four cables are labelled with "1" for Sector A, "2" for Sector B, "3" for Sector C, "4" for Sector D. Wiring: Two Conductor Shielded Cable Coax/BNC Underwater Connector MIL-5015 Connector Signal White or Red Center Contact Contact 2 Contact C Signal Common Black Shield Contact 1 Contact B	1. Determine the input pulse 2. Pulse Width \leq (MIPP * MPV 3. Duty Cycle D \leq MCIP*(120° 4. Off-time \geq PW*(1-D)/D. WARNING: DANGER — HIGH v shield must be grounded firm for 50 Ω BNC Male connector,	power (IPP, peak pow V*(120°c-T)/103°c)/I c-T)/103°c)/IPP. VOLTAGE on wires. W ly for safety. it is buyer's sole res	ver) with sound inte PP. T: Water Tempe /ires shall be insulate ponsibility to make s	nsity required by th rature in °c. ed for safety. DO No sure that the (fema	ne project. IPP MUS	ES BEFORE THE D	RIVING SIGNAL IS SI firmly grounded fo	r operating safety	
Wiring: Two Conductor Shielded Cable Coax/BNC Underwater Connector MIL-5015 Connector Signal White or Red Center Contact Contact 2 Contact C Signal Common Black Shield Contact 1 Contact B							•		
Signal White or Red Center Contact Contact 2 Contact C Signal Common Black Shield Contact 1 Contact B	Wiring:						r MIL-5015	Connector	
Signal Common Black Shield Contact 1 Contact B		-		-					
	-								
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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.

Free Hanging



Orientation of Sectors A, B, C, D or 1, 2, 3, 4.





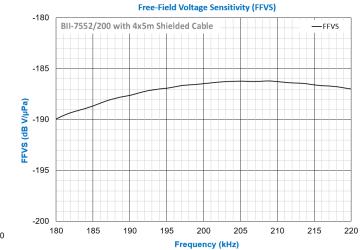
Benthowaye Instrument Inc. Underwater Acoustic Solutions

www.benthowave.com

Transmitting Voltage Response (TVR) (A, B, C, D sectors are in Parallel):

Transmitting Voltage Response (TVR) - TVR BII-7552/200 with 4x5m Shielded Cable TVR (dB μPa/V @ 1m) Frequency (kHz)

Free-filed Voltage Response (FFVS) of Sector A, B, C, or D:



Admittance in Water (A, B, C, D sectors are in Parallel):

