Echo Sounder Transducer

BII-7560 Series Echo Sounder Transducer: Broadband & High Power.

BII-7560 series are broadband conical beam echo sounder transducers which are optimized for use in short and long echo-ranging survey system, and in high resolution assessment of target and scattering strength (TS & Sv) in scientific survey of rivers, lakes and sea. Because of their low Q property, short pulse width and Chirp/FM signals can be applied to these transducers to achieve high resolution and accurate spatial information underwater. customized transducers with low side lobes (<-30dB) are available.

Typical Applications

Fishery/Plankton Sonar, Echo-counting & integration/Abundance Estimate	Sound Velocity Profiler/Velocimeter/Velocity Probe
Navigation, Underwater Robot, Object Detection/Tracking/Avoidance	Target/Scattering Strength Measurement/Assessment (TS & Sv)
Bathymetric Sounder, Depth Sounder, FM/Chirp Transducer	Seafloor Properties: Scattering/Roughness/Penetration/Reflection...
Underwater Distance Gage, Altimeter/Liquid Level Detector	High Speed/Frequency Short Range Communication

Specification

fs: Resonance Frequency. **TVR** unit: dB µPa/V@1m. **FFVS** unit: dB V/µPa. **BW**: -3dB Beam Width. **SA**: Solid Angle, dB, 10logΨ. **Q_m**: Quality Factor. **-3dB Bandwidth** = fs/Q_m. **MIPP**: Maximum Input Pulse Power. **MCIP**: Maximum Continuous Input Power. **MPW**: Maximum Pulse Width.

Transducer	fs kHz	BW Two-way	Q_m	TVR	FFVS	SA Two-way	MIPP	MPW	MCIP	ΦDxH, mm
BII-7560H/2000	2000	3.5°	4	175.5	-212.0	-27.0	120W	0.25s	3.5W	Φ21x15
BII-7560Q/1000	1000	4.6°	4	170.5	-206.0	-24.4	270W	0.5s	7W	Φ27x15
BII-7561/600	600	5.8°	4	166.6	-201.5	-22.5	480W	0.9s	12W	Φ33x15
BII-7562/420	420	4.0°	4	175.4	-199.4	-25.3	2300W	1s	35W	Φ60x25
Side Lobes:	< -17.8 dB									
Operating Depth:	1. Default: 100 m maximum. 2. Customization: 1000m maximum is available upon request.									
Transducer	**fs kHz**	**BW Two-way**	**Q_m**	**TVR**	**FFVS**	**SA Two-way**	**MIPP**	**MPW**	**MCIP**	**ΦDxH, mm**
BII-7562/38	38	37.0°	3	141.3	-165.9	-6.3	1200W	22s	6W	Φ60x70
BII-7562/50	50	28.0°	3	142.0	-196.0	-8.7	1000W	17s	7W	Φ60x62
BII-7562/70	70	20.0°	3	150.6	-196.0	-11.6	1200W	12s	9.5W	Φ60x50
BII-7562/120	120	11.5°	3	158.7	-177.6	-16.3	1000W	7s	11W	Φ60x40
BII-7562/200	200	7.0°	3	167.0	-196.0	-20.7	840W	4s	13W	Φ60x35
BII-7562/300	300	5.8°	3	169.6	-196.5	-22.4	2300W	1.5s	30W	Φ60x25
BII-7563/38	38	22.6°	3	145.1	-195.0	-8.1	2700W	22s	14W	Φ89x70
BII-7563/50	50	17.0°	3	148.7	-195.0	-10.5	2300W	17s	15W	Φ89x62
BII-7563/70	70	12.0°	3	157.4	-195.0	-13.4	2700W	12s	20W	Φ89x50
BII-7563/120	120	7.0°	3	165.5	-195.0	-18.1	2200W	7s	24W	Φ89x40
BII-7563/200	200	4.3°	3	173.7	-195.0	-22.5	1800W	4s	28W	Φ89x35
BII-7564/70	70	8.6°	3	162.3	-194.0	-15.8	4800W	12s	30W	Φ114x50
BII-7564/120	120	5.0°	3	170.4	-195.0	-20.5	3800W	7s	38W	Φ114x40
BII-7566/38	38	10.6°	3	157.0	-183.0	-14.0	4800W	48s	48W	Φ168x70
BII-7566/50	50	8.0°	3	160.6	-187.0	-16.5	4800W	32s	52W	Φ168x62
BII-7566/70	70	5.6°	3	169.4	-172.8	-20.0	4800W	26s	67W	Φ168x38
BII-7566/120	120	3.5°	3	177.5	-180.0	-24.6	4800W	12.5s	77W	Φ168x35

Side Lobes:	1. Default <-17.8 dB; The Two-way BW is listed above. 2. Side lobe suppression is available: ≤ -30 dB. The two-way BW is about 1.1 to 1.28 times larger.
Operating Depth:	100 m Maximum.
Following specs are for all BII-7560 series transducers.	
Pulse Driving Signal:	Spike (Negative or Positive), pulse and burst SINE/Square/Chirp excitation.
Beam Pattern:	Conical
Temperature Sensor:	1. Default: No built-in temperature sensor. 2. Built-in temperature sensor. Append **TS** to part number for integrating a temperature sensor in the transducer.
Impedance Matching:	BII-6000 Bespoke Impedance Matching between transducers and power amplifiers. Order Separately. Append **IM** to the part number listed above for integrating BII-6000 in the transducer.
T/R Switch:	BII-2100 Transmitting & Receiving Switching; Not Included. Order Separately, Append **TR** to part number for integrating a T/R Switch in the transducer.
Mounting Options:	1. Default: Free Hanging (FH) 2. Thru-hole Mounting with Single O-ring (THSO) 3. Thru-hole Mounting with Double O-ring (THDO) 4. Bolt Fastening Mounting (Stainless Steel): (BFMSS) 5. End-face Mounting: (EFM) 6. Flange Mounting: (FGM) 7. Flush Mounting: (FSM) Refer to online Transducer Mounting, Cable & Connector for more detailed information.
Cable:	1. Two Conductor Shielded Cable (SC) 2. 50 Ω RG58 Coax (RG58) 3. 50 Ω RG174/U Coax (RG174) 4. 50 Ω RG178/U Coax (RG178) (Operating Temperature Range: -70°C To +200°C) 5. Two Conductor Unshielded Cable (USC)

Cable Length:	1. Default: 1m 2. Custom
Connector:	1. Default: Wire Leads (WL) 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-waterproof.
Operation 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:	-20 °C to +60 °C or -4 °F to 140 °F.

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.

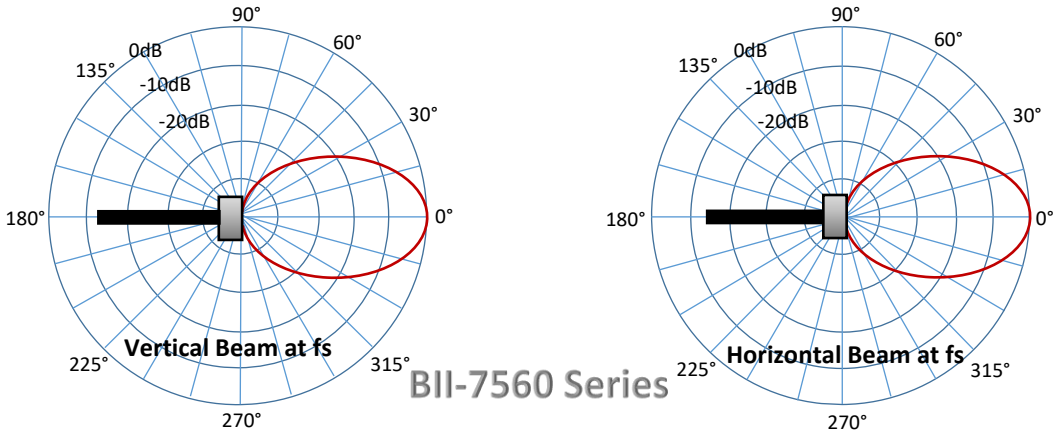
WARNING: DANGER — HIGH VOLTAGE on wires. Wires shall be insulated for safety. DO NOT TOUCH THE WIRES BEFORE THE DRIVING SIGNAL IS SHUT DOWN. Cable shield must be grounded firmly for safety.

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 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.

Transducer Wiring:

Wiring:	**Two Conductor Shielded Cable**	**Coax/BNC**	**Underwater Connector**	**MIL-5015 Connector**
Transmitting +	White or Red	Center Contact	Contact 2	Contact C
Transmitting -	Black	Shield	Contact 1	Contact B
Shielding and System Grounding	Shield	Shield	Contact 3	Contact A

Directivity Pattern: illustration ONLY. Please refer to -3 dB beam width and side lobes of a specific transducer.



BII-7560 Series