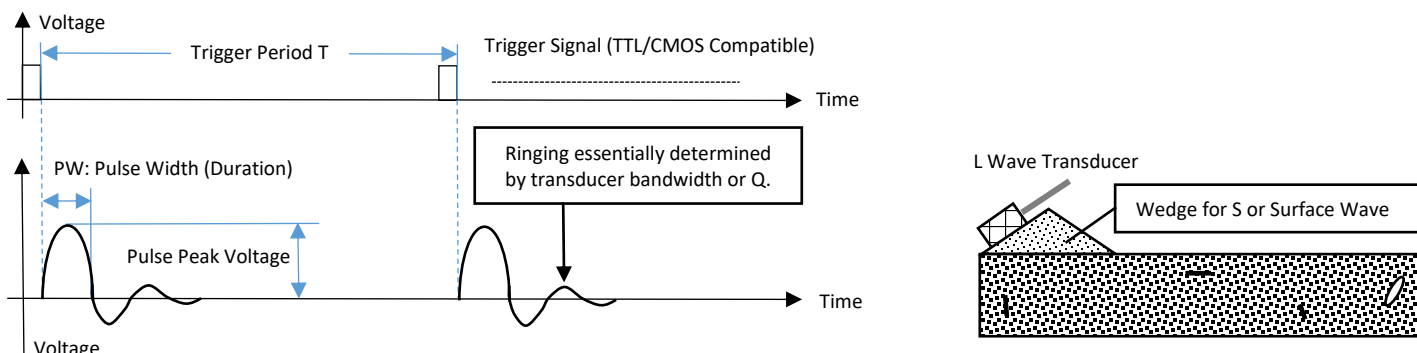


Ultrasonic Pulser-Receiver

BII's portable ultrasound pulser-receivers are designed for NDT applications (Nondestructive Testing) and Sound Velocimeter such as sound velocity profiling, absorption, flaw detection, thickness gaging, materials characterization, level and flow measurement, proximity sensing, etc...

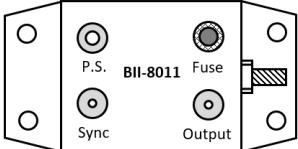
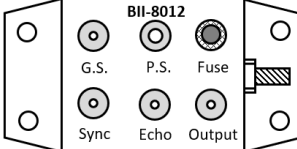
With a low power DC power supply, BII-8010 series generates repetitive high-power positive pulses in tens nS to drive a broadband ultrasonic transducer, captures the echoes (reflected stress waves), and amplifies the signals with digitally programmable gains for operator's oscilloscopes and computer-based digitizers (DAQ).

Shock Excitation Signal (Single Voltage Pulse or Spike):



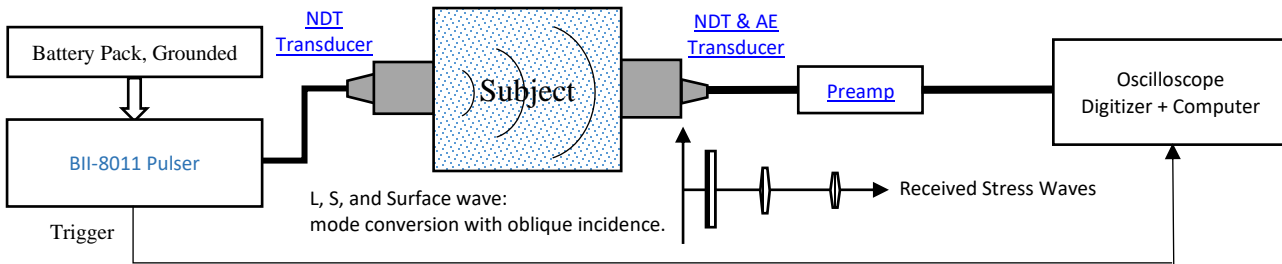
Typical Applications	
Flaw Detection, Structure Health Monitoring. Materials Characterization, NDT, Diagnostic ultrasound.	Underwater Sound Velocity Profiler, Thickness Gaging. Excitation of Longitudinal, Shear Wave, and Guided Waves.

Specification

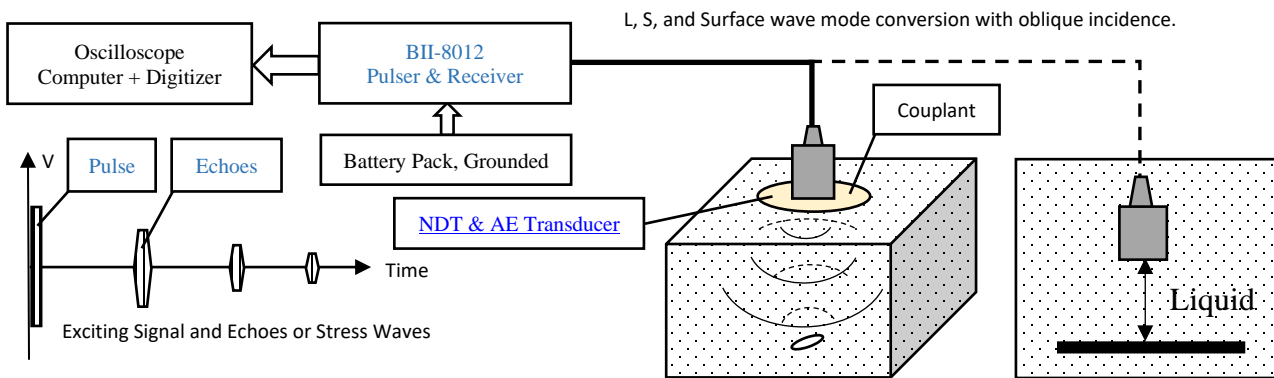
Ultrasonic Pulser-Receiver	BII-8011	BII-8012
		
Function:	Pulser ONLY	Pulser and Receiver
Immersion:	Not water-proofed, use in dry air ONLY.	
Transducer:	BII-7690 Series NDT Ultrasound Transducer . NOT included, order separately. 1. Transducers matching to 50 Ω. 2. Transducers without impedance matching.	
Pulser		
Pulse Type:	Positive Voltage Spike or Positive Impulse	
Pulse Width PW:	Typical ≤ 50 ns. 30 ns to 100 ns depending on transducers.	
PRR:	Pulse Repetition Rate (PRR): 1 pulse per second. 1. Pulse Period T = 1/PRR. 2. Duty Cycle D = PW/T = PW * PRR. 3. Bandwidth Δf-3dB of SINE Pulse ≈ 0.89/T = 0.89 * PRR.	
Pulse Peak Voltage V _{ppv} :	Fixed and bespoke, available from 50, 100, 150 and 200 V _{peak} . Specify when ordering. Warning: make sure V_{ppv} is less than the maximum driving voltage which the transducer can take without damage.	
Average Pulse Power:	≤ 1000 W, determined by operating frequency or the pulse width.	
Connector:	50Ω BNC Jack.	
Synch (Trigger Signal)		
Synch Output:	5 V Square Pulse. Trigger Signal to receiving system. The pulse starts at fall edge of trigger signal. TTL/CMOS Compatible. Logic 0 or Low: 0 to +0.6 VDC. Logic 1 or High: +4.6 to +5.0 VDC.	
Output Current:	± 600 mA, pulse, Maximum.	
Delay Time t _d :	≤ 20 nS	
Rise Time t _r :	≤ 30 nS	
Fall Time t _f :	≤ 35 nS	
Delay, rise and fall time are for estimating accuracy of localization of a NDT system in design phase.		
Connector:	50 Ω BNC Jack	
Receiver		
-3dB Bandwidth:	N/A	0.1 to 15 MHz. Bespoke band pass filter, specify when ordering.
Gain:	N/A	30, 60 dB
Connector:	N/A	50 Ω BNC Jack
Noise Density (RTI):	N/A	1.9 nV/√Hz, 4 fA/√Hz.
Gain Selection:	N/A	One-bit digital word, CMOS/TTL Compatible. Logic Low 0: 0 to +0.8 VDC, or Short to Digital COM. Logic High 1: +2.4 VDC to +Vs VDC, or Open.
Gain Selection Table		
Digital A0	N/A	Gain
0	N/A	30 dB
1	N/A	60 dB

Connector:	N/A	BNC Jack
Supply Voltage Vs:	+14 to +35 VDC. Warning: Vs > +36 VDC will damage the device. Fuse: 0.5A, 250VAC or 60VDC, Slow-Blow, 3AB, 3AG, 1/4" x 1-1/4".	
Suggested DC Supply:	2 x 9 V Battery Packs; 2 x 12 V Marine Battery and Automobile Batteries, or DC Power Supply with Grounded Output and Protection of Output Current Limit.	
Power Supply Connector:	Power Connector Jack	
Quiescent Current:	1.5 mA	19 mA
Power Supply Cable:	1. DC Power Supply Cable: 1 m power supply cable with DC Power Plug and Banana Plugs. Red Banana Plug: +VDC. Black Banana Plug: Common. Grounded DC Supply is recommended.	
Grounding:	Grounding Cable options, #10-24 nut and #10 washer included. Support Single-Point Grounding with Multiple Devices. GWL18: 0.6m AWG 21 or 18 Green Wire with #10 Ring Terminal and Wire Lead. GRT18: 0.6m AWG 21 or 18 Green Wire with #10 Ring Terminal and #10 Ring Terminal. GBP18: 0.6m AWG 21 or 18 Green Wire with #10 Ring Terminal and 4mm Banana Plug (Green).	
Mounting Hole:	4 x Φ 5.5mm Mounting Holes. Accept M5 or #10 screw, not supplied.	
Connectors:	BNC Jacks, DC Power Jack, #10-24 Grounding Stud.	
Size (LxWxD):	147.2 x 67.2 x 67 mm	
Weight:	0.46 kg	0.65 kg
Operating Temperature:	-10 to 70 °C or 14 to 158 °F	
Storage Temperature:	0 to 70 °C or 32 to 158 °F	

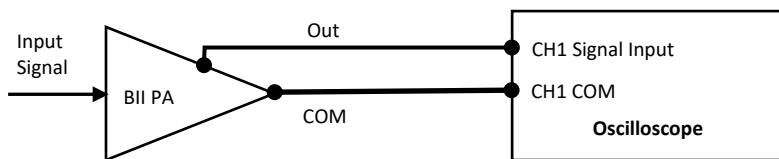
BII-8011 System Setup



BII-8012 System Setup



Measure Single Ended Output of BII Power Amplifiers



Warning:

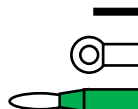
1. Outputs of the power amplifier is high voltage, choose suitable oscilloscope probe with correct attenuation and voltage rating.
2. for operating safety, ensure proper grounding, and shut down power supply of the device before handling the cables, wirings and hookup, etc.

Grounding Cable Options:

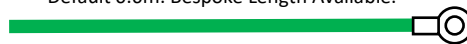
Accessory for Grounding for DC Supply Current, Support Single-Point Grounding with Multiple Devices:
GWL18: 0.6m AWG 18 Green Wire with #10 Ring Terminal and Wire Lead.
GRT18: 0.6m AWG 18 Green Wire with #10 Ring Terminal and #10 Ring Terminal.
GBP18: 0.6m AWG 18 Green Wire with #10 Ring Terminal and 4mm Banana Plug (Green).

Terminal Options:

- a. Wire Leads
- b. #10 Ring Terminal
- c. 4mm Banana Plug



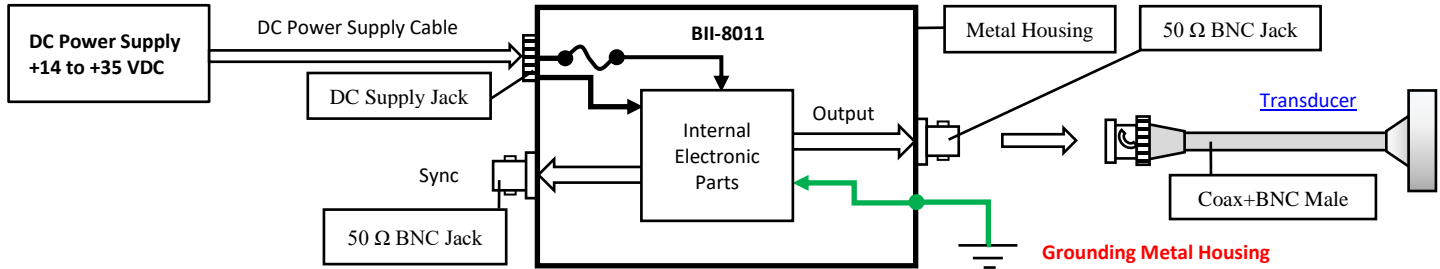
Default 0.6m. Bespoke Length Available.



#10 Ring Terminal
#10-24 nut and #10 washer included.

How to order:			
Pulsar & Receiver	-V _{ppv}	-BPF (for BII-8012 ONLY)	-Option of Grounding Cable
BII-8011, BII-8012	Positive Peak Voltage of the Pulse. 50, 100, 150, 200 V _{peak} .	-3dB Band Pass Filter of receiving, in MHz.	GWL18, GRT18, GBP18.
Example of Part Number	Description		
BII-8011-200Vp-GBP18	BII-8011, 200 V _{peak} Pulse Voltage, GWL18 Grounding Cable.		
BII-8012-100Vp-0.1MHz/15MHz-GBP18	BII-8012, 100 V _{peak} Pulse Voltage, Bandpass Filter: 0.1 to 15 MHz, GBP18 Grounding Cable.		

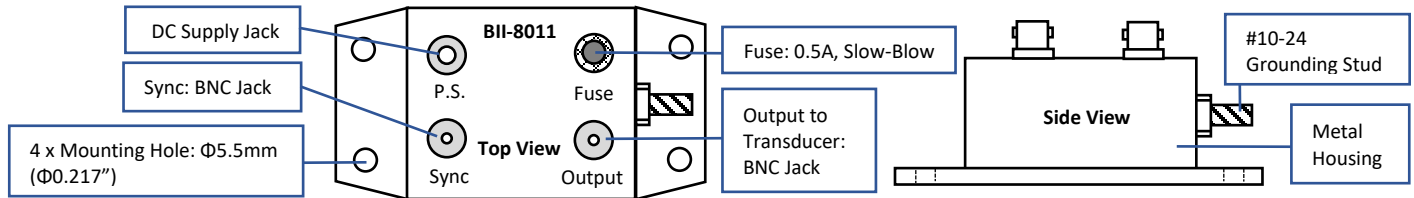
BII-8011 System Block Diagram



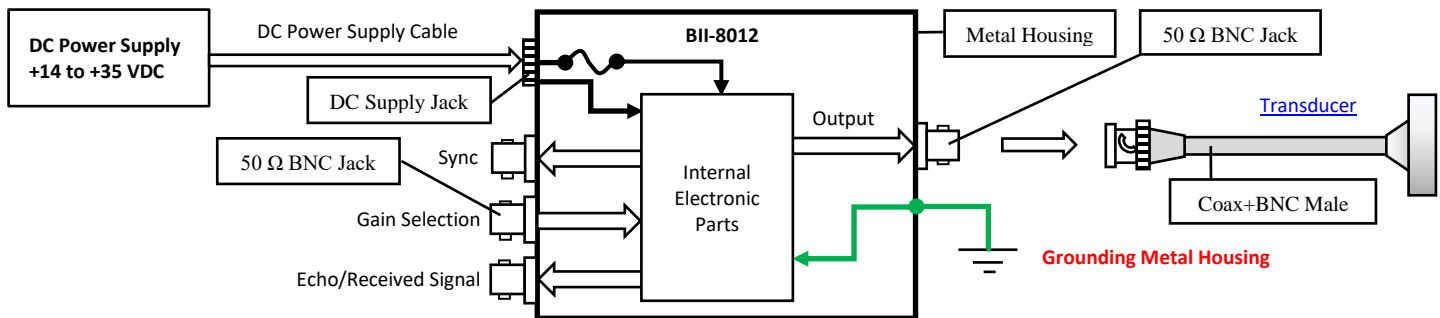
BII-8011 Synch Output	BII-8011 Output	Transducer Cable and Connectors
BNC Jack	BNC Jack	Coax + In-line BNC Plug (Male)
Synch Signal: Center Socket	Signal: Center Socket	Signal: Center Pin
Grounded Common: Body.	Grounded Common: Body.	Common: Body.
Grounding Metal Case for operating safety. Grounding Stud: #10-24 Screw, Nut and Washer included. Support Single-Point Grounding with Multiple Devices.		
Note: The body of Power Supply Jack is connected to metal case.		
DC Power Supply Cable: 1 m power supply cable with DC Power Plug and Banana Plugs. Fuse: 0.5A, 250VAC or 60VDC, Slow-Blow, 3AB, 3AG, 1/4" x 1-1/4".		
Red Banana Plug: +VDC, Black Banana Plug: Common. Common of DC Power Supply should be grounded.		

BII-8011 Physical Size (Metal Enclosure with four slots for mounting and grounding):

Overall Size: LxWxH = 147.2x67.2x67 mm. **Mounting Hole** $\Phi 5.5\text{mm}$ ($\Phi 0.217''$) accepts M5 or #10 screw. BII does not supply screws.



BII-8012 System Block Diagram

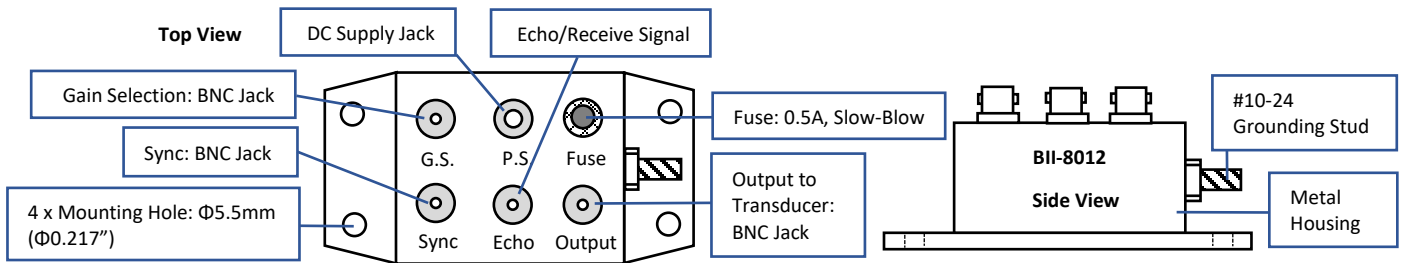


BII-8012 Synch Output, Gain Selection and Echo/Received Signal	BII-8012 Output	Transducer Cable and Connectors
3 x BNC Jacks	BNC Jack	Coax + In-line BNC Plug (Male)
Signal: Center Socket	Signal: Center Socket	Signal: Center Pin
Grounded Common: Body.	Grounded Common: Body.	Common: Body.
Grounding Metal Case for operating safety. Grounding Stud: #10-24 Screw, Nut and Washer included. Support Single-Point Grounding with Multiple Devices.		
Note: The body of Power Supply Jack is connected to metal case.		
DC Power Supply Cable: 1 m power supply cable with DC Power Plug and Banana Plugs. Fuse: 0.5A, 250VAC or 60VDC, Slow-Blow, 3AB, 3AG, 1/4" x 1-1/4".		
Red Banana Plug: +VDC, Black Banana Plug: Common. Common of DC Power Supply should be grounded.		

BII-8012 Physical Size (Metal Enclosure with four slots for mounting and grounding):

Overall Size: LxWxH = 147.2x67.2x67 mm. **Mounting Hole** $\Phi 5.5\text{mm}$ ($\Phi 0.217''$) accepts M5 or #10 screw. BII does not supply screws.

G.S.: Gain Selection. **P.S.:** DC Power Supply.



Metal Housings, Outline Dimensions (mm), Illustration only, the scale is not 1:1.

