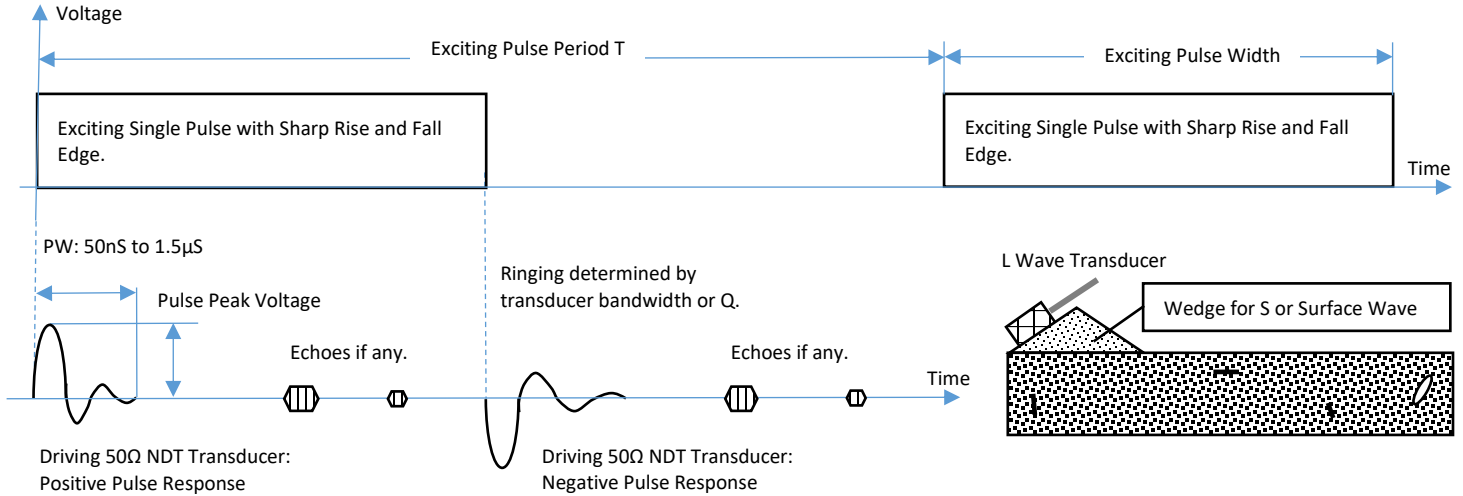


**Ultrasonic Pulser-Receiver**

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, BII8010 series generates repetitive high-power positive pulses and negative pulses in 50nS to 1.5µS 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):**  
PW: Pulse Width (Duration)



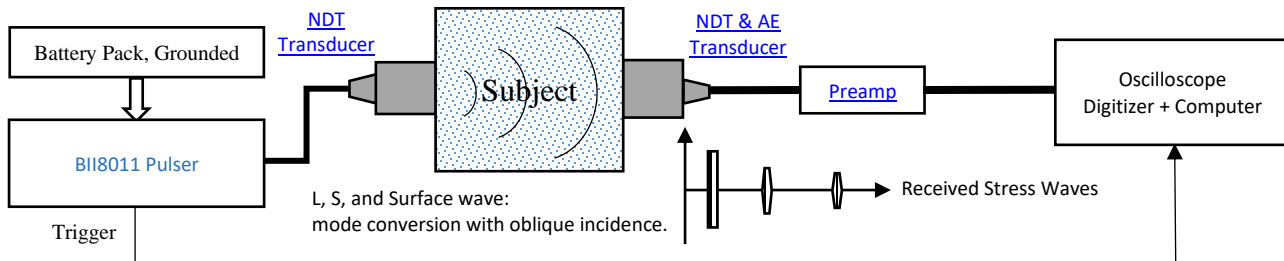
Typical Applications	
Flaw Detection, Structure Health Monitoring. Materials Characterization/Study, NDT, Diagnostic ultrasound.	Underwater Sound Velocity Profiler, Thickness Gaging. Excitation of Longitudinal, Shear Wave, and Guided Waves.

**Specification**

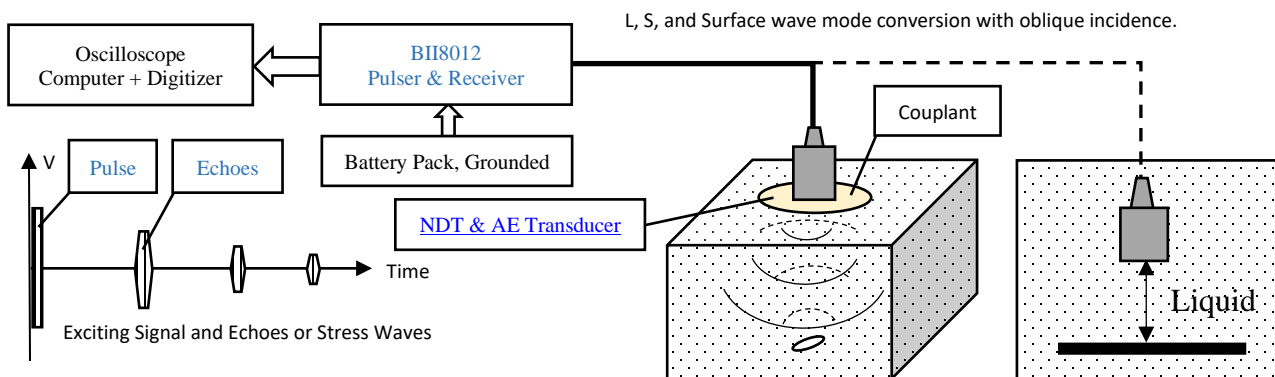
Ultrasonic Pulser-Receiver	BII8011	BII8012
Function:	Pulser ONLY	Pulser and Receiver
Immersion:	Not water-proofed, use in dry air ONLY.	
Transducer:	<a href="#">BII7690 Series NDT Ultrasound Transducer</a> . NOT included, order separately. 1. Transducers matching to 50 Ω. 2. Transducers without impedance matching.	
<b>Pulser</b>		
Pulse Type:	Positive Voltage Spike and Negative Voltage Spike, or Positive and Negative Impulses.	
Pulse Width PW:	50 nS to 1.5 µS depending on transducers.	
PRR:	Pulse Repetition Rate (PRR): 0.5 pulse per second. 1. Pulse Period T = 1/PRR = 2 Seconds. 2. Duty Cycle D = 50%.	
Pulse Peak Voltage V <sub>ppv</sub> :	5*Vs and -5*Vs at +Vs DC Supply. For Example, 135 and -135 V <sub>peak</sub> at +27VDC Supply. <b>Warning: make sure V<sub>ppv</sub> is less than the maximum driving voltage which the transducer can take without damage.</b>	
Pulse Power Capacity:	108 W	
Connector:	50Ω BNC Jack.	
<b>Synch (Trigger Signal)</b>		
Synch Output:	5 V Square Pulse. Trigger Signal to receiving system. The pulse starts at fall edge of trigger signal. TTL/CMOS Compatible. <b>Logic 0 or Low:</b> 0 to +0.6 VDC. <b>Logic 1 or High:</b> +4.6 to +5.0 VDC.	
Output Current:	± 600 mA, pulse, Maximum.	
Delay Time t <sub>d</sub> :	≤ 20 nS	
Rise Time t <sub>r</sub> :	≤ 30 nS	
Fall Time t <sub>f</sub> :	≤ 35 nS	
<b>Delay, rise and fall time are for estimating accuracy of localization of a NDT system in design phase.</b>		
Connector:	50 Ω BNC Jack	
<b>Receiver</b>		
-3dB Bandwidth:	N/A	10 kHz to 17 MHz.

Gain:	N/A	30, 60 dB
Connector:	N/A	50 Ω BNC Jack
Noise Density (RTI):	N/A	3 nV/√Hz, 4 fA/√Hz.
Gain Selection:	N/A	One-bit digital word, CMOS/TTL Compatible. <b>Logic Low 0:</b> 0 to +0.8 VDC, or Short to Digital COM. <b>Logic High 1:</b> +2.4 VDC to +Vs VDC, or Open.
<b>Gain Selection Table</b>		
<b>Digital A0</b>	N/A	<b>Gain</b>
0	N/A	30 dB
1	N/A	60 dB
Connector:	N/A	BNC Jack
Supply Voltage Vs:	+12 to +27 VDC.	
	Fuse: 0.3A, 250VAC or 60VDC, Slow-Blow, 3AB, 3AG, 1/4" x 1-1/4".	
	Warning: Vs > +30 VDC may damage the device.	
Suggested DC Supply:	3 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:	DC Power Connector Jack	
Quiescent Current:	1.5 mA	19 mA
Power Supply Cable:	1. DC Power Supply Cable <b>DCBP24</b> : 1 m power supply cable with DC Power Plug and Banana Plugs. <b>Red Banana Plug</b> : +VDC. <b>Black Banana Plug</b> : Common. <b>Grounded DC Supply is recommended.</b> 2. <b>DCBS27V</b> : Three 9V Battery Snaps + 0.3m (12") Cable + DC Power Plug.	
Grounding:	<b>Grounding Cable options, #10-24 nut and #10 washer included.</b> Support Single-Point Grounding with Multiple Devices. <b>GWL18</b> : 0.6m AWG 21 or 18 Green Wire with #10 Ring Terminal, 4mm Banana Plug (Green), and Wire Lead.	
Mounting Hole:	4 x Ø5.5mm 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	

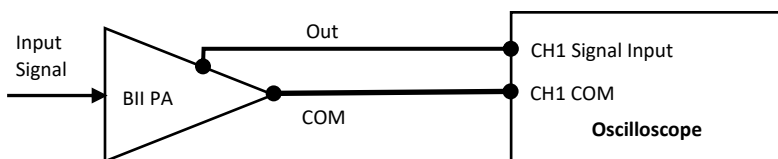
**BII8011 System Setup**



**BII8012 System Setup**



**Measure Single Ended Output of BII Power Amplifiers**



**Warning:**

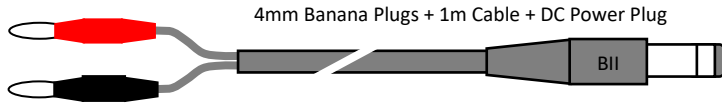
1. Outputs of the power amplifier is high voltage, choose suitable oscilloscope probe with correct attenuation and voltage rating.
2. for operating safety, ensure proper grounding, and shut down power supply of the device before handling the cables, wirings and hookup, etc.

**Accessories:**

**Part Number: DCBP24.**

**To Terminals of DC Supply:**

- a. One Red 4mm Banana Plug.
- b. One Black 4mm Banana Plug.

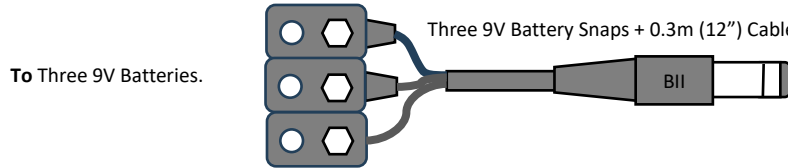


DC Power Plug.  
To DC Power Jack of the Device.

<b>Red Banana Plug or Red Wire Lead:</b> +VDC.	<b>Black Banana Plug or Black Wire Lead:</b> Common.	<b>Cable Shield, if any:</b> Shielding.
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One 1m DC supply cable. One end is with Red and Black Banana Plugs, another end of the cable is with DC Power Plug. Depending on output terminals of buyer's DC Supply, buyer may assemble other type of connectors to DC supply cable at buyer's cost.

**Part Number: DCBS27V.**



To Three 9V Batteries.

DC Power Plug.  
To DC Power Jack of the Device.

One 0.3m (12") DC supply cable. One end is three 9V Battery Snaps which supplies +27VDC to amplifiers, another end of the cable is with DC Power Plug.

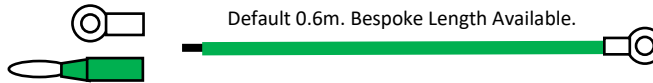
**Grounding Cable and Terminals**

**Grounding Cable, Part Number: GWL18,** Support Single-Point Grounding with Multiple Devices.

One 0.6m AWG 18 or AWG 16 Green Wire with #10 Ring Terminal and Wire Lead. One #10 Ring Terminal and one 4mm Banana Plug (Green) are included. Depending on buyer's grounding terminal type, buyer assembles #10 Ring Terminal, 4mm Banana Plug, or other type connector to grounding cable at buyer's cost.

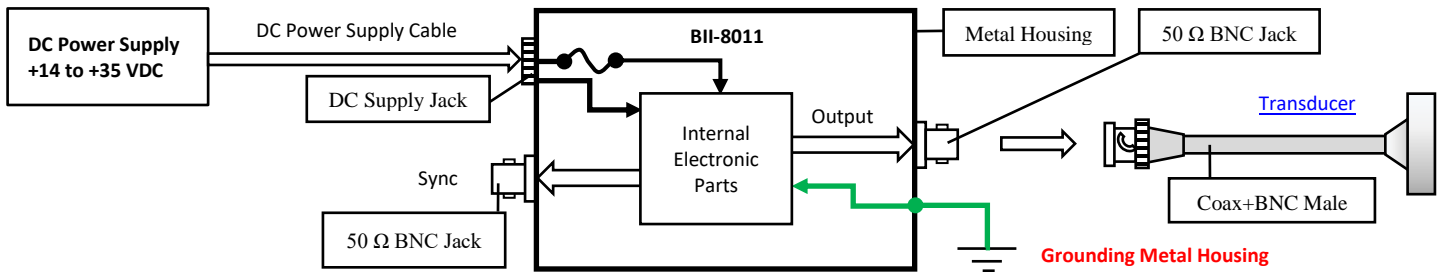
**Terminal to buyer's Grounding Terminal:**

- a. Default: Wire Lead
- b. One #10 Ring Terminal
- c. One 4mm Banana Plug



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

**BII8011 System Block Diagram**

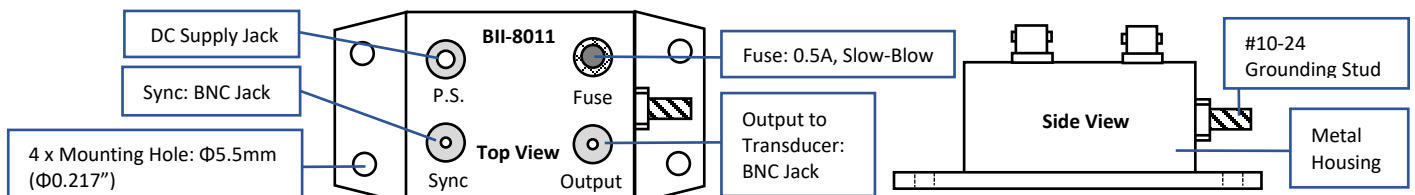


BII8011 Synch Output	BII8011 Output	Transducer Cable and Connectors
<b>BNC Jack</b>	<b>BNC Jack</b>	<b>Coax + In-line BNC Plug (Male)</b>
Synch Signal: Center Socket	Signal: Center Socket	Signal: Center Pin
Grounded Common: Body.	Grounded Common: Body.	Common: Body.

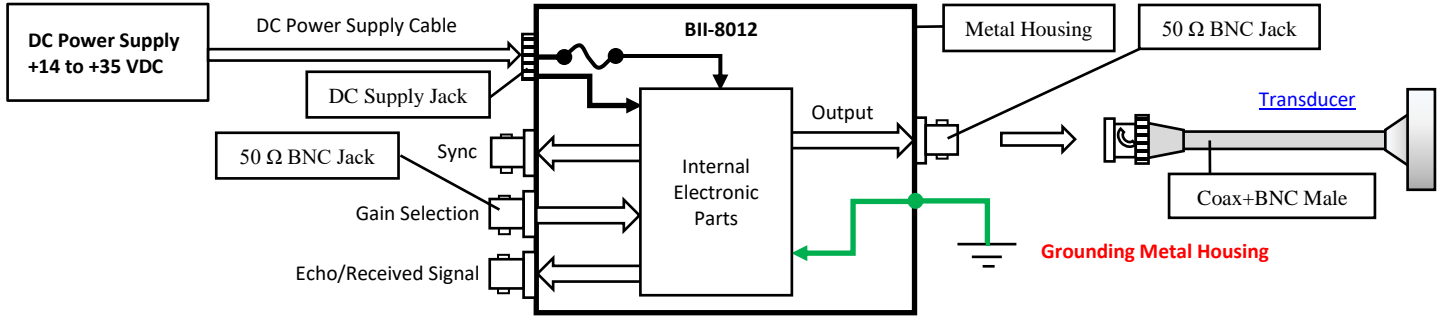
**Grounding Metal Case for operating safety. Grounding Stud: #10-24 Screw, Nut and Washer included.** Support Single-Point Grounding with Multiple Devices.  
**Note: The body of Power Supply Jack is connected to metal case.**  
**DC Power Supply Cable:** 1 m power supply cable with DC Power Plug and 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.**

**BII8011 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.



**BII8012 System Block Diagram**

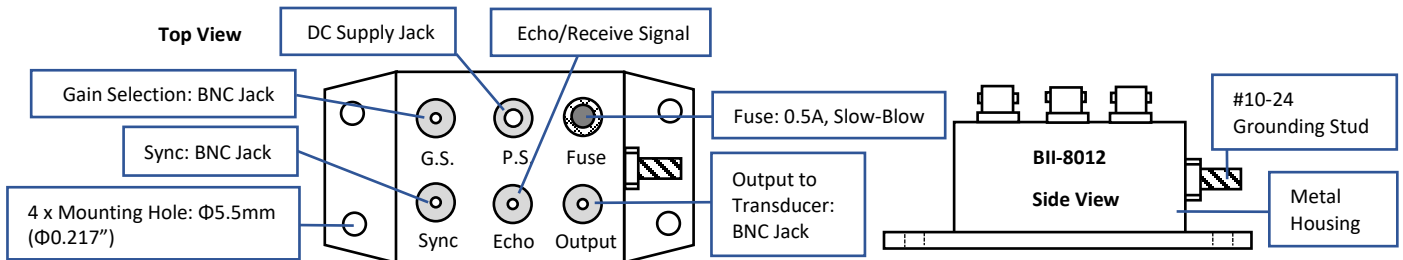


BII8012 Synch Output, Gain Selection and Echo/Received Signal	BII8012 Output	Transducer Cable and Connectors
<b>3 x BNC Jacks</b>	<b>BNC Jack</b>	<b>Coax + In-line BNC Plug (Male)</b>
Signal: Center Socket	Signal: Center Socket	Signal: Center Pin
Grounded Common: Body.	Grounded Common: Body.	Common: Body.
<b>Grounding Metal Case for operating safety. Grounding Stud: #10-24 Screw, Nut and Washer included. Support Single-Point Grounding with Multiple Devices.</b>		
<b>Note: The body of Power Supply Jack is connected to metal case.</b>		
<b>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".</b>		
<b>Red Banana Plug: +VDC, Black Banana Plug: Common. Common of DC Power Supply should be grounded.</b>		

**BII8012 Physical Size (Metal Enclosure with four slots for mounting and grounding):**

**Overall Size:** LxWxH = 147.2x67.2x67 mm. **Mounting Hole**  $\Phi$ 5.5mm ( $\Phi$ 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.**

