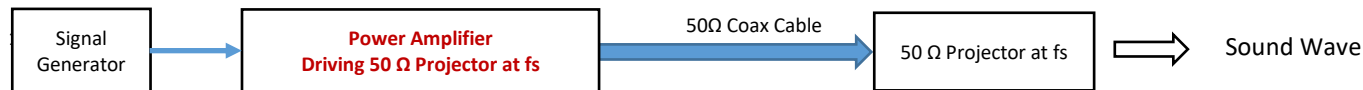


### BII5010 series Wideband Power Amplifier

#### DESCRIPTION

BII5010 series 10 MHz linear power amplifiers drive acoustic transducers to generate sounds (acoustic waves) in water, air, and solids.

#### SYSTEM CONFIGURATION




#### TYPICAL APPLICATIONS

Acoustical Imaging, HIFU (High Intensity Focused Ultrasound), Materials Study, NDT (Non-destructive Testing), Diagnostic Ultrasound, Inspection and Survey.

#### ABSOLUTE MAXIMUM RATINGS

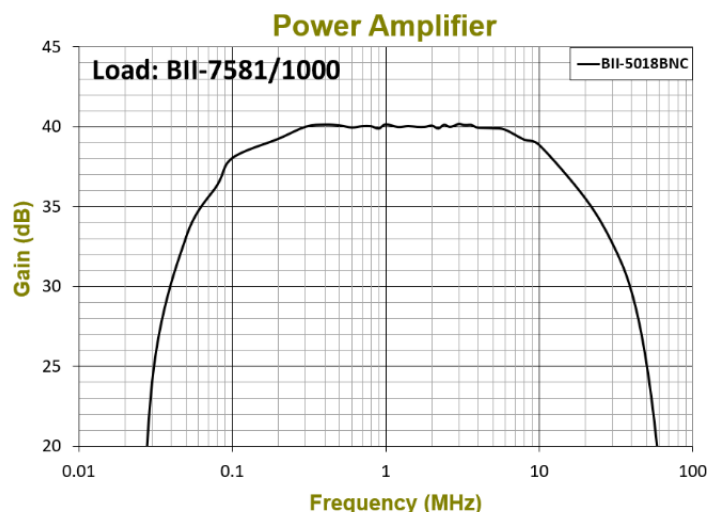
Power Amplifier	BII5018
DC Supply Voltage:	+36 VDC
Output Peak Current:	2.2 A
Input Voltage:	±10 V

**SPECIFICATIONS** at T = +17 °C, Vs = +24 VDC, Load: BII7581/1000 1MHz transducer, unless otherwise noted.

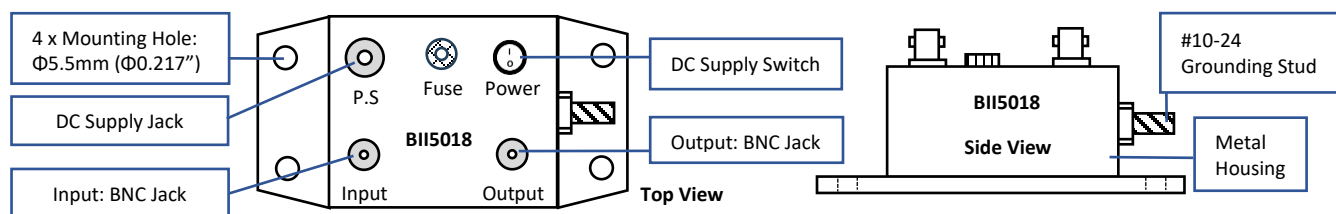
Power Amplifier		
Status:	<b>ACTIVE</b> <b>ACTIVE:</b> Product device recommended for new designs. <b>LIFEBUY:</b> BII has announced that the device will be discontinued, and a lifetime-buy period is in effect. <b>OBSELETE:</b> BII has discontinued the production of the device.	
Waterproof:	Not waterproof. <b>Always use the device in Dry Air for electrical safety.</b>	
Operating frequency:	0.1 to 15 MHz <b>Warning: the device performance degrades if operating frequency less than Minimum Operating Frequency.</b>	
Signal Type:	<b>Pulse Signals and Continuous Signals.</b> 1. SINE Pulse/Burst, Chirp/FM, Amplitude-Modulated SINE Pulses, FSK and PSK, Arbitrary Waveform, Spread Spectrum, etc. 2. Voltage Spikes and Single Pulse for NDT (Non-destructive Test). <b>Refer to: <a href="#">Typical Signals for Active SONAR, Ultrasound, HIFU (High Intensity Focused Ultrasound) and Communication.</a></b>	
Source Level Capability: (in Water)	<b>SINE/Chirp/Amplitude-Modulated Pulses:</b> 188.5 + DI, dB μPa at 1m. <b>Voltage Spikes and Single Pulse:</b> 191.5 + DI, dB μPa at 1m. <b>DI:</b> Directivity Index of the transducer.	
Operating Mode:	Linear	
Impedance Matching:	Built-in Impedance Matching, Driving 50 Ω Transducers.	
Gain:	40 dB or x 100	
Input Type:	Single Ended	
Input Connector:	BNC Jack	
Input Impedance:	1. Default: 1 KΩ    7 pF. 2. Bespoke: 50 Ω    7 pF. Buyer specify when ordering.	
Maximum Input Level:	2 Vpp, or Maximum Output Level/Gain, whichever is less.	
Output Type:	Single ended	
Output Connector:	BNC Jack	
Voltage Output:	V <sub>o max</sub> = Input Level * Gain, or (2Vs-16), in Vpp, whichever is less. Vs: DC Supply Voltage.	
Current Output:	I <sub>o</sub> ≤ 2 A peak.	
Load:	<a href="#">50Ω Transducers.</a>	
Shut-down:	Not Available.	
Output Disable Time:	N/A	
Output Enable Time:	N/A	
Full Power Bandwidth:	Refer to <a href="#">Frequency Response.</a>	
Pulse Power Capability: (RMS Power)	<b>SINE Pulse and Arbitrary Pulsing Waveform, etc.:</b> 118W@+32VDC Supply. 78W@+24VDC Supply. 18W@+12VDC Supply.	<b>Voltage Spikes and Single Pulse:</b> 235W@+32VDC Supply. 155W@+24VDC Supply. 35W@+12VDC Supply.
Power Efficiency: (Driving 50Ω at I <sub>o max</sub> )	<b>SINE Pulse and Arbitrary Pulsing Waveform, etc.:</b> 58% at +32 VDC. 51% at +24 VDC. 23% at +12 VDC. Driving Untuned Transducers: Power Efficiency of driving tuned transducers*cosθ. θ: Impedance Phase of Untuned Transducers. <b>It is NOT recommended to drive untuned transducers (active load) with pulses.</b>	<b>Voltage Spikes and Single Pulse:</b> 73% at +32 VDC. 65% at +24 VDC. 29% at +12 VDC.
DC Supply Voltage Vs:	+10 to +32 VDC.	
Suggested DC Supply	Marine Battery, Automobile Battery, or DC Power Supply with Grounded Output and Protection of Output Current Limit.	

	Fully charged 12V Automobile or Marine Battery are from 12.6 to 14.4 VDC. Ensure that voltage of battery pack is less than maximum DC supply voltage.
Quiescent Current:	15 mA
DC Supply Connector:	DC Power Jack.
Fuse:	7A, 250VAC, Slow-Blow, 3AB, 3AG, 1/4" x 1-1/4".
Accessory Cable:	1. DC Power Supply Cables: <a href="#">DCBP24</a> .
Cable Connector:	2. Grounding Cable: <a href="#">GWL18</a> .
Package:	Metal Enclosure
Grounding Terminal:	<b>Grounding Stud</b> , Two #10-24 nuts and Two #10 washers are included. Support Single-Point Grounding with Multiple Devices.
Mounting Holes:	4 x $\Phi 5.5\text{mm}$ ( $\Phi 0.217''$ ). Accept M5 or #10 screw, not supplied.
Size (mm):	LxWxH = 180.5 x 110.3 x 75
Weight in Air:	0.8 kg
Operating Temperature:	-20 to 70°C or -4 to 158°F
Storage Temperature:	-20 to 70°C or -4 to 158°F
<b>WARNING:</b> The buyer should observe the National Electrical Code or other related codes of buyer's country to assemble and integrate this device into buyer's product or system, and follow the code to ground and insulate this device. It is buyer's sole responsibility to make sure the proper insulation and grounding for operating safety before putting the device into service.	

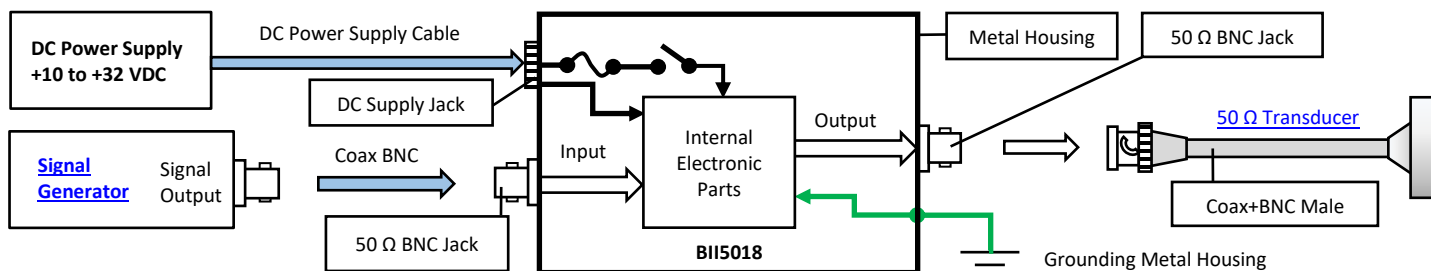
Frequency Response (Load: BII7581/1000 1MHz Transducer)



**BII5018:** Input and Output Connectors: BNC Jack. Metal Enclosure, Overall Size: LxWxH = 180.5x110.3x75mm. Mounting Hole  $\Phi 5.5\text{mm}$  ( $\Phi 0.217''$ ) accepts M5 or #10 screw. Screws are not supplied.



System Block Diagram and Wiring: Driving 50Ω Transducer with BNC Male.



Signal Generator	BII5018		50 Ω Transducer
BNC Jack	Input: BNC Jack	Output: BNC Jack	Coax + In-line BNC Plug (Male)

Signal: Center Socket	Signal: Center Socket	Signal: Center Socket	Signal: Center Pin
Common: Body.	Grounded Common: Body.	Grounded Common: Body.	Common: Body.
DC Power Supply Cable	Part Number: <b>DCBP24</b> , One 0.6 m DC supply cable with DC Power Plug and Banana Plugs. <b>Red Banana Plug</b> : +VDC, <b>Black Banana Plug</b> : Common.		
DC Supply Switch:	Turn ON and Turn OFF DC Supply. <b>"I" -&gt; ON; "O" -&gt; OFF.</b>		
Fuse:	7A, 250VAC, Slow-Blow, 3AB, 3AG, 1/4" x 1-1/4".		
Accessories:	1. One DC Power Supply Cables: <b>DCBP24</b> . 2. One Grounding Cable, Part Number: <b>GWL18</b> .		
Grounding Metal Case for operating safety.	<b>Grounding Stud</b> : #10-24 Screw 316SS. Nut and Washer are included. Support Single-Point Grounding with Multiple Devices. <b>Note: The body of Power Supply Jack is connected to metal case.</b>		
1. Install the device to a safe solid object to avoid sliding. An air free-flowing area and good thermal conducting object allow the device to cool down. 2. Never use the device in the event of slide happening, otherwise, loss of the device into water, property damage, and person injury may occur.			

#### How to Order

Part Number:	Description
BII5018	BII5018, Linear Power Amplifier.

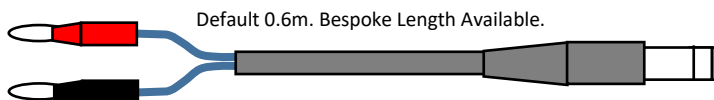
#### Customer's Question: What if the connector of my transducer/projector is SMA or SMC Connector?

BII Answers: Buyer may order a BNC to SMA (or SMC) adaptor from local electronic distributors in buyer's country. BII may ship the adaptor as accessory of the device. Please discuss with BII for customizations.

#### DC Supply Cable Pair: Part Number DCBP24.

##### To Terminals of DC Supply:

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



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

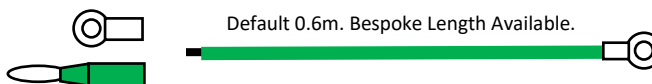
**Red Banana Plug**: +VDC. **Black Banana Plug**: Common.

One 0.6m DC supply cable. One end of the cable is with DC Power Plug, another end is Red and Black Banana Plugs. Depending on output terminals of buyer's DC Supply, buyer may assemble other type of connectors to DC supply cable at buyer's cost.

#### Grounding Cable and Terminals

##### Terminal to buyer's Grounding Terminal:

- Default: Wire Lead
- One #10 Ring Terminal
- One 4mm Banana Plug



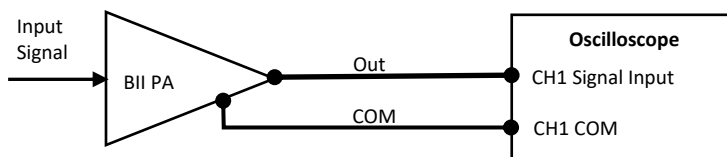
#10 Ring Terminal  
#10-24 nut and #10 washer included.

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

One 0.6m AWG 18 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 of connectors to grounding cable at buyer's cost.

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



##### Warning:

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

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

