



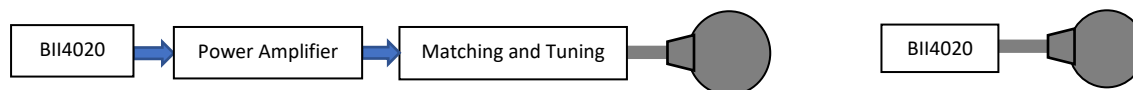
BII4020 Series Pulsed Square Waveform for Acoustic Systems

BII4020 series is a pulse-signal or pulse-train generator whose voltage level is TTL/CMOS compatible and duty cycle is 50% and is for embedded and standalone applications in Pulsing-Echo acoustic systems (SONAR, NDT, Diagnostic ultrasound...), HIFU, and underwater communication system. It features low power, high accuracy, and long-term stability.

BII4020s are used to drive switching mode power amplifiers. Besides, BII4020 can also be used to drive transducers directly for low power application in Laboratory or pilot study in field.

High Power Application (DC Power Supply: not shown.)

Low Power Application (DC Power Supply: not shown.)



Typical Application	
Active SONAR System, Seafloor Mapping, Echo Sounding Communication/Positioning/Beacon/Transponder/Pinger/Locator Artificial Acoustic Target, Phantom Echo Generation Ultrasonic Instrumentation, HIFU System, NDT, Diagnostic ultrasound	Sub-Bottom Investigation/Assessment/Profiler Sediment Profiling, Sediment Penetrating Detection Buried Objects Search, Pipeline/Cable Survey Navigation/Fishery Acoustics/Physical Oceanography
Features	
High Accuracy, long-term Stability, Low Power Consumption.	Pulse Width: 20 nS to 100 S, Pulse Period: 1.024 ms to 8 hrs.

Specification

Pulse Generator	BII4021	BII4022
	Dry Uses ONLY	Underwater, ≤ 300m.
Status:	ACTIVE	ACTIVE
Signal Type:	Gated Pulse Signal, Pulses, Pulse Trains, or Pulsed (Burst) Square Signals.	
Frequency Range:	1 kHz to 10 MHz, Bespoke.	
Pulse Width or Duration (PW):	20 nS to 100 S, Bespoke.	
Pulse Repetition Rate (PRR):	PRR: ≥ 0.000035 pps (Pulses Per Second), or Pulse Period T: 1.024 ms to 8 hrs, Bespoke.	
Frequency Accuracy:	1 kHz to 10 MHz: ±0.5% typical. 1 kHz to 10 MHz: ±1.5% Maximum, @25 °C.	
Frequency Stability	±0.005%/°C, ref @25 °C	
Aging/Long-Term Stability	±150 ppm/vkHr, @25 °C	
Pulse Width Output:	Rise Edge Pulse Signal. Logic 0 or Low: 0 to +0.4VDC, Logic 1 or High: +2.6V to +5.0VDC. Pulse Width Signal can ONLY drive short cable (≤1 m) to keep steep rise and fall edges. Pulse Width Output can be used as Trigger Signals.	
Output Voltage Level:	TTL/CMOS Compatible. Logic 0 or Low: 0 to +0.4VDC, Logic 1 or High: +2.6V to +5.0VDC.	
Output Type:	Single-ended	
Maximum Output Current:	± 75 mA	
Minimum load:	$R_{min} = (V_{omax}/2)/I_{omax}$.	
Cable Drive Capability:	≤ 1 m, frequency dependent. Output signal can ONLY drive short cable to keep steep rise and fall edges.	
Quiescent Supply Current:	2 mA	
Supply Voltage:	+6 to +32 VDC	
Suggested DC Supply:	+9 VDC Batteries, Marine Battery, Automobile Battery, Fixed DC Linear Power Supply, Not Included. DO NOT use variable power supply whose maximum supply voltage is higher than the above rated voltage. DO NOT use switching mode DC power supply.	
Operating Temperature:	-10 to 70 °C or 14 to 158 °F	
Storage Temperature:	0 to 70 °C or 32 to 158 °F	
Housing:	Metal Housing with four mounting holes	Plastic Housing with Underwater Mateable Connectors
Output Signal Connector:	BNC Jack (BNC)	Four Pin Underwater Mateable Connector: 0.3m Cable + MCOM4M + OMBMC + MCDLS-F
Trigger Connector:	BNC Jack (BNC)	
Power Supply:	Power Connector Jack on Housing. Power Supply Cable: DC-PPBP-24 .	
Size:	LxWxH = 95x59x47 mm (available) or	Φ60mm x 50mm.

	77x50.6x43 mm (not available now).	
Weight:	180 grams	260 grams
Accessories:	By default, BII does NOT supply accessory cables.	
	A1: Bespoke length RG58, RG174, or RG178 Coax with BNC Male to BNC Male.	Bespoke Cable with mating underwater connectors. Contact BII for customization.

How to Order BII4020 Series.

Please specify signal frequency (kHz), pulse width (PW, ms: millisecond) and pulse repetition rate (PRR, pps: pulses per second, PRR = 1/T, T is signal Period.) when ordering. These parameters are factory-set and calibrated at 25°C, not adjustable/trimmable, but selectable with onboard switch's by operators.

BII4020 Series	-frequency	-PW	-PRR
Pulsed Pulse Generator	in kHz	in nS, μS, mS, or S.	in PPS
BII4021-37.5kHz-0.2mS-10PPS:	BII4021, Pulse Trains, f=37.5kHz; Pulse Width PW= 0.2ms, PRR=10pps.		
BII4021-1MHz-10μS-10PPS:	BII4021, Pulse Trains, f=1MHz; Pulse Width PW= 10μS, Pulse Repetition PRR=10PPS.		
BII4021-2MHz-10S-0.04PPS:	BII4021, Pulse Trains, f=2MHz; Pulse Width PW= 10S, Pulse Repetition PRR=0.04PPS.		

BII4020 Series Wiring:

BNC Jack	Center: Signal; Shield: Common.
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BII4022 Wiring

Connectors:	Wire Leads	Underwater Connector (Male), MCBH4M.
+VDC	Red	Pin 3
Common	Black	Pin 1
Output Signal	White	Pin 2
Trigger Signal if ordered.	Blue, Green, or Yellow	Pin 4

Accessories:

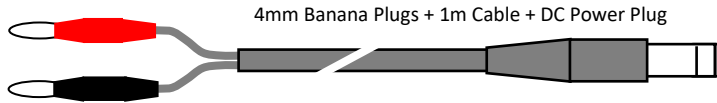
DC Supply Cable

Red Banana Plug or Red Wire Lead: +VDC.	Black Banana Plug or Black Wire Lead: Common.	Cable Shield, if any: Shielding.
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Part Number: DC-PPBP-24.

To Terminals of DC Supply:

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



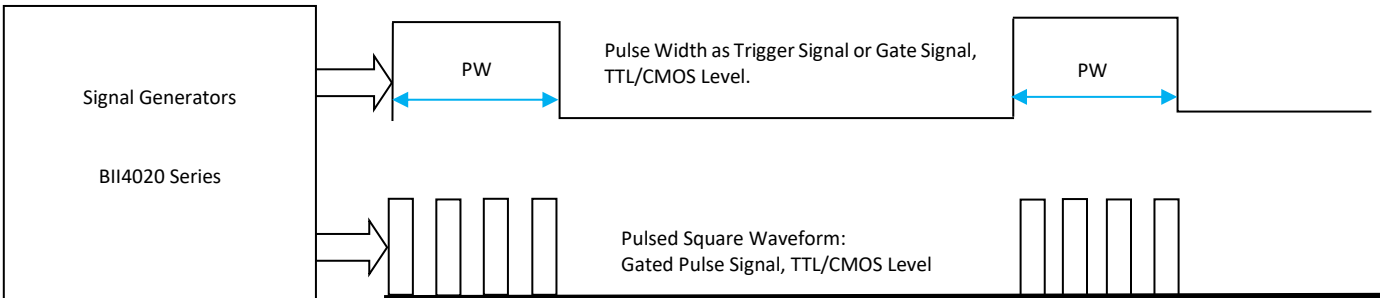
DC Power Plug.
To DC Power Jack of the Device.

One 1m 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.

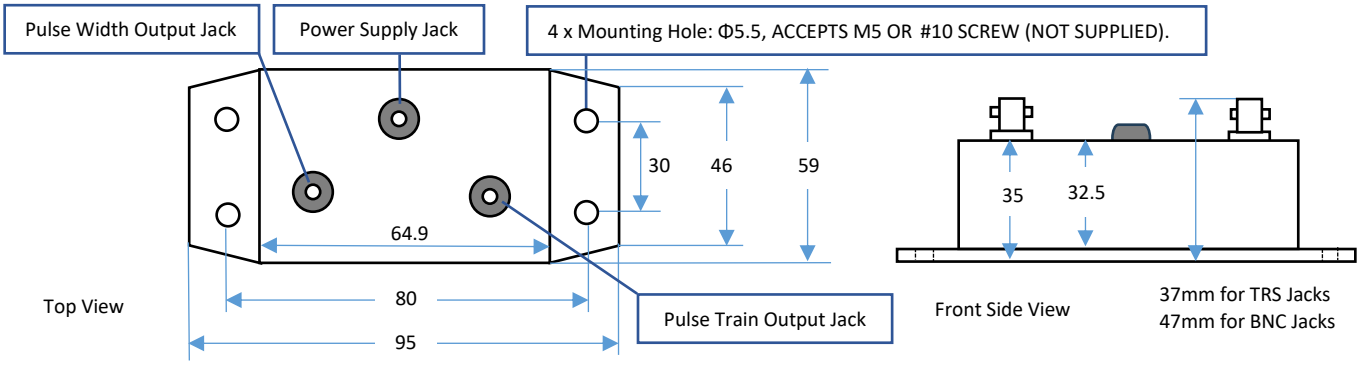
A1: Bespoke length RG58, RG174, or RG178 Coax with BNC Male to BNC Male. Default: 0.6m.



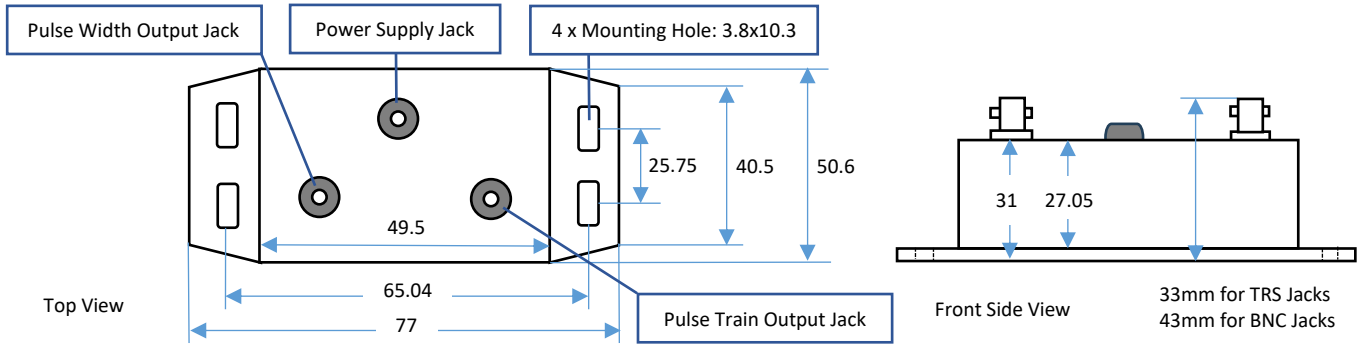
Output Waveform



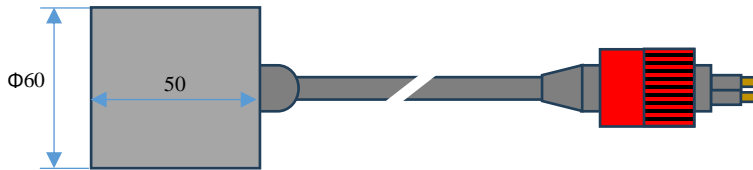
BI14021 Metal Housing (available):



BI14021 Metal Housing Option 2 (not available now):



BI14022 Outline (unit: mm).



0.3m Cable + MCOM4M + OMBMC + MCDLS-F.

Recommended Connector installed on buyer's submersibles:
MCBH4F