AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

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INSTRUCTIONS

MODEL AVG-3B-P-OS-NAVB

420 V, ≤ 2.5 ns

IMPULSE GENERATOR

SERIAL NUMBER: _____

WARRANTY

Avtech Electrosystems Ltd. warrants products of its manufacture to be free from defects in material and workmanship under conditions of normal use. If, within one year after delivery to the original owner, and after prepaid return by the original owner, this Avtech product is found to be defective, Avtech shall at its option repair or replace said defective item. This warranty does not apply to units which have been dissembled, modified or subjected to conditions exceeding the applicable specifications or ratings. This warranty is the extent of the obligation assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

TECHNICAL SUPPORT

Phone: 613-226-5772 or 1-800-265-6681
Fax: 613-226-2802 or 1-800-561-1970

E-mail: info@avtechpulse.com
World Wide Web: http://www.avtechpulse.com

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Manual Reference: /fileserver1/officefiles/instructword/avg/OBS/AVG-3B-P-OS-NAVB,edition1.sxw.
Last modified February 29, 2024.

INTRODUCTION

The AVG-3B-P-OS-NAVB is a high performance DC-powered module capable of generating impulses with amplitudes of < 300V to > 420V, with pulses widths of less than 2.5 ns, into loads of 50 Ohms in parallel with 20 pF of capacitance. The maximum repetition rate is 1 kHz.

This instrument must be triggered by an externally-generated TTL pulse, and it requires +24V DC (0.5A) and -5V DC (0.5A) prime power.

This instrument is intended for use in research and development laboratories.

ORIGINAL QUOTATION

June 24, 2004
Brian M. Concannon
NAVAIR
AIR-4.5.6 Bldg. 2185 Suite 1100
22347 Cedar Point Rd. Unit 6
Patuxent River, MD 20670-1161
301-342-2034
brian.concannon@navy.mil

Brian,

I am pleased to quote as follows:

Quote number: 12135

Model number: AVG-3B-P-OS-NAVB

Description: Impulse Generator

Amplitude: adjustable from < 300V to > 420V using a one-turn trimpot, into a load of 50 Ohms in parallel with 20 pF capacitance.

Pulse width: < 2.5 ns FWHM (not adjustable), into a load of 50 Ohms in parallel with 20 pF of capacitance.

Rise and fall times, 20%-80%: < 1.25 ns (see the attached photo for a typical waveform)

Required load resistance: 50 Ohms

Maximum load capacitance: 20 pF

Maximum repetition rate: 1 kHz

Polarity: positive

Dimensions: Avtech style A1 (see http://www.avtechpulse.com/catalog/page113_cat11_outlines_web.pdf)

Prime power required: +24V DC (0.5A) and -5V DC (0.5A)

Other: as per the standard AVG-3B-P-OS, described at http://www.avtechpulse.com/impulse/avg-3b

Price: $4998 US each, FOB destination.

Estimated delivery: 60-75 days after receipt of order.

Please call or email me if I can be of further assistance.

Regards,
Dr. Michael J. Chudobiak
Chief Engineer

--- Avtech Electrosystems Ltd. ---------- since 1975 ---

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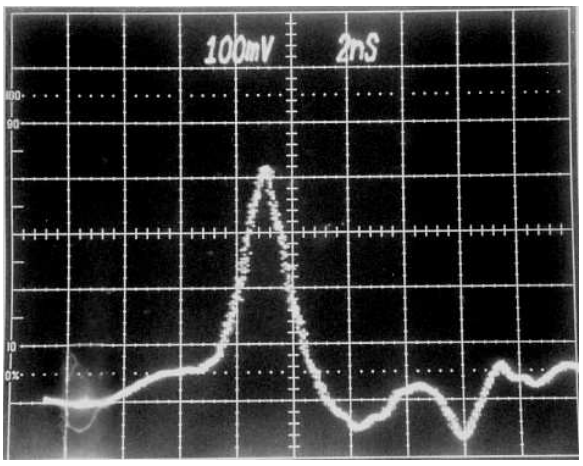
Nanosecond Waveform Generators
for general purpose, R&D and OEM applications

Pulse Generators - Laser Diode Drivers - Pulse Amplifiers
Impulse Generators - Current Pulsers - Delay Generators - Splitters
Function Generators - Monocycle Generators - Frequency Dividers + more!

Attached photo:



SPECIFICATIONS

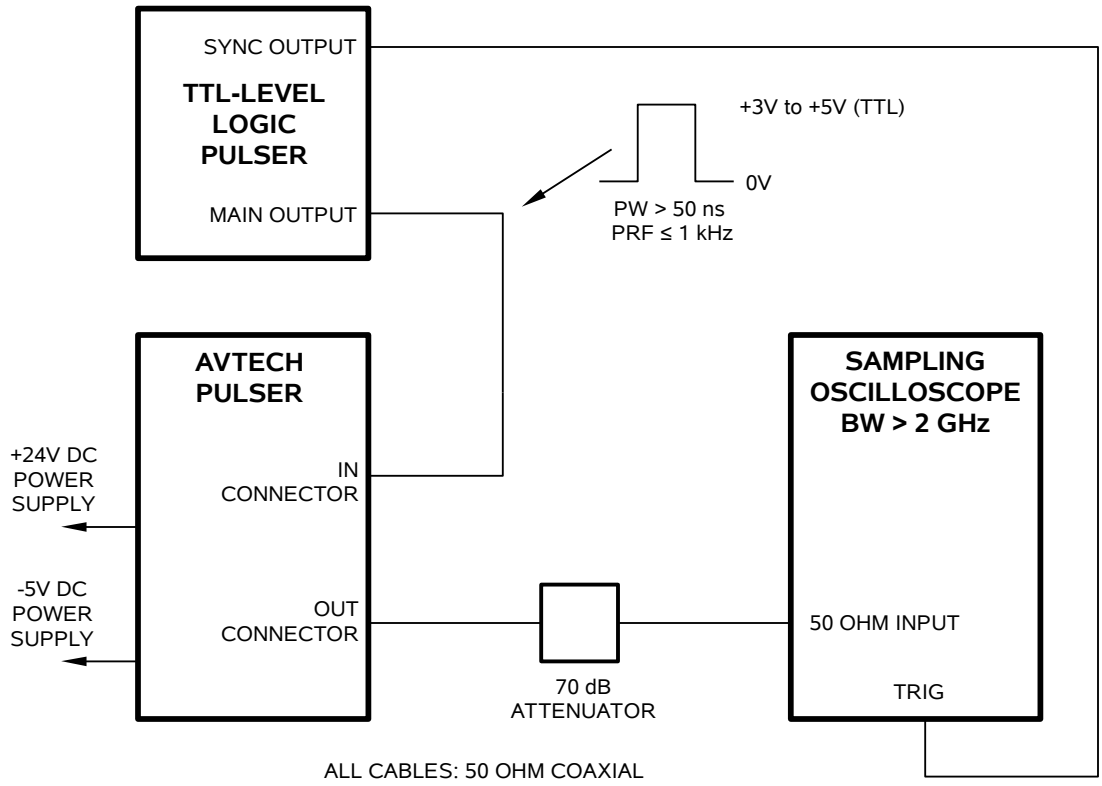
Model:	AVG-3B-P-OS-NAVB
Amplitude:	adjustable from < 300V to > 420V using a one-turn trimpot, into a load of 50 Ohms in parallel with 20 pF capacitance.
Pulse width:	< 2.5 ns FWHM (not adjustable), into a load of 50 Ohms in parallel with 20 pF of capacitance.
Rise time (20%-80%):	≤ 1.25 ns
Fall time (20%-80%):	≤ 1.25 ns
Required load resistance:	50 Ohms
Maximum load capacitance:	20 pF
PRF:	0 to 1 kHz
Polarity[2]:	Positive
Propagation delay:	≤ 50 ns (Ext trig in to pulse out)
Jitter:	± 100 ps (Ext trig in to pulse out)
DC offset:	Apply required DC offset (± 50 Volts, 250 mA max) to solder terminals
Trigger required:	+5 Volts, 50 to 500 ns (TTL)
Connectors:	Out: SMA, In: SMA, Power: Solder terminal
Dimensions: (H x W x D)	43 mm x 76 mm x 152 mm (1.7" x 3.0" x 6.0")
Power:	+24V DC (0.5A) and -5V DC (0.5A)
Chassis material:	Cast aluminum, blue enamel
Temperature range:	Any, +5°C to +40°C
Mounting:	It is recommended that the module be bolted to a heatsink, for cooling.

CONNECTORS AND CONTROLS

The location of the IN and OUT connectors, and the amplitude control, are shown in the photo below. The amplitude control may be adjusted using a small screwdriver.

The +24V, -5V, and ground power supply solder terminals, as well as the DC offset input, are shown in the photo below. The +24V and -5V inputs are protected against overvoltages and polarity reversal by externally-mounted Zener clamping diodes, visible in the photo.

BASIC TEST ARRANGEMENT



GENERAL OPERATING NOTES

1) The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed 2 GHz.

2) The use of 70 dB attenuator on the output will ensure a peak input signal to the sampling scope of less than one volt.

3) WARNING: The module may fail if triggered at a PRF greater than 1 kHz.

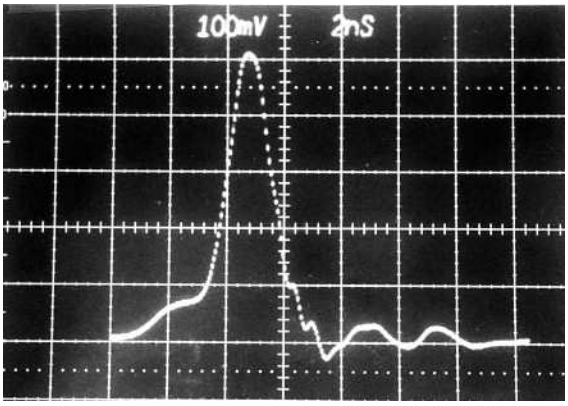
4) It is recommended that the module be bolted to a heatsink, for cooling.

5) For additional information:

Tel: 613-226-5772
Fax: 613-226-2802
Email: info@avtechpulse.com

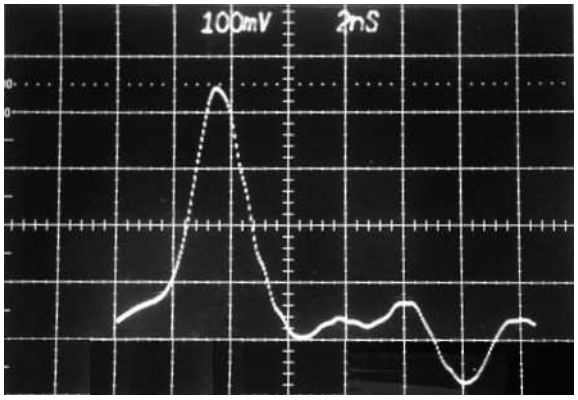
TYPICAL WAVEFORMS

The AVG-3B-P-OS-NAVB will generate a relatively clean, high-amplitude impulse into a true 50 Ohm load, as shown below:



100 V/div, 2 ns/div

Capacitive loading will inevitably introduce some amplitude loss and transient distortions, as shown below for the example of 20 pF in parallel with 50 Ohms, located at the end of a 24” length of coaxial cable:



100 V/div, 2 ns/div

For best results, the cable lengths should be as short as possible, and the capacitance of the load should be as low as possible.

Please note that the pulse width, amplitude, and load impedance will all interact to some extent. Changing one parameter will affect the others.

PERFORMANCE CHECK SHEET