



AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS  
SINCE 1975

P.O. BOX 265  
OGDENSBURG, NY  
U.S.A. 13669-0265

TEL: 888-670-8729 (USA & Canada) or +1-613-226-5772 (Intl)  
FAX: 800-561-1970 (USA & Canada) or +1-613-226-2802 (Intl)

info@avtechpulse.com - <http://www.avtechpulse.com/>

BOX 5120, LCD MERIVALE  
OTTAWA, ONTARIO  
CANADA K2C 3H4

## INSTRUCTIONS

MODEL AVB1-3

0 TO 50 VOLTS PEAK-TO-PEAK

400 TO 900 MHz MONOCYCLE 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 disassembled, 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: 888-670-8729 (USA & Canada) or +1-613-226-5772 (Intl)

Fax: 800-561-1970 (USA & Canada) or +1-613-226-2802 (Intl)

E-mail: [info@avtechpulse.com](mailto:info@avtechpulse.com)

World Wide Web: <http://www.avtechpulse.com>

TABLE OF CONTENTS

**WARRANTY.....2**

**TECHNICAL SUPPORT.....2**

**TABLE OF CONTENTS.....3**

**INTRODUCTION.....4**

**AVAILABLE OPTIONS.....4**

**SPECIFICATIONS.....5**

**GENERAL INFORMATION.....6**

**BASIC TEST ARRANGEMENT.....6**

**GENERAL OPERATING NOTES.....7**

**PERFORMANCE CHECK SHEET.....8**

Manual Reference: /files/server1/officefiles/instructword/avb/AVB1-3,edition1.odt.  
Last modified February 29, 2024.  
Copyright © 2024 Avtech Electrosystems Ltd, All Rights Reserved.

## INTRODUCTION

The AVB1-3 series of monocyte generators allows the generation of high-speed monocyte waveforms, with peak-to-peak amplitudes of 0 to 50 V into 50 $\Omega$  loads. The monocyte center frequency is adjustable over the range of 400 to 900 MHz.

See the online application note, "TB13 - How Is the Center Frequency of a Monocyte Waveform Measured?" at <http://www.avtechpulse.com/appnote/techbrief13/> for information about center frequency measurements.

The AVB1-3 can operate at repetition rates of up to 100 kHz. An externally-generated TTL-level signal is required to trigger the AVB1-3.

The AVB1-3 is powered by +15V DC.

The output is designed to drive 50 $\Omega$  loads. (A 50 $\Omega$  load is required for proper operation.) The output is AC-coupled.

This instrument is intended for use in research, development, test and calibration laboratories by qualified personnel.

## AVAILABLE OPTIONS

The AVB1-3 is available with this option:

-AK7 Option: an accessory kit that consists of three SMA, 18 GHz, 2 Watt attenuators (10, 20 & 30 dB) for use on the output, and two 50 Ohm, 1 GHz, 1 Watt feed-through terminators (one SMA, one BNC) for use on external trigger inputs.

## SPECIFICATIONS

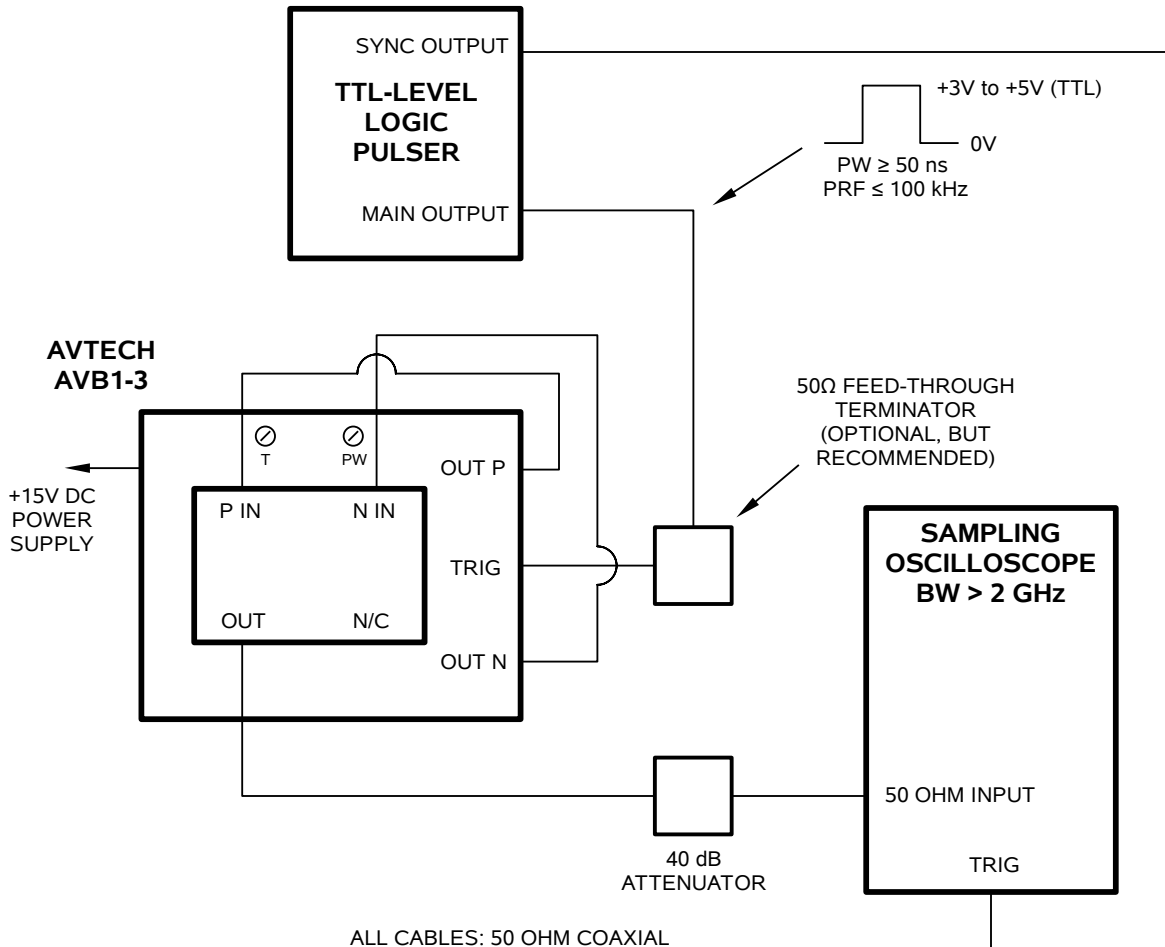
Model:	AVB1-3		
Frequency:	400 – 900 MHz, tunes full range <sup>1</sup>		
Amplitude <sup>2</sup> : (to 50 Ohms)	50 V <sub>pp</sub>		
Maximum repetition rate:	100 kHz		
Spurious signals: (WRT peak)	26 dB		
Propagation delay:	≤ 50 ns (Ext trig in to pulse out)		
Jitter:	± 15 ps (Ext trig in to pulse out)		
Trigger required:	Modules, and -C ext trig mode: +5 Volts, 50 to 500 ns (TTL)		
Connectors:	Out: SMA,	In: SMA,	Power: Solder terminals
Power requirements:	+15 Volts, 400 mA		
Dimensions (H x W x D):	43 x 76 x 152 mm (1.7" x 3" x 6")		
Chassis material:	Cast aluminum, blue enamel		
Temperature range:	+5°C to +40°C		

- 1) May be tuned either by front-panel one-turn control or by applying 0 to +10 Volts DC to a rear-panel BNC connector (-C units) or solder terminal (modules). Input impedance greater than 10 kilohms.
- 2) The output amplitude for all module units is fixed at the maximum.

## GENERAL INFORMATION

### BASIC TEST ARRANGEMENT

The AVB1-3 should be tested with a sampling oscilloscope with a bandwidth of at least 2 GHz to properly observe the high-speed waveform. A typical test arrangement is shown below:



The AVB1-3 generates a positive pulse and a negative pulse internally. These are added together in the pulse combiner located on the top of the main chassis. The OUT P to P IN and OUT N to N IN cables shown in the diagram above are preinstalled on the AVB1-3 (and should never be removed).

The attenuators are required to prevent damage to the sampling oscilloscope. A 40 dB attenuator with sufficient voltage rating should be used on the main output.

## GENERAL OPERATING NOTES

- 1) The bandwidth capability of components and instruments used to display the monocyte generator output signal (attenuators, cables, connectors, etc.) should exceed 2 GHz.
- 2) The use of a 40 dB attenuator will ensure a peak input signal to the sampling scope of less than one volt.
- 3) The module shown should be bolted to a heat sink capable of dissipating at least 5 Watts.
- 4) Various settings are sensitive to variations in the +15 VDC voltage supply and therefore a well-regulated DC supply is required.
- 5) The ten-turn trim pots PW and T control the pulse widths (PW) and pulse separation (T) of the positive and negative components of the monocyte waveform. At the time of shipping, these controls were set to provide optimal output and should not require any further adjustment.

PERFORMANCE CHECK SHEET