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NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

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INSTRUCTIONS

MODEL AVE

>10 V_{PP}, 1 MHz, FIXED TUNED

MONOCYCLE GENERATOR MODULE

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: 888-670-8729 (USA & Canada) or +1-613-686-6675 (International)
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TABLE OF CONTENTS

WARRANTY.....2
TECHNICAL SUPPORT.....2
TABLE OF CONTENTS.....3
INTRODUCTION.....4
SPECIFICATIONS.....5
REGULATORY NOTES.....6
FCC PART 18.....6
EC DECLARATION OF CONFORMITY.....6
DIRECTIVE 2011/65/EU (RoHS).....7
DIRECTIVE 2002/96/EC (WEEE).....7
BASIC TEST ARRANGEMENT.....9
DC POWER SUPPLY.....9
GENERAL OPERATING NOTES.....9
PERFORMANCE CHECK SHEET.....11

Manual Reference: /fileserver1/officefiles/instructword/ave/AVE module, ed2.odt.
Last modified February 29, 2024.

INTRODUCTION

The AVE series of monocycle generators allows the generation of high-speed monocycle waveforms, with peak-to-peak amplitudes of > 10 V into 50Ω loads. The amplitude of the output waveform is not adjustable.

The monocycle center frequency is fixed. The center frequency is equal to XXXX MHz, where the model number is AVE-XXXX.

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

The AVE can operate at repetition rates of up to 1 MHz. The AVE must be triggered by an external TTL pulse (> 50 ns) applied to the “IN” connector.

The output is designed to drive 50Ω loads. (A 50Ω 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.

SPECIFICATIONS

Model:	AVE
Center frequency:	1500-3000 MHz, fixed-tuned[1]
Amplitude: (V_{pp}, 50Ω[3])	≥ 10 V_{PP}
PRF_{max} (MHz):	1 MHz
Spurious signals:	-20 dB, with respect to peak
Propagation delay:	≤ 50 ns (Ext trig in to pulse out)
Jitter:	± 15 ps (Ext trig in to pulse out)
DC offset option[2]:	Apply required DC offset (± 50 V, 250 mA max) to back-panel terminals
Monitor output option[4]:	Provides a 20 dB attenuated coincident replica of main output
Trigger required:	+ 5 Volt, 50 to 500 ns (TTL)
Connectors:	In, Out: SMA. Power: solder terminals.
Power requirement:	+15 Volt, 200 mA
Dimensions:	H x W x D: 43 x 66 x 107 mm (1.7" x 2.6" x 4.2")
Chassis material:	Cast aluminum, blue enamel
Temperature range:	+5°C to +40°C

1) Specify required frequency.
2) For DC offset option suffix model number with -OS. Not available on AVE2 models. Avtech Model AVX-T bias tee can also be used to obtain DC offset.
3) A 50 Ohm load is required. Other loads may damage the instrument. Consult Avtech (info@avtechpulse.com) if you need to drive other load impedances.
4) For monitor option add suffix -M. Not available on AVE2 models.

REGULATORY NOTES

FCC PART 18

This device complies with part 18 of the FCC rules for non-consumer industrial, scientific and medical (ISM) equipment.

This instrument is enclosed in a rugged metal chassis and uses a filtered power entry module (where applicable). The main output signal is provided on a shielded connector that is intended to be used with shielded coaxial cabling and a shielded load. Under these conditions, the interference potential of this instrument is low.

If interference is observed, check that appropriate well-shielded cabling is used on the output connectors. Contact Avtech (info@avtechpulse.com) for advice if you are unsure of the most appropriate cabling. Also, check that your load is adequately shielded. It may be necessary to enclose the load in a metal enclosure.

If any of the connectors on the instrument are unused, they should be covered with shielded metal “dust caps” to reduce the interference potential.

This instrument does not normally require regular maintenance to minimize interference potential. However, if loose hardware or connectors are noted, they should be tightened. Contact Avtech (info@avtechpulse.com) if you require assistance.

EC DECLARATION OF CONFORMITY

CE

We Avtech Electrosystems Ltd.
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declare that this pulse generator meets the intent of Directive 2004/108/EG for Electromagnetic Compatibility. Compliance pertains to the following specifications as listed in the official Journal of the European Communities:

EN 50081-1 Emission

EN 50082-1 Immunity

and that this pulse generator meets the intent of the Low Voltage Directive 2006/95/EC. Compliance pertains to the following specifications as listed in the official Journal of the European Communities:

EN 61010-1:2001 Safety requirements for electrical equipment for measurement, control, and laboratory use

DIRECTIVE 2011/65/EU (RoHS)

We Avtech Electrosystems Ltd.
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declare that, to the best of our knowledge, all electrical and electronic equipment (EEE) sold by the company are in compliance with Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (also known as “RoHS Recast”). In addition, this declaration of conformity is issued under the sole responsibility of Avtech Electrosystems Ltd. Specifically, products manufactured do not contain the substances listed in the table below in concentrations greater than the listed maximum value.

Material/Substance	*Threshold level*
Lead (Pb)	< 1000 ppm (0.1% by mass)
Mercury (Hg)	< 1000 ppm (0.1% by mass)
Hexavalent Chromium (Cr6+)	< 1000 ppm (0.1% by mass)
Polybrominated Biphenyls (PBB)	< 1000 ppm (0.1% by mass)
Polybrominated Diphenyl ethers (PBDE)	< 1000 ppm (0.1% by mass)
Cadmium (Cd)	< 100 ppm (0.01% by mass)

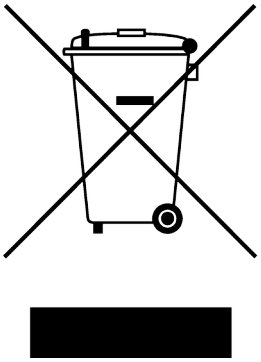
DIRECTIVE 2002/96/EC (WEEE)

European customers who have purchased this equipment directly from Avtech will have completed a “WEEE Responsibility Agreement” form, accepting responsibility for WEEE compliance (as mandated in Directive 2002/96/EC of the European Union and local laws) on behalf of the customer, as provided for under Article 9 of Directive 2002/96/EC.

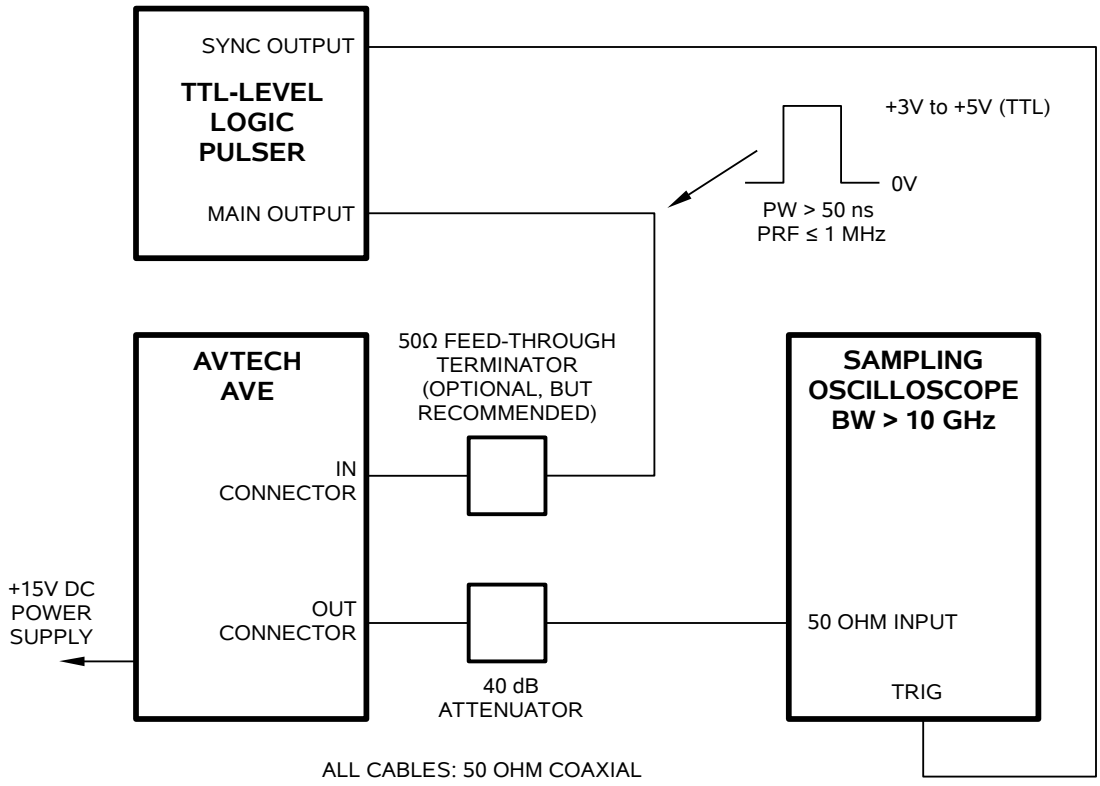
Customers who have purchased Avtech equipment through local representatives should consult with the representative to determine who has responsibility for WEEE

compliance. Normally, such responsibilities with lie with the representative, unless other arrangements (under Article 9) have been made.

Requirements for WEEE compliance may include registration of products with local governments, reporting of recycling activities to local governments, and financing of recycling activities.



BASIC TEST ARRANGEMENT



DC POWER SUPPLY

The AVE must be connected to a stable +15V DC power supply (as well as a ground connection).

The power supply input is protected from excessive voltages and incorrect polarities by an externally-mounted (and replaceable) 1N4746A Zener diode. This diode may be damaged by reversed polarities, or voltages exceeding 18V.

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 10 GHz.

2) The use of 40 dB attenuator on the output will ensure a peak input signal to the sampling scope of much less than 1V.

3) To DC offset the output pulse connect a DC power supply set to required DC offset value to the terminals marked “OS”. The maximum attainable DC offset voltage is

+50 Volts. (Option).

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

5) Two ten-turn trimpots are accessible through the top cover of the module. These trimpots affect the center frequency, symmetry, amplitude, and spurious output levels of the waveform. They are factory-adjusted, but may be adjusted by the user to optimize the waveform. This should be done while viewing the waveform on an oscilloscope.

PERFORMANCE CHECK SHEET