AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

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OTTAWA, ONTARIO
CANADA K2C 3H4

INSTRUCTIONS

MODEL AVP-AV-HV3-P-UWA

0 to 40V, 0.4 to 2 ns

PULSE GENERATOR

WITH 150 ps RISE TIME

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

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Manual Reference: /fileserver1/officefiles/instructword/avp/AVP-AV-HV3-P-UWA, edition4.odt.
Last modified February 29, 2024.

INTRODUCTION

The AVP-AV-HV3-P-UWA is a high performance DC-powered module capable of generating up to 40V into 50Ω loads at repetition rates up to 1 MHz. The rise time is less than 150 ps, and the fall time is less than 300 ps. The pulse width is variable from 0.4 to 2 ns.

Instruments with the "-P" model suffix can generate 0 to +40V, whereas instruments with the "-N" model suffix can generate 0 to -40V.

The AVP-AV-HV3-P-UWA 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 and development laboratories.

-UWA CUSTOMIZATION

The customized -UWA option provides an extended temperature operating range. Specifically:

Temperature Range: -20 ºC to +30 ºC

Amplitude Stability: +/- 20% (over spec temperature range, referenced to +32V at room temperature)

Pulse width stability: +/- 10% (over spec temperature range, referenced to 1.0 ns at room temperature)

Propagation delay stability: 35 ns +/-3 ns (over spec temperature range, referenced to room temperature)

All stabilities can be improved by reducing the temperature range by employing a warming box.

The units will operate at -40 ºC without risk of damage but with increased parameter variation (including increased jitter).

SPECIFICATIONS

Model:	AVP-AV-HV3-P-UWA
Amplitude[1]: (50 Ohm load)	0 to 40 Volts
Pulse width: (FWHM)	0.4 - 2.0 ns
PRF:	0 Hz to 1 MHz
Rise time (20%-80%):	≤ 150 ps
Fall time (80%-20%):	≤ 300 ps
Polarity:	Positive
Propagation delay:	≤ 70 ns
Jitter, Ext trig in to pulse out:	±15 ps
Trigger required:	+5 Volt, 50 ns to 500 ns (TTL).
Connectors: OUT: TRIG: DC POWER:	SMA SMA solder terminals
Power requirement:	+15 Volt, 200 mA
Dimensions (H x W x D):	43 mm x 66 mm x 107 mm (1.7” x 2.6” x 4.2”)
Chassis material:	Cast aluminum, blue enamel
Mounting, Temperature range:	Any, -20°C to +30°C

1) For operation at amplitudes of less than 20% of full-scale, best results will be obtained by setting the amplitude near full-scale and using external attenuators on the output.

ORIGINAL QUOTATION

Date: Fri, 18 Jul 2008 13:38:38 -0400
From: Avtech Sales
To: XXXXX
Subject: Re: AVP-AV-HV3

XXXXX,

We are pleased to quote as follows:

Quote number: 14396

Model number: AVP-AV-HV3-P-UWA

Output pulse parameters: See http://www.avtechpulse.com/speed/avp-av-hv3.

Temperature Range: -20 °C to +30 °C

Amplitude Stability: +-20%
(over spec temperature range, referenced to +32V at room temperature)

Pulse width stability: +-10%
(over spec temperature range, referenced to 1.0 ns at room temperature)

Propagation delay stability: 35 ns +-3 ns
(over spec temperature range, referenced to room temperature)

Note:
1) All stabilities can be improved by reducing the temperature range
by employing a warming box.

2) The units will operate at -40 °C without risk of damage but with
increased parameter variation (including increased jitter).

Prime power: Two options available.
1) For +15 +-0.5Volts, 250 mA: add the suffix -PS15.
2) For +24 +-3Volts, 250 mA: add the suffix -PS24

Other option available: -EA, -EW, -M
For pricing and info:
See http://www.avtechpulse.com/speed/avp-av-hv3/.

Price for quantity 1: $XXXXX US each, DDU (Delivered Duty Unpaid).
Includes the cost of shipping and insurance, but excludes customs
duties, taxes, and other import fees. Shipments are from Canada,
and are normally duty-free.

Price for quantity 2: $XXXXX US each, DDU (Delivered Duty Unpaid).
Includes the cost of shipping and insurance, but excludes customs
duties, taxes, and other import fees. Shipments are from Canada,
and are normally duty-free.

Quote valid for: 8 weeks

Estimated delivery: 8-10 weeks after receipt of order (excluding
export permit* delays).

*Export Permit: These instruments are very high performance pulse generators, which are considered to be "Nuclear-Related Dual-Use Goods" under government regulations. As such, an "End Use Statement" must be completed when ordering. The necessary form is attached (in PDF format). We will use the information in the completed form to apply for an export license from the Canadian government, which will take 1 to 6 weeks to obtain. We cannot ship your order without the license. Please return the completed form to us by fax.

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

Thank you for your interest in our products!

Regards,

Dr. Walter Chudobiak
Senior Engineer

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

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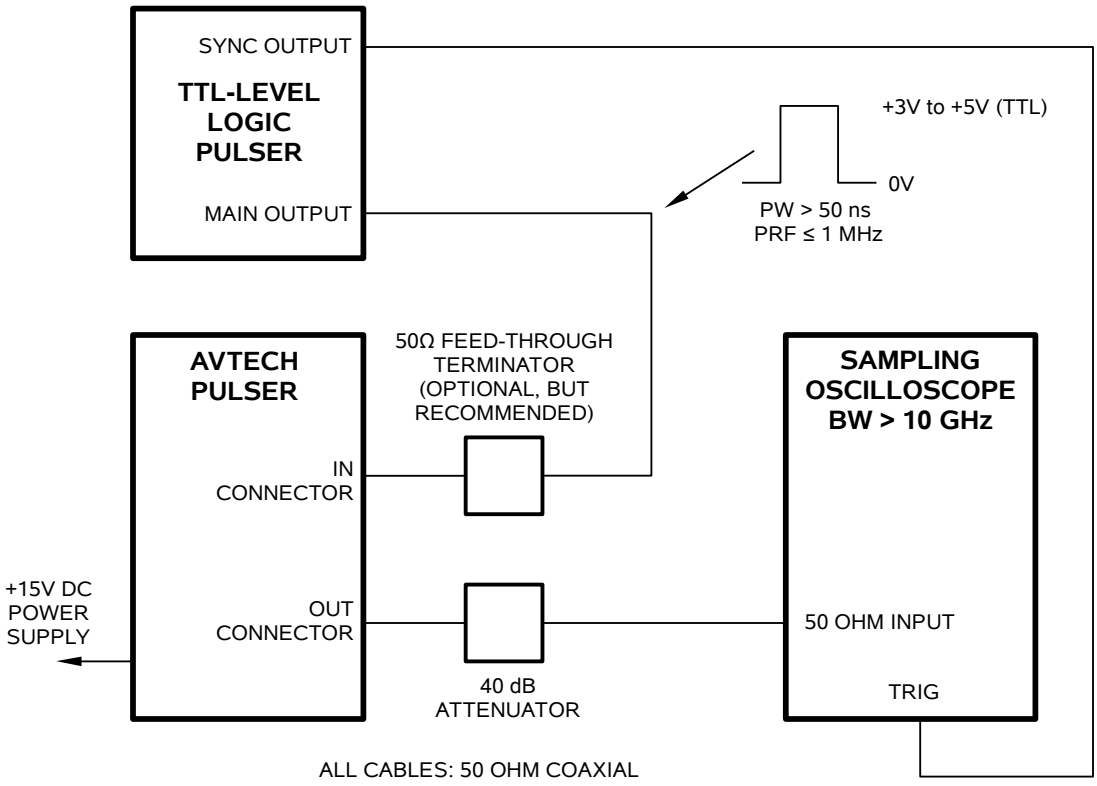
Attachment: EndUse Statement generic3.pdf

BASIC TEST ARRANGEMENT



CONTROLS – FRONT AND TOP

The location of the IN and OUT connectors, the optional “M” connector, and the amplitude and pulse width controls are shown in the photo below.

The “AMP” and “PW” controls may be adjusted using a screwdriver.

CONTROLS - REAR

The location of the power terminals are shown in the photo below.

The +15V input terminal is protected with a 1N4746A Zener diode, which will fail as a short if an excessive positive voltage (> 18V), or a negative voltage, is applied to the terminal.

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 less than 1 Volt.

3) In general, the source pulse generator trigger delay control should be set in the 0.1 to 1.0 us range, for proper positioning of the output pulse on the sampling oscilloscope display.

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

5) The output pulse width is controlled by means of the one turn potentiometer (PW). The pot should initially be set maximum clockwise and the pulse width adjusted

using an oscilloscope.

6) The output pulse amplitude is controlled by means of the one turn potentiometer (AMP). The pulse width may change by several nanoseconds as the output amplitude is reduced from maximum to minimum. Therefore it is convenient to first set the desired amplitude and then set the desired pulse width. Rotation of the PW pot causes the position of the falling edge of the pulse to change.

7) Some properties of the output pulse may change as a function of the amplitude pot setting. For some demanding applications, it may be desirable to use a combination of external attenuators and the amplitude pot to achieve the desired output amplitude.

PERFORMANCE CHECK SHEET