AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

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

INSTRUCTIONS

MODEL AVH-HV1-P-EA5-M1

0 to 100V, 200 kHz

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/avh/AVH-HV1-EA5-M1,edition2.odt.
Last modified February 29, 2024.

INTRODUCTION

The AVH-HV1-P-EA5-M1 is a high performance DC-powered module capable of generating impulses of up to +100V into 50Ω loads at repetition rates up to 200 kHz.

The pulse width, measured at the 20% amplitude point, is nominally 1 ns.

The pulse width, measured at the 10% amplitude point, is < 1.4 ns.

The amplitude is controlled by a 0 to +5V DC control voltage.

The module must be trigged by an external TTL trigger pulse.

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

SPECIFICATIONS

Model:	AVH-HV1-P-EA5-M1
Amplitude[1]: (50Ω load)	0 to +100 V
Pulse width:	Nominally 1.0 ns at the 20% rise point, and < 1.4 ns at the 10% rise point
PRF:	0 to 200 kHz
Polarity:	Positive
Propagation delay: (Ext trig in to pulse out)	≤ 75 ns
Jitter:	± 15 ps (Ext trig in to pulse out)
Trigger required:	+5 Volts, 50 to 500 ns (TTL)
Connectors:	In, Out: SMA, Power: Solder terminals
Power requirements:	+15 Volts, 200 mA
Dimensions (H x W x D):	43 mm x 66 mm x 107 mm (1.7” x 2.6” x 4.2”)
Operating temperature:	+5°C to +40°C

1) For operation of variable-amplitude units 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: Tue, 13 Nov 2007 11:30:20 -0500
From: Avtech Sales
To: Samada
Subject: Re: AVH-HV1-P-EA5-M1A
Nov. 13, 2007
Nobuyuki Samada
HIKARI,Inc.
Yushima Fuji Bldg.301, 3-13-8 Yushima Bunkyo-ku Tokyo 113-0034 Japan
TEL:+81-3-3832-3117 Fax:+81-3-3832-3118
samada.n@hikari-trading.com

Nobuyuki,

Following your recent inquiry, I am pleased to quote as follows:

Quote number: 14063.01

Model number: AVH-HV1-P-EA5-M1

Maximum pulse repetition frequency: 200 kHz

Pulse width: 1.0 ns (at 20% rise point, as per S/N 9573)

Amplitude: 0 to +100 Volts, into 50 Ohms

Amplitude Control Voltage: 0 to +5 VDC, Rin > 10 kilohms

Connectors, signal: SMA

Connectors, power: Solder terminals

Propagation Delay: < 50 ns

Input trigger signal: TTL-level pulse

Jitter: < +/- 20 ps

Package: Avtech Style A. See page 113, Catalog 11

Price: $xxxx US each, Exworks, Ottawa, Canada. Before discount.

Delivery: 8 weeks after receipt of order (excluding export permit* delays).

Note that S/N 9573 had a pulse width of 1.0 ns measured at the 20% point. If you require a lower pulse width see the following two quotes:

Quote number: 14063.02

Model number: AVH-HV1-P-EA5-M1A

Pulse width: 1.0 ns (at 10% rise point)

Other: same as the AVH-HV1-P-EA5-M1 described above.

Price: $ xxxx US each, Exworks, Ottawa, Canada. Before discount.

Delivery: 8 weeks after receipt of order (excluding export permit* delays).

Quote number: 14063.03

Model number: AVH-HV1-P-EA5-M1A-T1

Pulse width: 0.6 ns (at 20% rise point)

Other: same as the AVH-HV1-P-EA5-M1 described above.

Price: $xxxx US each, Exworks, Ottawa, Canada. Before discount.

Delivery: 8 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.

Regards,

Mary Budarick
Sales Manager

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

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EUROPEAN REGULATORY NOTES

EC DECLARATION OF CONFORMITY

We Avtech Electrosystems Ltd.
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Ottawa, Ontario
Canada K2C 3H4

declare that this pulse generator meets the intent of Directive 89/336/EEC 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 72/23/EEC as amended by 93/68/EEC. 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

CE

DIRECTIVE 2002/95/EC (RoHS)

This instrument is exempt from Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment. Specifically, Avtech instruments are considered "Monitoring and control instruments" (Category 9) as defined in Annex 1A of Directive 2002/96/EC. The Directive 2002/95/EC only applies to Directive 2002/96/EC categories 1-7 and 10, as stated in the "Article 2 - Scope" section of Directive 2002/95/EC.

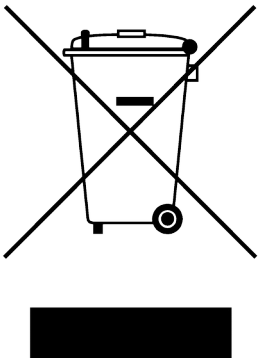
DIRECTIVE 2002/96/EC (WEEE)

European customers who have purchased this equipment directly from Avtech will have completed a “WEEE Responsibility Agreement” form, accepting responsibility for WEEE

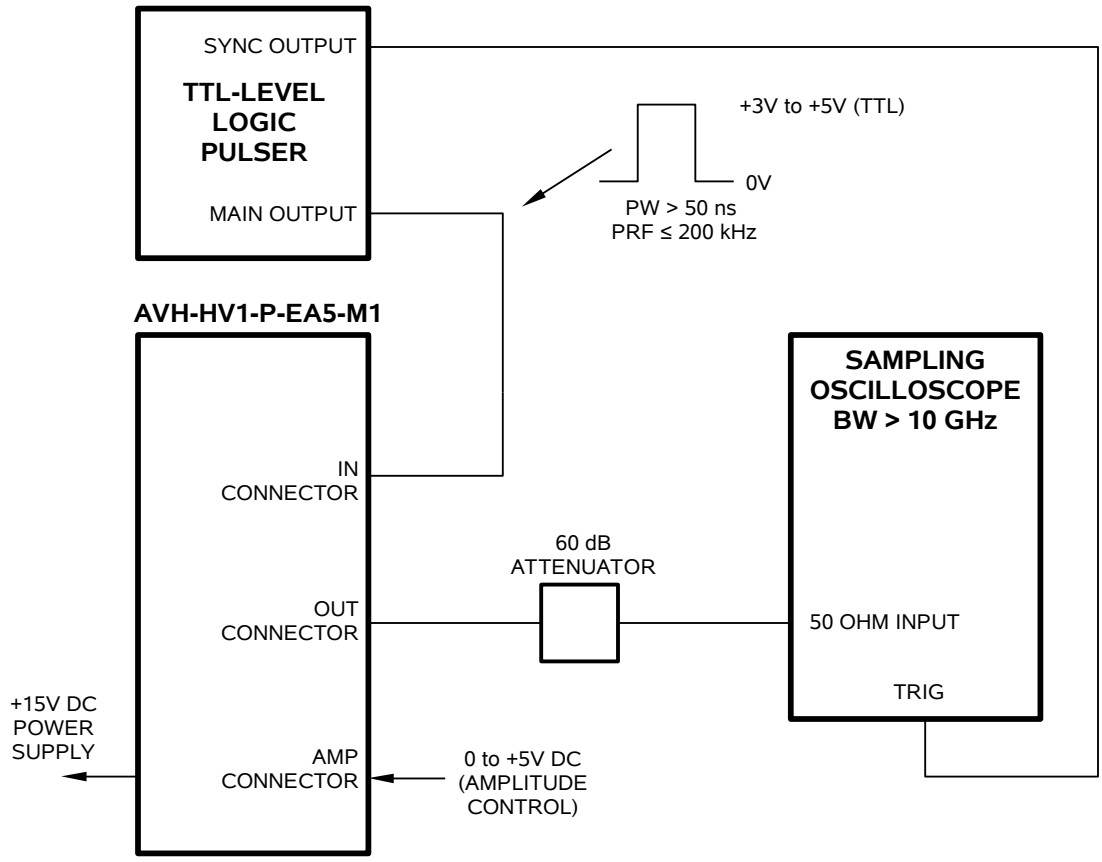
compliance (as mandated in Directive 2002/96/EC of the European Union and local laws) on behalf of the customer, as provided for under Article 9 of Directive 2002/96/EC.

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



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 60 dB attenuator on the output will ensure a peak input signal to the sampling scope of less than one volt.

3) The output amplitude is controlled by applying 0 to +5 VDC to the front panel “AMP” solder terminal (R_{IN} ≥ 10kΩ).

4) Minor adjustments to the output pulse width and pulse shape can be made by adjusting the ten-turn T_R and T_F controls on the top of the module. Clockwise rotation of the T_F control causes the pulse width of the output to increase by moving the falling edge of the waveform. Clockwise rotation of the T_R control causes the pulse width to decrease by moving the leading edge of the waveform. The T_R control also slightly affects the output amplitude and at the time of shipping is set to provide maximum amplitude. The T_F control is factory-set to ensure a maximum pulse width of 1.0 ns at

the 20% rise point. When varying the PRF over a wide range (for example, 20 kHz to 200 kHz) it may be necessary to adjust the T_R and T_F controls to re-establish the maximum output amplitude and minimum pulse width.

5) In general, the pulse generator trigger delay control should be set in the 100 ns range. Other settings should be as shown in the above diagram. The impulse generator output is delayed with respect to the trigger input signal by about 70 ns, typically.

6) WARNING: The module may fail if triggered at a PRF greater than 200 kHz.

7) For additional information:

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

PERFORMANCE CHECK SHEET