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NANOSECOND WAVEFORM ELECTRONICS  
SINCE 1975

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## INSTRUCTIONS

MODEL AVH-HV1-P-EA5-M1A

0 to 100V, 1 ns, 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 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: 613-226-5772 or 1-800-265-6681

Fax: 613-226-2802 or 1-800-561-1970

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

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Manual Reference: /fileserver1/officefiles/instructword/avh/AVH-HV1-EA5-M1A,ed2.odt.  
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## INTRODUCTION

The AVH-HV1-P-EA5-M1A is a high performance DC-powered module capable of generating impulses of up to +100V into 50 $\Omega$  loads at repetition rates up to 200 kHz. The pulse width (at the 10% point) is fixed at 1 ns.

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

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

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

ORIGINAL QUOTATION & SPECIFICATIONS

Date: Thu, 25 Aug 2005 11:43:36 -0400  
 From: Mary  
 To: Sales  
 Subject: Re: New Inquiry from Hitachi-Eg.  
 Aug. 25, 2005  
 To: K. Kitsukawa  
 Meisho, Japan  
 kitsukawa@78meisho.co.jp

Dear Mr. Kitsukawa,

We quote as follows. Please note the change of model number to reflect the PW of 1.0 ns at 10%.

Quote Number:	12721
Model Designation:	AVH-HV1-P-EA5-M1A
PRF Max:	200 kHz
PW:	1.0 ns (at 10% rise point)
Amplitude:	0 to +100 Volts to 50 Ohm
Amplitude Control Voltage:	0 to +5 VDC, Rin > 10 K
Connectors:	Signal: SMA, Power: Solder Connect
Propagation Delay:	<- 50 ns
Input Trigger:	TTL
Jitter:	< +/- 20 ps
Package:	Avtech Style A, see Page 113, Cat. 11
Price:	\$XXXXX US each, Exworks, Ottawa, Canada, after discount.
Delivery:	60 days 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.

Regards,

Mary Budarick  
 Sales Manager

MB:ql

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

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Sales wrote:

> Dear Dr. Chudobiak  
 >  
 > Please refer to your old mail dated on 2003-July 15.  
 > The same user needs the same unit, Mod. AVH-HV1-P-EA5-M1.  
 > But at present time, the specification of PW > changed to > Can you make a previous unit, it  
 means PW > If possible, please quote 1 unit.  
 >  
 > Best Regards  
 > K. Kitsukawa  
 > Meisho Corporation  
 > MOA Bldg., 6F, 3-34-6  
 > Minami-Otsuka, Toshima-ku  
 > Tokyo 170-0005 JAPAN  
 > Ph.: +81-3-3980-6541  
 > Fx.: +81-3-3980-7297  
 >  
 >  
 > To: K. Kitsukawa  
 > Meisho, Japan  
 > kitsukawa@78meisho.co.jp  
 >  
 > The original specifications for the AVH-HV1-P-EA5-M1 are shown below.  
 > We do not understand what you want changed. Please clarify.  
 >  
 > Model Designation:    AVH-HV1-P-EA5-M1  
 > PRF Max:            200 kHz  
 > PW:                1.0 ns (at 10% rise point)  
 > Amplitude:        0 to +100 Volts to 50 Ohm  
 > Amplitude Control Voltage: 0 to +5 VDC, Rin > 10 K  
 > Connectors:        Signal: SMA, Power: Solder Connect  
 > Propagation Delay:    <- 50 ns  
 > Input Trigger:        TTL  
 > Jitter:            <- +- 20 ps  
 > Package:            Avtech Style A, see Page 113, Cat. 11  
 >  
 > Regards,  
 > Dr. Michael J. Chudobiak  
 > VP, New Product Development  
 >  
 >  
 >  
 >>-----Original Message-----  
 >>From: Kitsukawa [mailto:kitsukawa@78meisho.co.jp]  
 >>Sent: Friday, July 11, 2003 1:12 AM  
 >>To: Dr. Michael J. Chudobiak  
 >>Subject: AVH-HV1-P-EA5-M1  
 >>  
 >>Dear Dr. M. Chudobiak,  
 >>  
 >>We have ordered AVH-HV1-P-EA5-M1 in last January under PO#ME03C012.  
 >>The same customer is asking you now to provide quotation by  
 >>modifying it, so that it can output 100V when 5VDC amplitude control is  
 >  
 > added.  
 >  
 >>Non-variable is ok with amplitude.  
 >>Please let us have quotation if above requirement is  
 >>available, along with specifications.

>>  
>>With best regards,  
>>  
>>K. Kitsukawa  
>>Meisho Corporation

## EUROPEAN REGULATORY NOTES

### EC DECLARATION OF CONFORMITY

We

Avtech Electrosystems Ltd.  
P.O. Box 5120, LCD Merivale  
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

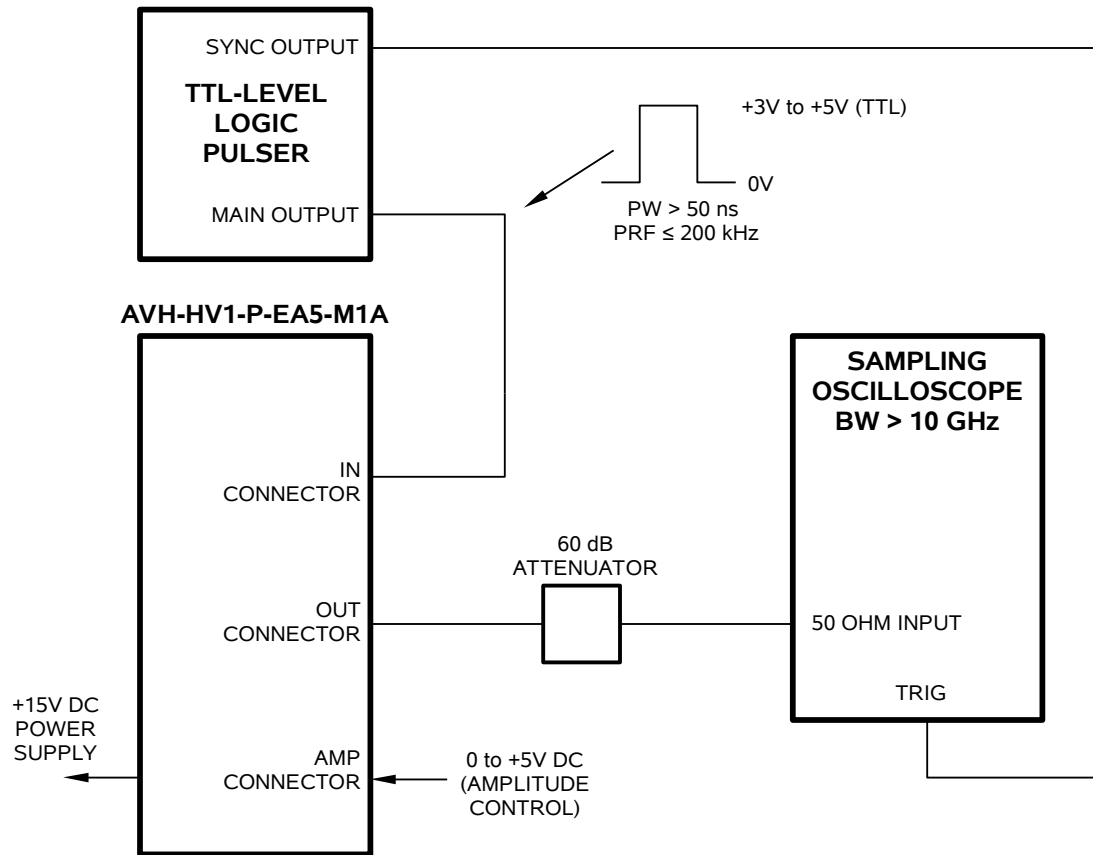


### DIRECTIVE 2002/95/EC (RoHS)

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.



## 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 ( $R_{IN} \geq 10k\Omega$ ).
- 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 set to ensure a maximum pulse width of 1.0 ns (at the

10% 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](mailto:info@avtechpulse.com)

PERFORMANCE CHECK SHEET