photomultiplier HV base
HV5120AP data sheet

ET Enterprises electron tubes

1 description

The HV5120AP is a compact photomultiplier HV Base operating from a low voltage supply (+5 to +15 V). It incorporates a positive HV supply and an active MOSFET voltage divider. The HV Base is intended for use with 10 stage, 51 mm photomultipliers requiring up to +2000 volts and ac coupling.

The unit is housed in a screened cylindrical metal enclosure having a diameter smaller than the photomultiplier. Threaded mounting bushes are provided. The signal is accessible via a 0.5 m length of shielded RG174U cable and is ac coupled.

The photomultiplier operating voltage is set by using any one of three programming options as shown in section 8. The cathode is at ground potential in the HV5120AP but for applications requiring grounded anode operation, a negative polarity version HV5120AN is available.

2 applications

The HV5120AP is designed for use in the following operating modes:

- all pulsed light applications
- photon counting

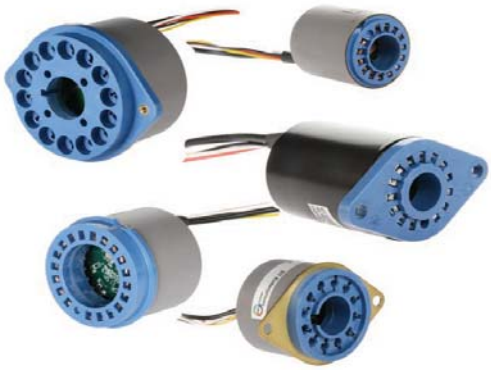
3 features

- compact
- no high voltage cables
- low noise
- linearity limited only by photomultiplier performance
- low power consumption

4 specifications

at HV = 1000V	unit	min	typ	max
supply voltage	V	+5		+15
control voltage	V	+0.1		+2.0
output high voltage	V	+100		+2000
output (anode) current	µA			200*
supply current at +5 V;				
for anode current = 0 µA	mA		70	
for anode current = 100 µA	mA		150	
supply current at +12 V:				
for anode current = 0 µA	mA		40	
for anode current = 100 µA	mA		60	
line regulation	%/V			0.01
anode load regulation:				
for anode current 0 - 100 µA	%			0.01
temperature coefficient	%/°C			0.02
switch-on time (10 - 90%)	s		0.2	
switch-off time (90 - 10%)	s		3	
anode ripple:				
for anode load = 10 kΩ‖22 pF	mV(p-p)		2	
weight	g		50	

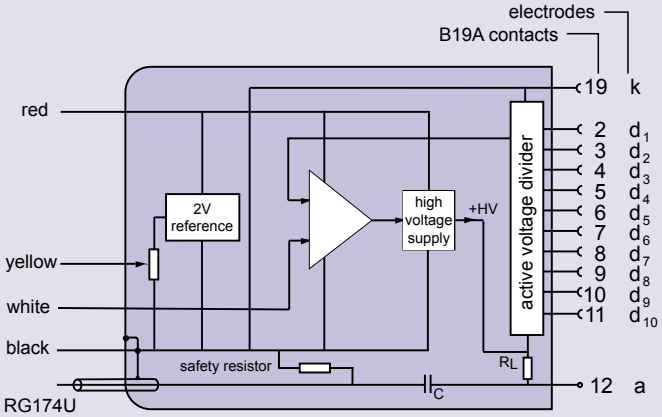
*Subject to photomultiplier limit



5 ratings

	unit	min	typ	max
supply voltage	V	4.5		18
control voltage	V	0		2
temperature (operating):				
at 93% RH, non-condensing	°C	-40		60

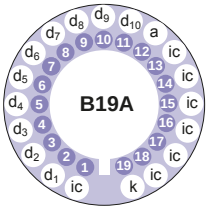
6 schematic diagram



7 voltage distribution

The photomultiplier pin configuration for this HV base is given below. The voltage distribution for an applied HV of V volts is shown in the table. Note that an anode load resistor (R_L) of 100 KΩ is included. A 10 MΩ resistor and capacitor, C, are connected between anode and ground to maintain the output at 0 V.

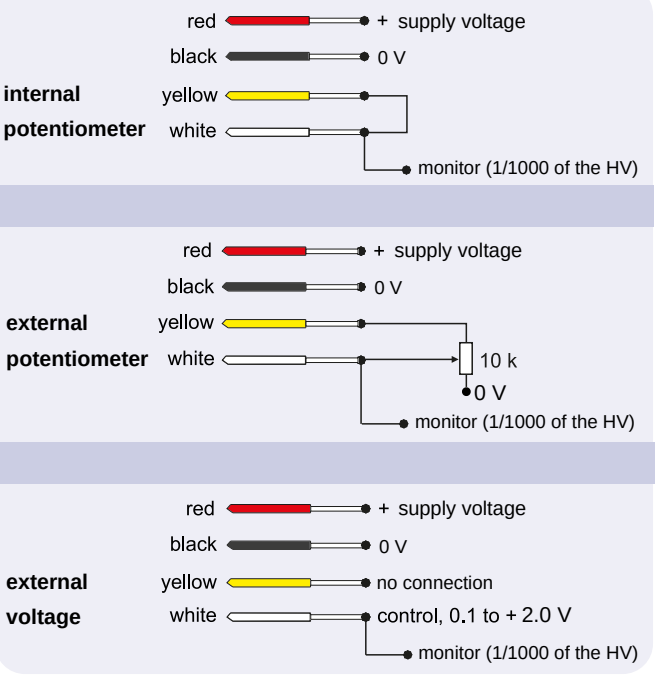
photomultiplier pin connections (view from below)



ic indicates an internal connection

k	d_1	d_2	.....	d_9	d_{10}	a
2/12V	1/12V		.....	1/12V	1/12V	

8 programming options

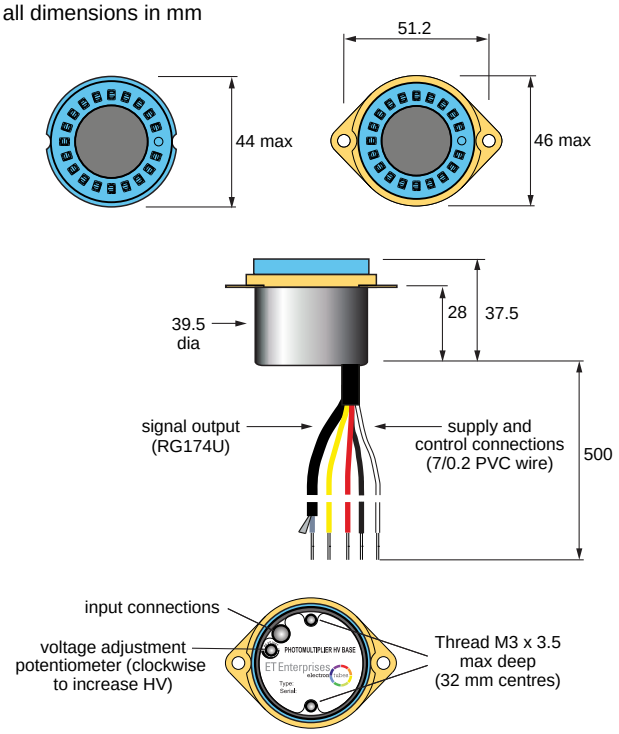


9 photomultiplier options and dimensions

The HV5120AP series HV base can be used with the following photomultipliers:

9250B, 9256B and 9266B

all dimensions in mm



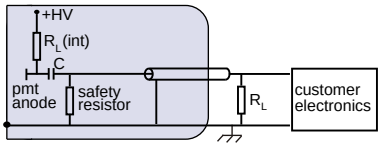
10 linearity

Linearity performance is dependent on the particular photomultiplier being used with the HV Base. It is measured as the % deviation in either peak pulse current, or average current, depending on the mode of operation.

Please refer to the corresponding photomultiplier data sheet for further information.

11 output configuration

The photomultiplier anode is internally ac coupled to ground via a 10 MΩ safety resistor. An internal load resistor, R_L (int), of 100 KΩ is also provided. An external load resistor, R_L, can be added if required.



C = internal coupling capacitor
R_L (int) = internal load resistor
R_L = external load resistor (optional)

12 ordering information

item	ordering code
without flange	HV5120AP
with flange	HV5120APF

13 warning

High voltages generated by these products present an electrical shock hazard and appropriate precautions must be taken.

Installation must be by qualified personnel.

All units are despatched with the internal potentiometer set to zero.

Do not operate outside the quoted ratings of the HV5120AP or those of the photomultiplier. This may result in loss of performance, permanent damage, or both.

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