photomultiplier HV base
HV3820CP data sheet

ET Enterprises electron tubes

1 description

The HV3820CP is a compact photomultiplier HV Base operating from a low voltage supply (+5 to +15 V). It incorporates a positive HV supply and a CW multiplier that directly supplies voltages to the photomultiplier electrodes. The HV Base is intended for use with 10-stage, 38 mm hardpin photomultipliers for applications requiring up to +2000 volts and ac coupling.

The unit is housed in a screened cylindrical metal enclosure. 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.

2 applications

The HV3820CP is designed for use in the following operating modes:

- pulsed light
- photon counting

3 features

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

4 specifications

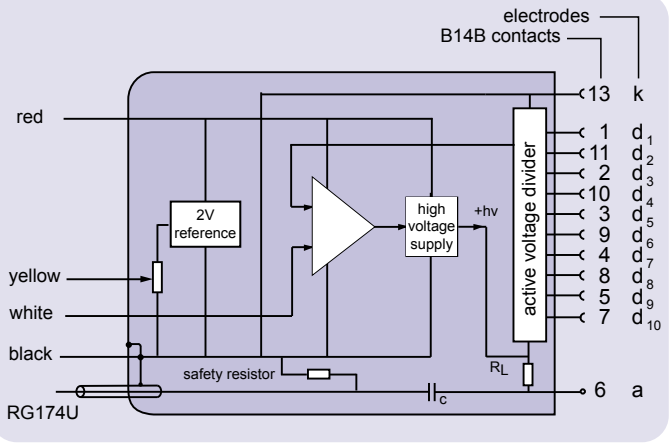
at HV = 1000V	unit	min	typ	max
supply voltage	V	+5		+15
control voltage	V	+0.1		+2.0
output high voltage	V	+100		+2000
output (anode) current	µA			200*
supply current at +5 V;				
for anode current = 0 µA	mA		1.5	
for anode current = 100 µA	mA		6.5	
supply current at +12 V:				
for anode current = 0 µA	mA		1	
for anode current = 100 µA	mA		5	
line regulation	%/V			0.01
anode load regulation:				
for anode current 0 - 100 µA	%			0.01
temperature coefficient	%/°C			0.02
switch-on time	s		0.2	
switch-off time	s		55	
anode ripple:				
for anode load = 10 kΩ‖22pF	mV(p-p)		2.5	
weight	g		32	

*Subject to photomultiplier limit

5 ratings

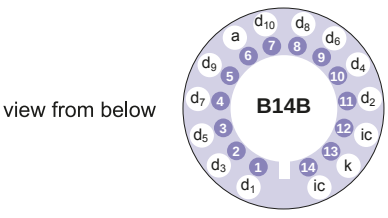
	unit	min	typ	max
supply voltage	V	4.5		18
control voltage	V	0		3
temperature (operating):				
at 93% RH, non-condensing	°C	-40		60

6 schematic diagram



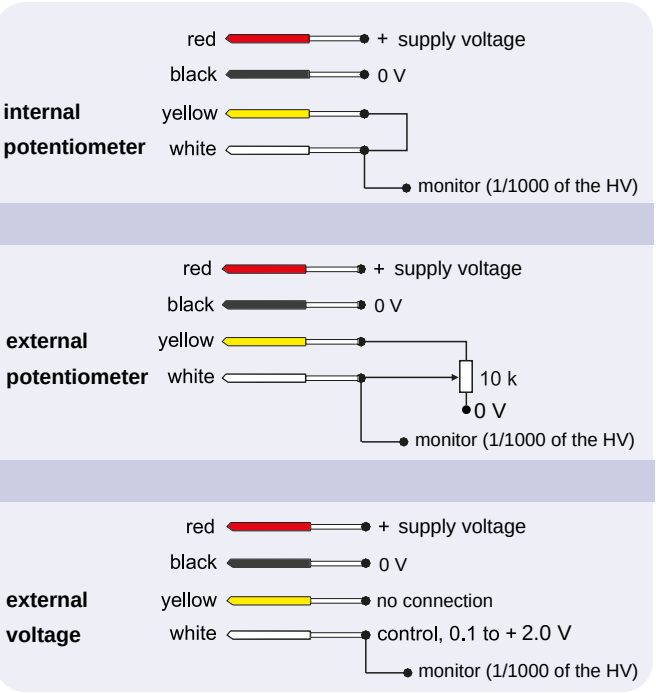
7 voltage distribution

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 100KΩ is included. A 10MΩ safety resistor is connected between signal output and ground to maintain the output close to 0 V.



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

8 programming options

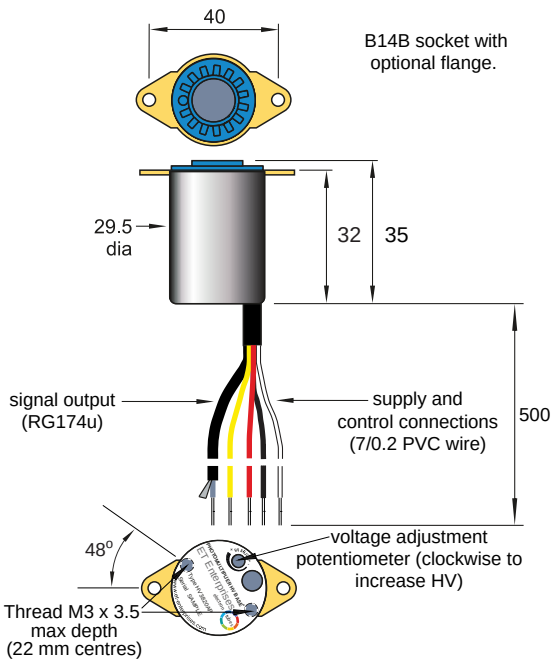


9 dimensions and photomultiplier options

The HV3820CP series HV base can be used with the following photomultipliers:

9102B, 9845B, 9902B 9903B and 9972B

all dimensions in mm



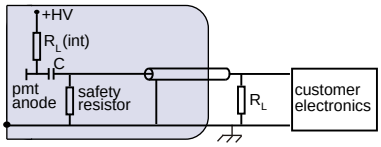
10 linearity

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	HV3820CP
with flange	HV3820CPF

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 and operation must remain within the specified ratings.

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

Do not operate outside the quoted ratings of the HV3820CP or those of the photomultiplier. This may result in loss of performance, permanent damage, or both.

ET Enterprises Limited
45 Riverside Way
Uxbridge UB8 2YF
United Kingdom
tel: +44 (0) 1895 200880
fax: +44 (0) 1895 270873
e-mail: sales@et-enterprises.com
web site: www.et-enterprises.com

ADIT Electron Tubes
300 Crane Street
Sweetwater TX 79556 USA
tel: (325) 235 1418
toll free: (800) 399 4557
fax: (325) 235 2872
e-mail: sales@electrontubes.com
web site: www.electrontubes.com

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