

# photomultiplier HV Base

## HV3020CP series data sheet

### 1 description

The HV3020CP is a compact photomultiplier negative polarity HV Base operating from a low voltage supply (+5 to +15 V). It incorporates a CW multiplier that directly supplies voltages to the photomultiplier electrodes. The HV Base is suitable for most 11-stage, 30 mm, hardpin photomultipliers for applications requiring up to +2000 volts and ac coupling.

The unit is housed in a screened cylindrical metal enclosure of the same diameter as the photomultiplier (30 mm). Threaded mounting bushes are provided. The anode output is 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 HV3020CP but for applications requiring grounded anode operation, a negative polarity version is available, which is the HV3020CN.

### 2 applications

The HV3020CP is designed for use in the following operating modes:

- pulsed light
- 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		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 (10 - 90%)	s		0.2	
switch-off time (90 - 10%)	s		55	
anode ripple:				
for anode load = 10 kΩ  22pF	mV(p-p)		2	
weight	g		32	

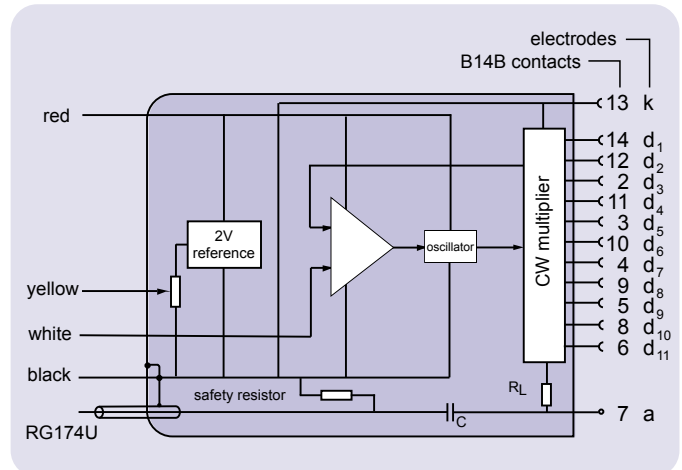
\*subject to photomultiplier limit



### 5 ratings

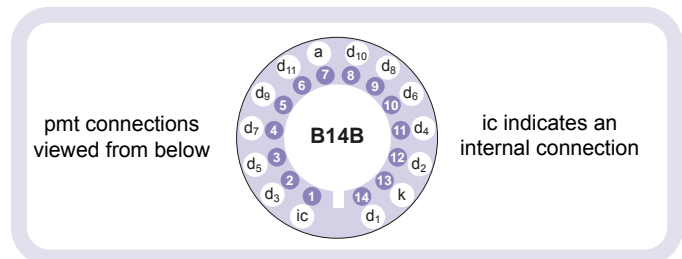
	unit	min	typ	max
supply voltage	V	4.5		18
control voltage	V	0		3
temperature (operating): at 93% RH, non-condensing	°C	-40		60

### 6 schematic diagram



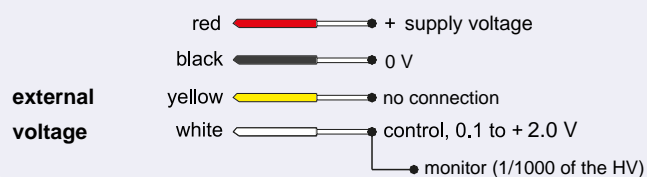
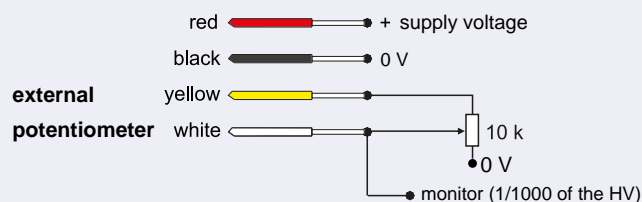
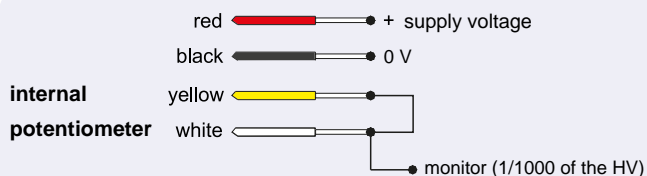
### 7 voltage distribution

The required photomultiplier pin configuration for this HV Base and a B14B socket 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 safety resistor and capacitor, C, are connected between anode and ground to maintain the output 0V.



k	d <sub>1</sub>	d <sub>2</sub>	.....	d <sub>10</sub>	d <sub>11</sub>	a
2/13V	1/13V	.....	.....	1/13V	1/13V	

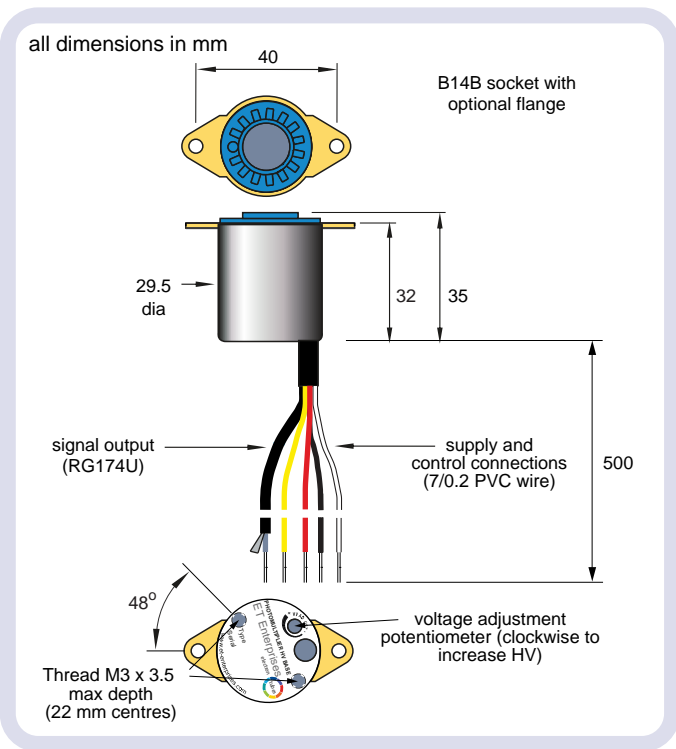
### 8 programming options



### 9 dimensions and photomultiplier options

The HV3020CP HV Base can be used with the following photomultipliers:

9107B, 9108B, 9124B, 9125B, 9128B, 9129B, 9130/100B, 9130/350B, 9131/100B, 9136B, 9142B, 9143B, 9442B, 9406B, 9407B, 9408B, 9798B, 9828B, 9900B and 9924B



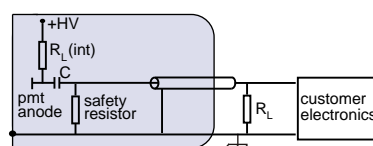
### 10 linearity

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	HV3020CP
with flange	HV3020CPF

### 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 HV3020CP or those of the photomultiplier. This may result in loss of performance, permanent damage, or both.

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