PS1803N DATA SHEET

PHOTOMULTIPLIER POWER BASE (NEGATIVE)

SENS - TECH

DESCRIPTION

The PS1803N is a compact photomultiplier power base, operating at negative high voltage. The CW principle of operation provides the lowest power consumption within our range of power bases. This is particularly relevant to battery operated equipment. It is suitable for use with 10 stage, 52 mm diameter, photomultipliers with an overall voltage range of –300 to –1800 V. It is available in two versions: the PS1803N/5 operates from a nominal +5V supply and the PS1803N/12 requires a nominal +12V.

It is housed in a cylindrical metal enclosure to provide electrical screening. Low voltage connections are by 500 mm long insulated leads, and the anode output is via a 500 mm long RG174U screened coaxial cable.

The overall operating voltage for the photomultiplier can be precisely set using any one of the three programming options **shown in the programming options section**.

EXAMPLES OF THE SENS-TECH POWER BASES

APPLICATIONS

The PS1803N is suitable for the following applications:

- Pulsed light
- Photon counting
- Analogue
- Battery powered instruments

FEATURES

- Extremely low power consumption
- Compact design
- Freedom from high voltage cables
- Low ripple
- Exceptional voltage divider stability with varying anode current
- Excellent pulse height linearity
- Sleep mode
- Reverse supply protected

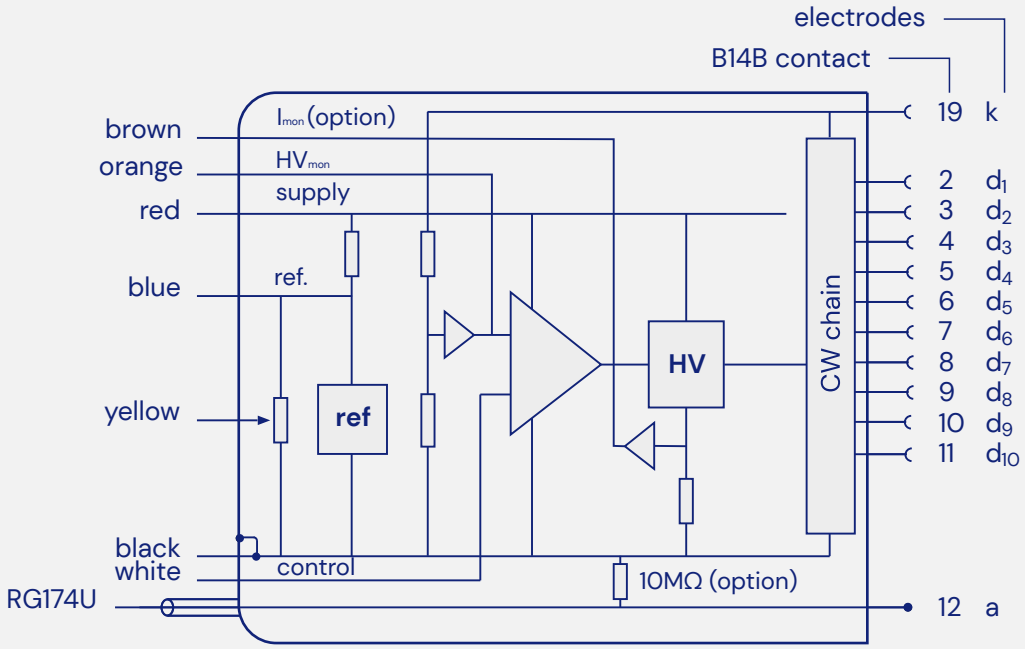
SPECIFICATION

OUTPUT VOLTAGE RANGE -300 V to -1800 V	**WARM UP TIME TO 0.3 % OF FINAL OUTPUT** < 1 s
ANODE CURRENT AT 1800 V 200 µA	**DISCHARGE TIME TO <40 V WITH NO LOAD** < 15 s
INPUT CURRENT, FULL LOAD (PS1803N/5) <36 mA	**INPUT CURRENT, FULL LOAD (PS1803N/12)** <15 mA
INPUT CURRENT, IDLING (PS1803N/5) <26 mA	**INPUT CURRENT, IDLING (PS1803N/12)** <11 mA
LOAD REGULATION (TYPICAL) 0.017% (0-100%)	**LINE REGULATION (TYPICAL)** 0.001 % V^{-1}
EXTERNAL VOLTAGE CONTROL 0.3 mV to 1.8 V (-300 to -1800V)	**REFERENCE VOLTS OUT (BLUE WIRE)** 2.5V±0.4%
TEMPERATURE COEFFICIENT (TYPICAL) 5 ppm $°C^{-1}$	**ANODE RIPPLE WITH 10 KΩ / 20 PF, 1 KV** 4 mV pp / 0.3 mV p-p (nulled)
WEIGHT 80g	

RATINGS

INPUT VOLTAGE (PS1803N/5) +4.75 V to +8 V	**TEMPERATURE (OPERATING)** + 5 °C to +55 °C
INPUT VOLTAGE (PS1803N/12) +11 V to +15 V	**REFERENECE OUT LOAD** 1mA
CONTROL VOLTAGE 0 to +1.8 V	

SCHEMATIC DIAGRAM



Example of output voltage with 1.3 volts applied to control (white) wire

CONTACT	ELECTRODE	VOLTAGE	CONTACT	ELECTRODE	VOLTAGE
2	d_1	-1000	8	d_7	-400
3	d_2	-900	9	d_8	-300
4	d_3	-800	10	d_9	-200
5	d_4	-700	11	d_{10}	-100
6	d_5	-600	12	a	0
7	d_6	-500	19	k	-1300

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VOLTAGE DISTRIBUTION

The photomultiplier pin configuration compatible with this power base is given below. Note that an anode load resistor is not included.

view from below

'ic' indicates an internal connection

k	d_1	d_2	d_9	d_{10}	a
3/13 V	1/13 V	-----	1/13 V	1/13 V	

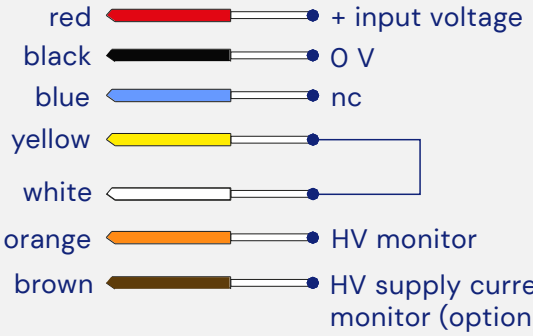
note: V is the high voltage, HV

SLEEP MODE

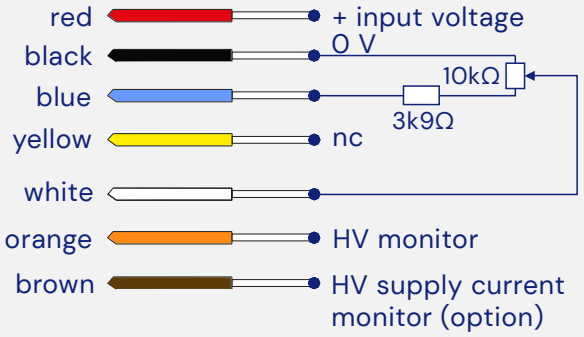
The power consumption can be reduced by setting the HV to zero. This is done by taking the control voltage (white) to 0 V.

PROGRAMMING OPTIONS

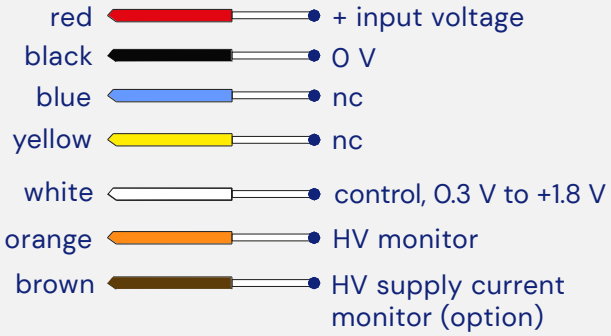
Internal potentiometer (access from back of power supply, clockwise to increase HV)



External potentiometer



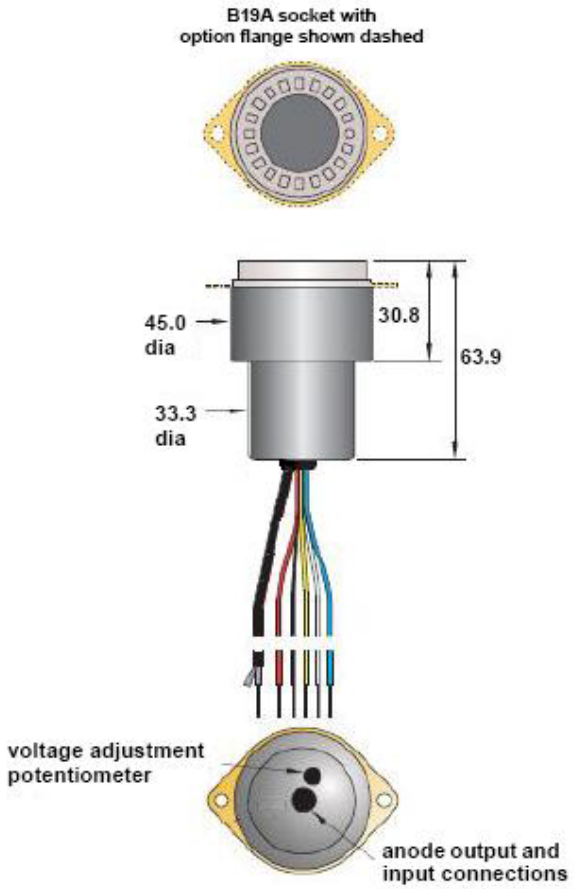
External voltage



nc: no connection - isolated lead
HV monitor: 1/1000 of the HV applied to photomultiplier (cathode)
HV control: 1/1000 of the required HV

OUTLINE DRAWING MM

All input connections are 7/0.2 PVC covered, 0.5m in length. The anode lead is RG174U, also 0.5m in length.



ORDERING INFORMATION

ITEM	ORDERING CODE
PS1803N, +5 V	PS1803N/5
PS1803N, +5 V, flange	PS1803N/5F
PS1803N, +12V	PS1803N/12
PS1803N, +12V, flange	PS1803N/12F

WARNING

High voltages generated by these products present an electrical shock hazard and appropriate precautions must be taken. They must be installed by qualified personnel and operated within the specified ratings.

The PS1803N is despatched with the internal potentiometer set to zero.

Do not operate outside the ratings limits. This may result in loss of performance or permanent damage to the PS1803N. Do not exceed the ratings of the photomultiplier as this may damage the photomultiplier and the power supply.

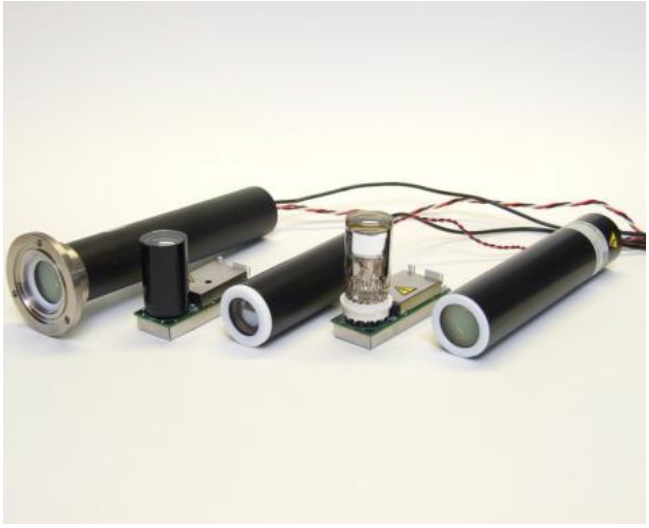
If you are using just a power base from Sens-Tech Limited you may benefit from choosing a complete photomultiplier with power base solution. **See examples of our range on the next few pages.**

PHOTOMULTIPLIER MODULES

YOU MAY ALSO BE INTERESTED IN...

SENS - TECH

Sens-Tech photomultiplier modules provide the nstrument designer with a wide range of high performance plug-and-play solutions for low and high light level detection and measurement.



Modules are light tight and incorporate combinations of the following:

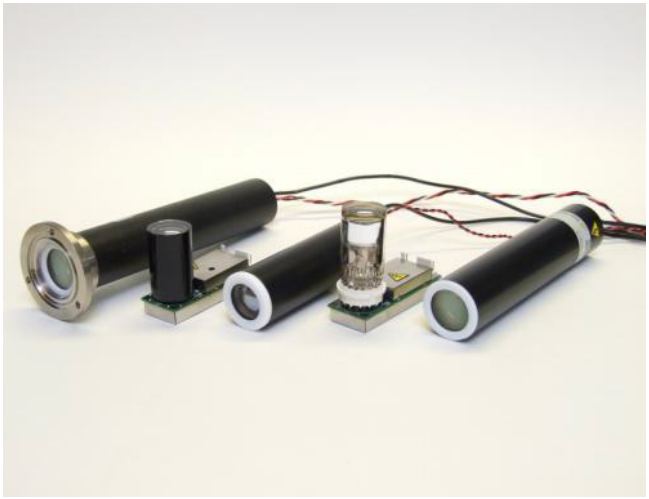
- Photomultiplier
- Power supply
- Voltage divider
- Electromagnetic screening
- Electrostatic screening
- Signal processing electronics
- Outputs include, USB, TTL, RS232, Voltage, Current

Photomultiplier Modules are suitable for the following applications:

- Photon counting
- Pulsed light
- Analogue detection

Benefits include:

- Shorter time-to-market
- Cost effectiveness
- Applications support long after the sale
- Plug-and-play versions
- User friendly
- Physically robust
- Long term stability of operation
- Reduced susceptibility to e-m interference
- User protected package with encapsulated HV
- Adjustable versions offering user control



If your requirement demands a unique module please discuss this with us.

The company reserves the right to modify these designs and specifications without notice. Developmental devices are intended for evaluation and no obligation is assumed for future manufacture. While every effort is made to ensure accuracy of published information the company cannot be held responsible for errors or consequences arising therefrom.

An ISO 9001 registered company