

## HIGH VOLTAGE POWER SUPPLY SOCKET ASSEMBLY WITH TRANSIMPEDANCE AMPLIFIER C14019-01

The C14019-01 is a high voltage power supply socket assembly for 28 mm (1-1/8 inch) diameter side-on photomultiplier tubes (PMT), incorporating a regulated high voltage power supply, an active voltage divider, and a transimpedance amplifier, having a wide bandwidth (DC to 5 MHz). It enables simple yet stable PMT operations with extended DC output linearity by only supplying  $\pm 15$  V and connecting to a potentiometer or a 0 to +5 V for high voltage adjustment.



### FEATURES

- Superior DC output linearity
- Low ripple / noise
- Fast high voltage programming response
- Including high transimpedance amplifier
- Amplifier with wide frequency band (DC to 5 MHz)

### SPECIFICATIONS

Parameter		Description / Value	Unit
Applicable photomultiplier tubes		$\phi 28$ mm (1-1/8 inch) side-on type	—
Input voltage		$\pm 15 \pm 1$	V
Maximum input voltage		$\pm 18$	V
Maximum input current <sup>①</sup>		V <sub>cc</sub> : 70, V <sub>ee</sub> : -20	mA
Linear DC output current of PMT <sup>②③</sup>		20 (load resistance 50 $\Omega$ )	$\mu$ A
Amplifier	Frequency bandwidth (-3 dB)	DC to 5 MHz	—
	Current to voltage conversion factor	0.15 (load resistance 50 $\Omega$ )	V/ $\mu$ A
	Maximum output signal voltage	+3 (load resistance 50 $\Omega$ )	V
	Output signal offset voltage	Typ. $\pm 10$	mV
	Output signal ripple / noise <sup>④</sup> (rms)	Max. 10	mV
	Amplifying method	Inverting output	—
High voltage power supply	Output voltage range	0 to -1250	V
	Line regulation against 1 V input change <sup>②</sup>	Typ. $\pm 0.01$	%
	Output voltage control	Control voltage (0 V to +5 V) or potentiometer (50 k $\Omega$ )	—
	Control voltage input impedance	100	k $\Omega$
	Output voltage programming response <sup>⑤</sup>	Typ. 80	ms
Temperature coefficient <sup>②</sup>	Typ. $\pm 0.01$	%/ $^{\circ}$ C	
Operating ambient temperature / humidity <sup>⑥</sup>		0 $^{\circ}$ C to +40 $^{\circ}$ C / Below 85 %	—
Storage temperature / humidity <sup>⑥</sup>		-15 $^{\circ}$ C to +60 $^{\circ}$ C / Below 90 %	—
Weight		60	g

NOTE: ① Without PMT ② Input voltage =  $\pm 15$  V, Control voltage = +4 V ③ Within:  $\pm 2$  % linearity  
 ④ Load resistance = 1 M $\Omega$ , Load capacitance = 22 pF ⑤ For 0 % to 99 % high voltage change ⑥ No condensation

Figure 1: DC linearity characteristics

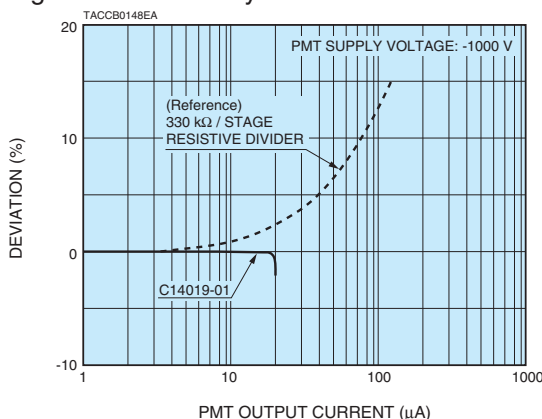
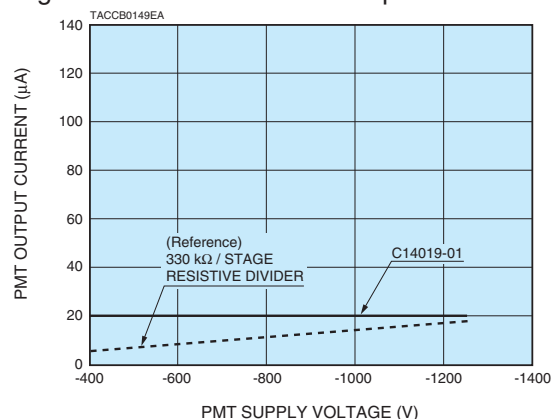


Figure 2: Practical PMT DC output limits



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Figure 3: Output voltage vs. control voltage

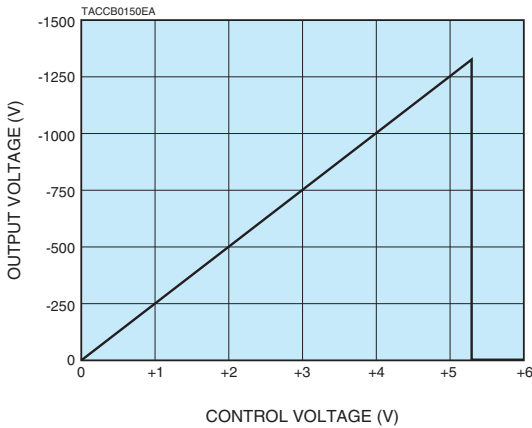


Figure 4: Frequency bandwidth

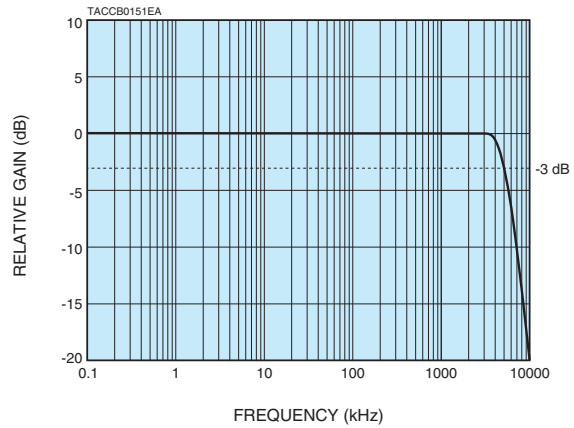
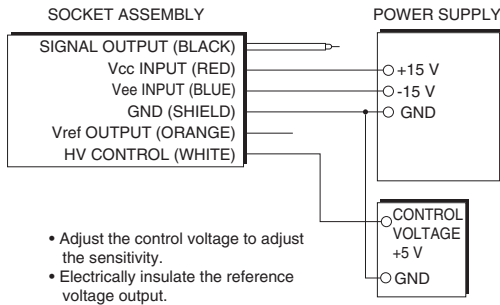


Figure 5: Adjustment method of high voltage

● OUTPUT VOLTAGE CONTROLLING BY EXTERNAL VOLTAGE



● OUTPUT VOLTAGE CONTROLLING BY EXTERNAL POTENTIOMETER

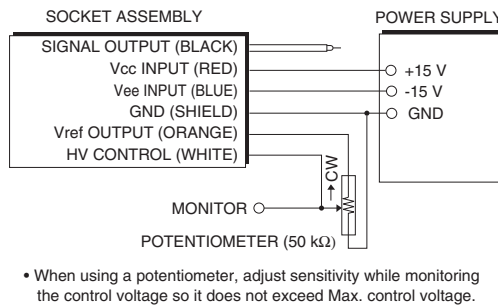
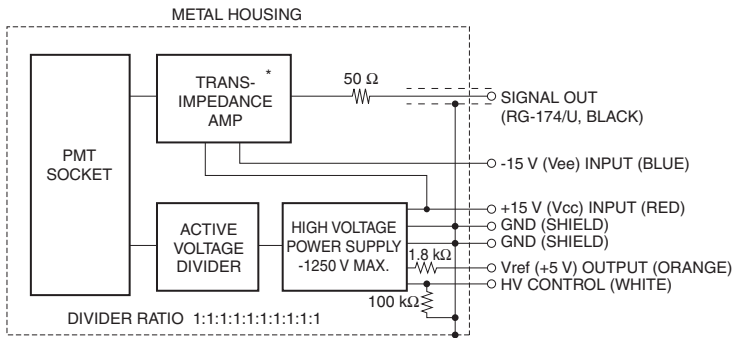
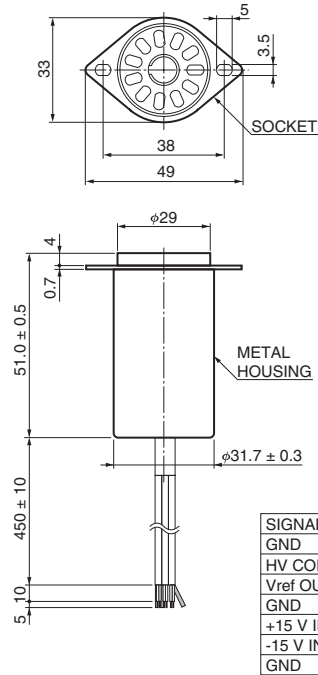


Figure 6: Schematic diagram



\* Current to voltage conversion factor: 0.15 V/μA  
Frequency bandwidth (-3 dB): DC to 5 MHz

Figure 7: Dimensional outline (Unit: mm)



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