

### UL recognized (UL60601-1, File No. E470768)

The C13890-15 is a compact PC-board mountable high voltage power supply, especially designed for photomultiplier tubes. The design offers better performance.

## FEATURES

- Wide input voltage range
- Low ripple / noise
- Very compact and lightweight
- High stability
- Wide operating ambient temperature
- Low power consumption



## SPECIFICATIONS

Parameter	C13890-15	Unit
Input voltage range	+11 to +16	V
Input current <sup>(A)</sup>	with no load Typ.	35
	with full load <sup>(B)</sup> Typ.	125
Specification guaranteed output voltage range <sup>(C)</sup>	-200 to -1250	V
Output current	Max.	0.6
Line regulation against +11 V to +16 V input change <sup>(A)(D)</sup>	Typ.	±0.01
Load regulation against 0 % to 100 % load change <sup>(A)</sup>	Typ.	±0.01
Ripple / Noise (p-p) <sup>(A)(D)</sup>	Typ.	0.003
Output voltage control	By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ ± 2.5 kΩ)	
Controlling voltage input impedance	Typ.	75
Reference voltage output	Typ.	+5.1 (with 50 kΩ external potentiometer)
Output voltage setting (Absolute value)	Typ.	Controlling voltage × 250
Output voltage rise time (0 % → 99 %) <sup>(A)(D)</sup>	Typ.	100
Temperature coefficient <sup>(A)(D)</sup>	Typ.	±0.01
Operating ambient temperature <sup>(A)(D)</sup>		-10 to +60
Operating ambient humidity <sup>(E)</sup>		Below 80
Storage temperature		-20 to +70
Storage humidity <sup>(E)</sup>		Below 80
Weight		29
Protective functions	Protected against reversed power input, reversed / excessive controlling voltage input, continuous overloading / short circuit in output	

**NOTE:** <sup>(A)</sup>At maximum output voltage.

<sup>(B)</sup>At input voltage: +11 V.

<sup>(C)</sup>The voltage from 0 V to -200 V can be output but all characteristics are not necessarily satisfied.

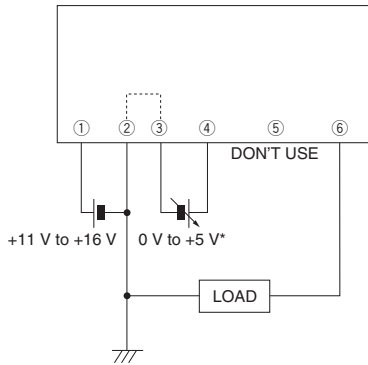
<sup>(D)</sup>At maximum output current.

<sup>(E)</sup>No condensation.

# COMPACT HIGH VOLTAGE POWER SUPPLY C13890-15

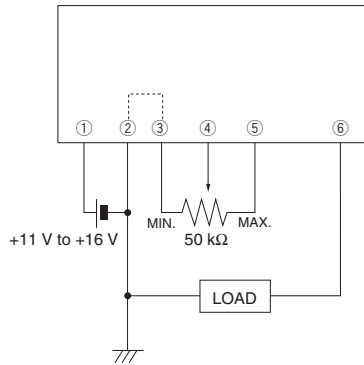
Figure 1: Connection diagrams

## ● OUTPUT VOLTAGE CONTROL BY EXTERNAL VOLTAGE



\*The instability in the external controlling voltage should be minimized as it directly affects the output voltage quality.

## ● OUTPUT VOLTAGE CONTROL BY EXTERNAL POTENTIOMETER



### PIN ASSIGNMENT

- ① Vcc IN +11 V to +16 V
- ② GND
- ③ Vcont GND
- ④ Vcont IN
- ⑤ Vref OUT +5.1 Typ.
- ⑥ HV OUT

- The housing is internally connected to pin ②.
- Pins ② and pin ③ are internally connected.

TACCC0182EA

Figure 2: Output voltage controlling characteristic

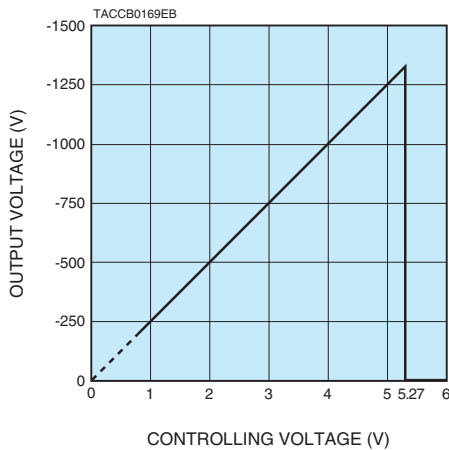
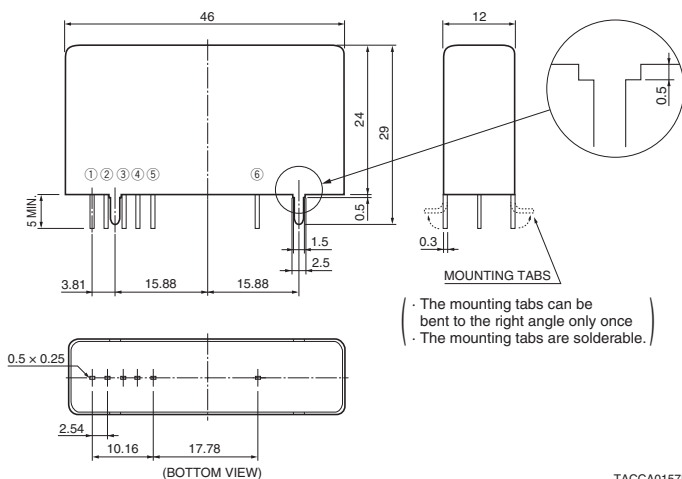
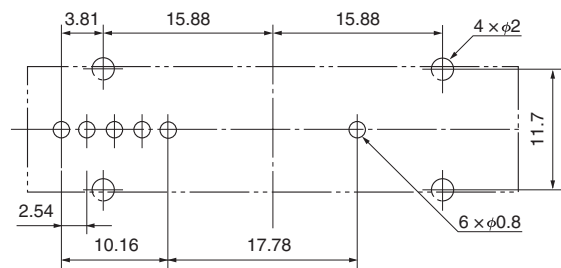


Figure 3: Dimensional outline (Unit: mm)



TACCA0157EC

### Drilling data for PC board (Soldering face)



TACCA0159EC

## HAMAMATSU PHOTONICS K.K. [www.hamamatsu.com](http://www.hamamatsu.com)

### HAMAMATSU PHOTONICS K.K., Electron Tube Division

314-5, Shimokanzo, Iwata City, Shizuoka Pref., 438-0193, Japan, Telephone: (81)539/62-5248, Fax: (81)539/62-2205

U.S.A.: Hamamatsu Corporation, 360 Foothill Road, Bridgewater, NJ 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: [usa@hamamatsu.com](mailto:usa@hamamatsu.com)

Germany: Hamamatsu Photonics Deutschland GmbH, Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8 E-mail: [info@hamamatsu.de](mailto:info@hamamatsu.de)

France: Hamamatsu Photonics France S.A.R.L., Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: [infos@hamamatsu.fr](mailto:infos@hamamatsu.fr)

United Kingdom: Hamamatsu Photonics UK Limited, 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-325777 E-mail: [info@hamamatsu.co.uk](mailto:info@hamamatsu.co.uk)

North Europe: Hamamatsu Photonics Norden AB, Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01 E-mail: [info@hamamatsu.se](mailto:info@hamamatsu.se)

Italy: Hamamatsu Photonics Italia S.r.l., Strada della Moia, 1 inf. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: [info@hamamatsu.it](mailto:info@hamamatsu.it)

China: Hamamatsu Photonics (China) Co., Ltd., 1201 Tower B, Jiaming Center, 27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: [hpc@hamamatsu.com.cn](mailto:hpc@hamamatsu.com.cn)

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd., 8F-3, No.158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)03-659-0080, Fax: (886)03-659-0081 E-mail: [info@hamamatsu.com.tw](mailto:info@hamamatsu.com.tw)

TACCA1080E02  
APR. 2018 IP