

**HAMAMATSU**  
PHOTON IS OUR BUSINESS

# HIGH VOLTAGE POWER SUPPLY



HAMAMATSU PHOTONICS K.K.

**High voltage power supplies listed in this catalog have the following features:**

- Low noise
- High efficiency
- High stability
- Protection function included

**Our many years of experience and achievements amassed as a leading manufacturer of photomultiplier tubes as well as the high voltage power supplies that drive them ensure highly reliable performance in a diverse range of applications.**

# High voltage power supply modules

	Type No.	Output voltage (Max.) (V)	Output current (Max.) (mA)	Input voltage (V)	Size W × H × D <sup>Ⓐ</sup> (mm)	Note		
	C10940	-03	-1200	0.6	+5	15 × 18 × 15	Digital Control RS-485, Daisy-chain (-R2 type only)	
		-03-R2						
		-53	+1200					
		-53-R2						
	C4900	—	-1250	0.6	+15	46 × 24 × 12		
		-01		0.5	+12			
		-50	+1250	0.6	+15			
		-51		0.5	+12			
	C10673	—	-1250	0.6	+15	46 × 24 × 12	UL recognized (UL60950-1)	
		-01		0.5	+12			
	C10764	—	-1250	1	+15	46 × 24 × 12		
		-50	+1250					
	C11152	—	-1500	1	+15	41 × 10 × 41	Low ripple / noise	
		-01			+12			
		-50	+1500		+15			
		-51			+12			
	C9619	—	-2000	2	+15	62 × 15 × 45		
		-01			+12			
		-50	+2000		+15			
		-51			+12			
	C11784	-12	-2000	5	+24	62 × 15 × 45		
		-52	+2000					
	C12446	-12	-1000	10	+24	62 × 15 × 45		
		-52	+1000					
	C12766	-12	-1500	30	+24	107 × 25.5 × 72	High current output -12: UL recognized (UL60601-1)	
		-52	+1500					

## Multiple output type

	C13145	-01	-1000 /ch	1 /ch	+24	130 × 35 × 130	8-channel outputs
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ⒶExcluding projecting parts

# Bench-top type high voltage power supplies

	Type No.	Output voltage (Max.) (V)	Output current (Max.) (mA)	Input voltage (V)	Size W × H × D <sup>Ⓐ</sup> (mm)	Note			
	C9525	-02	-2000	1.8	246 × 85 × 312	USB control Multiple outputs of ±5 V, ±15 V and high voltage			
		-03							
		-52	+2000						
		-53							
	C9727	—	-3500	2	246 × 85 × 312	USB control Multiple outputs of ±5 V, ±15 V and high voltage			
		-01							
		-50	+3500						
		-51							

ⒶExcluding projecting parts

# High voltage power supply modules

**0.7 W output 1200 V / 0.6 mA**

## C10940 series

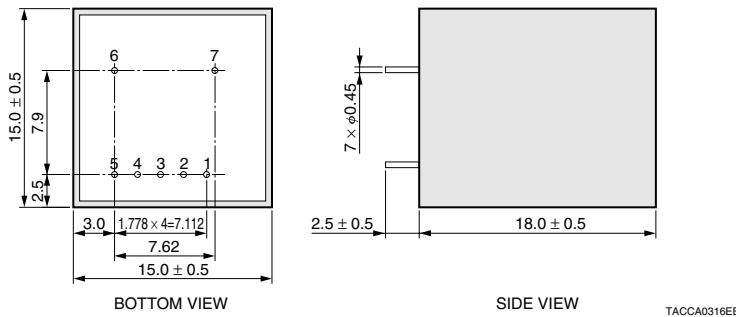


Parameter	C10940-03	C10940-03-R2	C10940-53	C10940-53-R2	Unit
Input voltage		+5 ± 0.5			V
Input current <sup>(A)</sup>	with no load Typ.	60			mA
	with full load Typ.	230			mA
Variable output voltage range		-10 to -1200		+10 to +1200	V
Specification guaranteed output voltage range		-200 to -1200		+200 to +1200	V
Output current	Max.	0.6			mA
Line regulation against ±0.5 V input change <sup>(A)(B)</sup>	Typ.	±0.02			%
Load regulation against 0 % to 100 % load change <sup>(A)</sup>	Typ.	±0.01			%
Ripple / Noise (p-p) <sup>(A)(B)</sup>	Typ.	50			mV
Output voltage control		See output voltage control diagrams below	See remote control diagram below	See output voltage control diagrams below	See remote control diagram below
Reference voltage output	Typ.	+1.2	—	+1.2	—
Output voltage setting (Absolute value)	Typ.	Controlling voltage × 1000	—	Controlling voltage × 1000	—
Output voltage rise time (0 % → 99 %) <sup>(A)(B)</sup>	Typ.	120	300	120	300
Temperature coefficient <sup>(A)(B)</sup>	Typ.		±0.01		%/°C
Operating ambient temperature <sup>(A)(B)</sup>			0 to +50		°C
Operating ambient humidity <sup>(C)</sup>			Below 80		%
Storage temperature			-20 to +60		°C
Storage humidity <sup>(C)</sup>			Below 80		%
Weight	Typ.		7.7		g
Protective functions		Protected against reversed power input, reversed/excessive controlling voltage input, continuous overloading/short circuit output			

NOTE: <sup>(A)</sup>At maximum output voltage <sup>(B)</sup>At maximum output current <sup>(C)</sup>No condensation

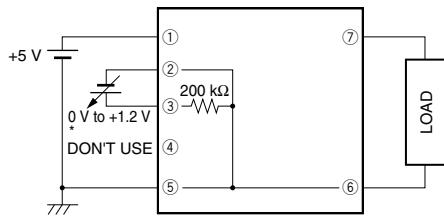
\* -R2 type: RS-485 control

### Dimensional outline (Unit: mm)

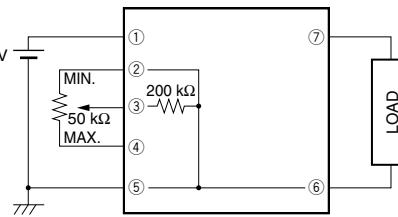


### Output voltage control (C10940-03, C10940-53)

#### ● By external voltage



#### ● By external potentiometer

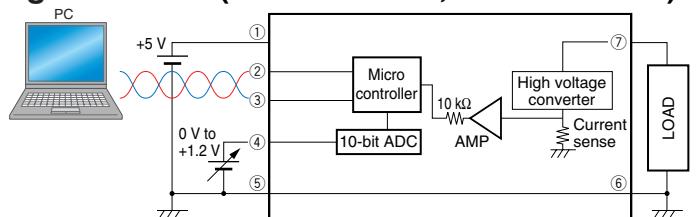


- ① Vcc IN +5 V
- ② Vcont GND
- ③ Vcont
- ④ Vref OUT +1.2 V Typ.
- ⑤ Vcc GND
- ⑥ HV GND
- ⑦ HV OUT

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

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### Digital control (C10940-03-R2, C10940-53-R2)



- ① Vcc IN +5 V
- ② RS-485 A
- ③ RS-485 B
- ④ VOLTAGE INPUT \*
- ⑤ Vcc GND
- ⑥ HV GND
- ⑦ HV OUT

\* It is also possible to operate without voltage input.

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# High voltage power supply modules

**0.7 W output 1250 V / 0.5 mA, 0.6 mA**

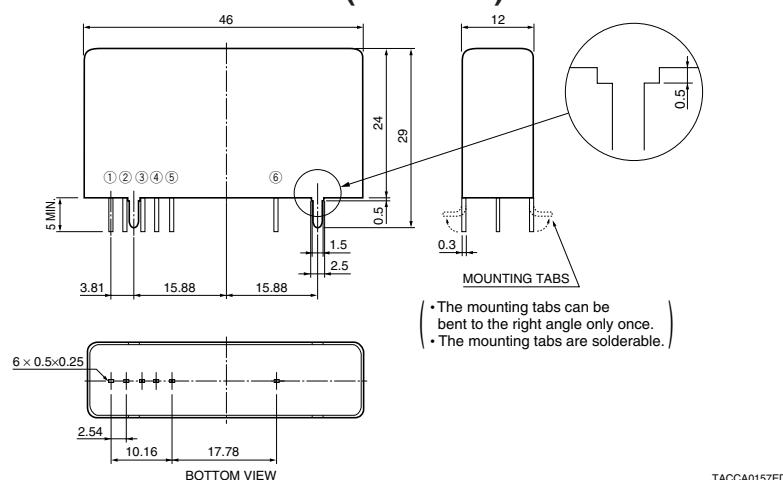
## C4900 series



Parameter	C4900	C4900-01	C4900-50	C4900-51	Unit
Input voltage	+15 ± 1	+12 ± 0.5	+15 ± 1	+12 ± 0.5	V
Input current <sup>(A)</sup>	with no load Typ.	14	15	14	15
	with full load Typ.	90	95	90	95
Variable output voltage range		0 to -1250		0 to +1250	V
Specification guaranteed output voltage range		-200 to -1250		+200 to +1250	V
Output current	Max.	0.6	0.5	0.6	mA
Line regulation against ±1 V or ±0.5 V input change <sup>(A,B)</sup>	Typ.			±0.01	%
Load regulation against 0 % to 100 % load change <sup>(A)</sup>	Typ.			±0.01	%
Ripple / Noise (p-p) <sup>(A,B)</sup>	Typ.			0.003 % (38 mV)	—
Output voltage control		By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ)			—
Controlling voltage input impedance	Typ.			80	kΩ
Reference voltage output	Typ.			+5.1	V
Output voltage setting (Absolute value)	Typ.			Controlling voltage × 250	V
Output voltage rise time (0 % → 99 %) <sup>(A,B)</sup>	Typ.			50	ms
Temperature coefficient <sup>(A,B)</sup>	Typ.			±0.01	%/°C
Operating ambient temperature <sup>(A,B)</sup>				0 to +50	°C
Operating ambient humidity <sup>(C)</sup>		Below 80		Below 80 <sup>(D)</sup>	%
Storage temperature				-20 to +70	°C
Storage humidity <sup>(C)</sup>				Below 80	%
Weight	Typ.			31	g
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 maximum output current    <sup>(C)</sup>No condensation    <sup>(D)</sup>At 0 °C to +40 °C

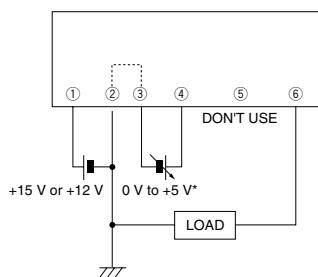
### Dimensional outline (Unit: mm)



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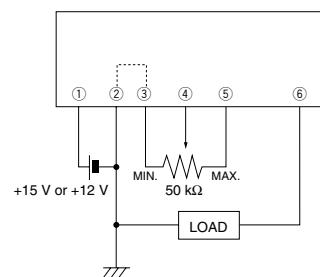
### Output voltage control

#### By external voltage



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

#### By external potentiometer



#### PIN ASSIGNMENT

- ① Vcc IN +15 V or +12 V
- ② Vcc GND
- ③ Vcont GND
- ④ Vcont IN
- ⑤ Vref OUT +5.1 V Typ.
- ⑥ HV OUT

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

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# High voltage power supply modules

**0.7 W output 1250 V / 0.5 mA, 0.6 mA**

## C10673 series

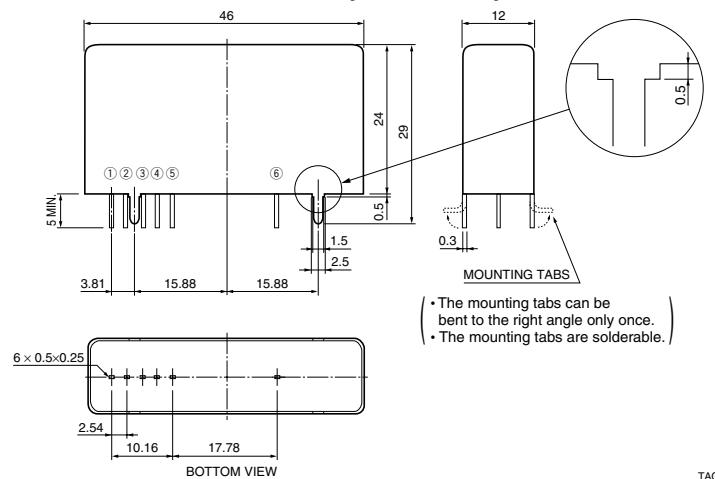
UL recognized (UL60950-1, File No. E315290) **CE**



Parameter	C10673		C10673-01	Unit
Input voltage		+15 ± 1	+12 ± 0.5	V
Input current <sup>(A)</sup>	with no load Typ.	15	20	
	with full load Typ.	95	100	mA
Variable output range		0 to -1250		V
Specification guaranteed output voltage range		-200 to -1250		V
Output current	Max.	0.6	0.5	mA
Line regulation against ±1 V or ±0.5 V input change <sup>(A,B)</sup>	Typ.	±0.01		%
Load regulation against 0 % to 100 % load change <sup>(A)</sup>	Typ.	±0.01		%
Ripple / Noise (p-p) <sup>(A,B)</sup>	Typ.	0.01 % (125 mV)		—
Output voltage control		By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ)		—
Controlling voltage input impedance	Typ.	80		kΩ
Reference voltage output	Typ.	+5.1		V
Output voltage setting (Absolute value)	Typ.	Controlling voltage × 250		V
Output voltage rise time (0 % → 99 %) <sup>(A,B)</sup>	Typ.	150		ms
Temperature coefficient <sup>(A,B)</sup>	Typ.	±0.015		%/°C
Operating ambient temperature <sup>(A,B)</sup>		0 to +40		°C
Operating ambient humidity <sup>(C)</sup>		Below 80		%
Storage temperature		-20 to +60		°C
Storage humidity <sup>(C)</sup>		Below 80		%
Weight	Typ.	31		g
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 maximum output current    <sup>(C)</sup>No condensation

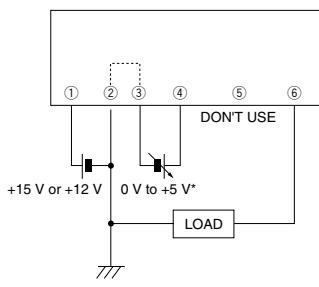
### Dimensional outline (Unit: mm)



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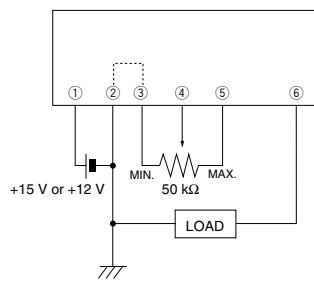
### Output voltage control

#### By external voltage



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

#### By external potentiometer



#### PIN ASSIGNMENT

- ① Vcc IN +15 V or +12 V
- ② Vcc GND
- ③ Vcont GND
- ④ Vcont IN
- ⑤ Vref OUT +5.1 V Typ.
- ⑥ HV OUT

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

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# High voltage power supply modules

**1.2 W output 1250 V / 1 mA**

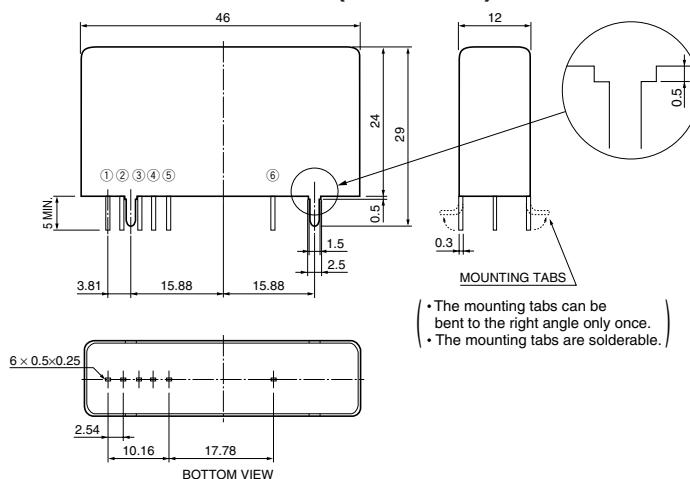
## C10764 series



Parameter	C10764		C10764-50	Unit
Input voltage		+15 ± 1		V
Input current <sup>(A)</sup>	with no load	Typ.	20	
	with full load	Typ.	170	mA
Variable output voltage range		0 to -1250	0 to +1250	V
Specification guaranteed output voltage range		-200 to -1250	+200 to +1250	V
Output current	Max.	1		mA
Line regulation against ±1 V input change <sup>(A,B)</sup>	Typ.		±0.01	%
Load regulation against 0 % to 100 % load change <sup>(A)</sup>	Typ.		±0.01	%
Ripple / Noise (p-p) <sup>(A,B)</sup>	Typ.	0.01 % (125 mV)		—
Output voltage control	By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ)			—
Controlling voltage input impedance	Typ.	80		kΩ
Reference voltage output	Typ.	+5.2		V
Output voltage setting (Absolute value)	Typ.	Controlling voltage × 250		V
Output voltage rise time (0 % → 99 %) <sup>(A,B)</sup>	Typ.	100		ms
Temperature coefficient <sup>(A,B)</sup>	Typ.	±0.01		%/°C
Operating ambient temperature <sup>(A,B)</sup>		0 to +40		°C
Operating ambient humidity <sup>(C)</sup>		Below 80		%
Storage temperature		-20 to +60		°C
Storage humidity <sup>(C)</sup>		Below 80		%
Weight	Typ.	31		g
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 maximum output current    <sup>(C)</sup>No condensation

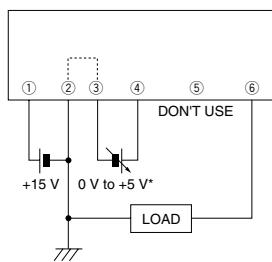
### ■ Dimensional outline (Unit: mm)



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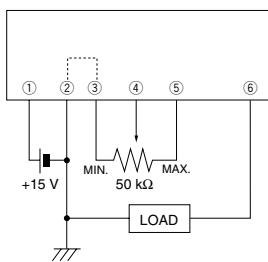
### ■ Output voltage control

#### ● By external voltage



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

#### ● By external potentiometer



#### PIN ASSIGNMENT

- ① Vcc IN +15 V
- ② Vcc GND
- ③ Vcont GND
- ④ Vcont IN
- ⑤ Vref OUT +5.2 V Typ.
- ⑥ HV OUT

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

TACCC0154EF

# High voltage power supply modules

**1.5 W output 1500 V / 1 mA**

## C11152 series

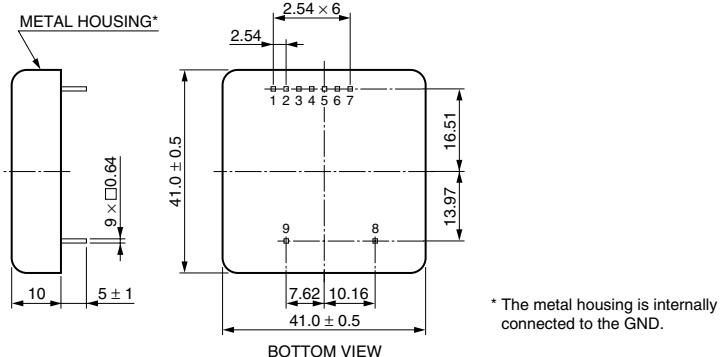
CE



Parameter	C11152	C11152-01	C11152-50	C11152-51	Unit
Input voltage	+15 ± 1	+12 ± 0.5	+15 ± 1	+12 ± 0.5	V
Input current <sup>(A)</sup>	with no load Typ.	45	50	45	mA
	with full load Typ.	180	220	180	
Variable output voltage range		0 to -1500		0 to +1500	V
Specification guaranteed output voltage range		-240 to -1500		+240 to +1500	V
Output current	Max.		1		mA
Line regulation against ±1 V or ±0.5 V input change <sup>(A,B)</sup>	Typ.		±0.01		%
Load regulation against 0 % to 100 % load change <sup>(A)</sup>	Typ.		±0.01		%
Ripple / Noise (p-p) <sup>(A,B)</sup>	Typ.	5 (>5 kHz), 8 (≤5 kHz)			mV
Output voltage control		By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ)			—
Controlling voltage input impedance	Typ.	130		150	kΩ
Reference voltage output	Typ.		+5.2		V
Output voltage setting (Absolute value)	Typ.		Controlling voltage × 300		V
Output voltage rise time (0 % → 99 %) <sup>(A,B)</sup>	Typ.		120		ms
Temperature coefficient <sup>(A,B)</sup>	Typ.		±0.005		%/°C
High voltage monitor output		0 to +5 (Output impedance 10 kΩ)			V
ON / OFF input		TTL positive logic			—
ON / OFF input impedance		30			kΩ
Operating ambient temperature <sup>(A,B)</sup>		0 to +50			°C
Operating ambient humidity <sup>(C)</sup>		Below 80			%
Storage temperature		-20 to +60			°C
Storage humidity <sup>(C)</sup>		Below 80			%
Weight	Typ.	38			g
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 maximum output current <sup>(C)</sup>No condensation

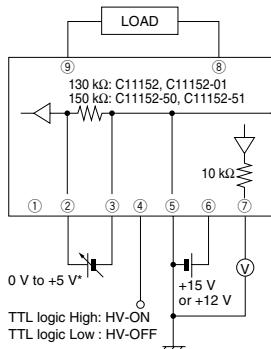
### Dimensional outline (Unit: mm)



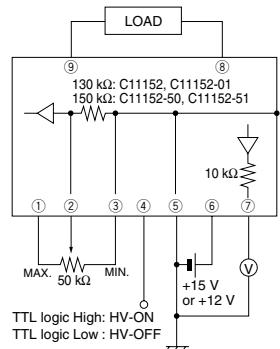
TACCA0306EC

### Output voltage control

#### By external voltage



#### By external potentiometer



#### PIN ASSIGNMENT

- ① Vref OUT +5.2 V Typ.
- ② Vcont IN
- ③ Vcont GND\*\*
- ④ ON / OFF IN
- ⑤ Vcc GND\*\*
- ⑥ Vcc IN +15 V or +12 V
- ⑦ HV MONITOR OUT
- ⑧ HV OUT
- ⑨ HV GND

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

\*\* Never connect the pin number ③ and ⑤ directly and externally.

TACCC0146ED

# High voltage power supply modules

**4 W output 2000 V / 2 mA**

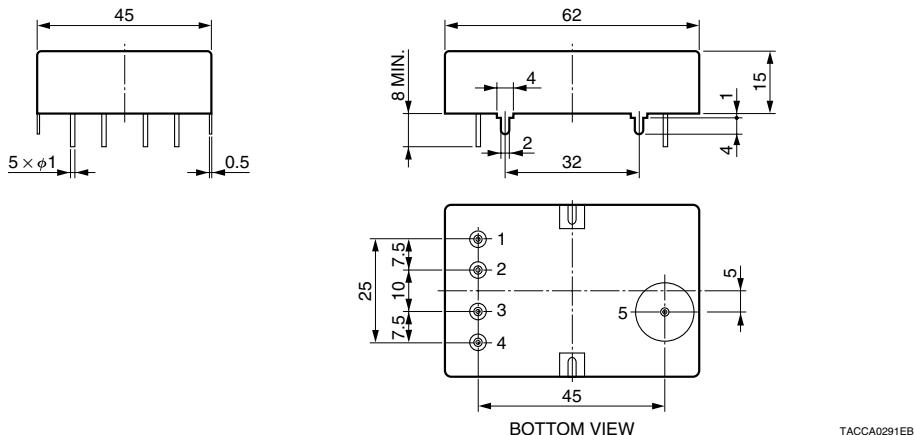
## C9619 series



Parameter	C9619	C9619-01	C9619-50	C9619-51	Unit
Input voltage	+15 ± 1	+12 ± 1	+15 ± 1	+12 ± 1	V
Input current <sup>(A)</sup>	with no load Typ.	120	100	120	mA
	with full load Typ.	380	460	380	
Variable output voltage range	0 to -2000		0 to +2000		V
Specification guaranteed output voltage range	-320 to -2000		+320 to +2000		V
Output current	Max.	2		mA	
Line regulation against ± 1 V input change <sup>(A)(B)</sup>	Typ.	±0.01		%	
Load regulation against 0 % to 100 % load change <sup>(A)</sup>	Typ.	±0.01		%	
Ripple / Noise (p-p) <sup>(A)(B)</sup>	Typ.	0.003 % (60 mV)		—	
Output voltage control	By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ)				—
Controlling voltage input impedance	Typ.	110	97		kΩ
Reference voltage output	Typ.	+5.2		V	
Output voltage setting (Absolute value)	Typ.	Controlling voltage × 400		V	
Output voltage rise time (0 % → 99 %) <sup>(A)(B)</sup>	Typ.	150		ms	
Temperature coefficient <sup>(A)(B)</sup>	Typ.	±0.01		%/°C	
Operating ambient temperature <sup>(A)(B)</sup>		0 to +40		°C	
Operating ambient humidity <sup>(C)</sup>		Below 85		%	
Storage temperature		-20 to +60		°C	
Storage humidity <sup>(C)</sup>		Below 90		%	
Weight	Typ.	100		g	
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 maximum output current <sup>(C)</sup>No condensation

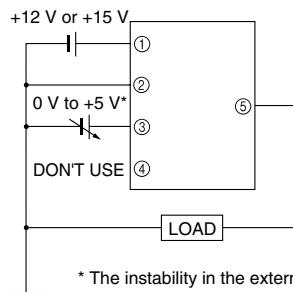
### ■ Dimensional outline (Unit: mm)



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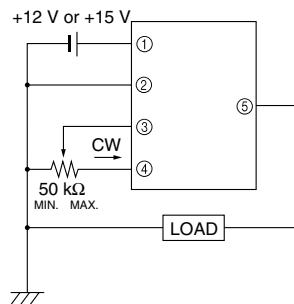
### ■ Output voltage control

#### ● By external voltage



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

#### ● By external potentiometer



PIN ASSIGNMENT  
 ① Vcc IN +12 V or +15 V  
 ② GND (common)  
 ③ Vcont IN  
 ④ Vref OUT +5.2 V Typ.  
 ⑤ HV OUT

TACCC0139EC

# High voltage power supply modules

**10 W output 2000 V / 5 mA**

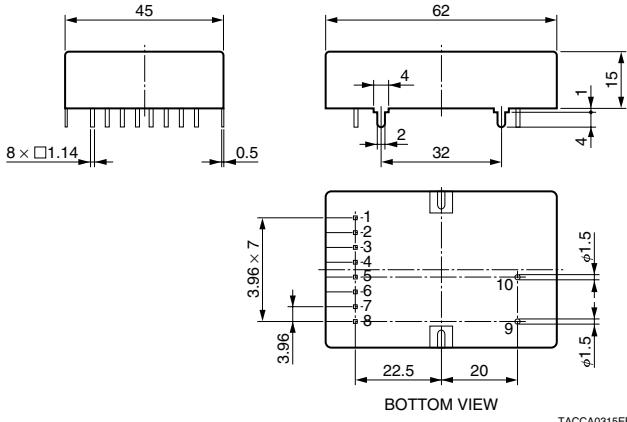
## C11784 series



Parameter	C11784-12		C11784-52	Unit
Input voltage	$+24 \pm 1.2$			V
Input current <sup>(A)</sup>	with no load	Typ.	55	mA
	with full load	Typ.	530	
Variable output voltage range	0 to -2000		0 to +2000	V
Specification guaranteed output voltage range	-320 to -2000		+320 to +2000	V
Output current	Max.		5	mA
Line regulation against $\pm 1.2$ V input change <sup>(A,B)</sup>	Typ.		$\pm 0.01$	%
Load regulation against 0 % to 100 % load change <sup>(A)</sup>	Typ.		$\pm 0.01$	%
Ripple / Noise (p-p) <sup>(A,B)</sup>	Typ.		50	mV
Output voltage control	By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ)			—
Controlling voltage input impedance	Typ.		640	kΩ
Reference voltage output	Typ.		+5.3	V
Output voltage setting (Absolute value)	Typ.		Controlling voltage × 400	V
Output voltage rise time (0 % → 99 %) <sup>(A,B)</sup>	Typ.		150	ms
Temperature coefficient <sup>(A,B)</sup>	Typ.		$\pm 0.005$	%/°C
High voltage monitor output	0 to +5 (Output impedance 10 kΩ)			V
Current monitor output	0 to +5 (Output impedance 10 kΩ)			V
ON / OFF input	TTL positive logic			—
ON / OFF input impedance	30			kΩ
Operating ambient temperature <sup>(A,B)</sup>	0 to +50			°C
Operating ambient humidity <sup>(C)</sup>	Below 85			%
Storage temperature	-20 to +60			°C
Storage humidity <sup>(C)</sup>	Below 85			%
Weight	Typ.		100	g
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 maximum output current. <sup>(C)</sup>No condensation

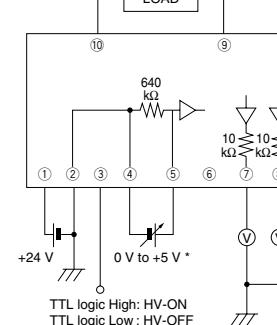
### Dimensional outline (Unit: mm)



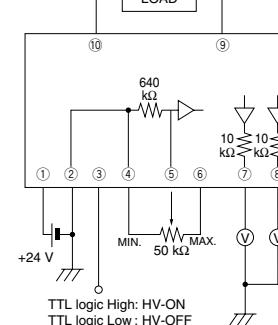
TACCA0315EB

### Output voltage control

#### By external voltage



#### By external potentiometer



#### PIN ASSIGNMENT

- |                |                        |
|----------------|------------------------|
| ① Vcc IN +24 V | ⑥ Vref OUT +5.3 V Typ. |
| ② Vcc GND **   | ⑦ CURRENT MONITOR OUT  |
| ③ ON / OFF IN  | ⑧ HV MONITOR OUT       |
| ④ Vcont GND ** | ⑨ HV GND               |
| ⑤ Vcont IN     | ⑩ HV OUT               |

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

\*\* Never connect the pin number ② and ④ directly and externally.

# High voltage power supply modules

**10 W output 1000 V / 10 mA**

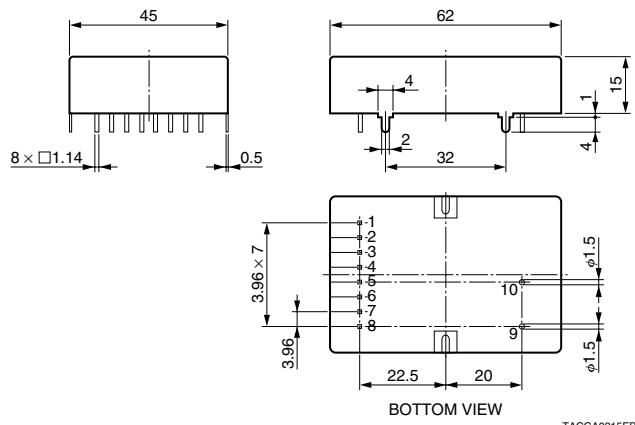
## C12446 series



Parameter		C12446-12	C12446-52	Unit
Input voltage		+24 ± 1.2		V
Input current <sup>A</sup>	with no load	Typ.	55	mA
	with full load	Typ.	550	mA
Variable output voltage range		0 to -1000	0 to +1000	V
Specification guaranteed output voltage range		-200 to -1000	+200 to +1000	V
Output current	Max.	10		mA
Line regulation against ± 1.2 V input change <sup>A(B)</sup>	Typ.	±0.01		%
Load regulation against 0 % to 100 % load change <sup>A</sup>	Typ.	±0.01		%
Ripple / Noise (p-p) <sup>A(B)</sup>	Typ.	50		mV
Output voltage control		By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ)		—
Controlling voltage input impedance	Typ.	640		kΩ
Reference voltage output	Typ.	+5.3		V
Output voltage setting (Absolute value)	Typ.	Controlling voltage × 200		V
Output voltage rise time (0 % → 99 %) <sup>A(B)</sup>	Typ.	150		ms
Temperature coefficient <sup>A(B)</sup>	Typ.	±0.005		%/°C
High voltage monitor output		0 to +5 (Output impedance 10 kΩ)		V
Current monitor output		0 to +5 (Output impedance 10 kΩ)		V
ON / OFF input		TTL positive logic		—
ON / OFF input impedance		30		kΩ
Operating ambient temperature <sup>A(B)</sup>		0 to +50		°C
Operating ambient humidity <sup>C</sup>		Below 85		%
Storage temperature		-20 to +60		°C
Storage humidity <sup>C</sup>		Below 85		%
Weight	Typ.	100		g
Protective functions		Protected against reversed power input, reversed / excessive controlling voltage input, continuous overloading / short circuit in output		—

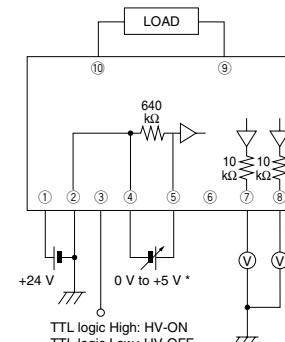
NOTE: <sup>A</sup>At maximum output voltage   <sup>B</sup>At maximum output current   <sup>C</sup>No condensation

### ■ Dimensional outline (Unit: mm)

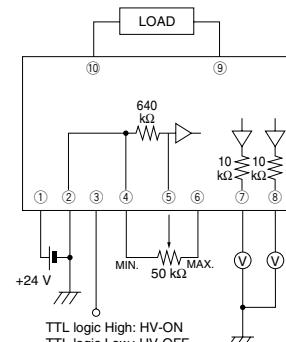


### ■ Output voltage control

#### ● By external voltage



#### ● By external potentiometer



#### PIN ASSIGNMENT

- |                |                        |
|----------------|------------------------|
| ① Vcc IN +24 V | ⑥ Vref OUT +5.3 V Typ. |
| ② Vcc GND **   | ⑦ CURRENT MONITOR OUT  |
| ③ ON / OFF IN  | ⑧ HV MONITOR OUT       |
| ④ Vcont GND ** | ⑨ HV GND               |
| ⑤ Vcont IN     | ⑩ HV OUT               |

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

\*\* Never connect the pin number ② and ④ directly and externally.

TACCC0158EC



# High voltage power supply modules

**45 W output 1500 V / 30 mA**

## C12766 series

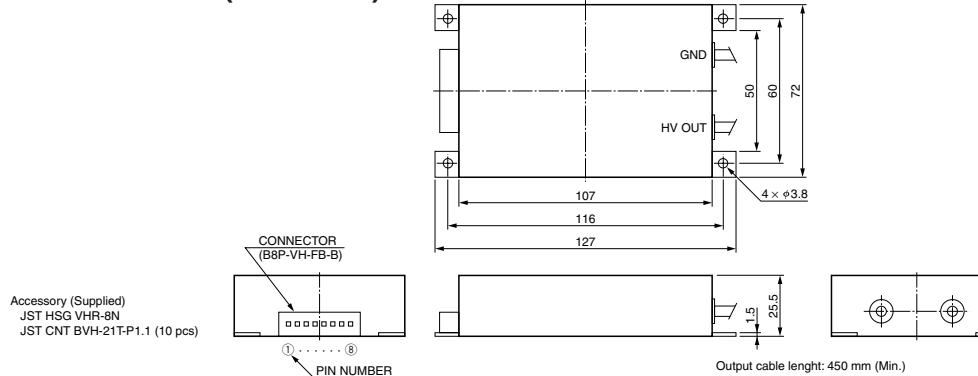
C12766-12: UL recognized (UL60601-1, File No. 470768)



Parameter	C12766-12		C12766-52	Unit	
Input voltage		+24 ± 1.2		V	
Input current <sup>A</sup>	with no load Typ.	65		mA	
	with full load Typ.	2.1		A	
Variable output voltage range		0 to -1500	0 to +1500	V	
Specification guaranteed output voltage range		-240 to -1500	+240 to +1500	V	
Output current	Max.	30		mA	
Line regulation against ± 1.2 V input change <sup>A/B</sup>	Typ.	±0.01		%	
Load regulation against 0 % to 100 % load change <sup>A</sup>	Typ.	±0.01		%	
Ripple / Noise (p-p) <sup>A/B</sup>	Typ.	75		mV	
Output voltage control	By external controlling voltage (0 V to +5 V) or external potentiometer (50 kΩ)				
Controlling voltage input impedance	Typ.	640		kΩ	
Reference voltage output	Typ.	+5.3		V	
Output voltage setting (Absolute value)	Typ.	Controlling voltage × 300			V
Output voltage rise time (0 % → 99 %) <sup>A/B</sup>	Typ.	1500		ms	
Temperature coefficient <sup>A/B</sup>	Typ.	±0.01		%/°C	
High voltage monitor output		0 to +5 (Output impedance 10 kΩ)		V	
Current monitor output		0 to +5 (Output impedance 10 kΩ)		V	
ON / OFF input		TTL positive logic		—	
ON / OFF input impedance		30		kΩ	
Operating ambient temperature <sup>A/B</sup>		0 to +50		°C	
Operating ambient humidity <sup>C</sup>		Below 85		%	
Storage temperature		-20 to +60		°C	
Storage humidity <sup>C</sup>		Below 85		%	
Weight	Typ.	290		g	
Protective functions	Protected against reversed power input, reversed / excessive controlling voltage input, continuous overloading / short circuit in output				—

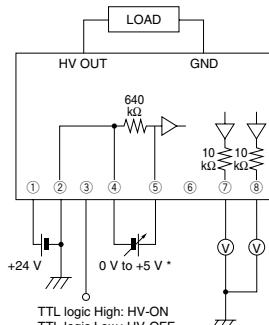
NOTE: <sup>A</sup>At maximum output voltage <sup>B</sup>At maximum output current <sup>C</sup>No condensation

### Dimensional outline (Unit: mm)

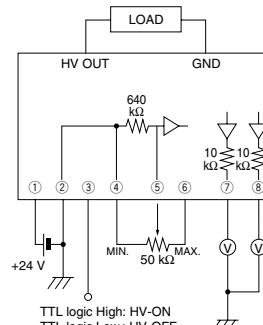


### Output voltage control

#### By external voltage



#### By external potentiometer



#### PIN ASSIGNMENT

- ① Vcc IN +24 V
- ② Vcc GND \*\*
- ③ ON / OFF IN
- ④ Vcont GND \*\*
- ⑤ Vcont IN
- ⑥ Vref OUT +5.3 V Typ.
- ⑦ CURRENT MONITOR OUT
- ⑧ HV MONITOR OUT

\* The instability in the external controlling voltage should be minimized as it directly affects the output voltage quality.  
\*\* Never connect the pin number ② and ④ directly and externally.

TACCC0158EC

# 8 ch High voltage power supply module

**1 W output (1000 V / 1 mA) × 8 ch**

# C13145-01

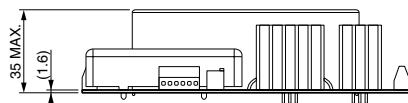
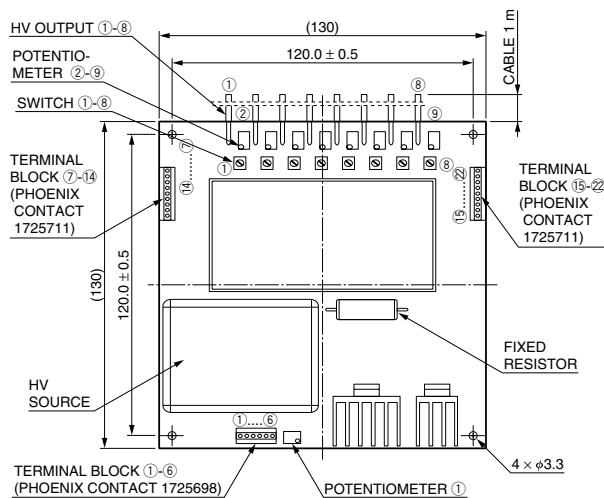
8-channel outputs / each output controlled individually



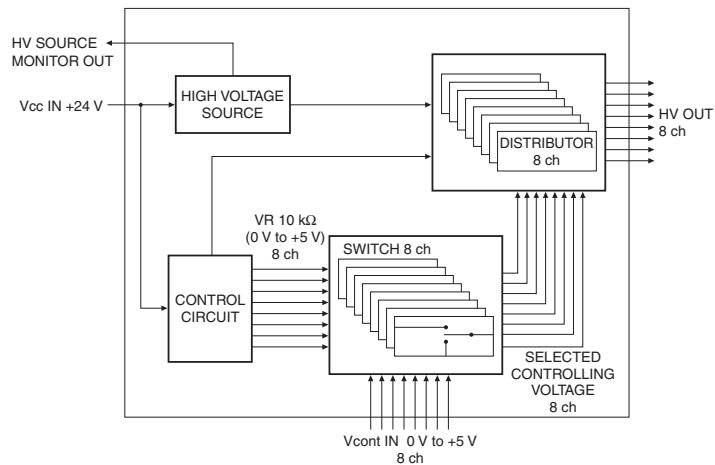
Parameter	Value / Description		Unit
Input voltage	$+24 \pm 1.2$		V
Input current <sup>A</sup>	with no load	Typ.	mA
	with full load	Typ.	mA
No. of channel	8		—
Variable output voltage range	0 to -1000		V
Specification guaranteed output voltage range	-300 to -900		V
Output current	Max.	1 (per channel)	mA
Line regulation against $\pm 1.2$ V input change <sup>A(B)</sup>	Typ.	$\pm 0.01$	%
Load regulation against 0 % to 100 % load change <sup>A</sup>	Typ.	$\pm 0.01$	%
Ripple / Noise (p-p) <sup>A(B)</sup>	Typ.	20 (Potentiometer control)	mV
Output voltage control	By external controlling voltage (0 V to +5 V) or potentiometer (10 kΩ)		—
Controlling voltage input impedance	Typ.	10	kΩ
Output voltage setting (Absolute value)	Typ.	Controlling voltage × 200	V
Output voltage rise time (0 % → 99 %) <sup>A(B)</sup>	Typ.	5 (Controlling voltage control)	ms
Temperature coefficient <sup>A(B)</sup>	Typ.	$\pm 0.03$	%/°C
Operating ambient temperature <sup>A(B)</sup>		0 to +50	°C
Operating ambient humidity <sup>C</sup>		Below 80	%
Storage temperature		-20 to +70	°C
Storage humidity <sup>C</sup>		Below 80	%
Weight	Typ.	516	g
Protective functions	Protected against excessive controlling voltage input / over current		—

NOTE: <sup>A</sup>At maximum output voltage   <sup>B</sup>At maximum output current   <sup>C</sup>No condensation

## ■ Dimensional outline (Unit: mm)



## ■ Block diagram



TACCC0180EA

TACCA0354EA

# Bench-top type high voltage power supplies

**4 W output 2000 V / 1.8 mA**

## C9525 series

 Multiple outputs of  $\pm 5$  V,  $\pm 15$  V and high voltage  
USB control



Parameter	High voltage power supply section	$\pm 5$ V power supply section	$\pm 15$ V power supply section		
Output voltage	C9525-02/C9525-03	0 V to -2000 V (variable)	$\pm 5$ V $\pm 0.25$ V (fixed)		
	C9525-52/C9525-53	0 V to +2000 V (variable)			
Specification guaranteed output voltage	C9525-02/C9525-03	-320 V to -2000 V (variable)	$\pm 15$ V $\pm 0.75$ V (fixed)		
	C9525-52/C9525-53	+320 V to +2000 V (variable)			
Maximum output current	1.8 mA	500 mA	200 mA		
Line regulation (For 10 % change in line voltage) <sup>A(B)</sup>	Max.	$\pm 0.005$ %	$\pm 0.1$ %		
Load regulation (For 0 % to 100 % change in load) <sup>A</sup>	Max.	$\pm 0.03$ %	$\pm 1$ %		
Ripple / Noise (p-p) <sup>A(B)</sup>	Typ.	0.003 %	0.06 %		
Drift (After 30 minute warm-up) <sup>A(B)</sup>	Typ.	$\pm 0.05$ %/h	$\pm 0.05$ %/h		
Temperature coefficient <sup>A(B)</sup>	Typ.	$\pm 0.01$ %/ $^{\circ}$ C	$\pm 0.01$ %/ $^{\circ}$ C		
High voltage output monitoring accuracy <sup>A</sup>	Typ.	$\pm(0.1\% + 2\text{ V})$	—		
Output connector	SHV-R	DIN-R (6 pins)			
AC input voltage	AC 100 V to AC 240 V				
Power consumption <sup>A(B)</sup>	Max.	60 V·A			
Operating ambient temperature <sup>A(B)</sup>	0 $^{\circ}$ C to +40 $^{\circ}$ C				
Operating ambient humidity <sup>C</sup>	Below 85 %				
Storage temperature	-20 $^{\circ}$ C to +50 $^{\circ}$ C				
Storage humidity <sup>C</sup>	Below 90 %				
Weight	Approx. 3.0 kg				

NOTE: <sup>A</sup>At maximum output voltage

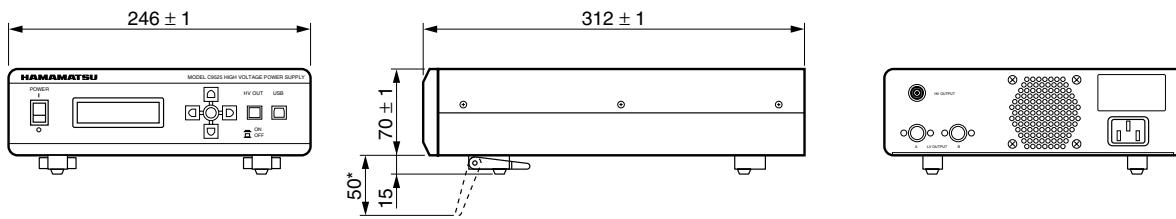
<sup>B</sup>At maximum output current

<sup>C</sup>No condensation

### Accessories

- ① High voltage output cable (1.5 m long) terminated with SHV-P E1168-17 ..... 1
- ② AC line cable (2 m long) ..... 1
- C9525-02/C9525-52: AC cable with a rating of 125 V
- C9525-03/C9525-53: AC cable with a rating of 250 V
- ③ 3P/2P connector AC adapter (C9525-02 / C9525-52 only) ..... 1
- ④ USB cable (1.5 m long) with filter ..... 1
- ⑤ Low voltage power supply section DIN connector plugs ..... 2
- ⑥ CD-ROM (Containing instruction manual, sample software) ..... 1
- ⑦ Clamp filter ..... 2

### Dimensional outline (Unit: mm)



\* The height of the C9525 is 120 mm with front legs extended.

TACCA0290EA

# Bench-top type high voltage power supplies

**7 W output 3500 V / 2 mA**

## C9727 series

**CE** Multiple outputs of  $\pm 5$  V,  $\pm 15$  V and high voltage  
USB control



Parameter	High voltage power supply section	$\pm 5$ V power supply section	$\pm 15$ V power supply section
Output voltage	C9727/C9727-01	0 V to -3500 V (variable)	$\pm 5$ V $\pm 0.25$ V (fixed)
	C9727-50/C9727-51	0 V to +3500 V (variable)	
Specification guaranteed	C9727/C9727-01	-320 V to -3500 V (variable)	$\pm 15$ V $\pm 0.75$ V (fixed)
Output voltage	C9727-50/C9727-51	+320 V to +3500 V (variable)	
Maximum output current		2 mA	500 mA
Line regulation (For 10 % change in line voltage) <sup>A,B</sup>	Max.	$\pm 0.005$ %	$\pm 0.1$ %
Load regulation (For 0 % to 100 % change in load) <sup>A</sup>	Max.	$\pm 0.03$ %	$\pm 1$ %
Ripple / Noise (p-p) <sup>A,B</sup>	Typ.	0.003 %	0.06 %
Drift (After 30 minutes warm-up) <sup>A,B</sup>	Typ.	$\pm 0.05$ %/h	$\pm 0.05$ %/h
Temperature coefficient <sup>A,B</sup>	Typ.	$\pm 0.01$ %/ $^{\circ}$ C	$\pm 0.01$ %/ $^{\circ}$ C
High voltage output monitoring accuracy <sup>A</sup>	Typ.	$\pm(0.1\% + 2$ V)	—
Output connector		SHV-R	DIN-R (6 pins)
AC input voltage			AC 100 V to AC 240 V
Power consumption <sup>A,B</sup>	Max.		60 V·A
Operating ambient temperature <sup>A,B</sup>			0 $^{\circ}$ C to +40 $^{\circ}$ C
Operating ambient humidity <sup>C</sup>			Below 85 %
Storage temperature			-20 $^{\circ}$ C to +50 $^{\circ}$ C
Storage humidity <sup>C</sup>			Below 90 %
Weight			Approx. 3.0 kg

NOTE: <sup>A</sup>At maximum output voltage

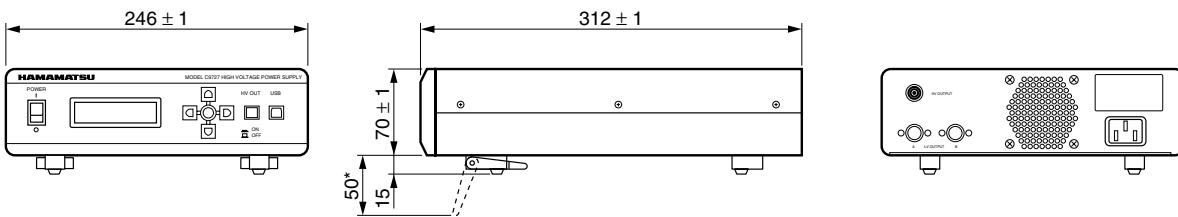
<sup>B</sup>At maximum output current

<sup>C</sup>No condensation

### Accessories

- ① High voltage output cable (1.5 m long) terminated with SHV-P E1168-19 ..... 1
- ② AC line cable ..... 1
  - C9727/C9727-50: AC cable with a rating of 125 V
  - C9727-01/C9727-51: AC cable with a rating of 250 V
- ③ 3P/2P connector AC adapter (C9727 / C9727-50 only) ..... 1
- ④ USB cable (1.5 m long) with filter ..... 1
- ⑤ Low voltage power supply section DIN connector plugs ..... 2
- ⑥ CD-ROM (Containing instruction manual, sample software) ..... 1

### ■ Dimensional outline (Unit: mm)



\* The height of the C9727 is 120 mm with front legs extended.

TACCA0290JA

## HANDLING PRECAUTIONS

- Products listed in this catalog generate high voltage. Do not directly touch the power output terminals with bare hands. Even when power is off, the internal parts may retain a high voltage, so do not touch them directly. Touching these may cause electrical shock, injury, or death.
- Do not try to disassemble, modify or repair the product by yourself. Doing so is dangerous because some internal parts of the product generate high voltage.
- Use or store the product within the ambient temperature and humidity range specified in the datasheet.
- Use caution when moving the product to a room with large changes in humidity or temperature since condensation may occur. Do not operate the product with wet or moist hands. Doing so may cause electrical shock or fire.
- Do not operate the product in locations subject to excessive dust, splashing from liquid such as water droplets, vibration or fire. Operation in such locations may result in fire.
- Do not operate the product in locations where flammable or explosive gases or vapors are present. Operation in such environments is extremely dangerous since it may cause explosion or fire.
- Ensure sufficient insulation and creepage distances on the printed circuit board where the high-voltage power module will be mounted.
- When connecting a benchtop high-voltage power supply to the AC power, always plug the AC power cable into a grounded 3-prong AC outlet. If a grounded 3-prong AC outlet is not available, then use the supplied 3-pin to 2-pin converter plug and securely ground the product using the grounding lead coming out of the 3-pin to 2-pin converter plug.
- Avoid installing a benchtop high-voltage power supply in such a way that the air vents are blocked or ventilation around it is interrupted or ambient temperature may rises excessively. Operation in such locations may result in fire.
- When replacing the fuse in a benchtop high-voltage power supply, use a fuse with the specified rating. Before replacing the fuse, be sure to turn off the power switch and unplug the AC cable from the power outlet. Do not use a fuse other than those specified and do not short-circuit the fuse terminals by using metal wire, etc. Failure to follow these replacement instructions may cause electrical shock or fire.
- When using the high-voltage output receptacle for a benchtop high-voltage power supply, always keep the high-voltage output cable (with an SHV plug) connected to that receptacle. If using a cable instead of the supplied high-voltage output cable, make sure the cable can withstand more than the required high voltage. Using a cable with a low breakdown voltage may cause electrical shock or malfunction. When not using the high-voltage output receptacle, always fit the protective cap onto it. Failure to follow this instruction may cause electrical shock.
- If the product malfunctions or any abnormal condition occurs during use, immediately disconnect the power source.

## ■SAFETY ALERT SYMBOLS, SIGNAL WORDS, AND PICTORIAL SIGNS

The following alert symbols, signal words, and pictorial signs are shown on the product to indicate warnings and cautions that must be observed to ensure safe product use.

<Safety alert symbols and signal words>



**DANGER**

"DANGER" indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING**

"WARNING" indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION**

"CAUTION" indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the equipment.

<Pictorial sign>



Electrical shock hazard  
High voltage is present.



This means DC (direct current).



This means AC (alternating current).

## ■PRODUCT WARRANTY PERIOD AND COVERAGE

Products listed in this catalog are warranted for a period of one year from the date of delivery. If a failure is found in a product within the warranty period that was caused by defects in the workmanship or materials used in the manufacture, then we will repair or replace it free of charge. The warranty is limited to repair or replacement of the defective product.

Even if within the warranty period, this warranty shall not apply to failures in cases where the product has been misused, mishandled, modified or repaired by the customer.

# ■MEMO

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### **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, N.J. 08807-0910, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-2658 E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saulx 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

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

North Europe: Hamamatsu Photonics Norden AB: Torshamngatan 35 SE-164 40 Kista, Sweden, Telephone: (46)8-509-031-00, Fax: (46)8-509-031-01 E-mail: info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93581733, Fax: (39)02-93581741 E-mail: info@hamamatsu.it

China: Hamamatsu Photonics (China) Co., Ltd.: B1201 Jiaming Center, No.27 Dongsanhuai Bellu, Chaoyang District, Beijing 100020, China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: 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)07-811-7238 E-mail: info@tw.hpk.co.jp

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