



HIGH VOLTAGE POWER SUPPLIES

PS-120

PS-120C

PS2-60

PS2-60C

Technical Description
Rev. 2211

2022
Lithuania

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1.1. Warranty Statement

The HV power supplies are protected by a one-year warranty covering labor and parts. The warranty enters into validity since the shipment date. Any evidence of improper use or unauthorized repair attempts voids the warranty.

1.2. Service Contact Information

For service/warranty requests, please contact:

EKSMA OPTICS, UAB
c/o EKSMA Optics, UAB
Dvarcioniu st. 2B
LT-10233 Vilnius, Lithuania

Phone: +370 5 272 99 00
Fax.: +370 5 272 92 99
E-mail: info@eksmaoptics.com
Website: www.eksmaoptics.com

2.1. General Information

2.1.1. Models

The table below lists standard options. Custom voltage modifications may be delivered on request.

Table 1. Models

<i>Catalog number</i>	<i>HV output tuning range, kV</i>	<i>Maximal HV current, mA</i>	<i>Output voltage control</i>
PS-120-1.8	+0.8 ... +1.8	66	By potentiometer
PS-120C-1.8	+0.7 ... +1.8	66	By CAN interface
PS-120-2.6	+1.6 ... +2.6	46	By potentiometer
PS-120C-2.6	+1.0 ... +2.6	46	By CAN interface
PS-120-3.1	+2.1 ... +3.1	38	By potentiometer
PS-120C-3.1	+1.2 ... +3.1	38	By CAN interface
PS-120-3.6	+2.6 ... +3.6	33	By potentiometer
PS-120C-3.6	+1.4 ... +3.6	33	By CAN interface
PS2-60-1.4	±0.6 ... ±1.4	±42	By potentiometer
PS2-60C-1.4	±0.6 ... ±1.4	±42	By CAN interface
PS2-60-2.0	±1.0 ... ±2.0	±30	By potentiometer
PS2-60C-2.0	±0.8 ... ±2.0	±30	By CAN interface
PS2-60-2.6	±1.6 ... ±2.6	±23	By potentiometer
PS2-60C-2.6	±1.0 ... ±2.6	±23	By CAN interface
PS2-60-3.6	±2.6 ... ±3.6	±16	By potentiometer
PS2-60C-3.6	±1.4 ... ±3.6	±16	By CAN interface

2.1.2. Main Components

Table 2. Main components

<i>Component</i>	<i>Quantity</i>	<i>Notes</i>
High voltage (HV) power supply	1	-
DC power cable (l=1.5m)	1	-
Technical description	1	-

2.2. Technical Specifications

Table 3. Technical specifications

<i>Parameter</i>	<i>Value(s)</i>	
	<i>PS-120(C)</i>	<i>PS2-60(C)</i>
Output voltage polarity	Positive	Bipolar
Maximum HV output power at maximal output voltage, <i>W</i>	120	2x60
Output voltage ripple, %	<0.5	
Output voltage control	Internal potentiometer	
	CAN interface (- C models)	
DC supply requirements	23.5...26 V, 6500 mA	
Maximum ambient temperature for operation, °C	45	
Dimensions, <i>mm</i>	175x110x42	
Weight, <i>g</i>	570	

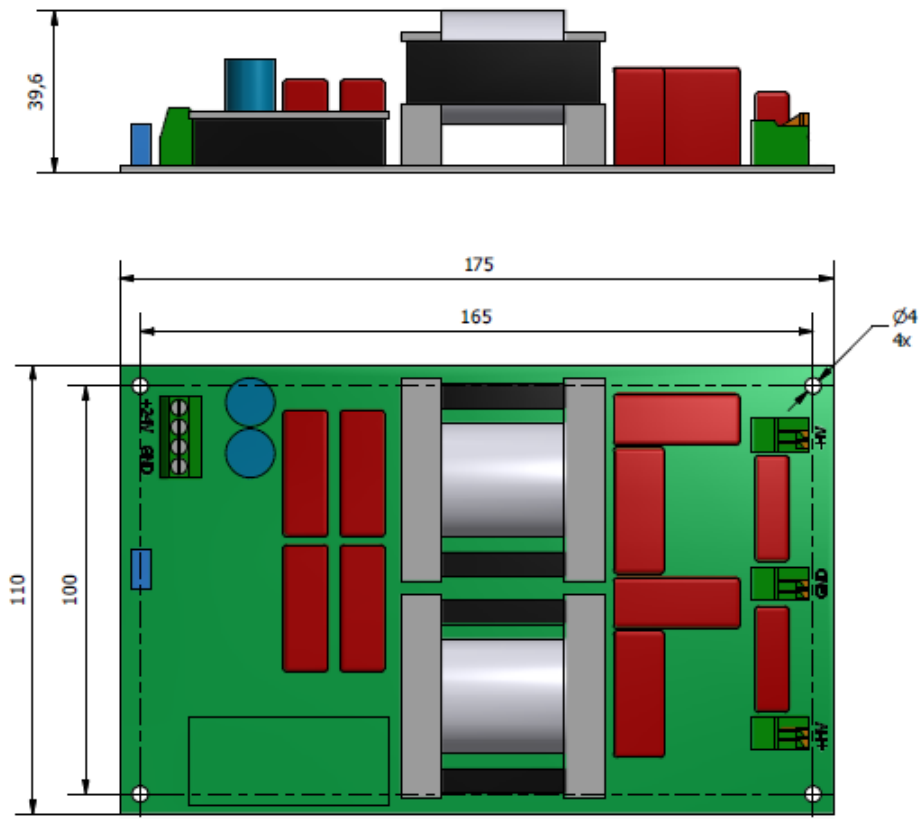


Figure 1. Outline drawing and dimensions of the HV power supply

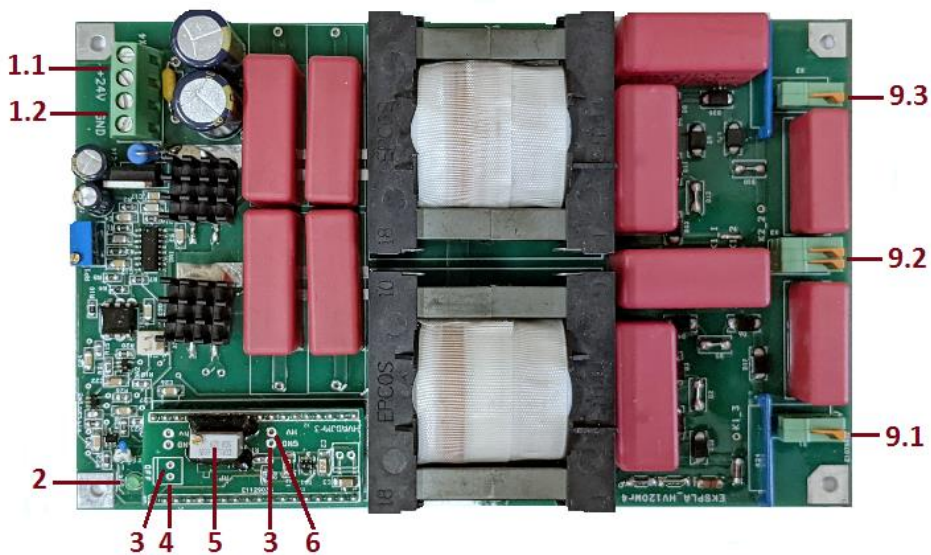


Figure 2. Top view of the HV power supply with potentiometer control

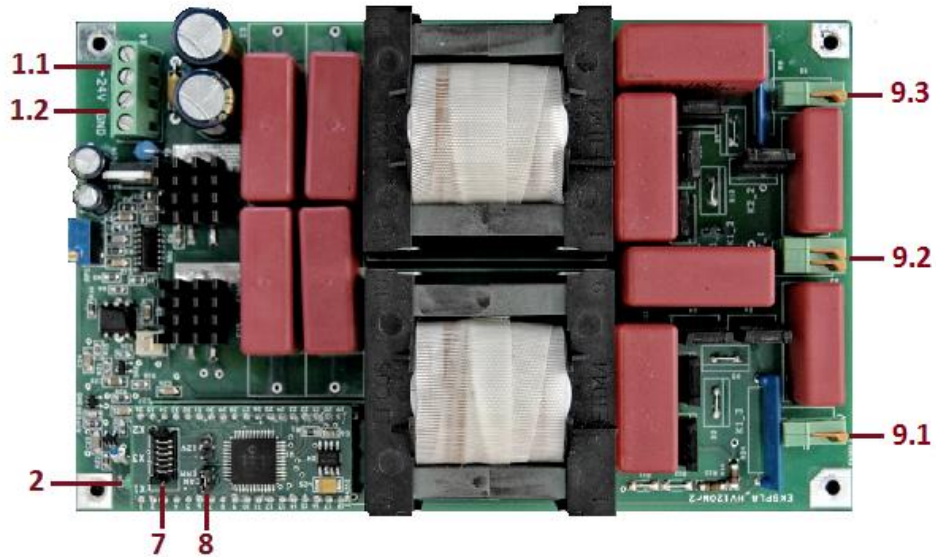


Figure 3. Top view of the HV power supply with CAN interface control (-C models)

Table 4. Controls and connections of the HV power supply

#	Port
1.1	+24V DC supply input (two pins of connector)
1.2	GND DC supply input (two pins of connector)
2	LED “+24V” or “No errors” on -C models
3	Pin GND
4	Pin HV output off (HV output is off when pin connected to GND)
5	HV tuning potentiometer
6	Pin for HV measurement. 1:1000 output.
7	CAN interface connector
8	CAN terminator
9.1	+HV output
9.2	GND for HV output (two pins of connector)
9.3	-HV output for PS2-60(C) +HV output for PS-120(C)

Equipment is designed to be safe under normal environmental conditions according to 1.4.1. 61010-1@IEC:2010 (Safety requirements for electrical equipment, control and laboratory use):

1. indoor use;
2. altitude up to 2000 m;
3. temperature 5°C to 35°C;
4. maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 35°C;
5. POLLUTION degree 1: no POLLUTION or only dry, non-conductive POLLUTION occurs.

Warning:

The safety of the system incorporating HV power supply is the responsibility of the assembler of the system.

Operating the power supply is allowed to persons acquainted with the operation manual and having permission to deal with voltages over 1000 V.

Do not remove unit covers while power cable is connected to the mains (if applicable).

WARNING

Direct contact with the exposed inner parts of the system when it is powered may cause human injuries or death.

Do not operate the unit until it is **grounded** and the load is connected.

Do not use the unit if any defects have been detected.

5.1. Installation of PS-120, PS2-60

5.1.1. Ground the HV Power Supply

Provide proper ground connection to the HV module. In order to prevent electrical breakdown, ensure that the distance between the bottom of HV module and the surface below is more than 6 mm.

5.1.2. Connect DC Power Supply

Connect the +24V DC power supply to the HV module. The DC power supply must be able to provide the maximum current as per 2.2 TECHNICAL SPECIFICATIONS.

5.1.3. Set HV Voltage

Turn on +24V DC power supply. "+24 V" LED indicator (**#2** in **Table 4**) should light.

Set the output voltage using the potentiometer (**#5** in **Figure 2**). Ways to control of the output voltage:

1. Measure the output high voltage directly if your control equipment is capable of measuring high voltage.
2. Alternatively, measure the voltage between points **#3** and **#6** in **Figure 2**. The output is 1:1000 voltage divider.

The pins **#3** and **#4** in **Figure 2** can be used to turn off HV output. HV output is off if these pins are shorted together.

5.1.4. Connect the Load

Turn off +24V DC power supply.

Connect the load to HV power supply output. Check that the connection cables are firmly attached.

Bipolar versions of HV power supply need to be loaded symmetrically. Acceptable difference of positive and negative output current is no more than 30%.

5.1.5. Check DC Power Supply

Switch the DC power on. Measure the voltage on DC supply input of HV power supply.

If the measured voltage is below +23.5V, use thicker cables to connect HV module to DC power supply, or increase the DC power supply voltage.

HV supply has on-board overheat protection. If temperature exceeds 50°C, HV supply automatically switches off; this is indicated by the LED (#2 in **Figure 2**), which will be off.

To bring HV supply back to operation, lower ambient temperature below 50°C and cycle (switch off and back on) the DC supply.

5.2. Installation of PS-120C, PS2-60C

CAN-USB converter is recommended for operation. It can be ordered from Eksma Optics. It comes together with software and a set of connection cables.



Figure 4. CAN-USB converter

5.2.1. Ground the HV Power Supply

Provide proper ground connection to the HV module. In order to prevent electrical breakdown, ensure that the distance between the bottom of HV module and the surface below is more than 6 mm.

5.2.2. Connect CAN Cable

Connect CAN cable from **USB-CAN converter** to connector #7 in **Figure 3** and USB cable between USB-CAN converter and PC.

5.2.3. Connect DC Power Supply

Connect the +24V DC power supply to the HV module. "+24 V" LED indicator (#2 in **Table 4**) should light. The DC power supply must be able to provide the maximum current as per 2.2 TECHNICAL SPECIFICATIONS.

5.2.4. Set HV Voltage

Turn on +24V DC power supply. Use Control panel application to control via PC. It gives possibility to turn ON/OFF and set high voltage output as well as to read-out actual status.

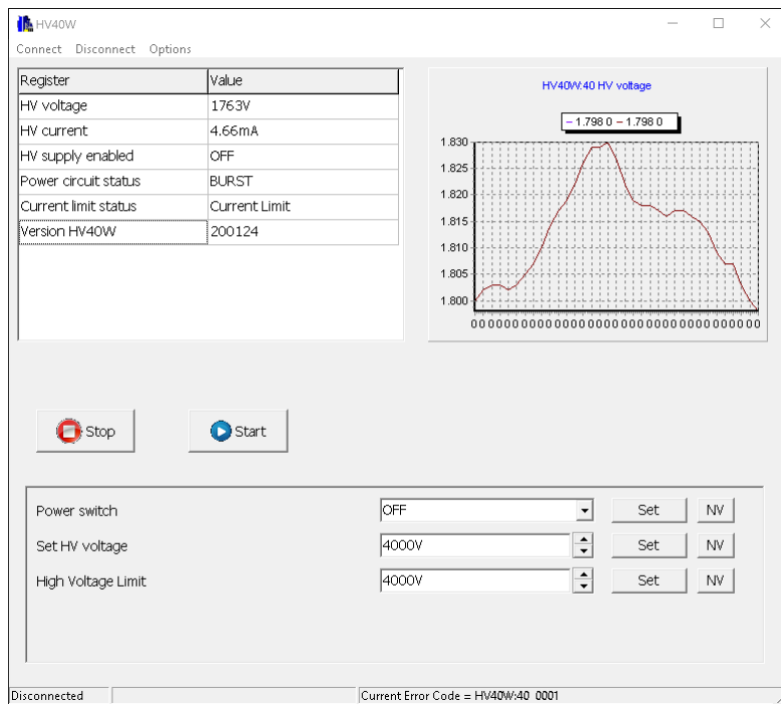


Figure 5. Control panel application

Use CANBrowser software to read-out actual status of HV power supply and save CSV file while need for technical service or consultation of manufacturer. CSV file includes list of CAN control registers and actual settings.

5.2.5. Connect the load

Connect the load. Check that the connection cables are firmly attached. Turn on HV supply via CAN Browser or Remote Control.

5.2.6. Check DC Power Supply

Switch the DC power on. Measure the voltage on DC supply input of HV power supply.

If the measured output is below +23.5V, use thicker cables to connect HV module to DC power supply, or increase the DC supply voltage.

HV supply has on-board overheat protection. If temperature exceeds 50°C, HV supply automatically switches off; this is indicated by the LED (#2 in **Figure 2**), which will be off.

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