



HIGH VOLTAGE POWER SUPPLIES

PS-170
PS-2x85

Technical Description
Rev. 2212

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:

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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>
PS-170-1.8	+0.7 ... +1.8	95
PS-170-2.6	+1.0 ... +2.6	65
PS-170-3.6	+1.4 ... +3.6	48
PS-2x85-1.5	±0.6 ... ±1.5	±56
PS-2x85-1.8	±0.7 ... ±1.8	±48

2.1.2. Main Components

Table 2. Main components

<i>Component</i>	<i>Quantity</i>	<i>Notes</i>
High voltage (HV) power supply	1	-
CAN-USB converter with cables (option)	1	-
Technical description	1	-

2.2. Technical Specifications

Table 3. Technical specifications

Parameter	Value(s)	
	PS-170	PS-2x85
Output voltage polarity	Positive	Bipolar
Maximum HV output power at maximal output voltage, <i>W</i>	170	2×85
Supply voltage DC requirements	23.5...26 V, 8.3 A	
Output voltage ripple, %	< 0.5	
Output voltage control	CAN/Internal potentiometer	
Maximum ambient temperature for operation, °C	45	
Dimensions, <i>mm</i>	152x80x58, see Figure 1. for details	
Weight, <i>g</i>	530	

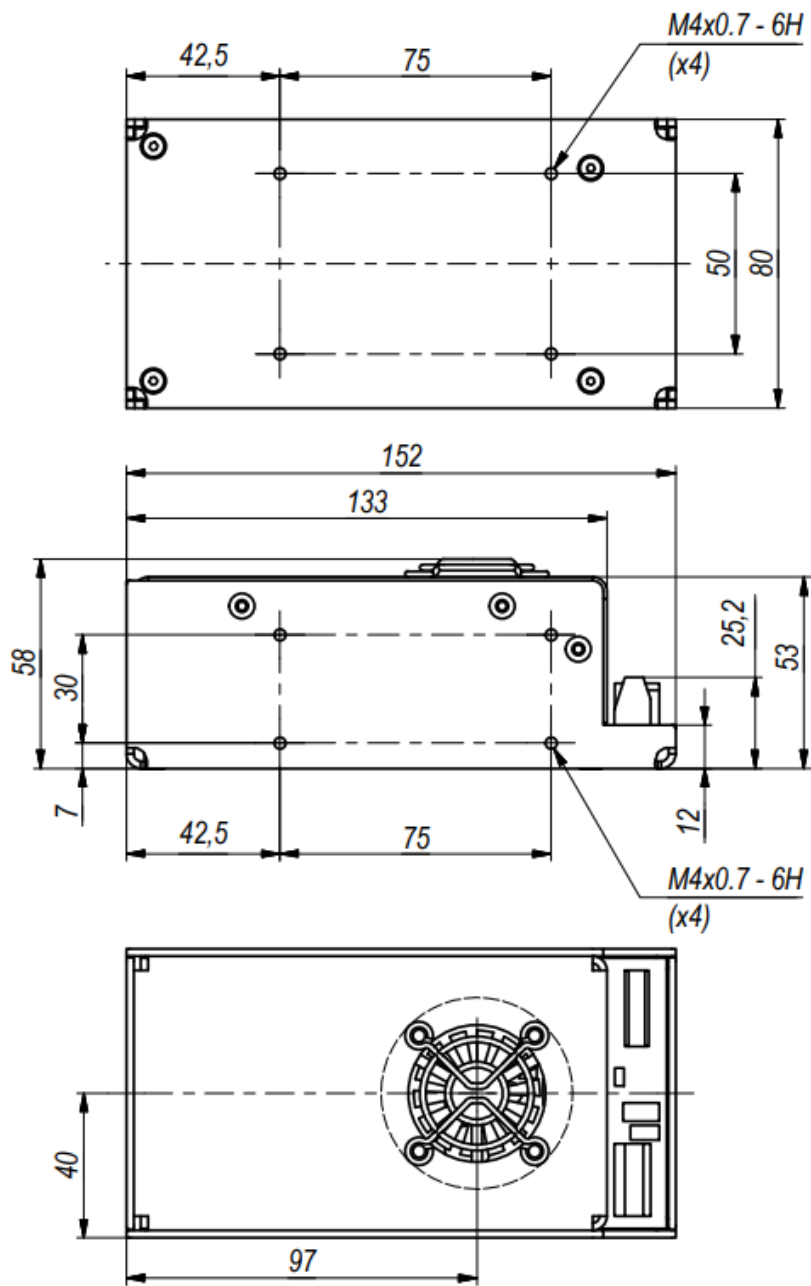


Figure 1. Outline drawing and dimensions of the HV power supply

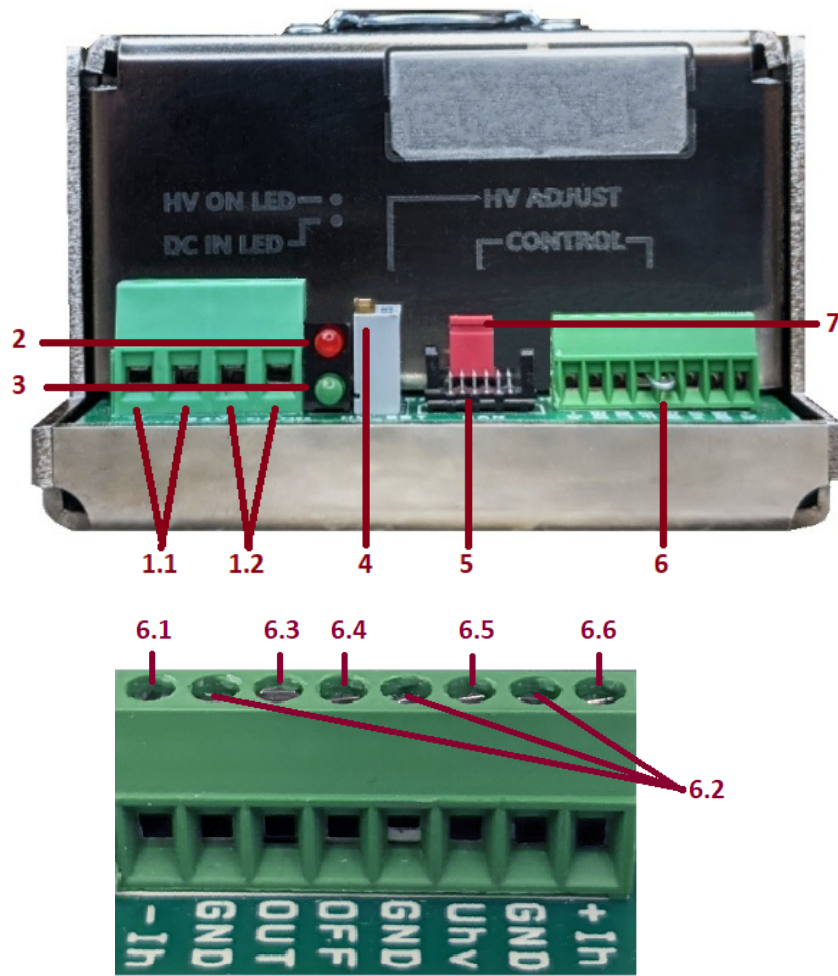


Figure 2. Front controls of the HV power supply

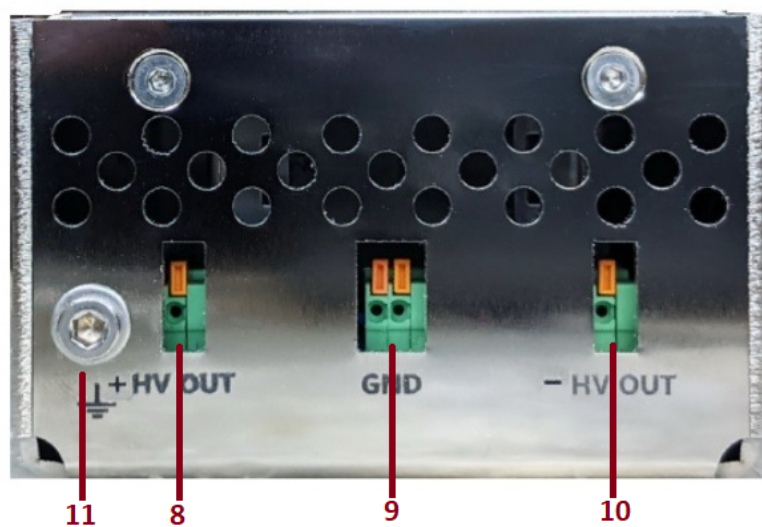


Figure 3. Rear controls of the HV power supply

Table 4. Controls and connections of the HV power supply

#	Port
1.1	2 pins for +24V input
1.2	2 pins for GND input (-24V)
2	LED HV output on
3	LED +24V
4	Potentiometer for HV tuning in potentiometer control mode
5	CAN connector
6	Control connector
6.1	"-Ih" test point for -HV current (1V = 100mA)
6.2	"GND"
6.3	"OUT" indication point for HV output (HV off - +5V; HV on- 0V)
6.4	"OFF" control input to enable HV output (connect to GND to allow HV output)
6.5	"Uhv" test point for +HV output (1V = 1kV)
6.6	"+Ih" test point for +HV current (1V = 100mA)
7	CAN terminator
8	+HV output
9	GND output
10	-HV output (+HV output for PS-170)
11	Grounding screw

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 driver and 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. Ground the HV Power Supply

Provide the proper ground connection to ground screw (#11) of HV power supply or grounding by mounting holes.

5.2. Short together pin “OFF” (#6.4) and “GND” (#6.2)

Connection is to enable HV output. This function has priority against CAN command “Power switch-On”. The input while connected to dry contact, can be used as remote start/stop function or interlock control.

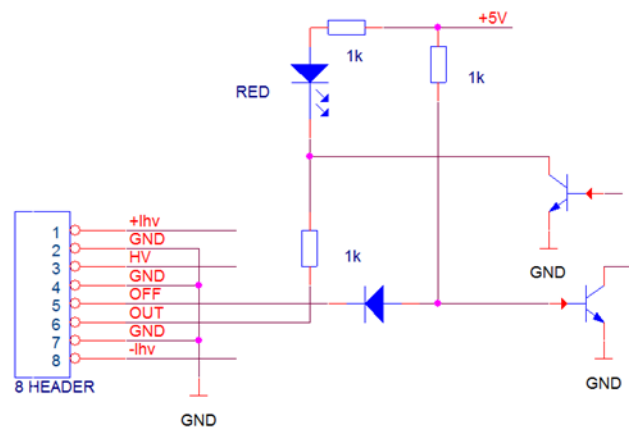


Figure 4. ON/OFF input internal layout

5.3. Supply +24V Power

Connect the +24 VDC power supply to the HV power supply. See **Table 3** for requirements.

5.4. Set Required Output HV

HV output voltage can be controlled by:

1. Internal (#4) potentiometer. Output voltage and current monitoring is possible on (#6.1, #6.5, #6.6) connector pins. 1V pro rata 1kV voltage and 100mA HV current.
2. Using CAN, see CHAPTER 6 CONTROL VIA CAN for details.

5.5. 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%.

5.6. Switch Power Supply

Switch the +24 VDC power on. The green LED (#3) should light continuously. It is blinking, if supply voltage is below +23.5V. Use the thicker wires to reduce voltage drop, or increase the DC supply voltage to compensate it for normal operation.

VDC can be safely increased up to +26V.

Red LED lights while HV output is switched on.

Power supply stops HV output if output current exceeds maximal value. To restart operation, turn off and turn on of VDC is required. The restart can be done using CAN command OFF and following ON.

6.1. CAN

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



Figure 5. CAN-USB converter

1. Connect CAN-USB converter to PC and HV power supply by cables.
2. Turn on +24V power supply.
3. Install and open CAN Browser.
4. Set required settings (see CHAPTER 7 CAN BROWSER SETTINGS).

Table 5. Basic CAN Browser settings

Setting	Description
Command	Toggle the HV supply output ON/OFF
Uset	Set HV output value.
Set HV knob control enable	Off – control HV via CAN interface
	On – control HV by potentiometer.
Set HV knob minimum set voltage	Set minimum HV output voltage for potentiometer control.
Set HV knob maximum set voltage	Set maximum HV output voltage for potentiometer control.

After each command need to push green cursor and button “Program”.

Table 6. Advanced CAN Browser registers

Setting	Description
Status	Off- HV output is turn off.
	On- HV output is turn on.
Read HV voltage	Display HV output voltage.
Read HV+current	Display positive current of HV supply output.
Read HV-current	Display negative current of HV supply output.
Set voltage limit	Display input +24 voltage.
Set HV knob read level	Display trimmer position.