

1kW BENCH MOUNT/ RACK MOUNT

AC-HVDC POWER SUPPLIES

The M-Power-Line series is a competitive, highly efficient, compact DC power supply with robust design. Combining simple operation and an easy to use multi-function display, these power supplies are well suited for applications in industry, science and research.

M-Power-Line models feature flexible and easy to operate local controls combined with a multifunction digital display that simultaneously shows both the output set points and actual measured values. HV outputs can be adjusted by voltage and current encoders with coarse and fine settings, with set point adjustment possible even with the output locked. The local control interface also allows the user to set the IP address, displays information about the unit, such as operation hours, MAC address and internal status.

Other features include operating hours counter, device history (fault memory), streaming of actual values and states with timestamp, flash-over (arc) counter, overtemperature device shutdown, and much more. The HV output is resistant to short circuits and arcing and can operate continuously into a short circuit. The M-Power-Line power supplies are suitable for both inductive and capacitive loads and for unlimited operation at both full and no load.

Multiple temperature sensors monitor the main power components, and in the event of a fault, power circuits are shut down and a fault message is displayed.

Standard integrated LAN and USB interfaces are located on the rear panel. This ensures the power supply can be controlled and maintained remotely and also allows multichannel communication with the unit using checksum-protected data transmission.



Dimensions

3.5" x 17.9" x 17.5" (88.9 x 454.6 x 443mm)
2U 19" bench/rack mount

Features

- 0-3kV, 0-10kV, 0-30kV and 0-50kV output models
- Single phase AC input with active PFC
- 2U 19" rack mount
- Multi-function control panel with user friendly interface
- LAN and USB interfaces are standard
- High efficiency – 85% to 90%
- Low ripple $\leq 0.1\%$ pk-pk
- CE marked, EN61010-1 safety compliant
- Short circuit & arc protection
- Integrated arc counter
- HV Release socket for integration of shut down circuits
- Variable fan speed for quiet operation
- Operating temperature: 0 to +40°C
- 2 year warranty

Benefits

- Provides maximum flexibility and control
- Ensures safe operation providing maximum protection to the power supply
- High voltage release included for safe operation at high voltage output
- User friendly control combined with bespoke terminal software for maximum flexibility
- Lighter than competing products and easier to maintain
- Low cost of ownership

Applications

- Electrostatics
- High voltage test stands
- Insulation testing
- Ion sources
- Laboratory power

Models & Ratings

Model Number	Polarity	Output Voltage	Output Current	Ripple	Stored Energy	Discharge Time Constant
MPL003P330	Positive	0 to +3kV	333mA	3Vpk-pk	2.0J	9.2s
MPL003N330	Negative	0 to -3kV				
MPL010P100	Positive	0 to +10kV	100mA	10Vpk-pk	4.4J	8.7s
MPL010N100	Negative	0 to -10kV				
MPL030P033	Positive	0 to +30kV	33mA	30Vpk-pk	4.5J	5.9s
MPL030N033	Negative	0 to -30kV				
MPL050P020	Positive	0 to +50kV	20mA	50Vpk-pk	6.6J	4.2s
MPL050N020	Negative	0 to -50kV				

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	110		230	VAC	±10% single phase, 47-63Hz
Power Factor		>0.95			At full load at nominal AC line
Input Connector	IEC60320 C20 receptacle				
Efficiency	85		90	%	At full load

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage Range	3		50	kV	See Models and Ratings table
Output Current Range	20		333	mA	See Models and Ratings table
Output Control	Continuous adjustment from 0 to rated voltage/current by front panel mounted encoders with coarse and fine adjustment settings				
Response Time	10		90	%	<500ms
	90		10		Of rated output voltage at rated load
Set point resolution		±0.1		%	Rated
Stability		±0.1		%	Over 8 hours under constant conditions after 30 min. warm up
Line Regulation		±0.01		%	For ±10% AC line voltage variation
Load Regulation		±0.1		%	No load to full load
Voltage ripple		0.1		%	pk-pk
HV output connection	Mating HV connector and 3m cable supplied				
HV insulating medium	Outputs ≤10kV are air insulated, ≥30kV use solid dielectric silicone encapsulation				

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Temperature Coefficient		±0.1		°C	
Ambient Temperature	0		+40	°C	Operating
	0		+60	°C	Storage
Humidity	0		+80	%	At 0°C to +31°C, non-condensing
	0		+50	%	At +31°C to +40°C, non-condensing
Cooling	Forced air cooling with variable fan speed				
Operating Altitude		6,500 (2,000)		ft (m)	
Protection	Open/short circuits, arcs, overtemperature				

Signals & Controls

	Function
Front panel	Voltage and current encoders, power switch, HV ON/OFF switch, multi-function display shows actual outputs, set points, set/display IP address, unit status, MAC address, baud rate
LAN interface (standard)	Full duplex with 5 simultaneous connections possible via Ethernet, IP address configurable via front panel display, transfer speed of 10/100Mbit/s. TCP/IPv4 protocol
USB interface (standard)	Virtual COM port on PC side, 115k Baud

EMC: Emissions

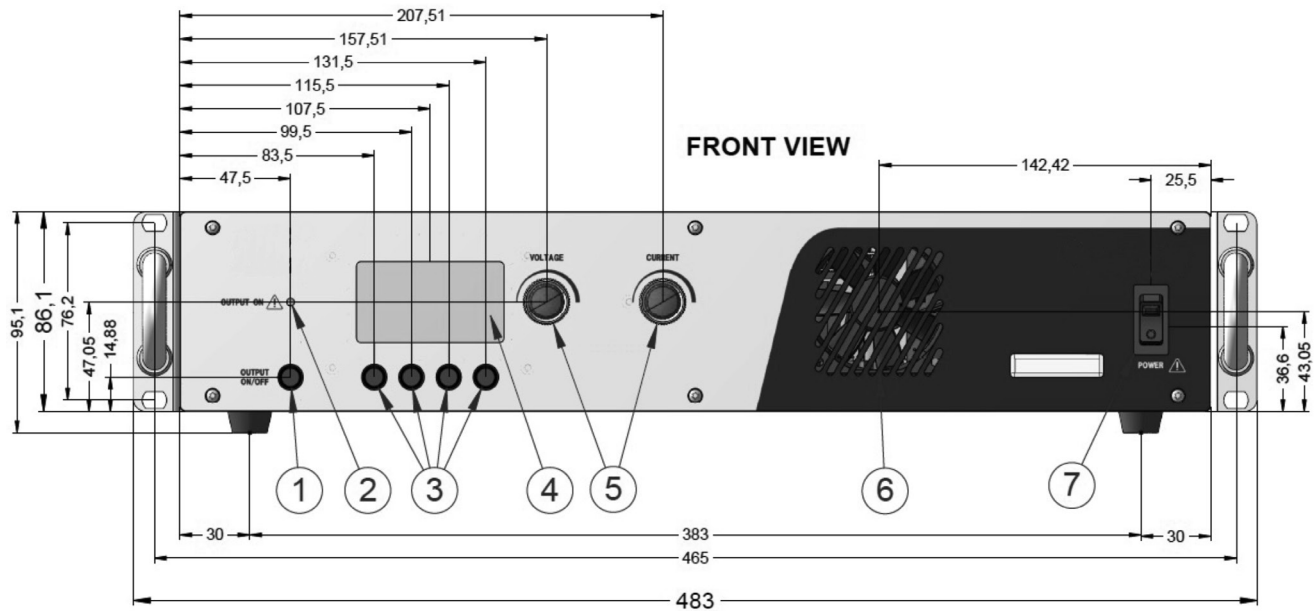
Phenomenon	Standard	Notes & Conditions
Harmonic Currents	EN61000-6-2	
Voltage Flicker	EN61000-6-3	

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
EN	EN61010-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Mechanical Details

Front view with control elements



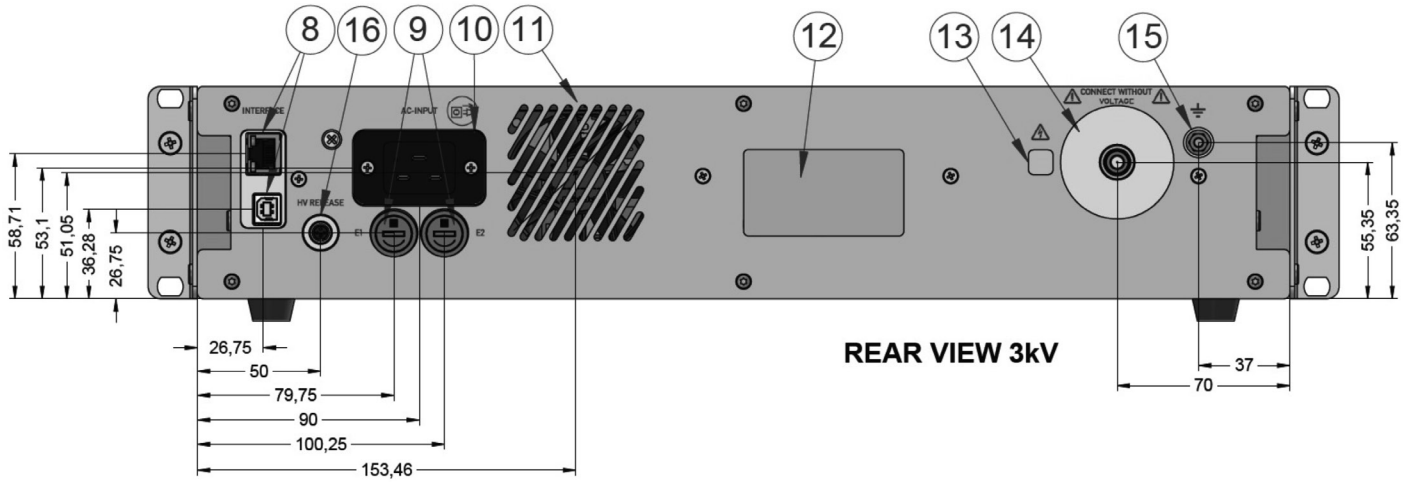
Notes:

1. All dimensions are in millimeters (mm).

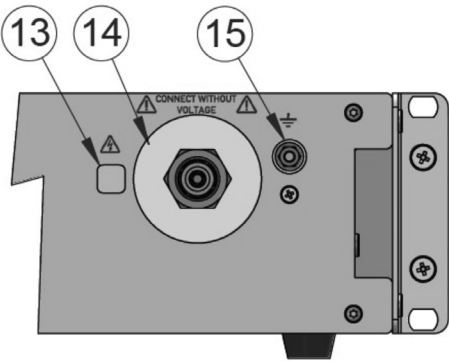
Number	Function	Number	Function
1	Output On/Off button	5	Rotary encoders for current and voltage control
2	Output On LED	6	Air inlet
3	Operating buttons "softkeys"	7	Power switch
4	Display		

Mechanical Details

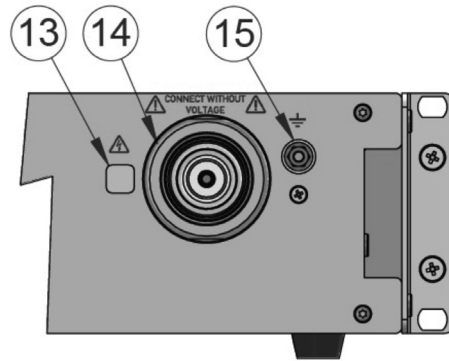
Rear View



Rear View 10-30kV



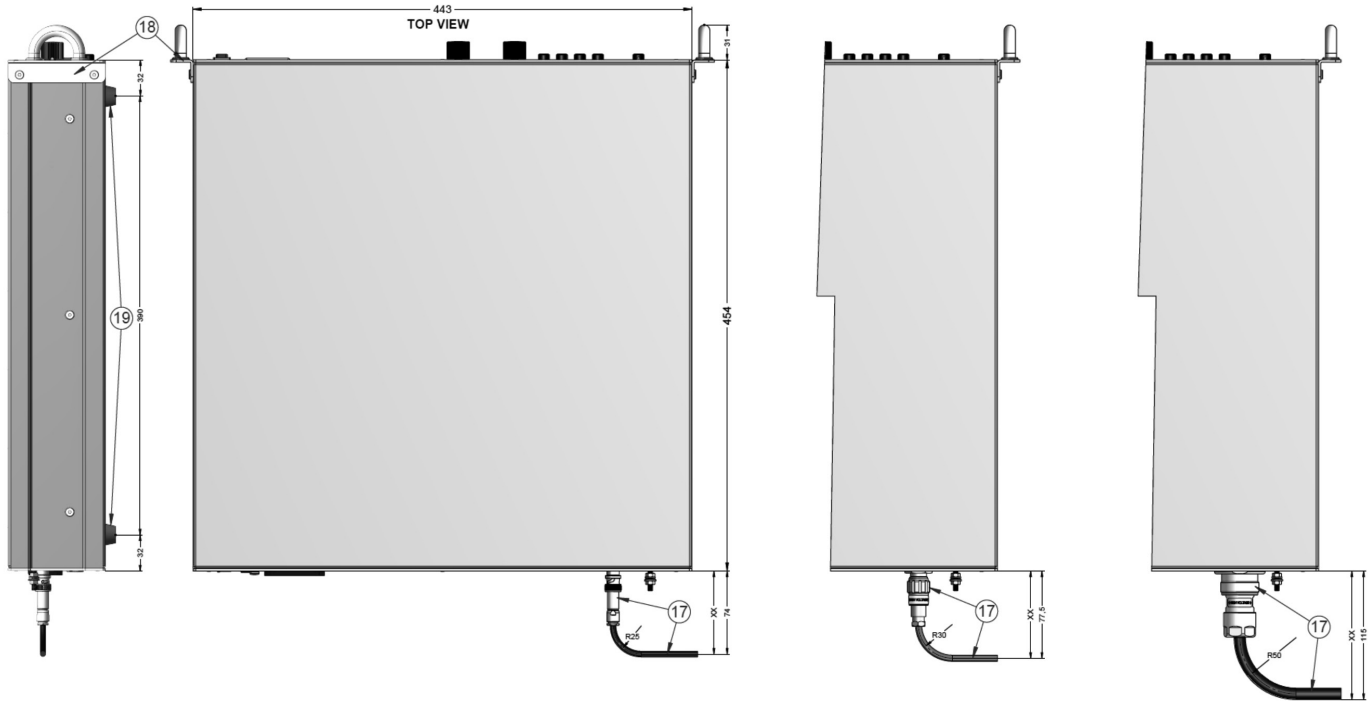
Rear View 50kV



Number	Function	Number	Function
8	Interfaces (Ethernet, USB)	13	Polarity indication
9	Device fuses E1, E2 HBC 12,5T (5x20mm)	14	HV output socket
10	Mains connection	15	Grounding bolt / PE
11	Air outlet	16	HV Release socket
12	Position of type plate		

Mechanical Details

Top View



Number	Function
17	HV plug & HV cable
18	Adapter bracket for 19" rack
19	Feet (removable)

Class	HV plug	HV cable	Ordering number
3 kV	SHV	RG 58	Z0251
10 kV	HS 40	130 660	Z0249
30 kV	HS 40	130 660	Z0249
50 kV	KS 150	RG 11	Z0250

Model Number	Mounting	Width		Height		Depth	Weight
		19"	443mm	2U	88.9mm		
MPL003P330	Bench mount ⁽¹⁾	19"	443mm	2U	88.9mm	454mm	10kg
MPL003N330	Bench mount ⁽¹⁾	19"	443mm	2U	88.9mm	454mm	10kg
MPL010P100	Bench mount ⁽¹⁾	19"	443mm	2U	88.9mm	454mm	10kg
MPL010N100	Bench mount ⁽¹⁾	19"	443mm	2U	88.9mm	454mm	10kg
MPL030P033	Bench mount ⁽¹⁾	19"	443mm	2U	88.9mm	454mm	14kg
MPL030N033	Bench mount ⁽¹⁾	19"	443mm	2U	88.9mm	454mm	14kg
MPL050P020	Bench mount ⁽¹⁾	19"	443mm	2U	88.9mm	454mm	14kg
MPL050N020	Bench mount ⁽¹⁾	19"	443mm	2U	88.9mm	454mm	14kg

Notes:

1. Rack mount option (19" mounting brackets included)