



## Highest Flexibility

Supreme performance for Single Magnetron Sputtering, Plasma Nitriding & BIAS Application processes.

MAGPULS MP2-L1 Series Bi-Polar Pulse Power Supplies, specially designed for R&D and Laboratory usage, are suitable for operating with single magnetron for non-reactive sputtering deposition on substrates such as metals. Individual operating modes and enhanced ARC-management allows MP2-L1 Pulse Power Supplies operate effectively in achieving superior quality deposition. Typical applications of MP2-L1 are production of Hard Coatings, Plasma Nitriding & Biasing.

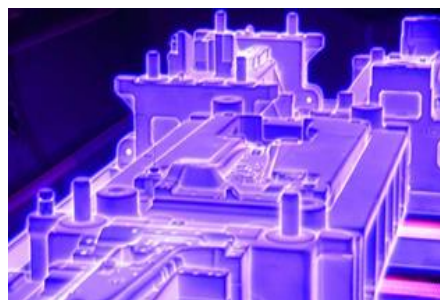
MP2-L1 Units are designed to operate in the frequency range of 1 to 100 kHz and can deliver power up to 3 kw with pulse current up to 35 A (peak current). Higher frequency / current / power models are available.

MP2-L1 Series PS is made up of mainly two units. First unit is the DC power supply which provides DC power into the big capacitor bank of the pulse unit. The second unit is the Pulsar, an intelligent circuitry, which is equipped with highly sophisticated ARC management capability.

Duty Cycle can be adjusted to achieve higher target utilisation & for better optimisation of the processes. Enhanced ARC management provides best coating results without process interruptions. Optionally, there is an external Optical Input Interface for controlling of the pulse PS externally. It also has an Optical Output Interface for triggering or synchronization of other pulse power supplies of MP1 or MP2 series.

### VOLTAGE PULSING – Discrete Advantage

MAGPULS Pulse Power Supplies are designed on Voltage Pulsing Technology (VPT). Unlike in Current Pulsing Technology, user can set the amplitude of the Pulse (voltage) in VPT Pulsars. This provides a very tight control on the process. Stable plasma condition is easily achievable at low pulsing frequencies, well below 100kHz. Pulsing current is in correlation with the plasma impedance & temperature stress on the coating products can be controlled very effectively.



#### KEY FEATURES

Adjustable Pulse Parameters & Frequency

7 Different Output operating modes

DC+, DC-, Uni-Polar+, Uni Polar +, Bipolar Pulse, Programmable Pulse Train, Synchronization,

Enhanced Effective ARC management

#### BENEFITS & ADVANTAGES

Universal Application Range - One power supply

Optimal adjustment of process for better process stability

Better control of power - optimized target utilization

Quick Arc-suppression. Lowest Arc-energy. Best results



## Technical Data

OUT PUT	MP2-35 / 1 kW	MP2-35 / 2 kW	MP2-35 / 3 kW
Voltage	0 – 1000 V	0 – 1000 V	0 – 1000 V
Current	0 – 1.4 A DC 0 – 35 A Pulse	0 – 2.8 A DC 0 – 35 A Pulse	0 – 5.3 A DC 0 – 35 A Pulse
Power	0 – 1 kW DC	0 – 2 kW DC	0 – 3 kW DC
Pulse Frequency	DC 0.05 Hz – 100 kHz		
Max. Frequency with Max. Pulse Current	100 kHz @ 10 A 25 kHz @ 35 A	100 kHz @ 10 A 25 kHz @ 35 A	100 kHz @ 10 A 25 kHz @ 35 A
Pulse Time Settings T <sub>on</sub> / T <sub>off</sub>	2.0 μs up to 100 sec / 2.0 μs up to 100 sec		
Duty Cycle	0.005 % to 100 %		
Pulse wave form	DC +, DC- Unipolar pulse, unipolar minus, Bipolar pulses Programmable Pulse Train		
IN PUT			
Max. Voltage	0 – 1000 V	0 – 1000 V	0 – 1000 V
Max. Current	0 – 1.4 A DC	0 – 2.8 A DC	0 – 5.3 A DC
Max. Power	0 – 1 kW DC	0 – 2 kW DC	0 – 3 kW DC
Mains Supply	1 Φ 230 VAC 50/60 Hz		
ARC-MANAGEMENT			
I <sub>max</sub> - Detection	0 - 35 A peak	0 - 35 A peak	0 – 35 A peak
ARC – Detection Time	< 200 ns		
Off Time after ARC Detection	30 μs to 1000 ms		
ARC – Recovery Time	≥ 100 μs		
di/dt Dynamic Change	Var. di/dt threshold: 0A/μs up to 2000A/μs		
Voltage Drop ΔU	Var. U threshold: 0% up to 100% U <sub>DC</sub> (Option)		
U x I – Cross Detection	Var. U threshold 0V up to 1000V Var. I threshold: 0.1 x max. I <sub>peak</sub> up to 1 x max. I <sub>peak</sub> (Option)		
INTERFACE			
Analog	1 (up to 3) 15 pin-Sub-D for controlling external DC power supplies		
Digital	15 pin Sub-D user Interface with floating potential contactors		
RS 232	9 pin Sub_D		
Ethernet	RJ 45		
Profibus	9 pin Sub-D (Option)		
TEMP MANAGEMENT			
Cooling System	Air cooling		
Cooling Temperature	Max. 35°C		
Cooling Medium	Air		



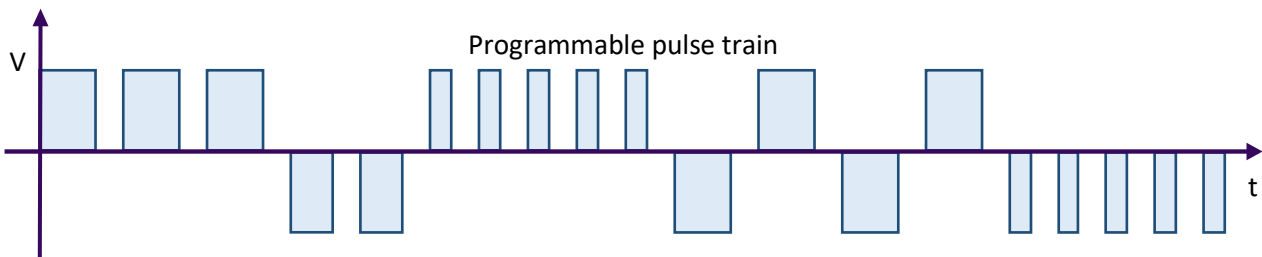
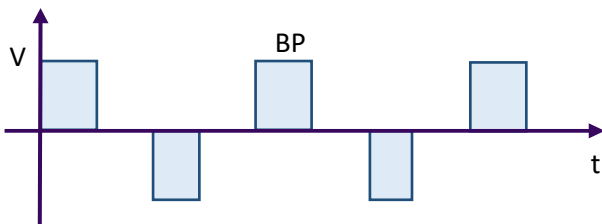
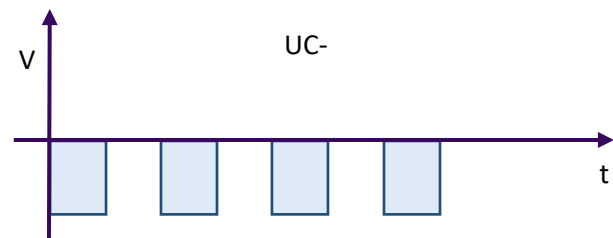
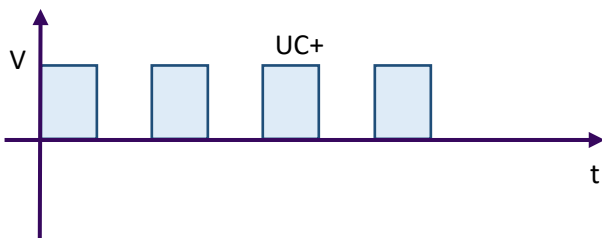
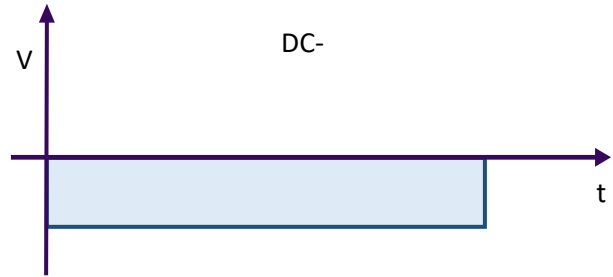
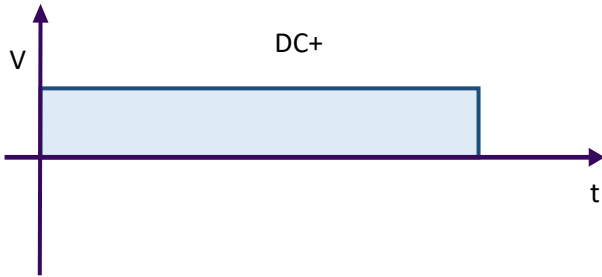
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ENV CONDITION	MP2-35 / 1 kW	MP2-35 / 2 kW	MP2-35 / 3 kW
Ambient Temperature	+5° C up to +35° C		
Max. Humidity	80 % non condensing		
Max. Operating Altitude	1500 m above sea level		
MECHANICAL DATA			
Construction	19" – Rack 5 HU		
Dimension H x W x D	222.25 mm x 483 mm x 650 mm		
Weight	20 kg	24 kg	26 kg
DISPLAY & CONTROLS			
Display	Graphic color Display		
LED Display	Power, OK, Start / Stop		
Controls	Graphical Menu via Function Keys, Arrow keys & Continuous Rotating Knob		
SUITABILITY			
Application	Hard Coating on Tools & Bits and BIAS application		
Process	PVD, Plasma Nitriding, Pulse Plasma , Dual & Single Magnetron Sputtering		
Material	Metals, Oxydes		

Please contact us for information on higher capacity models & other variants



**OUT PUT Wave Forms**





## PRODUCT Images

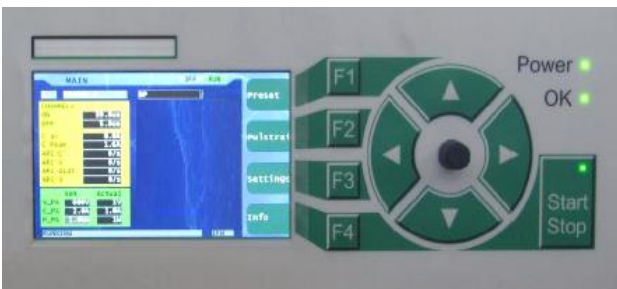
Front Facia with Controls



Rear side with connecting cables



Control Panel



Display Panel

