

## Power supply 110 Vdc 480W HBMR136200/5



### Features

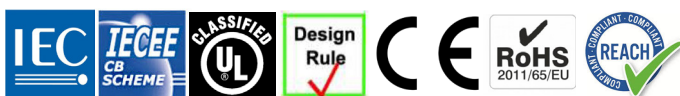
- C/V curve down to 0V, no foldback
- Power Good Relay AC & DC-ok optional
- Efficiency up to 93%
- Hold up time >50ms
- Soft start & auto-recovery
- Precise dynamic response to load change
- Designed for long life under full stress
- Strong input filters
- High reliability, shock & vibration proof
- EMC meets CE norm class B
- Overload and short circuit protection
- Large terminals 4x AWG20 – AWG6 (0,5 – 16mm<sup>2</sup>)

### Application

The HPV power supply is made for high reliable and demanding industrial applications, rail way, infrastructure, professional machine building, printing machines and complex dc-drive up to precision piezo drives.

### Design

The HPV series is a high precision switch mode power supply for an upscale demand. The design meets challenging applications like complex dcdriives, piezo print head, test-stands, and professional machine-building. The power supply provides a low ripple-noise, a precise load-regulation and high efficiency up to 93%. High-end long life capacitors guarantee an extended hold-up-time and an extraordinary lifetime of the power supply. The circuit design starts complex loads easily. The internal control circuit manages illegal operating conditions to prevent your system from damages. The HPV series features active high input transients with suppressor diodes, X2-capacitors and varistors. All inputs, outputs and feature connections are galvanic isolated. The design rules set value on extended interference immunity and safety. The unit is designed in accordance to the EN60950-1 and the EMC compatibility to EN55022 class B norms. Engineering design is made in accordance to the CSA/UL60950-1 and the IEEE CB scheme rules.



In accordance with IEC60950-1



## Features

### Mechanics

Stable metal/aluminium housing IP20. To allow adequate convection, a free air space of 50mm (top/bottom) and 5mm (sidewalls) is required; for active devices 15mm space from the sidewalls. For free air convection it is necessary to install the unit horizontal. Use the DIN-Rail installation (equiped standard) with the patented 35mm DIN-Rail brackets according to EN60275. It is easy to mount/dismount while snapping it onto the 35mm DIN-Rail - no tools are necessary.

### Design Concept

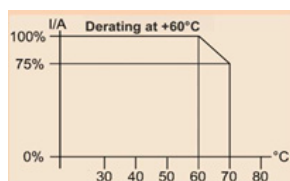
The HPV power supply series realizes very high power efficiency in a space-saving housing. The philosophy is, to employ 125°C low ESR ultra long life capacitors where expedient to achieve a superior lifetime of the product. The HPV power supply is made for high reliable and demanding industrial applications, rail way, infrastructure, professional machine building, printing machines and complex dc-drive up to precision piezo drives.

### Galvanic Isolation

The power supply is galvanic isolated between the input and the output. All features like the Power Good Relay are connected to the DC power outputs.

### Thermal shutdown

The HPV is featured with a thermal overload shut down and auto recovery behaviour. OT Over Temperature The maximum ambient temperature is +70°C. If the power Supply exceeds this value (over temperature protection) it completely shuts down (metering point 10mm from outside device). The device restarts automatically into operation when the temperature drops to a normal value.



### Over Voltage Protection

Ticker mode and auto recovery. Exceeding the OVP results in a locked shutdown mode. Resuming the failure causes automatic restart into normal operation.

### Short Circuit Protection

A continuous short circuit does not cause damage to the power supply. The HPV delivers constant current and 0 output voltage. It recovers automatically after the short circuit is released.

### Open Circuit Protection

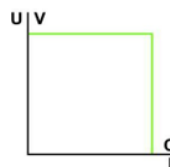
The HPV series is continuously open circuit protected. The device delivers a stable output voltage and no current. If a load is immediately connected to the device, the power supply stabilizes within 1ms. It does not overshoot the output voltage.

### Power Up Ramp

The devices has a soft start ramp when powering up. The device does not either overshoot the voltage nor does the output flutter – independent if a load is connected or not.

### Current Voltage Chart, CV & CC mode

The HPV series provides a perfect current voltage chart. It has no fold back or other abnormalities. The output voltage can drop down to zero volts when the power supply is overloaded. The unit delivers a stable and constant current to the outputs.



### DC-OK (Power Good Relay)

The DC ok relay indicates if the output voltage is low and if the AC voltage is low. The contact is galvanic insulated to the AC input and the DC output connections. The isolation is 3000Vac with a forced isolation and covers the overall adjustment range of the HPV model with 220Vdc. If the DC voltage is ok the relay is closed, if the power supply unit is in false operation the relay is open. Considering the lower and the upper margin of the AC voltage detection it is to say that the HPV series starts at 80Vac/150Vac depending on the AC input selector. The unit starts with 175Vdc when a DC voltage applies to the input.

Make sure to set the AC input selector to 230Vac (factory setting) for DC input supply. DC-Fail hysteresis: drop-out 20% Vnominal / pull-in 60% Vnominal.

Relay indication:

- Normal condition ..... Relay closed
- Over temperature ..... Relay open
- AC Low voltage..... Relay open
- DC low voltage ..... Relay open



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### Technical Data

AC Input Range	90 – 132Vac / 184 – 265Vac , 47 – 63Hz (115/230Vac input selector, factory setting is 230Vac)
DC Input Range	250Vdc – 375Vdc (input selector set to 230Vac)
AC Input Rating	115Vac<8.8A 230Vac<4.3A (recommended circuit breaker type B with 16A or larger)
DC Input Rating	250Vdc<2.4A 375Vdc<1.6A (input selector set to 230Vac rated)
Rated DC Voltage	110Vdc
DC Voltage Setting Range	(Adjustable to 86 – 132Vdc)
Rated DC Current	4,4A
Power Boost	4,8A
Overvoltage Protection	154Vdc
Ripple Peak	230Vac 20MHz 200mV
OR Failure Relay (option)	Yes, break contact, protective forced isolation to the inputs and the output 3000Vac
Derating	+60°C...+70°C 2.5%/°C
Accuracy	< ± 1.5% interface
Load Regulation	< ± 0.05% 0-100%
Response to Load Change	<1ms 10-100%, 100-10%
Base Load	None required (open circuit proof)
Efficiency	230Vac Up to 93% at 90% load
Short Circuit Protection	Continuous
Open Circuit Proof	Continuous
Temperature Control	Yes, thermal shutdown with auto recovery (+70°C, metering distance 10mm)
Hold Up Time	>50ms 230Vac
Inrush Current	NTC <40A 25°C cold start
Soft Start	100ms typical
Cooling	Natural convection
Ambient Operating Temp.	- 25°C...+70°C
Ambient Storage Temp.	- 40°C...+85°C
Environment	Humidity 95% non-condensing @ 25°C, climate class. 3k3, pollution rate II
ROHS	2011/65/EG confirmed
REACH	EG No. 1907/2006 confirmed
EMI	EN55022 class B
EMS	EN61000-6-2,3
Safety	cUL60950 (classified in accord. to EN60950-1), EN60950-1, EN60204-1
Safety class 1(A)	VDE0805, VDE0100
Isolation paths	> 8mm creepage distance & clearance paths
Input to Output Isolation	3000Vac
Input to Case Isolation	2500Vac
Output to Case	2100Vdc
Meantime By Failure (MTBF)	400000h (IEC61709)
Meantime To Failure (MTTF)	128124h (IEC61709)
ROHS conformity	ROHS directive 2011/65/EU
REACH conformity	REACH directive 1907/2006
AC Terminals	Input Screw Terminal 3x AWG20 – AWG6 / 0,5 – 16mm <sup>2</sup> (L,N,PE)
DC Terminals	Output Screw Terminal 4x AWG20 – AWG6 / 0,5 – 16mm <sup>2</sup> (+ + / - -)
IP rating	IP20



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### Ordering Data

PRODUCT NUMBER	DESCRIPTION
HBMR136200/5	Power supply 110Vdc 480W

### Dimension and Weight

Power unit ..... 130x200x114,5 mm

Packaging..... 180x210x140 mm

Weight: ..... 3 kg

### IP Rating

IP20