Power Supply 110Vdc

Modular Power Supply Unit for the Hexatronic InOne Hybrid System

Features

- C/V curve down to 0V, no foldback
- Power Good Relay AC & DC-ok optional
- Efficiency up to 93%
- Hold up time >30 ms
- 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 – 16mm²)

Application

The HPV power supply is made for high reliable and demanding industrial applications and fulfills the requirements for any telecommunications or security system to be powered.

Design

The HPV series is a high precision switch mode power supply for an upscale demand. The design meets challenging applications like complex dcdrives, 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.

Product Information

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 snaping 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

Technical Information

Product Color	Blue/Grey
Conformance	ROHS conformity : ROHS directive 2011/65/EU REACH conformity: REACH directive 1907/2006 EMI: EN55022 class B EMS: EN61000-6-2,3 Safety: EN60950-1, EN60204-1 Safety class: 1(A) VDE0805, VDE0100 CE
Temperature, Operation [°C]	-25 to +70
Temperature, Storage [°C]	-40 to +85
Technical Notes	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<16.8A 230Vac<9A (recommended circuit breaker type C 16A (230Vac) or C 20A (115Vac) DC Input Rating: 250Vdc<5A 375Vdc<3.3A (input selector set to 230Vac rated) Rated DC Voltage: 110 Vdc DC Voltage Setting Range: (Adjustable to 86 – 132Vdc) Rated DC Current: 9.1A Power Boost: 9.6A Overvoltage Protection: 154Vdc Ripple Peak: 230Vac 20MHz 250mV 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: >30ms 230Vac Inrush Current: NTC <84A 25°C cold start Soft Start: 100ms typical Cooling: Controlled fan from manufacturer EBM Papst (Germany) 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 I

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): 127196h (IEC61709)
AC Terminals: Input Screw Terminal 3x AWG20 – AWG6 / 0,5 – 16mm² (L,N,PE)
DC Terminals: Output Screw Terminal 4x AWG20 – AWG6 / 0,5 – 16mm² (+ + / - -)

IP Rating IP20

Items 3

Item Name	Dimensions [mm]	Weight [kg]
PSU 110V DC 480W DIN-Rail HBMR136200/5	**130 x 200x 114.5**	**3**
PSU 110V DC 1000W DIN-Rail HBMR136200/6	**56 x 200 x 114.5**	**3.2**
N+1 Redundancy Controller HBMR136202	**130 x 62 x 115**	**1**

