HPW00601

DIN Rail

Made in Germany

60 Watts Power Supply -15°C...+75°C with active PFC 85..264Vac, Active Inrush Current Limiter 700mA peak

Short Specification:

- Metal housing
- Up to 86% efficiency
- -15°C…+60°C full output power
- Free air convection
- Galvanic insulated
- Continuous short circuit protected
- Overload & low voltage protected
- Soft start & auto-recovery
- Hold up time >50ms
- Open Circuit Proof
- EMI/EMS EN61000-6-2,3, EN55022 class B
- IEC(EN)60950-1
- PFC IEC(EN)610003-2 class A
- Series & parallel operation
- Effective inrush current 0,7A (230Vac)
- Screw terminals AWG26...AWG12
- 24 hours burn in test
- High reliability, shock & vibration proof

Applications:

- **LED large multi-array**
- **Traffic control systems**
- **UPS buffered control systems**
- **High reliable industrial & telecom**
- **railway**

Models	Voltage	Current
HPW00601.24T	**24V**	**2.5A**
HPW00601.48T	**48V**	**1.25A**

Technical Data Table

AC Input Range	90-265Vac, 47-63Hz, 120-375Vdc	
AC Input Nominal	115Vac <1.6A 230Vac <800mA	
Model	HPW00601.24TLIRC	HPW00601.48TLIRC
Rated DC Voltage	24V	48V
Rated DC Current	2.5A	1.25A
Ripple [mVpp] 230Vac	20 (20MHz)	40 (20MHz)
Output adj. Range [V]	22,5...28,5V	40,5V...50,7V
Stability at load switch 0-100%	± 0,5%	± 0,5%
Power	60W continuous	
Load regulation	< ± 0.1% 10-100%, 100-10%	
Open Circuit Protection	Continuous	
Short Circuit Protection	Continuous	
Efficiency	86% typ.	
Over Current Protection I(AB)	1.1x Irated	
Over Voltage Protection	130% of U_{out}, auto recovery	
Hold Up Time	> 50ms 230Vac @ full load	
Inrush Current	< 700mApeak / 495mArms active electronic limiter	
MCB (Circuit Breaker)	1A type-A / 6kA recommended	
Soft Start	50ms typical	
Cooling	Natural convection	
Ambient Temperature	- 20°C…+75°C (see derating chart)	
Storage Temperature	- 40°C…+85°C	
EMI	EN55022 class B / EN61000-3-2 (harmonics)	
EMS	EN61000-6-2, EN61000-6-3 (noise immunity)	
Safety Norms	EN60950-1, EN60204-1	
Safety Class (with PE connected)	1, VDE0805, VDE0100, IP20	
Air & Creep Distance	> 8mm	
Input / Output Isolation	I/P-O/P:3kVac I/P-G:2kVac O/P-G:1.4kVdc	
Power Good Relay	<48Vdc/500mA, galvanic isolation 60Vdc	
MTBF EN61709	600.000h	
MTTF EN61709.SN29500	157.680h @ 40°C 24/7, 85% load	
Lifetime expected	18 years under 24/7 40°C 85% load conditions	
Climate Class / Pollution Degree	3k3 / class2	
Humidity in Operation	90% @ 25°C, not condensing	
Operation Altitude	≤ 3000m above sea level (9842 feet)	
Dimensions (HxWxD)	124x50x99.5mm	
Net Weight	700g	
ROHS	2011/65/EG confirmed	
REACH	EG No. 1907/2006 confirmed	
Connectors Option (AC & DC)	Spring-type terminal with cable protection 0,25...2.5mm² 23…13AWG according with IEC/EN60664-1, IEC/EN61984. Use copper conductors only. Tightening torque for the optional terminal connectors is 0.5 - 0.6 Nm / 4.5 - 5.3 lbf-in, strip 4.5mm	

Conception:
The HPW power supply series realizes high power efficiency in a space-saving housing. Latest generation electrical devices relate to the high reliability of all Camtec products. The HPW60 is designed for operation under critical ambient temperature conditions in traffic signs and outdoor control units. The extreme low inrush of 495mA$_{rms}$ allows easy multi array installations in large LED-signs or on UPS buffered systems. The power supply is equipped with an active PFC. The EMC harmonics allow low interferences of a larger number of HPW units to be installed into a single AC bus.

Parallel & series connection:
Camtec power supplies of the same model and the same output voltage can be either used in parallel or in series connection. The assembling of external parts is usually not recommended. Make sure that the output voltage of each connected unit is ±1% equal. We recommend connecting the DC-outputs to a neutral point or a power bar. Always use equal cabling length for all DC-outputs.

Power Good Relay:
As a standard the power good relay allows to control the power supply is ok. When the output voltage breaks down the contact opens. Galvanic isolation 60vdc.

Manual and Technical Details

Table of Connections SK1

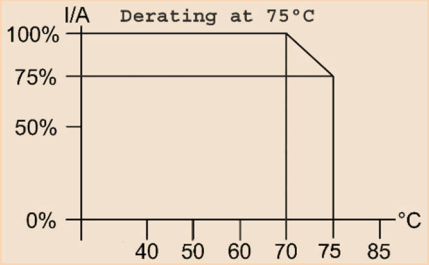
Pin	Name	Type	Function	Signal	Remarks
1	L	Power Input	Phase	Under DC supply operation an external fuse for each input line L & N is required!	1pc 3520038 connector required
2	N	Power Input	Neutral Terminal		
3	PE	Power Input	GND / Protective Earth		

Table of Connections SK2

Pin	Name	Type	Function	Signal	Remarks
1	DC +	DC Output	-	-	1pc 3520037 connector required
2	DC +	DC Output	-	-	
3	DC -	DC Output	-	-	1pc 3520037 connector required
4	DC -	DC Output	-	-	
5	DC-OK	Relay	Power Good Relay	-	1pc 3520037 connector required
6	DC-OK	Relay	Power Good Relay	-	

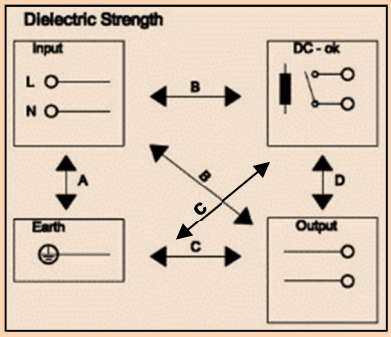
Temperature Monitoring & Derating

The maximum ambient temperature during operation is + 70°C.
The measuring point is 10mm outside the power supply.



Electrical Safety (Factory-Test / Fieldtest Owner)

	T	A	B	C	D
Type Test	60s	2000Vac	3000Vac	1400Vdc	500Vdc
Factory Test	5s	2000Vac	2000Vac	1400Vdc	500Vdc
Field Test	2s	2000Vac	2000Vac	1400Vdc	500Vdc



Type and Factorytest are the manufacturer. While repeating damage can happen to the power supply unit. For the field test (owner) follow the below instruction:

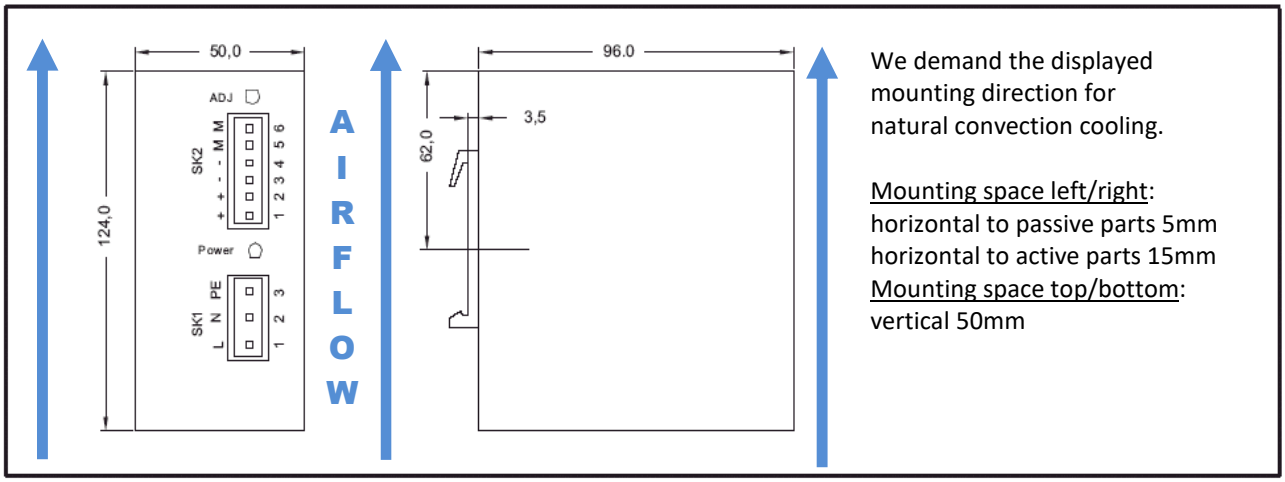
a) Use suitable test equipment, raising the voltage slowly
b) Short circuit L1 and N, and all the DC output terminals.
c) Use only test voltages of 50/60Hz. The outputs are unearthed and therefore they have no resistance to GND/PE.
d) If the residual voltage is ≥60Vdc, observe the safety standards. Use only specially insulated screwdriver to trim the Ua/Ia.

Ordering Codes & Options

Term	Information	Camtec Article Number
HPW00601.24T	24V/2.5A	3041046007CA
HPW00601.48T	48V/1.25A	3041046008CA
AC Input Connector	3pole terminal connector LS7,5mm AWG26-AWG12, Package = 10pcs	3520038
DC Output Connector	2pole terminal connector LS5,08mm AWG26-AWG12, Package = 10pcs	3520037

Coting Option

We offer optional protective coating. It is to be used in e.g. dusty, dirty, high humidity, or in awaiting quick temperature changes. Short circuit and corrosion at print board lines and at solder points can be prevented. The coat itself is a transparent acrylic resin. It is procured with a robotics varnishing machine. Peters SL 1306 N-FLZ (transparent) IEC60216-1 2001, IPC-CC-830B, UL listed as permanent coating FileNo.: E80315 , UL94V-0
Ordering Information: HPW000601.24T**C** (Coating recommends an MOQ of 10 units each lot!)



We demand the displayed mounting direction for natural convection cooling.

Mounting space left/right:
horizontal to passive parts 5mm
horizontal to active parts 15mm
Mounting space top/bottom:
vertical 50mm

Safety Instructions: Please read all warnings and advices carefully before installing or operating the power supply. Retain this operation manual always ready to hand.The device must be installed by specialist staff only.

Installation:

1.) The device is designed for systems fulfilling the safety norms of dangerous voltages/energy and fire prevention
2.) Installation is restricted to specialists only, make sure that the AC wire system is free of voltage
3.) Opening the unit, making any modifications to it, dismounting any screws from it, operating the Device out of specification and/or using it in appropriate area will unevitably result in loosing manufactureres guarantee; we decline taking any responsibility for risk of demages caused to someones health or to any installed system.
4.) Attention: The power supply has an internal input fuse. It is necessary to wire an automatic circuit breaker (MCB) to the line. We suggest to use a 1A-type with A-characteristic or larger. It is verboten to operate the power supply without protective earth wired. It essential to install a line switch before the device.

Warnings:
Disregard these warnings can cause fire, electic shock, serious accident and death.

1. **Never operate the device without Protective Earth Conductor**
2. **Before connecting the unit to the AC wire system make all wires free of voltage and assure accidently switch on**
3. **Allow neat and professionel cabeling**
4. **Never open nor try to repair the power supply by yourself. Inside are dangerous voltages that can cause electric shock hazard.**
5. **Avoid metal pieces or other conductive material to fall into the device**
6. **Do not operate the unit under damp or wet conditions**
7. **It is prohibited to operate the unit under Ex conditions or in Ex-Area**

All parameters base on 15 minutes run-in @ full load / 25°C / 230Vac 50/60Hz, as otherwise stated.