

# HSW00901

# DIN Rail

Made in Germany

**90 Watts Power Supply -20...+70°C**  
**85..265Vac Input Voltage**

### Short Specification:

- Metal housing
- Up to 90% efficiency
- -20°C...+60°C full output power
- Hold up time >30ms
- Free air convection
- Galvanic insulated
- Continuous short circuit protected
- Overload & low voltage protected
- Open Circuit Proof
- Soft start & auto-recovery
- EMI/EMS EN61000-6-2,3, EN55022 class B
- PFC: EN61000-3-2 class A
- IEC(EN)60950-1
- Series & parallel operation
- DIN Rail 35mm
- Screw terminals AWG23...AWG13
- 24 hours burn in test
- High reliability, shock & vibration resistant

**Reliable standard power supply**  
**with extended life time**



Models	Voltage	Current
HSW00901.24T	24V	3.8A
HSW00901.36T	36V	2.5A
HSW00901.48T	48V	1.9A
HSW00901.60T	60V	1.5A
HSW00901.72T	72V	1.3A
HSW00901.140T	140V	640mA



## Technical Data Table

AC Input Range	85...132Vac / 184...265Vac, 47...63Hz, 110...375Vdc			
AC Nominal Input	115Vac <2.2A / 230Vac <1.1A			
Model Name	HSW00901.24T	HSW00901.36T	HSW00901.48T	HSW00901.60T
Nominal Voltage	24V	36V	48V	60V
Nominal Current	3.8A	2.5A	1.9A	1.5A
Power Boost 60s	4.6A	3.0A	2.3A	1.8A
Voltage Set Range	22,5...28,5V	34,2...39,6V	45,6...52,8V	57,0...66,0V
Ripple 230Vac/20MHz	50mVpp	60mVpp	60mVpp	100mVpp
Model Name	HSW00901.72T	HSW00901.140T		
Nominal Voltage	72V	140V		
Nominal Current	1.3A	640mA		
Power Boost 60s	1.6A	770mA		
Voltage Set Range	68,0...86,0V	133,0...155,0V		
Ripple 230Vac/20MHz	120mVpp	120mVpp		
Power	90W continuous			
Operation Failure Relay	Yes, break contact isolated up to 60Vdc (not available for 72Vdc and 140Vdc models)			
Factory Adjust. Tolerance V <sub>out</sub>	± 1%			
Load regulation	< ± 0.5% 10-100%, 100-10%			
Response to Load Change	<1ms 10-100%, 100-10%			
Short Circuit Protection	Continuous			
Open Circuit Proof	Continuous			
Efficiency	90% typical at 85% load			
Load Protection	1,2x I <sub>rated</sub> with auto recovery			
Voltage Protection	140% of U <sub>out</sub> with auto recovery			
Hold Up Time	> 40ms 230Vac			
Inrush Current	< 32A (230Vac) with NTC inside			
MCB (Circuit Breaker)	13A type-B / 6kA recommended			
Softstart	50ms typical			
Cooling	Natural convection			
Derating	+60°C...+70°C 2.5%/°C			
Ambient Temperature	- 20°C...+70°C			
Storage Temperature	- 40°C...+85°C			
EMI	EN55022 class B / EN61000-3-2			
EMS	EN61000-6-2,3			
Safety	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	2000Vac			
Output to Case	500Vdc, models ≥60Vdc 2400Vdc			
MTBF EN61209	590.000h			
MTTF EN61209.SN29500	140.056h @ 40°C 24/7 85% load			
Environment	Humidity 90% non-condensing @ 25°C, climate class. 3k3, pollution rate II			
Altitude Operations	3000m NN / 9842 ft. above sea level			
Dimensions (HxWxD)	102x50x96mm			
ROHS	2011/65/EG confirmed			
REACH	EG No. 1907/2006 confirmed			
Weight	300g			
Connectors Option (AC & DC)	Spring-type terminal with cable protection 0,25...2.5mm <sup>2</sup> 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			

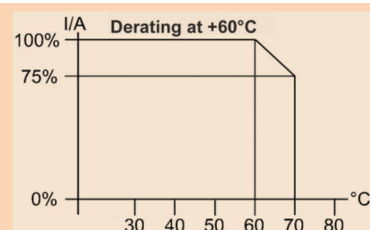
## Technical Concept

The Camtec HSW series is a high precision switch mode power supply for an upscale demand. The unit is voltage adjustable. It is engineered and manufactured by CAMTEC in Germany. The power supply provides a low ripple-noise, a precise load-regulation and high efficiency up to 90%. 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. The internal control circuit manages illegal operating conditions to prevent your system from damages. The HSW 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. Our engineering design is made in accordance to the CSA/UL60950-1 and the IEEE CB scheme rules.

## Overtemperature, Over Voltage Protection & Derating

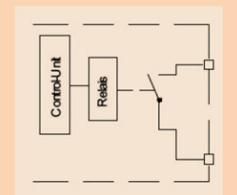
**OT Over Temperature** The maximum ambient temperature is +70°C. There is no temperature protection inside the power supply. The head room for the product is high.

**OVP Over Voltage Protection** Exceeding the OVP results into ticker mode. Resuming the failure causes automatic restart into normal operation.



## DC-OK (Power Good Relay)

The DC ok relay indicates if the output voltage is low. The contact is galvanic insulated to the AC input and the DC output connections. The isolation covers the overall adjustment range of the HSW00901 series up to 60Vdc. If the DC voltage is ok the relay is closed. If the power supply unit is in false operation the relay is open. The power good relay is available for all the models except HSW00901.72T and HSW00901.140T.



## Parallel Operation & Decoupling

To increase the overall power of the power supply, two or more devices of the same model with the same output voltage may be operated in parallel. To avoid any issues, make sure the cable lengths and cable cross-sections of all power supplies to the star point are identical.

The HSW00901 models have no internal O-ring diode for decoupling N+1 units.

## Connections

### AC Main Input

- 1 = L - wire
- 2 = N - wire
- 3 = PE - wire

### DC Mains

- 1 = DC +
- 2 = DC +
- 3 = DC -
- 4 = DC -

### Outputs

- 5 = DC-ok power good relay
- 6 = DC-ok power good relay
- (not available for 72Vdc and 140Vdc models)

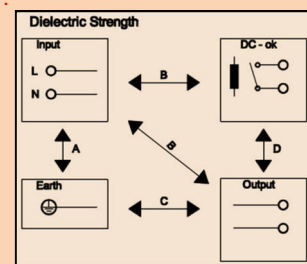
## Safety Test

Type Test	T	A	B	C <sup>1)</sup>	D
Type Test	60s	2500Vac	3000Vac	500Vdc	3000Vac
Factory Test	5s	2000Vac	2000Vac	500Vdc	2000Vac
Field Test	2s	2000Vac	2000Vac	500Vdc	2000Vac

<sup>1)</sup> ≥60Vdc = 2400Vdc

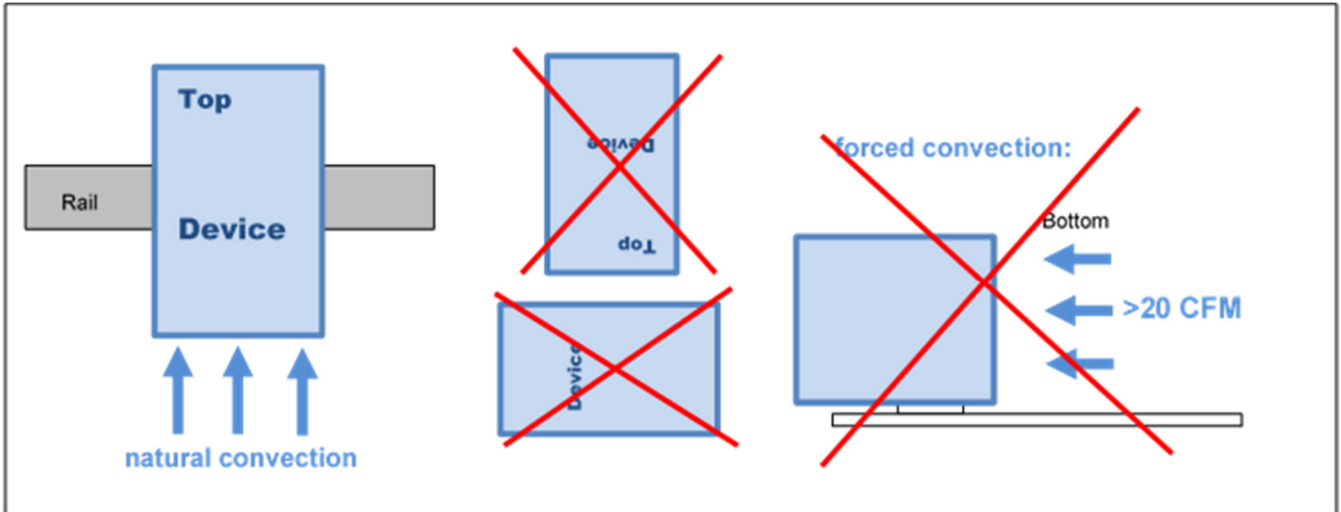
Type test and factory tests are conducted by the manufacturer. Do not repeat the test in field. Field test rules:

- a) Use appropriate test equipment which apply the voltage with a slow ramp
- b) Connect L1 and N together, as well as all output poles
- c) Use only AC test-voltages with 50/60Hz. The output voltage is floating and has no ohmic reference to ground.
- d) If testing output voltages are ≥60Vdc remain to security directives. Use only isolated screw drivers to adjust output voltages.

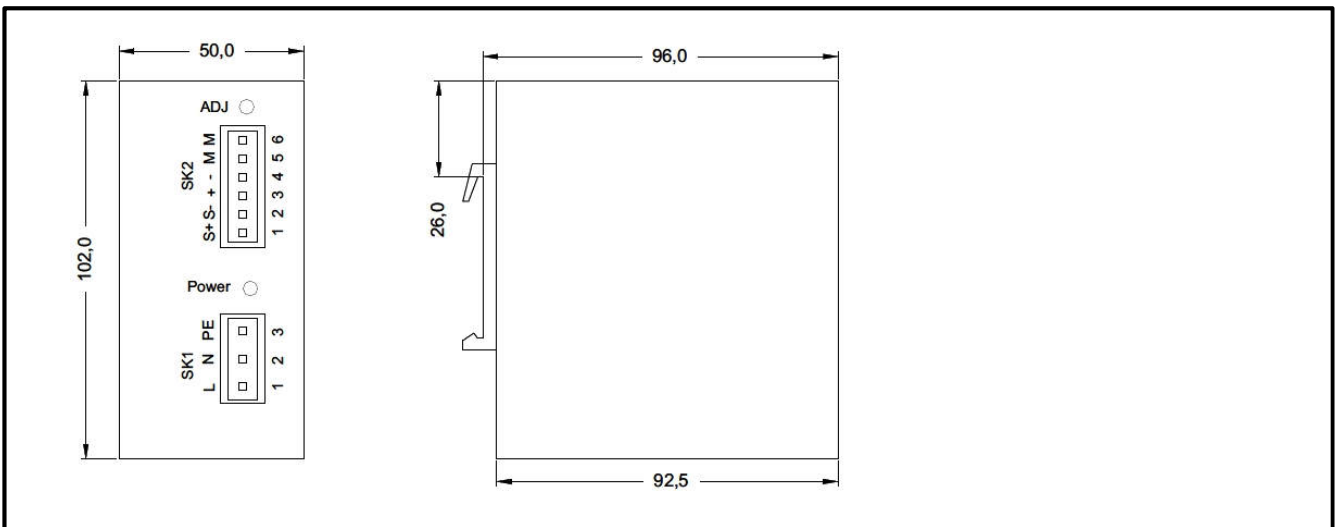


## Mechanics & Installation Instruction of the HSW00901

Stable metal/aluminium housing IP20. To allow adequate convection, a free air space of 50mm (top/bottom) and 5mm (sidewalls) is required; and to active devices 15mm space from the sidewalls. Patented 35mm DIN-Rail bracket meet EN60275. It is easy to mount/dismount while snapping it onto the 35mm DIN-Rail - no tools necessary. Other mounting direction then shown are not evaluated from our engineering team and may need a power derating or it can cause a derating of the product life time.



Mounting Instruction: recommended airflow space below and above is 50mm (2 Inch)



## Ordering Codes

Model (DIN-Rail standard)	Information	Camtec Article Number
HSW00901.24T	24V	3041034017CA
HSW00901.36T	36V	3041034018CA
HSW00901.48T	48V	3041034019CA
HSW00901.60T	60V	3041034020CA
HSW00901.72T	72V	3041034021CA
HSW00901.140T	140V	3041034099CA
Output Connector **	2pole, 10 pcs per pack, lead space 5,08mm	3520037
Input Connector **	3pole, 10 pcs per pack, lead space 7,62mm	3520038

\*\* Note that the connectors are not part of the power supply and require separate order

**Safety regulations: Please read these instructions completely before using the equipment. Keep these instructions on to hand. The device may only be operated by trained specialist staff.**

**Installation:**

- 1) The device is designed for devices and systems that meet the standard requirements for hazardous voltages, power and fire prevention.
- 2.) Installation and service only by trained persons. The AC power must be switched off. The work is to be labeled; accidental reconnection of the system must be prevented.
- 3.) Opening the device, its modification, loosening bolts or operation outside the specified herein specification or in an unsuitable environment, has the immediate loss of warranty to follow. We disclaim any responsibility for any resulting damage to persons or things.
- 4.) Note: The device must not be operated without an upstream circuit breaker (CB). We recommend the use of B-Type 8A. It is prohibited to use the unit without PE. It may be necessary upstream device has a power switch.

**Warning:**

**Non-compliance can result in fire and serious injury or death.**

1. Operate the appliance without PE connection.
2. Before connecting the device to the AC network, make wires free of voltage and assure accidentally switch on.
3. Allow neat and professional cabling.
4. Never open nor try to repair the unit. Inside are dangerous voltages that can cause electrical shock hazard.
5. Avoid metal pieces or other conductive material to fall into the item
6. Do not operate the device in damp or wet conditions
7. Do not operate the unit under EX-conditions

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