

DCUPS2U4AH Uninterruptable 48V DC Power Supply

112Watt for Tele- & Data-Communication

Short Specification:

- Metal housing
- 90% efficiency
- +10°C...+40°C ambient
- Free air convection
- Galvanic insulated
- Continuous short circuit & idle proof
- Overload & low voltage protected
- Soft start & auto-recovery
- Hold up time >30ms
- Minimum load = 0A
- EMI/EMS EN61000-6-2/3, EN55022 class B
- + pole connected to GND/housing
- According to IEC(EN)60950-1
- Extended monitoring
- Thermal load protection
- AC-Fail message
- Built in high reliable Panasonic brand batteries
- Output Electrolytic Capacitors +125°C
- 2U 84WU D280mm 19" aluminium enclosure
- Input/output plugs fused against accidental remove
- Battery extension module connectable



Single-Output: 38-56Vdc/2A

Made in Germany.



Camtec Systemelektronik GmbH – Gewerbestraße 30 – DE76327 Pfinztal – Germany

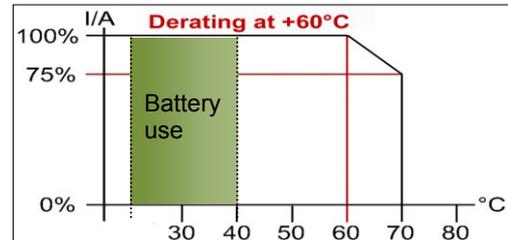
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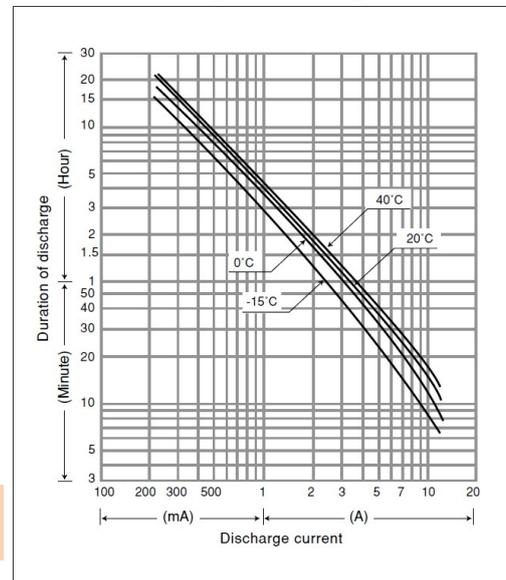
(Subject to alterations. This product is not designed to be used in applications such as life support systems wherein a failure or malfunction could result in injury or death)

AC Input (internal selection)	230Vac , 47...63Hz , 250...375Vdc
AC Input Rating	184..265Vac, 230Vac <1.1A
Rated DC Voltage	56Vdc(48V)
Low DC Voltage	38Vdc
Rated DC Current (s. graph) 40°C	2.0A
Maximum DC Current (s. graph) 40°C	3.0A
Ripple [mVpp] (230Vac available)	150 (20MHz)
Load regulation 0-100%	±0.5%

Tolerance Ua adjusted	± 1%
Transient Time	<1ms (10-100% , 100-10%)
Minimum Load	0 A
Efficiency	90% typical
Load Protection	3A , manual reset
Short Circuit Protection	Yes, auto recovery
Input Fuse	2x 4AT, N & L fused, UL-type!
Output Fuse	Thermal 3A, push to reset
Inrush Current	< 32A (230Vac)
Hold Up Time (Battery full)	4h / 1A load
Convection	Natural convection
Operation Temperature	+10°C...+40°C IEC60068-2-1
Transport Temperature	-15°C...+55°C IEC60068-2-1
Storage Temperature	+10°C...+30°C IEC60068-2-1
EMI	EN55022 class B / EN61000-3-2
EMS	EN61000-6-2,3
Safety	(IEC)EN60950-1
Safety class 1(A)	VDE0805, VDE0100
Air & Surface Leakage Paths	> 8mm
Input/output	Galvanic insulated
AC Fail Relay (galv. insulated)	≤48Vdc/500mA , ≤30Vac/500mA
DC Fail Relays (galv. insulated)	≤48Vdc/500mA , ≤30Vac/500mA (option)
Relative Humidity (+25°C)	≤95% , no condensations
Pollution Degree	2 (EN50178)
Climatic Class	3K3 (EN60721)
Dimensions (HxWxD(T))	2U 84WU D=280mm
Weight	9800g
Connector AC	C14 Schaffner IEC60320-1, L+N lines fused. Dismounting protected by a securing clip Schurter 4700.0001
Connectors DC	Phoenix 1840599 DFK-PC4/6-GF-7,62 Female. Dismounting protection with M3 threads for the mating plug.
Connector DC-Fail-Message	SUB-D 9pole female DIN41652 T1



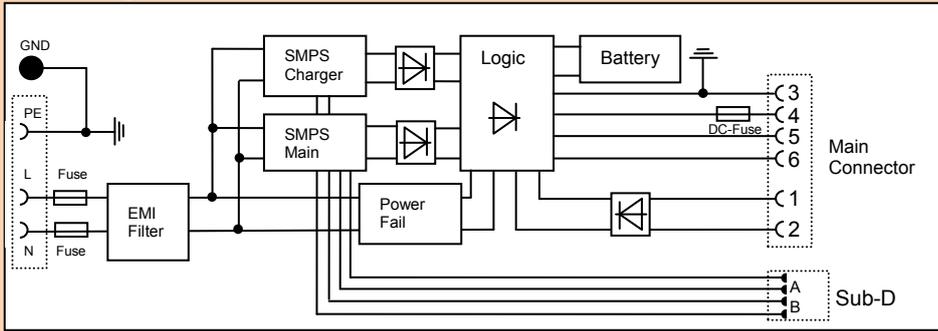
Duration of discharge vs Discharge current



Specification:

The DCUPS2U-Series is designed as an uninterruptable power supply for telecommunication and data application use. Its regulated DC of 90% makes the DCUPS2U robust, economical and reliable. Camtec power supplies are traditionally made with high-end low ESR electrolytic output capacitors with withstanding +125°C temperature. Our capacitors are rather designed over for longer lifetime and longer hold up times. The DCUPS2U is short circuit and zero load stability protected. It has a thermal overload fuse at the output to protect the connected load. It is protected against high transient and provides very good interference resistance. We use IP20 stabile aluminium housings with ventilation slots in accordance to the demanding VDE norms. The plus pole has an internal connection to ground. The AC-Line connector and the DC-Output connector has securing clip and screw fitting to avoid accidental removal of the connected cabling. The DCUPS2U has a built in AC-Fail detection and the message is available at the output connector galvanic insulated. A DC-fail-function- message for the battery charger power supply and the main power supply is optional available; each relay is floating galvanic insulated.

Block Diagram



Main connector:

- 1) Battery Extension +
- 2) Battery Extension -
- 3) Battery Out +
- 4) Battery Out -
- 5) Power Fail Message
- 6) Power Fail Message

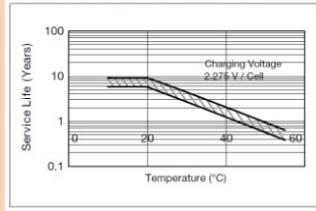
Available Options (Sub-D):

- A) DC-o.k.-monitoring for the battery charger power supply
- B) DC-o.k.-monitoring for the main power supply

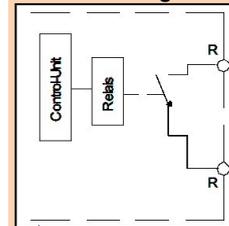
Characteristics

Capacity (25 °C)	20 hour rate 10 hour rate 5 hour rate 1 hour rate	4.5 Ah 3.9 Ah 3.5 Ah 2.8 Ah
Internal resistance	Fully charged battery (25 °C)	40 mΩ
Temperature dependency of capacity (20 hour rate)	40 °C	102 %
	25 °C	100 %
	0 °C	85 %
Self discharge (25 °C)	After 3 months	91 %
	After 12 months	66 %

Influence of Temperature on Trickle life



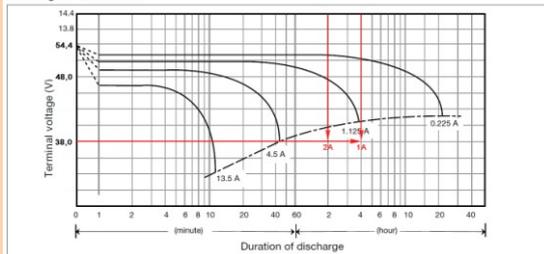
AC Fail Message



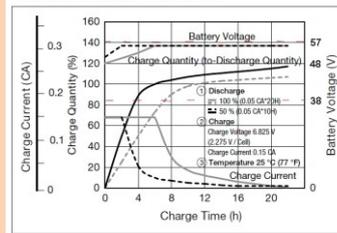
Low Voltage:

If the AC-Input drops -20% the AC-OK-Relay (R) opens (control message). The green DC-OK LED is off.

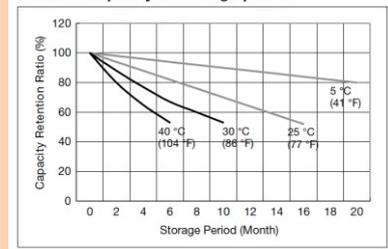
Discharge characteristics



Constant-voltage and constant-current charge characteristics for Trickle use



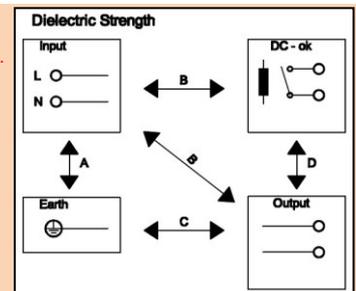
Residual capacity vs storage period



Test	Time	A	B	C	D
Type Test	60s	2500Vac	3000Vac	500Vdc	500Vdc
Factory Test	5s	2000Vac	2000Vac	500Vdc	500Vdc
Field Test	2s	2000Vac	2000Vac	500Vdc	500Vdc

Type test and factory tests are conducted by the manufacturer. Do not repeat the test in the 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 voltages is floating and has no ohmic reference to ground.
- d) If testing output voltages are $\geq 60Vdc$ remain to security directives. Use only isolated screw drivers to adjust output voltages.



Function Table and Messages

Indicators	AC-Line o.k. green LED	AC-Fail Relay Contact	Battery o.k. LED green	Battery Low LED red	Battery Charge LED yellow	Piezo Sound Interval 30s	Battery Extension LED green	*) DC-o.k. Relay 1 (Charger)	*) DC-o.k. Relay 2 (Main AC-power)
Normal operation	On	Closed (C)	On	Off	Off	Off	On (if connected)	Open	Open
AC-Main line fail at 184Vac	Off	Open (O)	On	Off	Off	On	On (if connected)	Closed	Closed
Battery Low Voltage $\alpha < 38Vdc$	On/ Off (AC-fail)	C/O (AC-fail)	Off	On	On/ Off (AC-fail)	Off/ On (AC-fail)	On (if connected)	Open/ Closed (AC-fail)	Open / Closed (AC-fail)
Battery 38Vdc $< \alpha < 52Vdc$	On/ Off (AC-fail)	C/O (AC-fail)	Off/ On (AC-fail)	Off	On/ Off (AC-fail)	Off/ On(AC-fail)	On (if connected)	Open/ Closed (AC-fail)	Open/ Closed (AC-fail)
Battery o.k. $> 52Vdc$	On/ Off (AC-fail)	C/O (AC-fail)	On	Off	Off	On/Off (AC-fail)	On (if connected)	Open/ Closed (AC-fail)	Open/ Closed (AC-fail)
Charger Power Supply disable	On	Open	Off (<90%)	On (<70%)	Off !	Off	On (if connected)	Closed	Open
Main Power Supply disable	On	Open	Off (<90%)	On (<70%)	Off !	Off	On (if connected)	Open	Closed

Terminal Connects:	1 = Battery Extension Input + 2 = Battery Extension Input - 3 = DC + (connected to GND/Housing) 4 = DC - 5 = AC-Line Fail Relay 6 = AC-Line Fail Relay	SK1	1 = L 2 = N 3 = GND+/ PE	SK2		SK3	A = Charger o.k. Relay A = Charger o.k. Relay B = AC Main Line Power o.k. Relay B = AC Main Line Power o.k. Relay	GND-Screw (external) Is the PE-connection to the housing. Note that the +pole is internal connected to GND, too
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Battery Management Switch:

We advise the battery management to be switched into the off-position for shipping, storing or for service operations (battery change!). If the switch is not in the off-position, the batteries can be damaged while being total discharged! The piezo warning sound of AC-main failure and the DC-battery backup connection is disabled while the switch is put into the off-position. To enable the battery backup and all warnings, make sure that the battery management is put into the on-position (normal operation mode).

Order Codes:

DCUPS2U4AH.56 for 48Vdc(56,0Vdc/4Ah/1A) , ad .DF for the DC-Fail-Monitoring-option to the order code, sample: DCUPS2U4AH.56.DF

Available Component Parts:

AC-line cable L=2m H05VV1,5 with isolated ground receptacle CEE7/7 IEC60083 and connector C13 IEC60320-1 Schurter 4782, Order Code: 3061060001CA

DC-line connector AWG10...24/0,2...44mm² with housing, 45° wiring outlet, and M3 screw fittings, Order Code: 3061051001CA

Monitor line cable with two metal Sub-D 9pole 1:1 with kurlid screws, 35° wiring outlet, L=3m Lappkabel LiYY0.5 DIN47100, Order Code: 3061052001CA

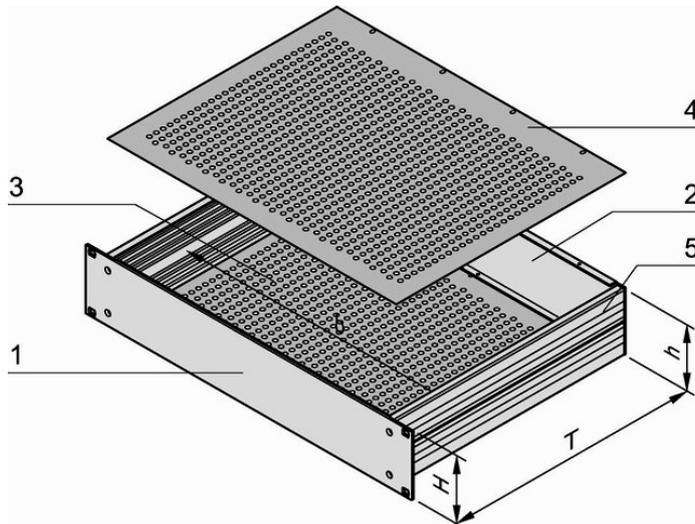
Attention: always use C13 connector Schurter 4782 to enable securing clips to fit to the AC-line cabling, other C13-connectors may not fit

Mechanics & Installation:

Stable aluminium housing IP20 to allow adequate convection, a free air space of 1U (top/bottom) and 5mm (sidewalls) is required for the DCUPS2U; for active devices 15mm space from its sidewalls. For free air convection it is necessary to install the DCUPS2U horizontal

Battery type for service replacement:

To guarantee safe function it is advised to use the same battery type as the installed one, to DC-UPS. The battery type is the Panasonic LC-R124R5P 12V 4,5Ah . We recommend the batteries to change after 2 years cycle operation to prevent malfunctions.



H= 2U = 88,1mm

B= 84WU(TE) = 426,4mm

T= 280mm

We use a very robust full aluminium housing with stable aluminium handholds, drawn side frames and a 2,5mm aluminium anodized front plate.

Safety Instructions: Please read all warnings and advices carefully before installing or operating the DCUPS2U. Retain this operation manual always ready to hand. The DCUPS2U must be installed by specialist staff only.

Installation:

- 1.) The DCUPS2U 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 DCUPS2U, making any modifications to it, dismantling any screws from it, operating the DCUPS2U out of specification and/or using it in appropriate area will inevitably result in loosing manufactureres guarantee; we decline taking any responsibility for risk of damages caused to someones health or to any installed system.
- 4.) Attention: The DCUPS2U has input fuses for the L and the N line. Replace the fuses only with the same type; we recommend to use the same manufacturer. The fuses must be UL-certified switch type. It is also necessary to wire an automatic circuit braker to the line. We suggest to use a 16A-type with B-characteristic. It is verboten to operate the DCUPS2U without protective earth wired.
- 5.) It is recommended to replace the internal batteries by the same valve regulated lead-acid battery type with Faston 197 connectors: Panasonic LC-R124R5P. For replacing the battery please consult your service provider or send the DCUPS2U to the manufacturer.
- 6.) After lifetime batteries has to be given to a cetified recycle company.

Warnings:

Disregard these warnings can cause fire, electric shock, serious accident and death.

1. Never operate the DCUPS2U without Protective Earth Conductor
2. Before connecting the DCUPS2U to the AC wire system make all wires free of voltage and assure accidentally switch on
3. Allow neat and professional cabling
4. Never open nor try to repair the DCUPS2U by yourself. Inside are dangerous voltages that can cause electric shock hazard.
5. Avoid metal pieces or other conductive material to fall into the DCUPS2U
6. Do not operate the DCUPS2U under damp or wet conditions
7. It is verboten to operate the DCUPS2U under Ex conditions or in Ex-Area

