AP246
2 Outputs
19" Power Supply, 60 Watt

- High efficiency: 84%
- ACin wide range: 85...265V AC
  DCin wide range: 95...300V DC
- 8 HP plug in width
- H15 standard pinout
- Full power rail sharing
- Meets EMC standards
  EN 55022 class B, EN 61000-6-2
  EN 61000-4-X, VDE 0160/2 and NAMUR

Power Supply AP246

This dual-output power supply uses a two-step wide-range converter. It works over a wide range (100 - 240V AC) without any switch over.

Hold-up time is up to 250ms at 230V AC. Load distribution is flexible; there is no minimum load and the full power of 60W can be delivers from any one output.

EMC compatibility is a major feature. It has low spurious noise, and noise suppression meets EN 55022 class B. Noise immunity meets and VDE 0106 class 2, even at full load.

Over-voltage and over-temperature protection avoid problems even in extreme working environments.

Vout [DC]  |  lout a/b | Pout   | Features                  | Order-No.
----------|----------|-------|---------------------------|----------
Vout1      | +12V     | 3A / 5A | 60W                       | Wide input range, OTP,  AP246.111
           | -12V     | 3A / 5A | 60W                       | OVP      |
Max. tota power: 60W
Vout2      | +15V     | 2.5A / 4A | 60W                       | Wide input range, OTP,  AP246.122
           | -15V     | 2.5A / 4A | 60W                       | OVP, readjusted |
Max. tota power: 60W

"F" appended to Order No. means front panel 8 HP included and fitted.
* lout a: Current range with increased accuracy.
* lout b: maximum output current.

Accessories:
H15 connector, 0.5mm² test contacts: ZP 100
H15 connector with soldering pins: ZP 120

Warranty: 2 years from date of delivery.

Output
- Sum voltage: Vout1+2
- Accuracy: Vout1 max. ± 0.5%, Vout2 max. ± 0.5%
- Sense lines: None
- Minimum load: None
- Output power Pout: max. 60W
  Pout1.2: max. 60W
- Noise, Ripple: max. 3.5/4.0mAmp
  incl. spikes: max. 4.5/6.0mAmp
- Over-voltage protection: typ. 1.15 x Vout
- Rating: 1.5W/K
- Operating temperature: 1 green LED
- Isolation: Vout to Vin SELV
- EN 60 950, VDE 0805. All outputs are protected against open-circuit, short-circuit, and overload.

Input
- Line input /C
  - Range: 100...240V AC
  - 85...265V AC
- Line input DC: 275V DC
  - 95...300V DC
- Line frequency: 47...63Hz
  - @ 85V AC
- Input current rms: max. 1.5A
- Noise suppression: EN 55.022/B
  - DC or 400Hz, see page 2.
  - 10kHz...30MHz, conducted.

Specifications are valid at 230V AC, unless otherwise stated. They are subject to change without prior notice.

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Output (continued)

Voltage regulation
- Line regulation max. % ± 0.1
- Load regulation stat. Δ Ustat max. % ± 2.5 / 3.5 ± 0.3 / 0.4
- Load regulation dyn. Δ Udyn max. % ± 1 / 1 ± 1 / 1.5
- Response time ts max. ms 3
- Temperature coefficient typ. % / K ± 0.01
- Ripple max. mVpp 5 / 8 3.5 / 4
- incl. spikes max. mVpp 6 / 10 4.5 / 6

Current limitation
- Threshold typ. W 66
- Short-circuit max. A 1.4 x Iout b
- Start delay tDelay typ. ms 400
- Vout rise up time tRise typ. ms 30
- On and off characteristic
- Power back immunity Uback max. V 1.1 x Vout
- Load capacity max. μF 2 x 5,000

AP246.111  AP246.122

± 0.1  ± 0.1
± 2.5 / 3.5 ± 0.3 / 0.4
± 1 / 1 ± 1 / 1.5
3 3
± 0.01 ± 0.01
5 / 8 3.5 / 4
6 / 10 4.5 / 6
85...265V AC, Iout = 100%.
lout1 full load...lout2 full load and reverse, Iout a/b,
for other power rail sharing see graph on page 3.
10%...90%...10% load change, Iout a/b,
rise time dt = typ. 20μs.
Till ΔVout is within ≈ 0.5% of final value.

Input (continued)

AC input range V AC 85...265 95...300
DC input range V DC 75...85, 300 for 0.5s
Derated AC range V AC 300...370
Derated DC range V DC 47...63 63...400
Frequency range Hz
Derated frequency range Hz
In-rush current max. A 20
Hold-up time min. ms 250
min. ms 40
min. ms 25
Power factor λ typ. 0.65
Internal fuse
Input range selection

85...265 Full spec.
95...300 Full spec.
75...85, 300 for 0.5s Full spec.
300...370 Full spec.
47...63 Increased leakage currents.
63...400 Wait min. 30s before switching on again (cold-start).
In-rush current max. A 20
Hold-up time min. ms 250
min. ms 40
min. ms 25
Power factor λ typ. 0.65
Internal fuse
Input range selection

Electromagnetic Compatibility

Emissions
- Radio interference, EN 55011, EN 55022
- Electrostatic discharge ESD, EN 61000-4-2
- Radiated fields, EN 61000-4-3
- Fast transients, EN 61000-4-4
- Surge transients, EN 61000-4-5
- Transient voltage, IEC 255
- NAMUR-prescription
- Transient resistance, VDE 0160 §5.3.1.1.2
- Over-voltage resistance (PULS standard)

EN 61000-3-2 Harmonics, EN 61000-3-3 Flicker
Class B Conducted 10kHz...30MHz.
Class A Radiated 30MHz-1GHz
EN 61000-6-1 is also satisfied

BkV direct discharge (level 4)
15kV air discharge (level 4)
10V/m (level 3)
4kV (level 4)
2kV (level 3)
2kV (level 4) cap. coupling
4kV (isolation class 4)
2kV (isolation class 4)
5kV Satisfied
500V AC / 0.5s
50 kHz
75Ω / 1.1ms (class 2)
300V AC / 0.5s

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Protection

Unit protection
- Overload: Yes, Total-power limit.
- Short-circuit proof: Yes, Auto restart after 400ms.
- Open-circuit proof: Yes
- Over-temp. (OTP) on heatsink: typ. +100° C, Switch off.
- Reverse battery prot.: Yes
- ACin range selection: Wide range

Load protection
- Over-voltage (OVP): Yes, Switch off.
  - Threshold typ. 28.6V (Vout1+2) AP246.111.
  -typ. 34.4V (Vout1+2) AP246.122.
- Accuracy max. ±3.5%
- Restart: After line disconnection, wait time 1 min.
- Method: Switch off with self-holding.

Safety

IEC 60950-1, EN 60950-1, UL 60950-1

Electrical safety
- Test voltage (each unit) 3kV AC Primary / secondary.
- according to EN 60 950 2.5kV AC Primary / PE.
- for t = 2sec 500V AC Secondary / PE.
- Air- and leakage distance 6.4 / 8mm Primary / secondary.
- Isolation resistance min. 5MΩ VDE 0551.
- Protection class I VDE 0106 part 1, IEC 536.
- PE resistance < 0.1Ω VDE 0805.
- Protection system IP20 DIN 40050, IEC 529.
- Leakage current max. 0.1mA EN 60 950-1, VDE 0805, VDE 0160.
- Safe low voltage SELV EN 60 950-1, VDE 0100 §6, EN 60 950-1, VBG4.
- Over-voltage class II VDE 0110 part 1, IEC 664.
- Touch safety Finger test VDE 0100 §6, EN 60 950-1, VBG4.
- Penetration protection > ∅3mm e.g. screws, small parts etc.

Operation and Ambient Area

Application class: KSF DIN 40040.
- Operation temperature max. 0° ... +70°C Ta (measured at 1cm distance).
- Derating range +55° ... +70°C Derating, see diagram.
- Storage temperature typ. -20° ... +100°C Ta.
- Humidity max. 95% Non-condensing.
- Mechanical usage Vertical See page 4.
- Lateral spacing None No gap needed.
- Cooling Normal convection Don’t obstruct air flow.
- Dirt protection level max. 2 VDE 0110 part 1.
- Vibration 0.075mm IEC 68-2-6 (10...60Hz).
- Shock 11ms / 15g IEC 68-2-27 (3 shocks).
- Operation Height max. 2,000m Above sea level.

Efficiency and Power Loss

AP246.111 and .211 typ. 84% / 11.4W @ 230V ACin, Iout = 100%.

Reliability and Lifetime

MTBF according to Siemens standard SN29500 typ. 310,000h 230VAC, Iout = 100%, +40°C Ta.
- Only long life (>2,000h @ 105° C) electrolytic capacitors are used.
- Function test 100% Test certificate enclosed.
- In-circuit test Yes
- Run-in (burn-in) 24h Full load, Ta = +55° C, on/off cycle.

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This technical information is valid for +25° C ambient temperature and 5 minutes run in time, unless otherwise stated.
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Fuse
The PSU has electronic protection against external short-circuits. In case of an internal defect, a fuse disconnects the unit. It can only be replaced by opening the unit which should be done by the supplier.

Installation for Operating
The unit is constructed for 19" systems:
Ensure that pin 4 of H15 connector is on top. For other installation considerations consult your representative. Ensure free air flow!

Dimensions and Connections

19" board, with Al/Mg alloy cover on component side, and a plastic cover on the bottom side. 8HP plug in width. See figure below for dimensions.

Caution:
Do not remove any screws on box, as internal safety connections could be disconnected!

H15 pinout (DIN 41312)
NC = No Connection - Do not use!

Schematic

Accessories

AP246.111 also readjusted.
Lower cost versions.

Installation set for mounting on DIN rail.

With PF-Signal.
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