



PSE100-series DC/DC 100 W

Input / Output

- Wide input voltage ranges.
- Input ranges from 10 to 270 Vd.c.
- Single outputs from 5 to 48 Vd.c.
- Low ripple and noise.
- Reverse input voltage protection.

Operation

- High efficiency.
- Operating temperature range -25 to +70 °C.
- Fully encapsulated, meets IP20 as standard.
- Convection cooled.
- Low voltage alarm, with logic signal.
- Input overvoltage switch-off.

Features

- Conformally coating, tropic.
- Under voltage logic alarm.
- Accesible on front panel:
 - Output voltage adjustment.
 - Output voltage measurement.
 - Output OK status green LED.

EMC

- EN/IEC 61000-6-3, Emission.
- EN/IEC 61000-6-2, Immunity.
- EN/IEC 61000-4-4, 4 kV.
- EN/IEC 61000-4-5 level 2 & 3.
- Both input and output.

Input and output ratings

| Nominal inputs | Input range | Code |
|--------------------------|-------------|------|
| 12, 24 Vd.c. | 10 - 30 V | A |
| 24, 28, 36, 48, 60 Vd.c. | 20 - 72 V | B |
| 110, 127 Vd.c. | 50 - 150 V | C |
| 110, 127, 220 Vd.c. | 90 - 270 V | D |

Other input and outputs combination on demand.

Within the range we guarantee full output performance,
 $U_{out} +10\%$ $I_{out} +5\%$

Input voltages meeting train standard
 EN 50155/IEC 60571, can be made on demand.
 For 36 V use standrad B-input range.
 For 110 V use standard C-input range.

| Output | | |
|---------|---------|-------|
| Voltage | Current | Power |
| 5 V | 20.0 A | 100 W |
| 13.2 V | 7.6 A | 100 W |
| 15 V | 6.7 A | 100 W |
| 24 V | 4.2 A | 100 W |
| 48 V | 2.1 A | 100 W |

Other input and outputs combination on demand.

Output ratings and type code

| Output | | | Input | | | |
|---------|---------------------|-------|-------------|-------------|-------------|-------------|
| Voltage | Current | Power | 10 - 30 V | 20 - 72 V | 50 - 150 V | 90 - 270 V |
| 5 V | 20.0 A ¹ | 100 W | PSE100A5 | PSE100B5 | PSE100C5 | PSE100D5 |
| 13.2 V | 7.60 A | 100 W | PSE100A13.2 | PSE100B13.2 | PSE100C13.2 | PSE100D13.2 |
| 15 V | 6.70 A | 100 W | PSE100A15 | PSE100B15 | PSE100C15 | PSE100D15 |
| 24 V | 4.20 A | 100 W | PSE100A24 | PSE100B24 | PSE100C24 | PSE100D24 |
| 48 V | 2.10 A | 100 W | PSE100A48 | PSE100B48 | PSE100C48 | PSE100D48 |

How to read our product code:

Example **PSE100A24**

PSE100 = Family code

A = Input voltage code

24 = Output voltage 24 V

¹⁾ -25 to +55 °C 100 % load, 70 °C at 75 % load. With extra cooler the rating is 100 % @ +70 °C, see option T3 and mechanical drawing figure 5.

Features

Conformal coating

PSE100 is conformal coated to withstand noncondensing tropical environment Rh 95 %.

Under voltage logic alarm

On DC-inputs a built in logic alarm changes to alarm state if the converter voltage drops below -10 % of nominal output. The alarm circuit also controls the DC OK LED.

The DC OK or POWER GOOD signal is logic 1.

The drive voltage is 8 to 10 V, 5 mA = logic 1.

See also figure 1 & 3.

Over Voltage Limit OVL

A second regulation circuit takes over in case the main regulation fails. The output voltage is limited to approximately +15 % over nominal output voltage.

Over Voltage Limit Input OVLIN

The unit switch-off in case of an over voltage on the input. This circuit protects the semiconductors for failures due to over voltage.

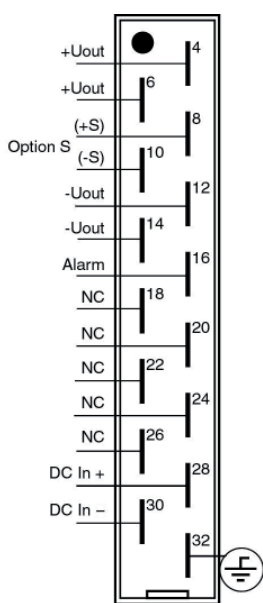


Figure 1. Pin-out DIN 41612, H15

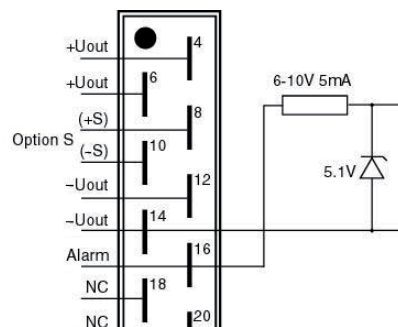


Figure 2. 5 V logic alarm signal

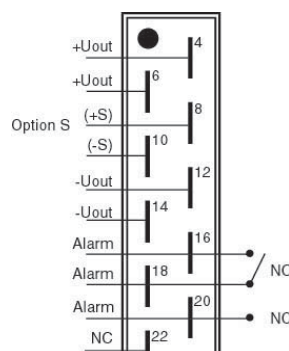


Figure 3. Alarm relay output Option B

Optional Features

Over voltage protection OVP, option A

The output voltage is limited to 15 % over nominal output voltage. A thyristor short-circuits the output.

Under voltage alarm with relay, option B

The logic alarm output is replaced with a relay with selectable alarm logic NO or NC.

Alarm = No input or low output <-10 % of nominal output, see figure 3.

The relay is rated 30 V 0.5 A (a.c. & d.c.).

Built in series diode, option C (Derating 20 %)

A series diode on the output, which is mounted inside the case. Use this option when output is connected in parallel with other power supplies to achieve redundancy. The output power might be derated. It is model dependent, contact factory.

Built in series diode with resistor, option CR

With a series resistor the output can be parallel connected with 2 or more units which passively balance the load between the units.

Remote sense, option S

The voltage sensing can be put at the load to compensate for voltage drop. Is a standard feature on 5 V output.

Inrush current limit with NTC, option H

Only for C-input code. Reduce the inrush current during start up will be affected. Contact factory for other inputs.

Series diode on input, option K1

If hold-up time is specified a series diode on the input is needed. Depending on input voltage the unit will be derated due to the diode losses. The series diode also provides reverse voltage protection and is recommended if long distance between input fuse and unit input (3 m).

2.5 kVa.c. isolation input/case, option E1

On A and B inputs. The emission level increase to level A.

2.5 kVa.c. isolation output/case, option E2

The emission level increase to level A.

Train input

Input voltage range according to train standard EN 50155 and IEC 60571.

Extra cooler, option T3

To meet EN 50155/IEC 60571 specified T3 ambient temperature demand +85 °C during 10 minutes.

The unit is then 10TE wide as a slide in unit. With option N, wall/chassi mount, the unit will be 52 mm high.

General data / input data

| | |
|---|------------------------|
| Design topology | Push-Pull |
| Switching frequency | 100 kHz |
| Emission / Immunity | See page 4 |
| Safety EN/IEC 60950 | Class I |
| Max accepted input ripple ¹ 50 - 400 Hz | 2 % of nominal voltage |
| Power consumption at no load | 3 to 5 W |
| Reverse input voltage protection | Parallel diode |
| Inrush current limit with NTC | D input code |
| Isolation | See table page 4 |
| Vibration EN/IEC 61373 | Body mounted class B |
| Dimension (D x W x H) mm | 167 x 36.3 x 106 |
| Weight | 0.80 - 1.15 kg |

1. Higher ripple affects the input, contact factory

Mechanical Options

Front panel for Euroformat

8TE Euro panel, option L, see figure 6

10TE with extra cooler, option T3

Wall mounting panels, option N,

see figure 7 and 8.

Including connector holder.

H15 Screw type female -H15-S.

H15 FastOn 6.3 mm female -H15-T.

DIN rail TS35 clips -Q, see figure 8

Mechanical drawing

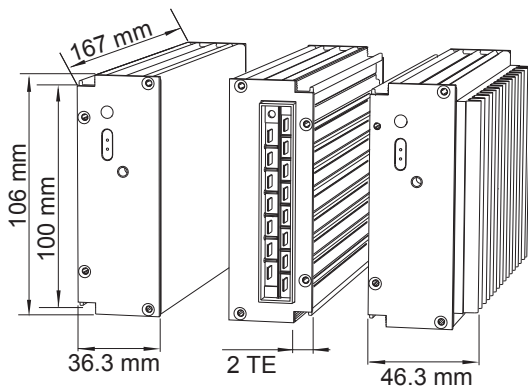
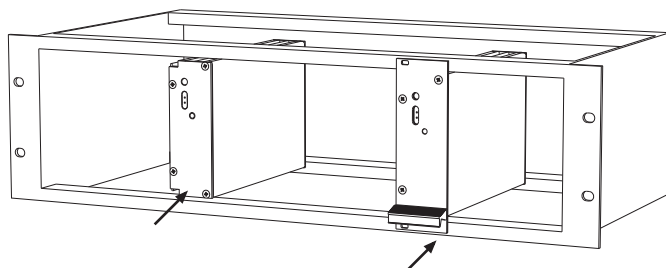


Figure 4. Dimensions.
Weight: 0.80 kg.

Figure 5. Optional extra cooler
version. Weight: 1.00 kg



PSE mounted in a 19" Sub-rack. Standard unit.

PSE mounted in a 19" Sub-rack with L panel
8TE & 10TE (Optional)

Figure 6. 3HE 19" sub rack mounting.

Output data

| | |
|--|-----------------------------|
| Source regulation | 0.2 % |
| Load regulation (0 to 100% load) | 0.2 % |
| Transient recovery time of 10 to 100% voltage deviation | <3 ms |
| Output ripple (100kHz) ² | Typ. 10 mV p-p ² |
| Input ripple attenuation on output 50 to 400 Hz | 150:1 |
| Emission / Immunity | See page 4 |
| Temperature coefficient | 0.02 %/°C |
| Min output adjustment range adjustable with a 15 turn potentiometer | 90 - 110 % |
| Current limit, rectangular | 105 % |
| Remote sense | Option S |
| Soft start | Yes |
| Start-up time | <1 s |
| Reverse voltage protection on output | Parallel diode |
| Hold-up time, see option K1 & contact factory | 2 - 10 ms |
| Efficiency ³ | 80 - 88 % |
| Operating temperature range at 100 % load, conduction cooling with outputs >10 V | -25 to +70 °C |
| At 100 % load forced air cooling | -25 to +85 °C |
| Optional | -40 °C |
| Storage temperature range | -40 to +85 °C |

- Output ripple might increase to 0.5 % RMS of V_{out} , when EN/IEC 61000-4-3, 10 V/m test is applied
- Lowest efficiency measured within the whole input voltage range at 100 % load.

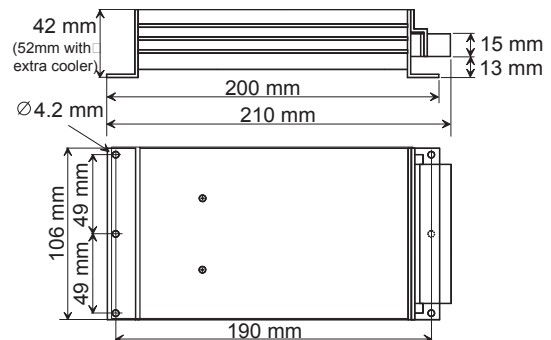


Figure 7. Dimensions with option N, wall mounting
Weight: 0.95 kg and with extra cooler 1.15 kg.

PSE wall mounted.

Using PSE wall mounting kit, option N, with connector holder, female H15 connector with screw or tab connectors (Optional).

PSE DIN-rail mounted.

Using PSE wall mounting kit, option N with addition of 2x DIN-rail clips, (Optional)

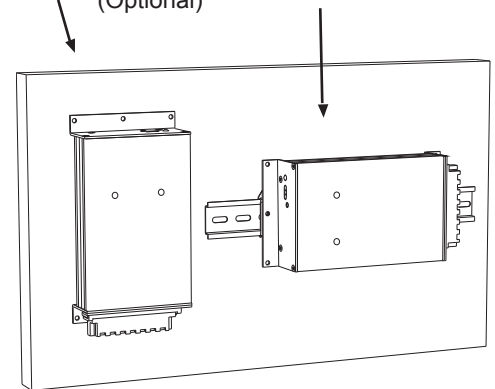


Figure 8. Wall mounting
Option -N.

Safety and EMC



Safety standard EN/IEC 60950

PSE100 meets the requirements defined by CE mark as apparatus.

PSE100 meets requirements of EMC directive and low voltage directive (LVD).

Thus a PSE100 can be used as free standing unit or in installations as well as systems designed according to "The modular approach". PSE100 can be used in installation without further EMC tests, if our installation instructions are followed. Please note that product standards can demand different levels or other basic standard tests. We test according to levels below. For higher levels or other tests, contact factory.

| Isolation testable levels | Test voltage |
|--|-----------------------------------|
| Input / Output: Input code: A, B Input code: C, D | 2 kVd.c. 2.5 kVa.c. / 4 kVd.c. |
| Input / Case: Input code: A, B Input code: C, D | 2 kVd.c. 2.5 kVa.c. / 4 kVd.c. |
| Output / Case all outputs | 2 kVd.c. |
| Isolation, not testable level | Safety isolation |
| Transformer isolation In / Out | 4 kVa.c. / 8 mm |

We use the product standard Low voltage power supplies, DC outputs EN/IEC 61204-3 and the generic EMC standards:
EN/IEC 61000-6-2 (Immunity)
EN/IEC 61000-6-3 (Emission)

EMC

| EMC-standards | EMC-performance | | Remarks |
|--|---|--------------------------------|---|
| Emission standards | Input | Output | |
| EN 55011/EN 55022 (0.15-30 MHz) | Level B | Level B | |
| EN 55011/EN 55022 (30-1000 MHz) | Level B | | Enclosure test |
| Immunity standards | EN/IEC 61000-6-2 | | |
| EN/IEC 61000-4-2 | 8 kV / 15 kV | | Contact / air, Enclosure test |
| EN/IEC 61000-4-3 | 10 V/m AM-Modulated ² | | Output ripple can increase to 0.5 % of Vout, Enclosure test |
| EN/IEC 61000-4-4 | 4 kV | 4 kV | |
| EN/IEC 61000-4-5, Input code A, B EN/IEC 61000-4-5, Input code C, D | 0.5 kV / 1 kV 1 kV / 2 kV ¹ | 0.5 kV / 1 kV 0.5 kV / 1 kV | Line-line 2 Ω / Line-case 12 Ω |
| EN 50121-3-2/IEC 62236-3-2 | 1 kV / 2 kV | 1 kV / 2 kV | Line-line 42 Ω / Line-case 42 Ω |
| EN/IEC 61000-4-6 | 10 V _{RMS} | 10 V _{RMS} | AM-Modulated |
| EN/IEC 61000-4-8 | Not sensitive | | Enclosure test |
| EN/IEC 61000-4-10 | Not sensitive | | Enclosure test |

1. Higher level 2 kV / 4 kV with external filters, contact factory.
2. Level increased to 20 V/m on T-Inputs

Contact

For updates on this datasheet we refer to www.polyamp.com
Specifications subject to change without notice.



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