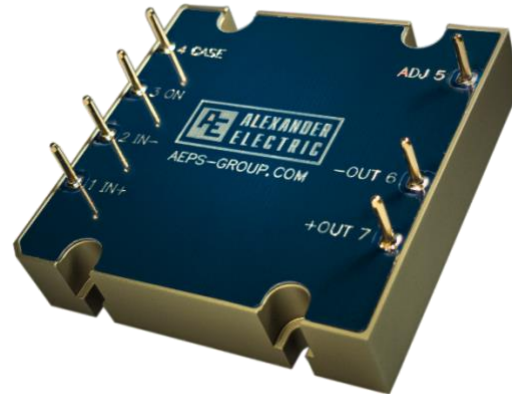


Features

- Output power up to 150 W, 60 W/inch³
- Output voltage up to 372 VDC on request
- Operating case temperature -60 ... +110 °C
- Efficiency up to 90 %
- Case dimensions: 58x56x13 (mm) – V2
- CNC milled case
- Open-type mounting holes
- Output voltage adjustment
- Remote ON/OFF
- Protection against reverse polarity (use AC inputs)
- Inputs:
 - DC HV "270" (155-400 VDC)
 - DC HV "150" (82-200 VDC)
 - AC 1ph. "115" (80-138 VAC, 113-195 VDC)
 - AC 1ph. "230" (187-264 VAC, 263-372 VDC)
 - AC 3ph. "220" (187-264 VAC, 263-372 VDC)



Description

JETDiV series of high voltage input AC/DC - DC/DC isolated converters with the open-type mounting holes meant for operation in harsh environmental conditions. The combination of electro-technical and mechanical parameters creates versatility for the series to be used in various application fields with strong vibrations and mechanical shocks: both low and high altitude in unprotected equipment compartments, in drones, in all types of transport, in supercomputers, in low and high temperature environments, digital signage equipment, in radar systems. The series is an optimal fit for any environment which requires low-profile, minimized dimensions and weight, high efficiency and wide temperature range.

Ordering information

JETDiV 150 - 270 S 60 - M - V2

1 2 3 4 5 6 7

- 1 Series name.
- 2 Nominal output power, W: default **150 W**, other output power limits may be provided on request.
- 3 Input voltage range: default **"270" 155-400 VDC**; possible to provide **"150"**, **"115"**, **"220"** and **"230"** ranges on request.
- 4 Number of output channels: **"S"** - 1 channel.
- 5 Nominal output voltage of channel.
- 6 Index of case operating temperature range: **"M"** - default **-60 ... +110 °C**; other temperature ranges possible on request.
- 7 Index of case form-factor.

| Base models (1 channel) | | | | | |
|-------------------------|---|--------------|----------------|----------------------------|---------------------------------|
| Model part number | Input voltage | Output power | Output voltage | Output current per channel | Typical efficiency at 70 % load |
| JETDiV150-270S10-M-V2 | DC HV "270" DC HV "150" AC 1ph. "115" AC 1ph. "230" AC 3ph. "220" | 150 W | 10 VDC | 15 A | 85 % |
| JETDiV150-270S12-M-V2 | | 150 W | 12 VDC | 12.5 A | 85 % |
| JETDiV150-270S15-M-V2 | | 150 W | 15 VDC | 10 A | 86 % |
| JETDiV150-270S24-M-V2 | | 150 W | 24 VDC | 6.25 A | 86 % |
| JETDiV150-270S27-M-V2 | | 150 W | 27 VDC | 5.6 A | 86 % |
| JETDiV150-270S36-M-V2 | | 150 W | 36 VDC | 4.2 A | 90 % |
| JETDiV150-270S48-M-V2 | | 150 W | 48 VDC | 3.125 A | 90 % |
| JETDiV150-270S60-M-V2 | | 150 W | 60 VDC | 2.5 A | 90 % |
| JETDiV150-270S120-M-V2 | | 150 W | 120 VDC | 1.25 A | 90 % |
| JETDiV150-270S150-M-V2 | | 150 W | 150 VDC | 1 A | 89 % |
| JETDiV150-270S200-M-V2 | | 150 W | 200 VDC | 0.75 A | 88 % |

Additional ordering information:

- 1) The units may be provided with a different range of input voltage on request, please see available ranges in our [selection guide](#).
- 2) Units with non-standard output voltage may be provided on request.
- 3) Units with non-standard output power may be provided on request.

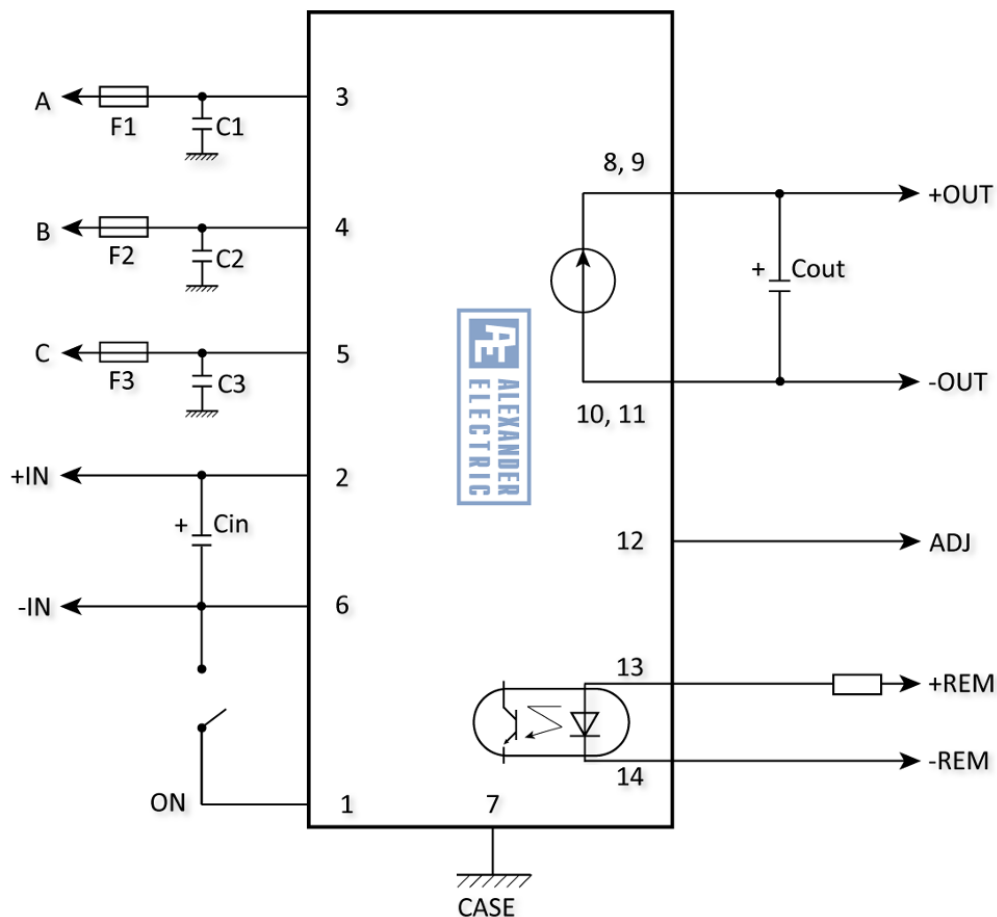
| General characteristics ³ | | |
|--|---|--|
| Switching frequency | | 200 kHz typ. (PWM modulation) |
| Temperature ranges | case operating temperature | −60 °C ... +110 °C (default "M") |
| | storage temperature | −60 °C ... +125 °C |
| Over-temperature protection | | +110° C typ. |
| Thermal mode and cooling method | cooling methods, from most preferred (for the unit to be used with a coldplate or heatsink it's necessary to consult with the producer) | 1. Conductive - heatsink-coldplate. 2. Forced air heatsink cooler. 3. Convectional heatsink cooling with vertical orientation of itself and vertical orientation of its ribs for free air flow from bottom to top. |
| Thermal resistance | case to ambient | 4,4 °C/W |
| Humidity (non-condensing) | | 5-95 % rel. H |
| Insulation | in/case | 1500 VAC |
| | in/out, in/REM | 3000 VAC |
| | out/case, out/REM, REM/case | 500 VAC |
| | out/out | 500 VDC |
| Isolating resistance @ 500 VDC | | >20 MOhm |
| Thermal shock, mechanical shock & vibration | | MIL-STD-810F |
| Safety standards | | IEC/EN 60950-1 |
| Typical MTBF | Pout = 0.7·Pout,max | 600 000 hrs (Tcase = 25° C) |
| Weight (max) | | 125 g |
| Input characteristics ³ | | |
| Input voltage range (with power derating) | "270" | 155-400 VDC, surge 450 VDC |
| | "150" | 82-200 VDC, surge 230 VDC |
| | "115" | 80-138 VAC, surge 150 VAC |
| | "230" | 187-264 VAC, 263-372 VDC, no surge |
| | "220" 3ph. | 187-264 VAC, 263-372 VDC, no surge |
| Start-up input voltage | for "270" input | typ. 140 |
| EMC standard compliance ¹ | CE MIL-STD-461F with typical connection scheme | |
| Output characteristics ³ | | |
| Output voltage adjustment | ±10 % via ADJ output (see drawing) | |
| Output voltage regulation ² | input variance Uin,min to Uin,max | ±0.5 % for load 10-100 % |
| | load variance 10 % to 100 % | ±2 % |
| Ripple and noise (peak-to-peak) | 20 MHz bandwidth | <1 % for load 10-100 % |
| Protection | over-current | auto-reset at 110-150 % of Iout,nom |
| | over-voltage | <130 % Uout |
| Capacitive load (max) | 24 VDC, 50% Pout,nom | typ. 25 000 uF |
| Remote OFF (input side) | connect ON to -IN or apply 0-0.5 VDC to ON | |
| Remote OFF (isolated) | Unit is shut down by applying 3-5VDC (2-10 mA) to +REM, -REM pins | |

1. See available filters on www.aeps-group.com.

2. -

3. All specifications are valid for normal climatic conditions, nominal output voltage and current, unless stated otherwise.

Minimal necessary connection scheme



Additional ordering information:

- 1) In the case of using 3-phase AC mains (**220** and **400**), connect 3 phase without N to terminals **A**, **B** and **C** (3, 4, 5) via Input fuses (F1, F2, F3).
- 2) In the case of using 1-phase AC mains (**115** and **230**), connect L and N wires to any pair of **A**, **B** and **C** (3, 4, 5) inputs. It is also necessary to use input fuses for the respective network.
- 3) It's recommended to experiment with values of interference class-Y capacitors (**C1**, **C2** and **C3**). Recommend value is 2000-4700 pF. In case of using 1-phase AC mains only two capacitors are used for respective L and N connections.
- 4) In case of using DC mains (**270** and **150**), input wires are connected to **+IN**, **-IN** (2, 6). If reverse polarity protection is required, connect DC mains to any pair of **A**, **B** and **C** (3, 4, 5) inputs.
- 5) It is necessary to use an external capacitor **Cin** for all mains. See the table "**Recommended input capacitors**" on the following page.
- 6) It is necessary to use an output capacitor **Cout**. See the table "**Recommended output capacitors**" on the following page.

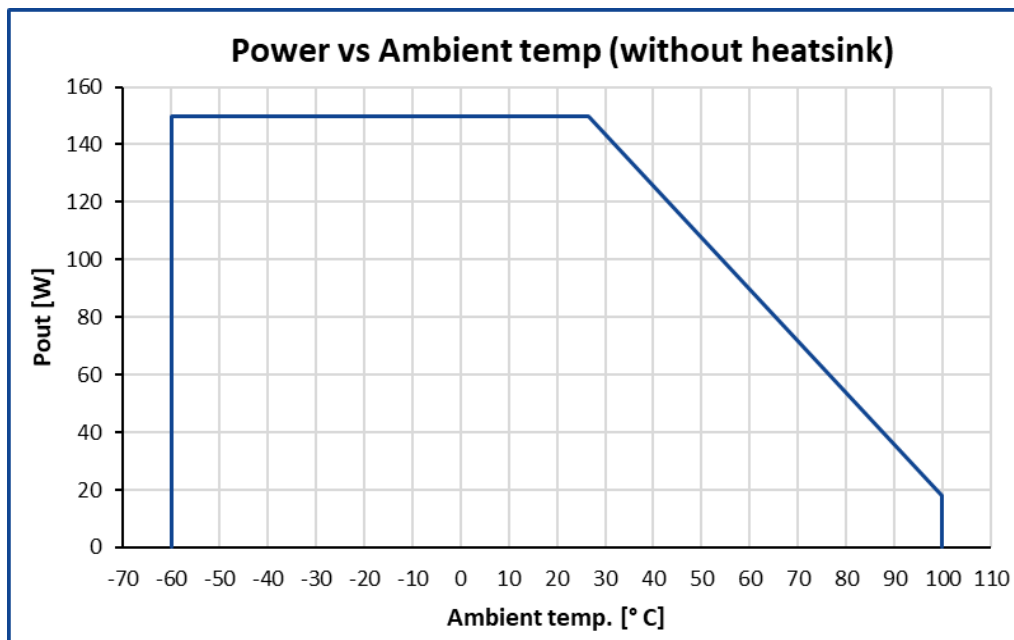
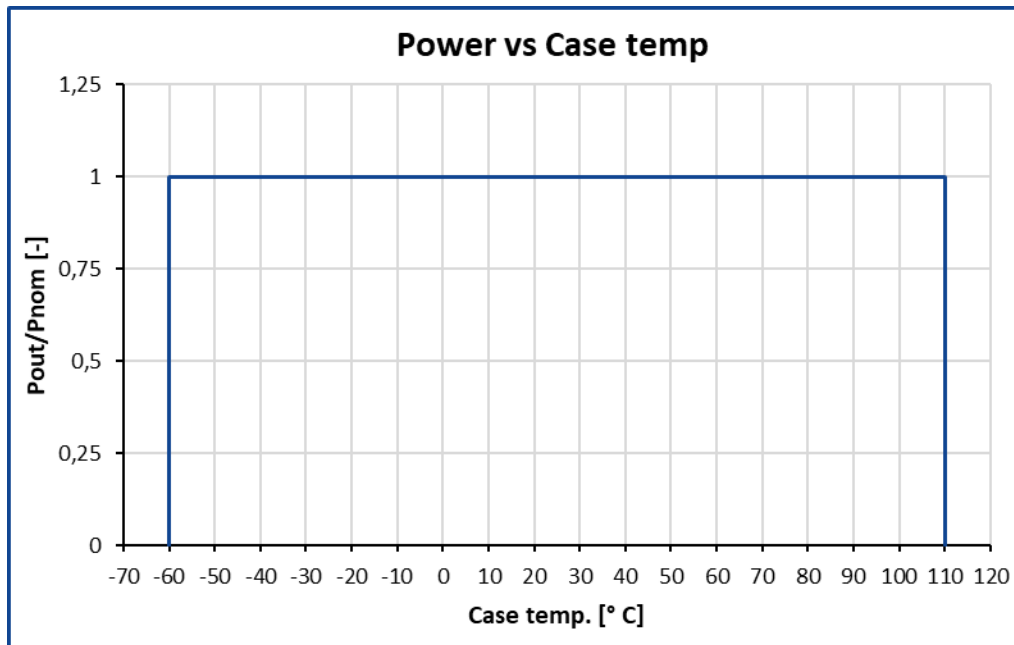
RECOMMENDED OUTPUT CAPACITORS

| V _{out} | C _{out} | | | |
|------------------|------------------|------|--------------------|------------------|
| | Capacitance | VDC | Model number | Manufacturer |
| 10V | 560μF | 16V | 860160374026 | Wurth Elektronik |
| 12V | 390μF | 16V | UPA1C391MPD1TD | NICHICON |
| 15V | 250μF | 25V | 630D104 | Vishay |
| 24V | 100μF | 35V | RL81V101MDN1KX | NICHICON |
| 27V | 82μF | 35V | ELXY350ETD820MF15D | United Chemi-Con |
| 36V | 47μF | 50V | ELXZ500ELL470MFB5D | United Chemi-Con |
| 48V | 27μF | 63V | A759EK276M1JAAE054 | KEMET |
| 60V | 18μF | 80V | A759KK186M1KAAE075 | KEMET |
| 120V | 10μF | 160V | A759KS106M2CAAE110 | KEMET |
| 150V | 3,3μF | 250V | A759KS335M2EAAE512 | KEMET |
| 200V | 2,2μF | 250V | A759KK225M2EAAE685 | KEMET |

RECOMMENDED INPUT CAPACITORS

| Inputs | C _{in} | | |
|---------------|-----------------|--------------------|------------------|
| | Rating | Model number | Manufacturer |
| DC HV "270" | DC450V/220μF | EKHF451ELL221MM45S | Nippon Chemi-Con |
| DC HV "150" | DC250V/220μF | EKXJ251ELL221MU45S | Nippon Chemi-Con |
| AC 1ph. "115" | DC250V/220μF | EKXJ251ELL221MU45S | Nippon Chemi-Con |
| AC 1ph. "230" | DC450V/220μF | EKHF451ELL221MM45S | Nippon Chemi-Con |
| AC 3ph. "220" | DC450V/220μF | EKHF451ELL221MM45S | Nippon Chemi-Con |
| AC 3ph. "400" | DC450V/220μF | EKHF451ELL221MM45S | Nippon Chemi-Con |

Power-temperature relationship



Power vs Ambient temp. graph is given for short-term use cases. To use the units without a heatsink it's mandatory to consult with the manufacturer.

Additional application information

1. Value of case temperature

The case temperature is measured at the middle of the long side of the case base. When using a thermocouple, it is necessary to attach the thermocouple conductors to the base surface at a distance of at least 20 mm from thermocouples head. **The thermocouple measuring end and its conductors must be covered with a layer of heat-conducting paste 2-3 mm thick to provide correct measurements.**

2. Possible cooling methods

- 1) Conductive cooling with aluminum (or copper) **heatsink or coldplate, with base at least 2 mm thick.**
- 2) Forced air.
- 3) Convectional heatsink cooling with vertical orientation of itself and vertical orientation of its ribs for free air flow from bottom to top.

To use the units without a heatsink it's mandatory to consult with the manufacturer.

Most of the unit's dissipated heat (93-95 %) is concentrated **on the TOP SIDE of the unit (fully metal surface)** which must be attached to the heatsink-coldplate or ribbed heatsink surface. Requirements for the heatsink surface (preferably CNC milled) - flatness tolerance of the heatsink surface must be lower than 0.1 mm per 100 mm of length.

3. Unit heatsink fixation

If 4 mounting holes are available, then first one pair of diagonally located holes is connected with screws, then a second pair. First installation of the screws should be done without force. Then all the screws should be tightened with the recommended torque.

For quality contact between the unit and a heatsink - it's necessary to use thermal conductive paste with thickness less than 0.1 mm, with thermal conductivity **greater than 2 W/K.m**. The paste must be applied with mesh stencil in a pattern of squares (i.e. 2x2 mm to 4x4 mm squares mm with 0.5-1 mm spacing between the squares). This allows paste to be evenly spread in a thin layer and excess air to escape when tightening screws during unit mounting.

4. Short-term unit operation

If it's necessary to shortly turn on the unit for 3-5 minutes (for example for input-control testing), an aluminum (copper) coldplate must be used as a heatsink. Its width and length must be not less than of the unit itself, with thickness at least 10 mm. The unit must be placed on coldplate through a thin (0.15-0.3 mm) silicone-based heat-conducting sheet.

5. Thermal protection tripping

When internal unit's thermal protection is tripped (typ. +110 °C) the unit is turned off (until automatic restart). **Such state should lead to measures of forced heatsink cooling, for example via fans turn-on.** Time before automatic restart of the unit after thermal protection tripping can last from several seconds up to several minutes depending on thermal inertia of the heatsink.

6. Operation with shorted outputs

The units have a short-circuit output protection. **The protection is for emergency only, not for long-term operation. It's prohibited to use the units with shorted outputs (the units have the special detectors inside).**

7. Reliability of in-parallel connected units system

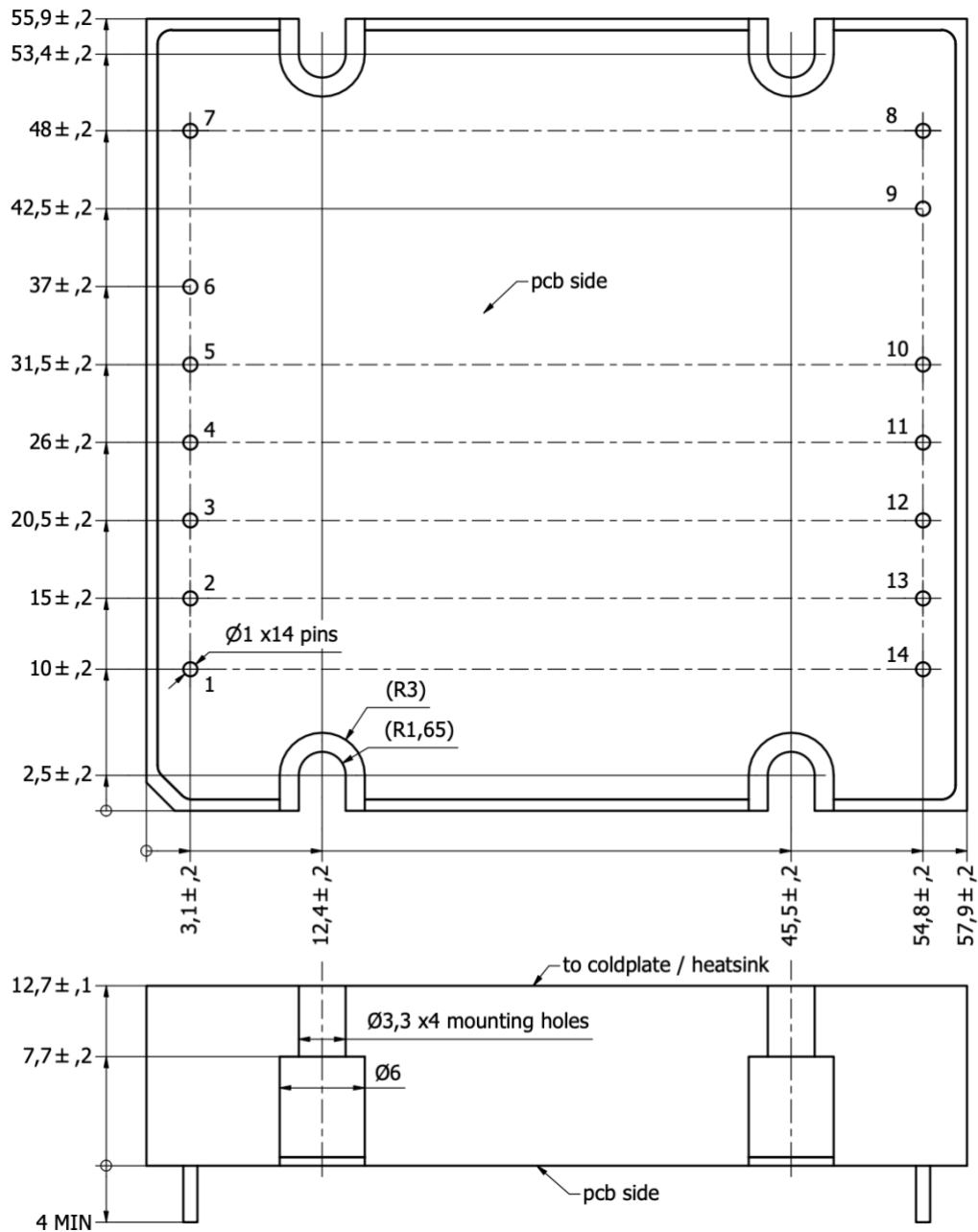
To maximize reliability of in-parallel connected units system (for case of failure of one in-parallel connected units), with minus outputs (-OUT) directly connected together - plus outputs (+OUT) should be connected through separating diodes. Usually, Schottky diodes with breakdown voltage at least twice of unit's output voltage are used for such purpose. PAR outputs of all in-parallel connected units must be directly connected together.

If you have any questions, please contact us directly at aepe@aepe-group.cz.

Dimensions - one channel

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8, 9 | 10, 11 | 12 | 13 | 14 |
|----|-----|---|---|---|-----|------|------|--------|-----|------|------|
| ON | +IN | A | B | C | -IN | CASE | +OUT | -OUT | ADJ | +REM | -REM |

Dimensions in millimeters, 4 installation holes, PCB mounting only.



Additional information

After ordering the product - the customer is fully responsible for applying the product in strict compliance with mentioned rules and principles of use in the product datasheet and reference technical material (RTM) which is downloadable at www.aeps-group.com.

Please, note that all information in this material is for reference only. Further detailed information (including: additional requirements, manuals and circuit schemes, etc.) is found at www.aeps-group.com or provided via an email request at aeps@aeps-group.cz. All pictures shown are for illustration purpose only, actual product appearance may vary, incl. inner components choice and placement and connectors placement.

According to company's policy in view of constant improvements of the production design the manufacturer reserves the right to change the contents of specifications and promotional materials without prior notice! Make sure you are using the latest documentation downloadable at www.aeps-group.com.

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