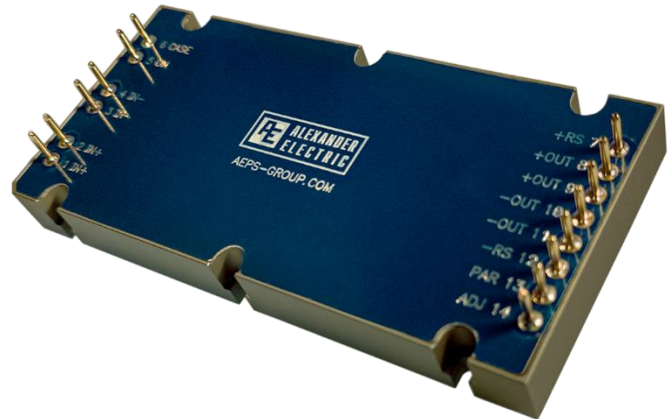


Features

- Output power up to 600 W, 82 W/inch³
- Output voltage up to 620 VDC on request
- Operating case temperature -60 ... +110 °C
- Efficiency up to 90 %
- Case dimensions: 119x63x16 (mm) – V4
- CNC milled case
- Open-type mounting holes
- 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)
 - AC 3ph. "400" (323-440 VAC, 390-620 VDC)
- Remote off
- Active parallel operation
- Output voltage adjustment



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 600 - 270 S 60 - M - V4

1 2 3 4 5 6 7

- 1 Series name.
- 2 Nominal output power, W: default **600 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"**, **"230"** and **"400"** 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
JETDiV600-270S24-M-V4	DC HV "270" DC HV "150" AC 1ph."115" AC 1ph."230" AC 3ph."220" AC 3ph."400"	360 W	24 VDC	15 A	88 %
JETDiV600-270S27-M-V4		405 W	27 VDC	15 A	90 %
JETDiV600-270S36-M-V4		540 W	36 VDC	15 A	90 %
JETDiV600-270S48-M-V4		600 W	48 VDC	12.5 A	90 %
JETDiV600-270S60-M-V4		600 W	60 VDC	10 A	90 %
JETDiV600-270S120-M-V4		600 W	120 VDC	5 A	90 %
JETDiV600-270S150-M-V4		600 W	150 VDC	4 A	90 %
JETDiV600-270S200-M-V4		600 W	200 VDC	3 A	90 %
JETDiV600-270S300-M-V4		600 W	300 VDC	2 A	89 %
JETDiV600-270S400-M-V4		600 W	400 VDC	1.5 A	88 %

Additional ordering information:

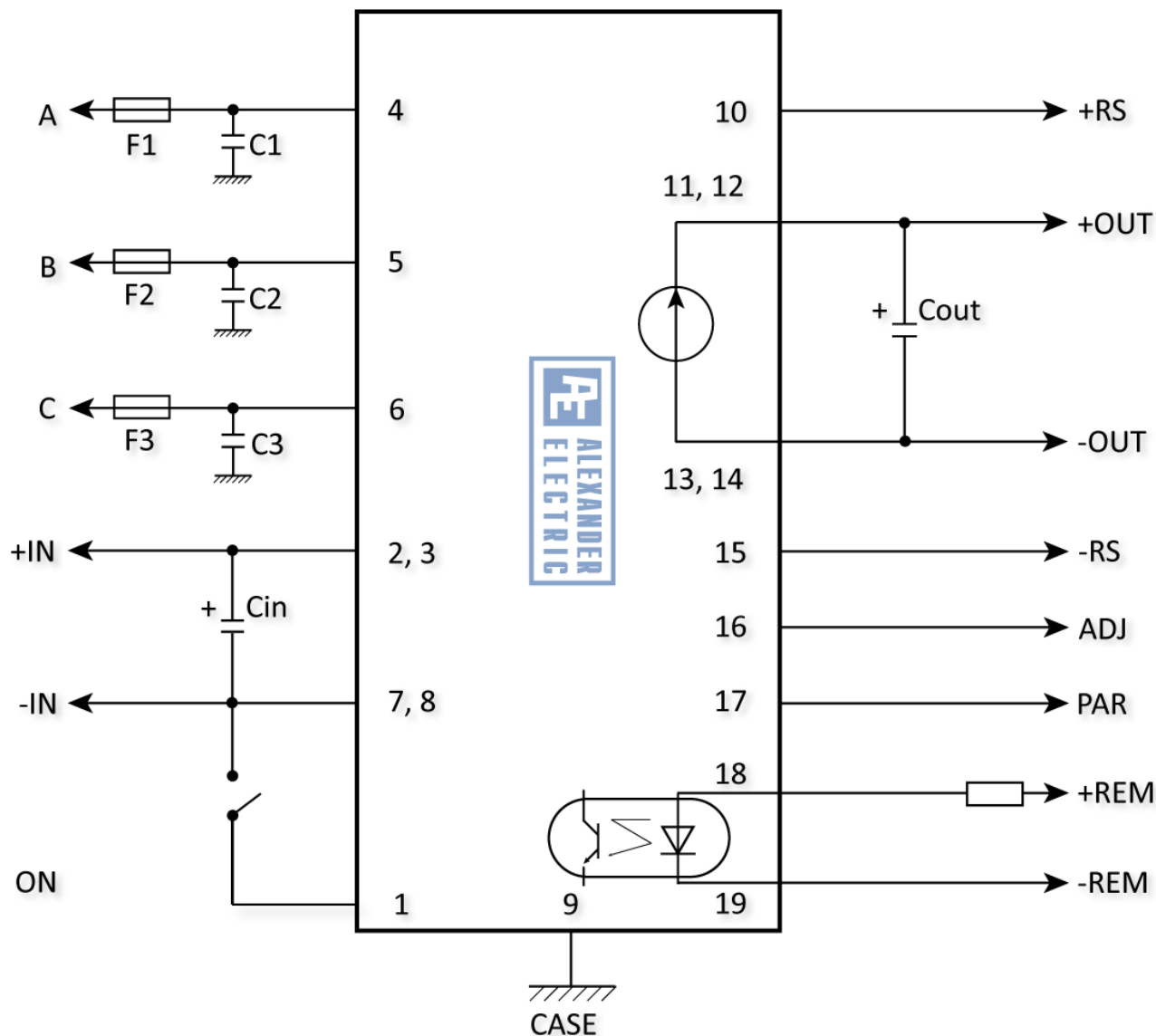
- 1) The units may be provided with a different range of input voltage on request, please see available ranges in our [selection guide](#).
- 2) Units with non-standard output voltage may be provided on request.
- 3) Units with non-standard output power may be provided on request.

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	2 °C/W
Humidity (non-condensing)		5-95 % rel. H
Insulation	in/case, in/out	1500 VDC
	out/case	1000 VDC
	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	190 000 hrs (Tcase = 50 °C)
Weight (max)		370 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, 113-195 VDC, surge 150 VAC
	"230"	187-264 VAC, 263-372 VDC, no surge
	"220" 3ph.	187-264 VAC, 263-372 VDC, no surge
	"400" 3ph.	323-440 VAC, 390-620 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	input variance U _{in,min} to U _{in,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 I _{out,nom}
	over-voltage	<130 % U _{out}
Capacitive load (max)	24 VDC, 50 % P _{out,nom}	typ. 25 000 uF
ON-OFF function	connect ON to -IN or apply 0-0.5 VDC to ON	
Remote OFF	Unit is shut down by applying 3-5VDC (≤5 mA) to "+REM", "-REM" pins	

Additional ordering information:

- 1) See available filters on www.aeps-group.com.
- 2) Thermal resistance is given for special cases of short-term operation without a convection-cooled heatsink. For such use, due to the high-power output, feel free to contact us.
- 3) All specifications are valid for normal climatic conditions, nominal input, and output voltage and current, unless stated otherwise.

Minimal necessary connection scheme



Additional ordering information:

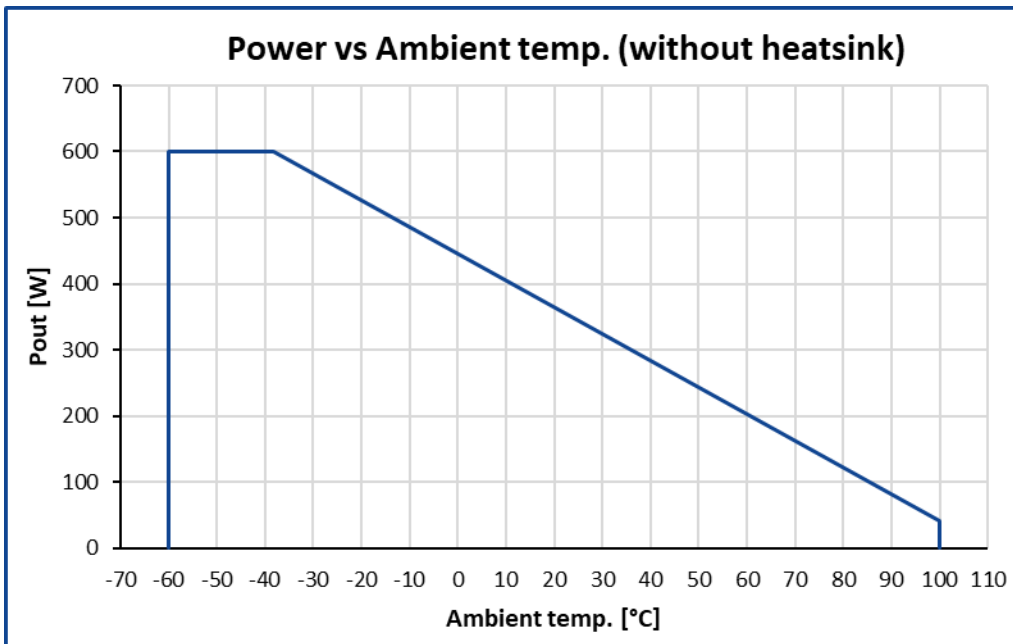
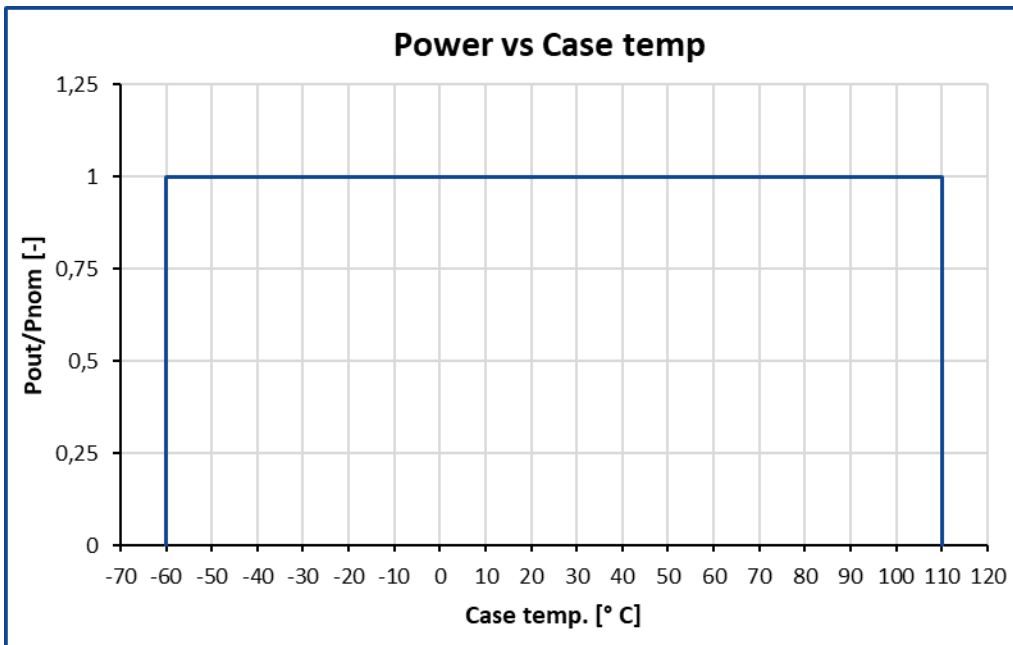
- 1) In the case of 3-phase mains (**220** and **440**), terminals **A**, **B** and **C** (4, 5, 6) are used. Input fuses for the respective mains must be used. Interference capacitors (**C1**, **C2** and **C3**) must have a value of 2000...4700pF and class Y.
- 2) In case of connection of 1-phase AC networks (**115** and **230**), any 2 pins from **A**, **B** and **C** (4, 5, 6) are used. It is also necessary to use input fuses for the respective network.
- 3) When using modules of this series with single-phase low-frequency networks (**50 Hz**), it is necessary to use an external capacitor **Cin**. Its value (**in microfarads**) must correspond to the output power of the module.
- 4) The **ON-OFF** pins are used for DC connection to turn off the module. This is done by connecting the **ON-OFF** pin to **-IN**.
- 5) The **+OUT** and **-OUT** pins are the output pins of the module. The output capacitor should be connected to them based on the table below.

RECOMMENDED CAPACITORS				
V _{out}	C _{out}			
	Capacitance	VDC	Model number	Manufacturer
24V	1000µF	35V	UBC1V102MNS1MS	NICHICON
27V	820µF	50V	UCM1H821MNJ1MS	NICHICON
36V	560µF	63V	UBX1J561MHL	NICHICON
48V	330µF	80V	UBW1K331MHD	NICHICON
60V	220µF	80V	UBW1K221MHD	NICHICON
120V	82µF	250V	A759SZ826M2EAAE150	KEMET
150V	36µF	450V	C4AQGLW5360P36K	KEMET
200V	25µF	450V	C4AQGBU5250P12K	KEMET
300V	12,5µF	450V	C4AQGBU5125P1YK	KEMET
400V	8µF	450V	C4AQGLU4800P12K	KEMET

Additional ordering information:

- 1) This list of recommended capacitors is not mandatory. You can use any manufacturer or type of capacitors according to your needs.
- 2) **Please, do not use capacitors with ratings lower than listed in the table above.**

Power-temperature relationship



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 fixate the conductors (connected to the thermocouple end) to the base surface at a distance of at least 20 mm. 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-coldplate**, for example, aluminum plate thicker than 4 mm.
- 2) Forced air.
- 3) Convectonal 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 producer.

Most of the unit's dissipated heat (93-95 %) is concentrated on the bottom surface of the unit, its base, 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.

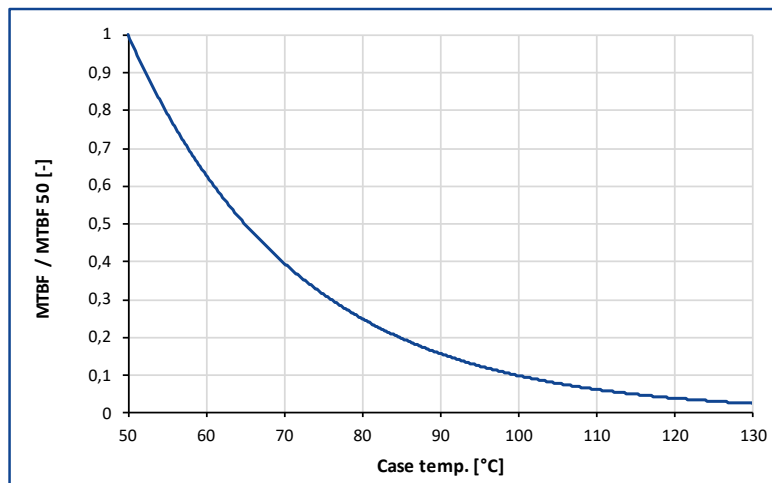
For quality contact between the unit and a heatsink - it's necessary to use thermal conductive paste with thickness less than 0.1 mm, with thermal conductivity **greater than 3 W/°C.m**. The paste must be applied with mesh stencil in a pattern of squares (i.e. 2x2 mm to 4x4 mm squares mm with 0.5-1 mm 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. MTBF dependance on case temperature

When using the unit, a customer must in one way or another monitor maximal heatsink temperature. Maximal heatsink temperature near the center point of the longer unit's side (considered as unit case temperature) must correspond to the expected unit's MTBF. Approximate MTBF function shown on the graph lower, where MTBF/MTBF 50 is unit's MTBF value at chosen unit's case operating temperature relative to value at 50 °C unit's case temperature. Maximal unit's case temperature is recorded by internal unit's thermal sensor-monitor.



6. 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.

7. 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).**

8. Reliability of in-parallel connected units system

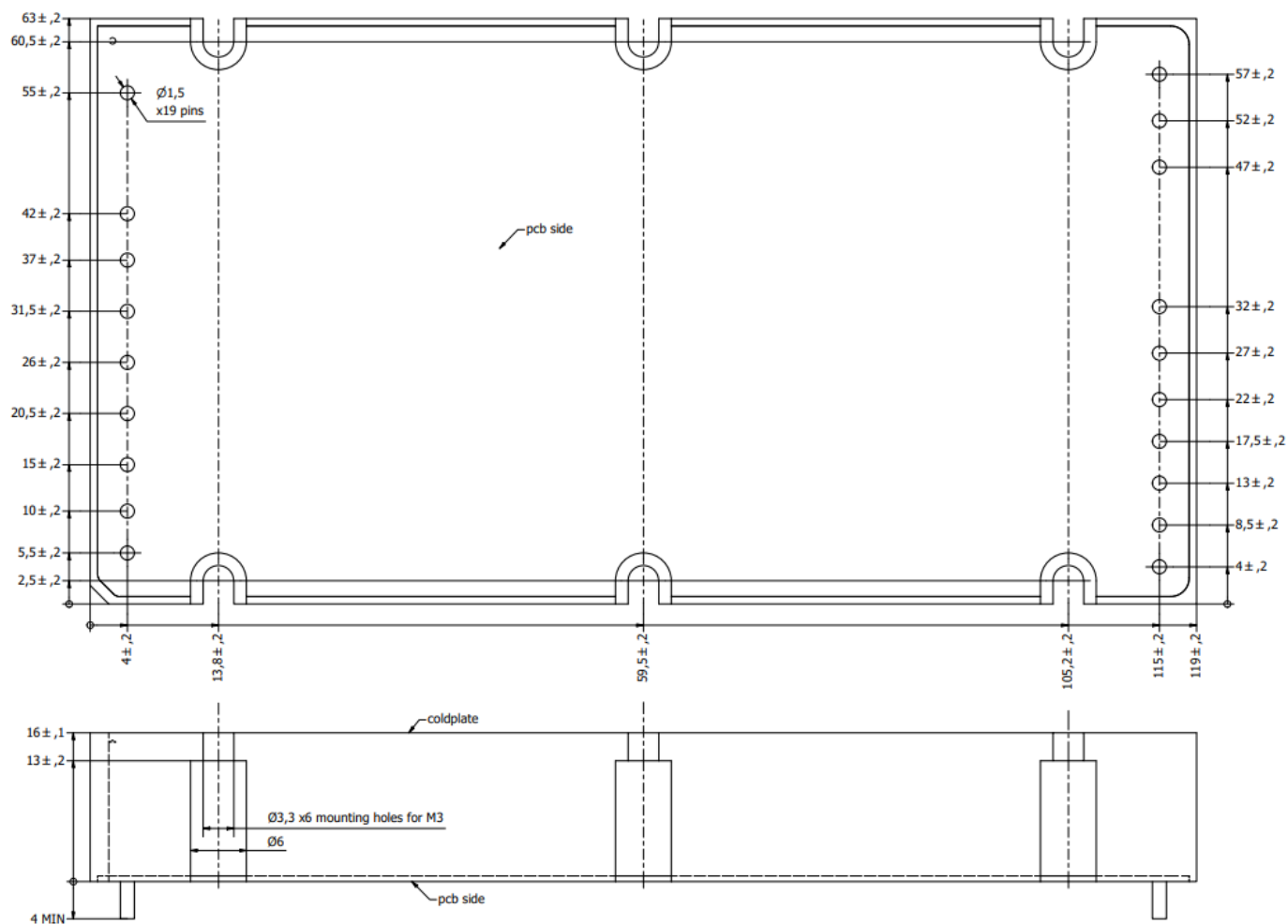
To maximize reliability of in-parallel connected units system (for case of failure of one in-parallel connected units), with minus outputs (-OUT) directly connected together - plus outputs (+OUT) should be connected through separating diodes. Usually, Schottky diodes with breakdown voltage at least twice 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 aeps@aeps-group.cz.

Dimensions - one channel

1	2, 3	4	5	6	7, 8	9	10	11, 12	13, 14	15	16	17	18	19
ON	+IN	A	B	C	-IN	CASE	+RS	+OUT	-OUT	-RS	ADJ	PAR	+REM	-REM

Dimensions in millimeters, 6 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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