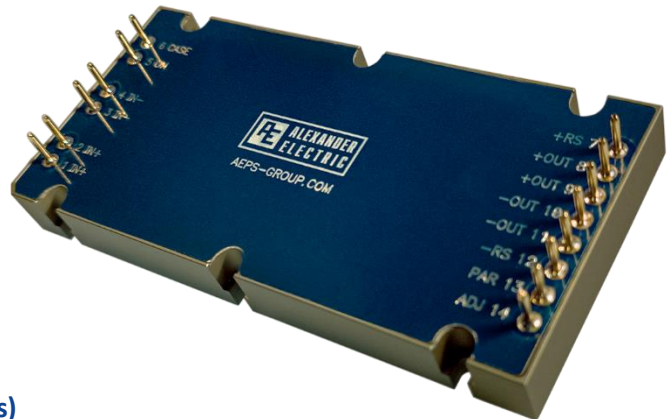


## Features

- Output power up to 300 W, 60 W/inch<sup>3</sup>
- Output voltage up to 620 VDC on request
- Operating case temperature -60 ... +110 °C
- Efficiency up to 90 %
- Case dimensions: 117x56x13 (mm) – V3
- CNC milled case
- Open-type mounting holes
- Remote off
- Active parallel operation
- Output voltage adjustment
- 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)
  - AC 3ph. "400" (323-440 VAC, 390-620 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 300 - 270 S 60 - M - V3**

1      2      3      4      5      6      7

- 1 Series name.
- 2 Nominal output power, W: default **300 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
JETDiV300-270S24-M-V3	DC HV "270" DC HV "150" AC 1ph."115" AC 1ph."230" AC 3ph."220" AC 3ph."400"	225 W	15 VDC	15 A	86 %
JETDiV300-270S27-M-V3		300 W	24 VDC	12.5 A	86 %
JETDiV300-270S36-M-V3		300 W	27 VDC	11.1 A	90 %
JETDiV300-270S48-M-V3		300 W	36 VDC	8.3 A	90 %
JETDiV300-270S60-M-V3		300 W	48 VDC	6.25 A	90 %
JETDiV300-270S60-M-V3		300 W	60 VDC	5 A	90 %
JETDiV300-270S60-M-V3		300 W	120 VDC	2.5 A	90 %
JETDiV300-270S60-M-V3		300 W	150 VDC	2 A	90 %
JETDiV300-270S60-M-V3		300 W	200 VDC	1.5 A	90 %
JETDiV300-270S60-M-V3		300 W	240 VDC	1.25 A	88 %
JETDiV300-270S60-M-V3		300 W	300 VDC	1 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.

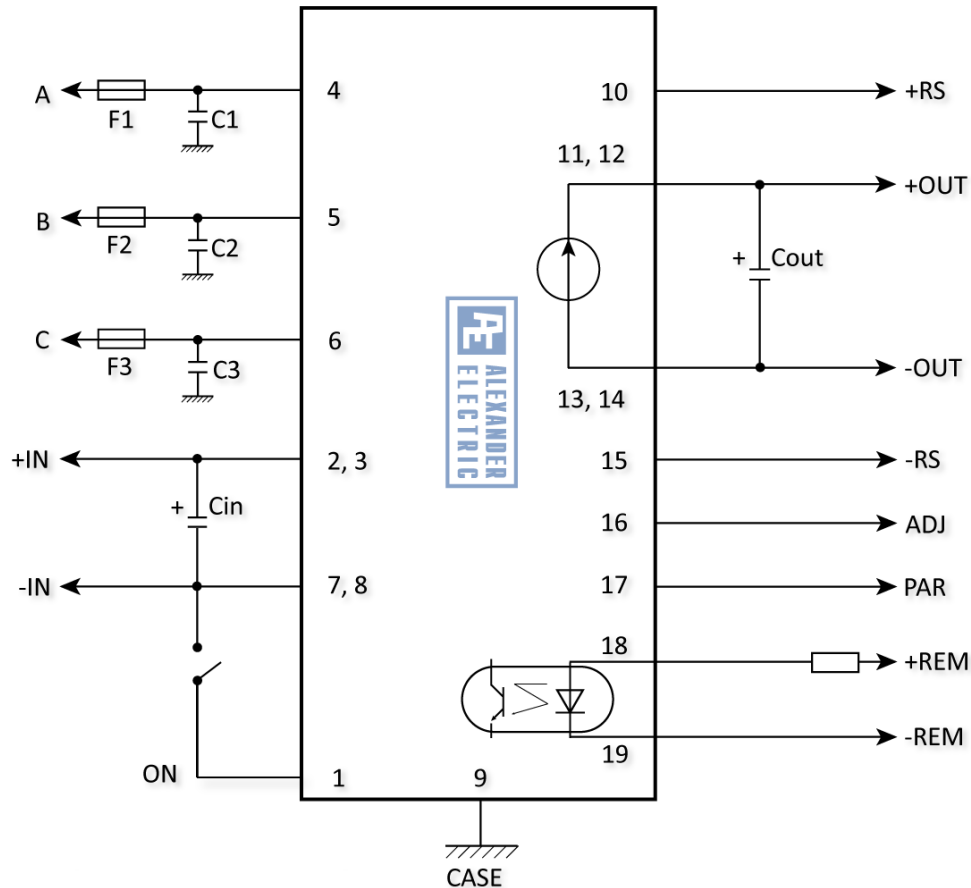
General characteristics <sup>3</sup>		
Switching frequency		200 kHz typ. (PWM modulation)
Temperature ranges	case operating temperature	-60 °C ... +110 °C (default "M")
	storage temperature	-60 °C ... +125 °C
Over-temperature protection		+110 °C typ.
Thermal mode and cooling method	cooling methods, from 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. Convectonal 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	2,4 °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	$P_{out} = 0.7 \cdot P_{out,max}$	190 000 hrs (T <sub>case</sub> = 50 °C)
Weight (max)		300 g
Input characteristics <sup>3</sup>		
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 <sup>1</sup>	CE MIL-STD-461F with typical connection scheme	
Output characteristics <sup>3</sup>		
Output voltage adjustment	±10 % via ADJ output (see drawing)	
Output voltage regulation	input variance U <sub>in,min</sub> to U <sub>in,max</sub>	±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 <sub>out,nom</sub>
	over-voltage	<130 % U <sub>out</sub>
Capacitive load (max)	24 VDC, 50% P <sub>out,nom</sub>	typ. 25 000 µF
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](http://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



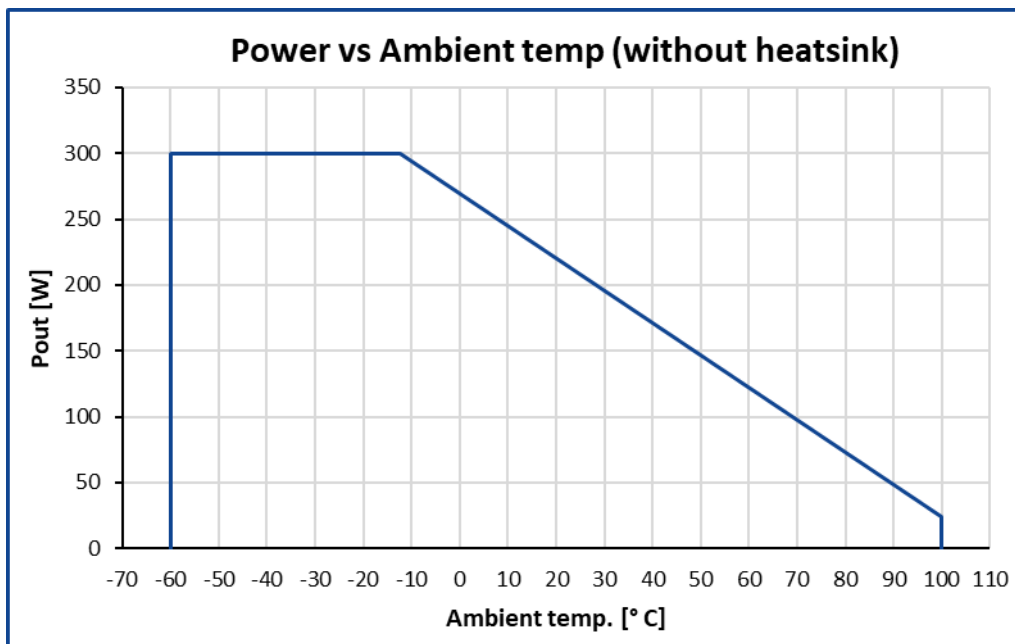
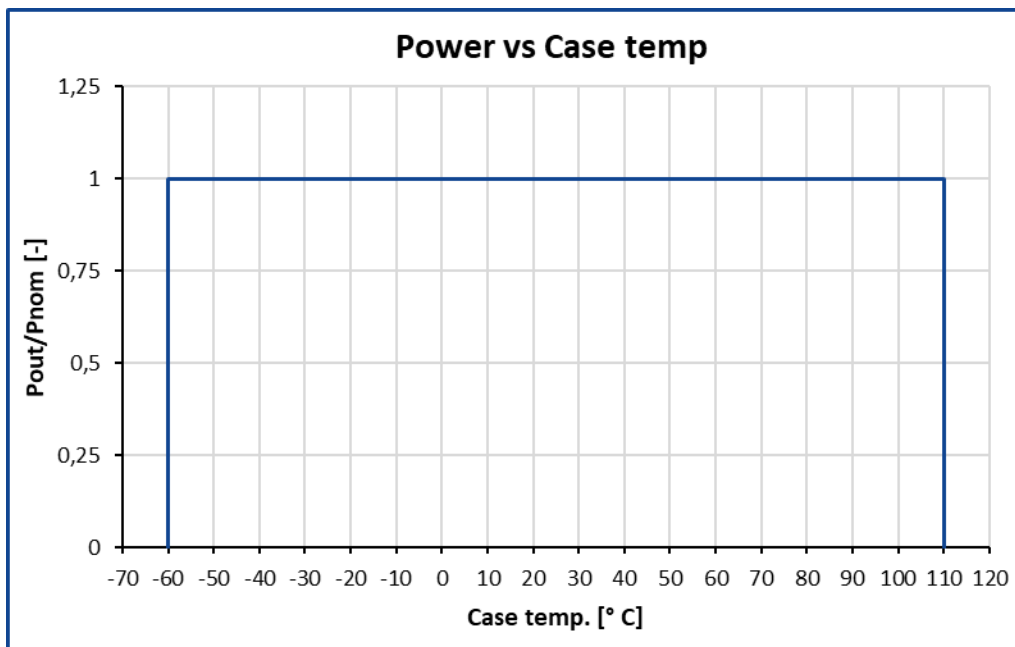
### Additional ordering information:

- 1) In the case of using 3-phase AC mains (**220** and **400**), connect 3 phase without N to terminals **A**, **B** and **C** (4, 5, 6) 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** (4, 5, 6) 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, 3 and 7, 8). If reverse polarity protection is required, connect DC mains to any pair of **A**, **B** and **C** (4, 5, 6) 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 <sub>out</sub>	C <sub>out</sub>			
	Capacitance	VDC	Model number	Manufacturer
15V	750µF	35V	EEU-FP1V751	PANASONIC
24V	330µF	50V	UVY1H331MPD1TD	NICHICON
27V	220µF	50V	UVY1H221MPD	NICHICON
36V	150µF	50V	UPM1H151MPD	NICHICON
48V	82µF	63V	860080774011	Würth Elektronik
60V	47µF	80V	EEH-AZC1K470B	PANASONIC
120V	39µF	150V	672D396H150ET5C	Vishay
150V	10µF	160V	A759KS106M2CAAE110	KEMET
200V	8,2µF	250V	A759MS825M2EAAE458	KEMET
240V	6,8µF	300V	B32674D3685K	EPCOS/TDK
300V	3,3µF	350V	CAA573X7T2V335M640LH	TDK

RECOMMENDED INPUT CAPACITORS			
Inputs	C <sub>in</sub>		
	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 x 2 (parallel)	EKHF451ELL221MM45S	Nippon Chemi-Con
AC 3ph. "220"	DC450V/220µF	EKHF451ELL221MM45S	Nippon Chemi-Con
AC 3ph. "400"	DC450V/220µF x 2 (series)	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 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 manufacturer.**

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.

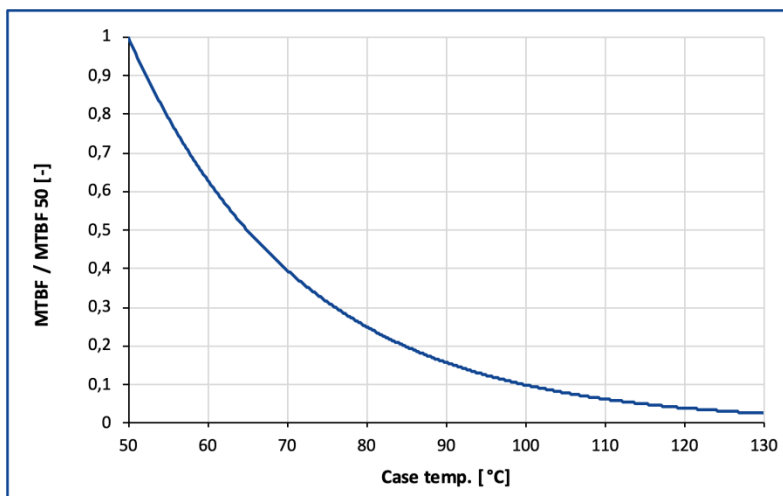
For quality contact between the unit and a heatsink - it's necessary to use thermal conductive paste with thickness less than 0.1 mm, with thermal conductivity **greater than 2 W/K.m**. The paste must be applied with mesh stencil in a pattern of squares (i.e. 2x2 mm to 4x4 mm squares mm with 0.5-1 mm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

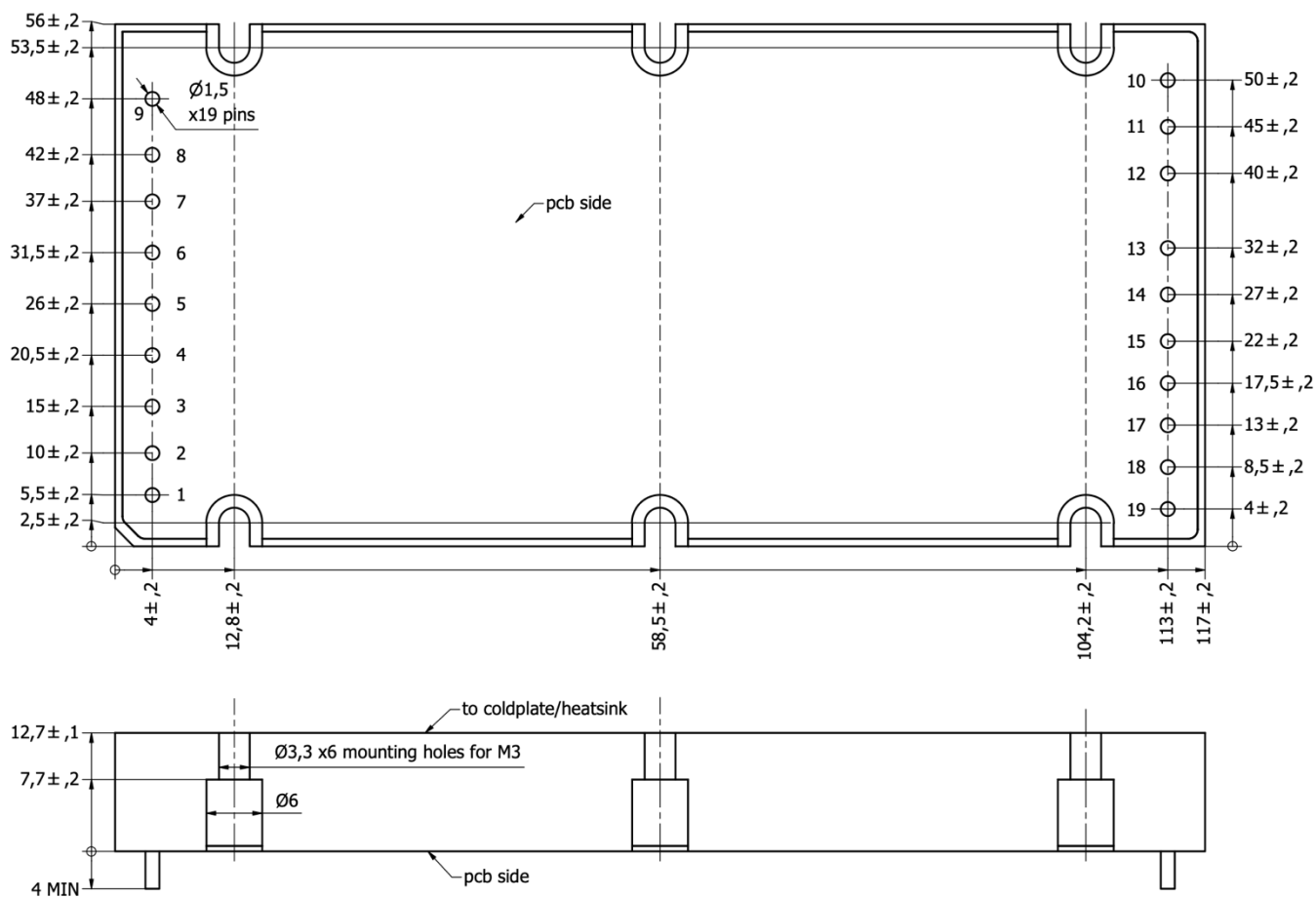
If you have any questions, please contact us directly at [aeps@aeps-group.cz](mailto:aeps@aeps-group.cz).



## 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, 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](http://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](http://www.aeps-group.com) or provided via an email request at [aeps@aeps-group.cz](mailto: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.

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