



## Features

- Option of simultaneous operation with VAC and/or VDC networks
- Class: Industrial, power density up to **3608 W/dm<sup>3</sup>**
- Low profile 15 mm design
- Case operating temperature range:  $-40^{\circ}\text{C} \dots +110^{\circ}\text{C}$ , for request up to  $-60^{\circ}\text{C} \dots +130^{\circ}\text{C}$
- Output current up to 34 A, output power 500 W
- Input voltage ranges: 176...242 VAC; 80...140 VAC
- Parallel operation
- Feedback from load
- Output voltage adjustment, remote on/off
- Max capacitance 85000  $\mu\text{F}$  (for  $U_{\text{out}}=12 \text{ VDC}$ , 50% Output power)
- Metal case, with mounting flanges
- Completely replace the previous generation modules TESH500

For all special requirements placed on the last page of datasheet [please click here.](#)

## Description

**Ultra-compact isolated AC/DC converters** with alternative inputs of double purpose are especially designed for industrial applications and harsh environment operation. These compact units (110 x 84 x 15 mm) have output power up to 500 W and operating temperature range between  $-60 \dots +130^{\circ}\text{C}$ . These modules have full protection complex against over current, shorting and overheating, can be switched on/off by a signal and be connected in parallel or in series.

These modules are built using especially designed electronic components and sealed with heat-conducting potting material. They have wide operating temperature range and thermal protection chip. These modules undergo special thermal and limit tests, including burn-in-tests with extreme on/off modes. They are available in metal cases with mounting flanges.

Upon customers' request this module can be produced in copper cases (covered by "Black chrome"), allowing its installation on aluminum heat sink and providing a positive effect on the modules EMC and heat transfer.

Upon customers request a low-cost version of a module is available.

## Ordering information

### TESAV 500 - 230 S 12 - U T

1      2      3    4    5      6    7

- 1 - «TESAV» Series
- 2 - Max output power, W
- 3 - Input voltages
  - 230 – 230 VAC (176...242 VAC)
  - 115 — 115 VAC (80...140 VAC)
- 4 - Index of output channels quantity
  - S – one
- 5 - Nominal output voltage, VDC (two signs for a channel)
- 6 - Index of case design
  - U – metal case with flanges
- 7 - Index of operating temperature range of the case
  - T –40°C...+110°C, for request up to –60°C...+130°C

## Technical information

### Standard models with one output

Module	Input voltage	Output power	Output voltage / nominal output current	Typical efficiency <sup>1</sup>
TESAV500-115S15-UT	80...140 VAC	500 W	15 VDC / 33,3 A	87%
TESAV500-115S24-UT			24 VDC / 20,8 A	88%
TESAV500-115S27-UT			27 VDC / 18,5 A	88%
TESAV500-115S48-UT			48 VDC / 10,4 A	90%
TESAV500-230S15-UT	176...242 VAC		15 VDC / 33,3 A	88%
TESAV500-230S24-UT			24 VDC / 20,8 A	89%
TESAV500-230S27-UT			27 VDC / 18,5 A	89%
TESAV500-230S48-UT			48 VDC / 10,4 A	91%

Modules with non-standard output voltage from 12 to 60 VDC with maximal output current up to 34 A, could be delivered on request.

<sup>1</sup> - Typical efficiency is stated for module which was set to an aluminum test heat sink (310x310x6mm) through a heat-conducting paste.

## Specifications \*

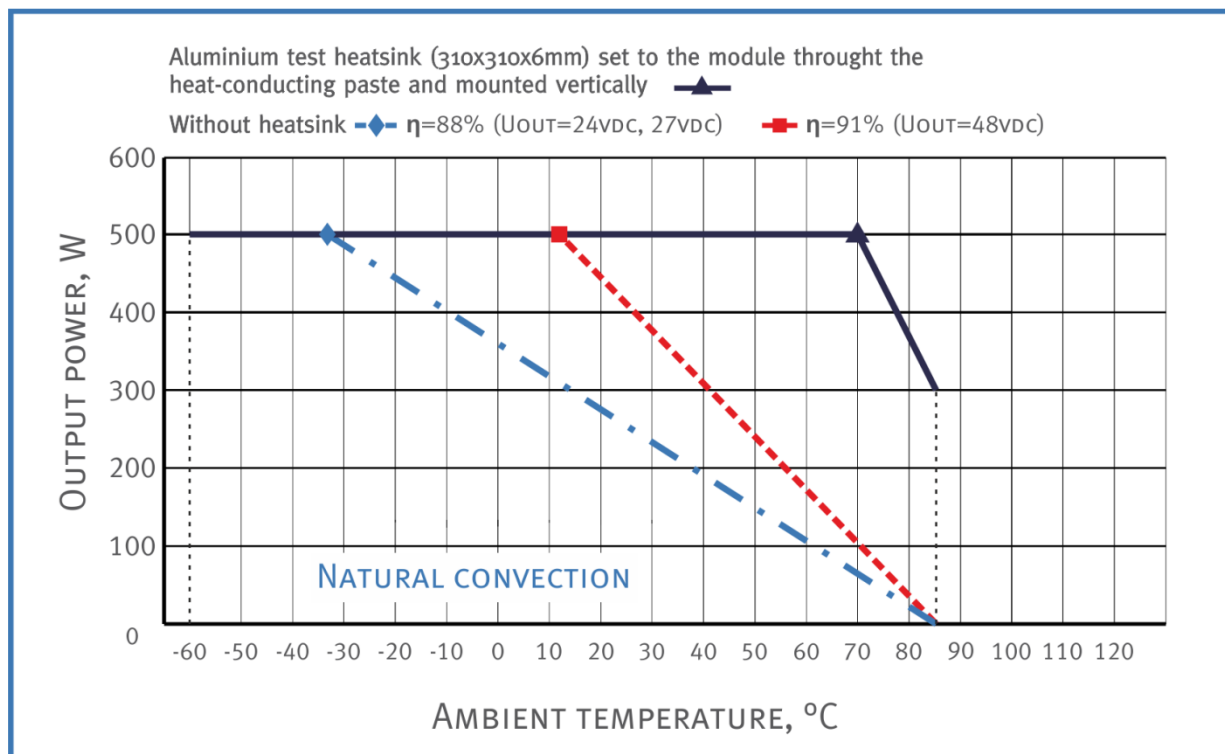
<b>Input specifications</b>	
Input voltage range / transitional deviation, 1 sec 115	~80...140 VAC/~80...140 VAC; accepted =82...198V
Input voltage range / transitional deviation, 1 sec 230	~176...242 VAC/~176...264 VAC; accepted =175...350V
Input frequency	47...440 Hz, DC input
Input filter	absent
<b>Output specifications</b>	
Output voltage adjustment (single-channel models only)	±5% Uout
Instability of output voltage in accordance to changing of output current from 10 to 100% for single output model	±2%
Instability of output voltage in accordance to instability of input voltage	±0,5%
Ripple and noise (peak-to-peak) (20 MHz)	<2% Uout
Short circuit protection**	>150% Iout nom, auto repair
Overvoltage protection**	<130 % Uout
Over current protection level**	Pout ... 1.3·Pout
Remote On/Off	Shuts down outputs by applying 0...1,1 VDC or connection of output «ON» and «- IN», I≤5mA
Max capacitance for Uout=12 VDC, 50% Output power***	85000 µF
<b>General specifications</b>	
Case temperature (operating)	-40°C...+110°C, for request
Case temperature (storage)	up to -60°C...+130°C
Case temperature power decrease (natural convection)	See diagram (dashed, dash-dotted curve)
Case temperature without power decrease with heat sink	See diagram (solid curve)
High humidity	100% @35 °C
Thermal resistance case — environment without heat sink	2,3°C/W
Insulation voltage input/output	~3000 VAC
Insulation voltage input/case	~1500 VAC
Insulation voltage output/case	~500 VAC
Isolation resistance @ 500 VDC	>20 MOhm
EMC standards	EN 55022, class A with additional filter
Safety standards	IEC/ EN 60950
Typical MTBF (Tcase = 50°C; Pout = 0,7 Pout max)	50000 hrs
Cooling metod	Free air convection or forced air cooling
Weight (max)	250 g

\* All specifications are valid for normal climatic conditions, Uin.nom., Iout.nom., unless otherwise stated.

\*\* Parameters are stated for the information purposes and could not be used at long term work, exciding maximum output current, at work outside of a range of working temperatures, at module's work with the output voltage over a range of adjustment.

\*\*\* For other output voltages the maximum output capacity is calculated from the fact that  $\frac{C_{max} \times U_{out}^2}{2}$  is a constant.

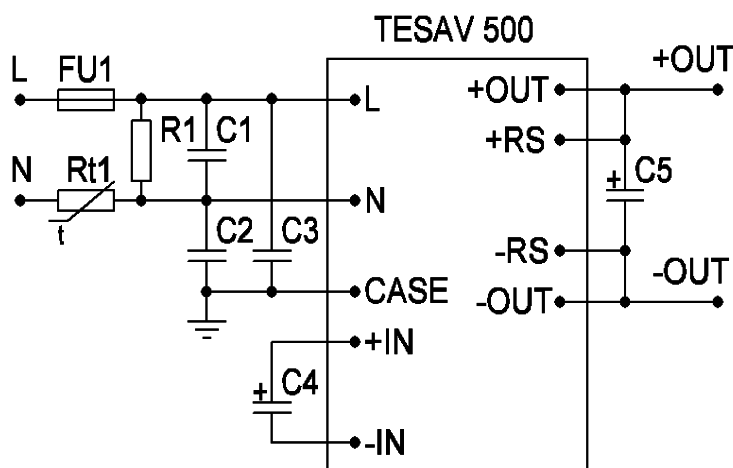
## Output power vs an ambient temperature at input voltage



Dropping parts of the dashed and dash-dotted curves are in accordance with the **maximum temperature of the case**. Output power must not exceed the values which are limited by corresponding curve for a given ambient temperature. Modules can be used without a heat sink only when screwing them heat conductive plate with thermal paste and with the length and width not less than case size and thickness of not less than 3 mm.

At point ▲, ◆ and ■ simultaneously present several extreme worst-case conditions, such as the combination of maximum case temperature and maximum output power. Continuous module operation at these points should be avoided.

### Typical connection diagram



#### For input 230 VAC

C1	0.47uF 275VAC, X2 class
C2, C3	2200pF 250VAC, Y2 class
C4	470 uF 400 V for normal climatic conditions & 100% Output power
C5	Tantalum, Low ESR
R1	470kOhm 0.5W
Rt1	NTC 4Ω 8A
FU1	12A 250V



## Certificates

Certificate ISO 9001\*  
CE conformity declaration

\*Management system and R&D of Alexander Electric is ISO certified

## Note

The label with sign "remove before use" can be placed on the top surface of the module and must be removed before installation.

Please, note that all information in this material is for reference only. Further detailed information (including: additional requirements, manuals and circuit schemes) is found on our website [goncharov-jet.com](http://goncharov-jet.com).

## Contact information

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According to company's policy in view of constant improvements of the production design the manufacturer reserves the right to itself change the contents of promotional materials without prior notification.

## Special requirements