

AC/DC power supplies PJTA700



Features

- Power density up to **1504 W/dm³ (24.7W/in³)**
- **Conduction-cooled (baseplate cooled)** design
- Low profile 28.6 mm design with terminal blocks
- Case operating temperature ranges: -40°C to +85°C, -50°C to +85°C
- Output current up to 50 A, output power 700 W; one or two output channels
- Input voltage ranges: 100-242 VAC, 176-242 VAC
- Active power factor correction
- Galvanically isolated output channels
- Additional output for fan
- Over current, short circuit, overvoltage and thermal protection
- Output voltage adjustment
- Remote feedback
- Max capacitance - not limited
- Metal case

Description

AC/DC power supplies (modules) PJTA700 are specially designed for industrial applications and harsh environment operation. This compact unit (175 x 93 x 28.6 mm) has maximum output power of up to 700 W and it is available in versions with one or two galvanically isolated output channels. The units can be switched on/off by a signal, have a full protection against over current, short circuit and overheating; they also can be connected in parallel or in series and provide compliance to EMC standard EN55022, class A (class B with filtration and protection module).

Modules are made of customized element base. They are sealed with heat-conducting potting material and have a wide operating temperature range from -50°C to +85°C, featuring a thermal protection chip. These power supplies undergo special temperature and burn-in tests with extreme on/off modes.

Ordering information

PJTA 700 - 230W S 15 - S C N D

1 2 3 4 5 6 7 8 9

- 1 - «PJTA» Series
- 2 - Max output power, W
- 3 - Input voltages
 - 230W – 230 VAC (100...242 VAC)
 - 230 – 230 VAC (176...242 VAC)
- 4 - Index of output channels quantity
 - S – one
 - D – two
- 5 - Nominal output voltage, VDC (two signs for a channel)
- 6 - Index of design option
 - S - modification with polymer potting protection
- 7 - Index of case design and outputs
 - C- case with a cover and terminal blocks
- 8 - Index of operating temperature range of the case
 - N -40°C ...+85°C (basic version)
 - P -50°C ...+85°C
- 9 - Index of mounting on DIN-rail
 - D – with clip for mounting on DIN-rail

Technical information

Standard models with one output

Module	Input voltage range	Output power	Output voltage / nominal output current	Typical efficiency
PJTA700-230WS12-XXX	~100...242 VAC*	600 W	12 VDC / 50 A	84%
PJTA700-230WS15-XXX			15 VDC / 40 A	84%
PJTA700-230WS24-XXX		700 W	24 VDC / 29.2 A	88%
PJTA700-230WS27-XXX			27 VDC / 25.9 A	88%
PJTA700-230WS28-XXX			28 VDC / 25 A	88%
PJTA700-230WS48-XXX			48 VDC / 14.6 A	89%
PJTA700-230S12-XXX	~176...242 VAC	600 W	12 VDC / 50 A	84%
PJTA700-230S15-XXX			15 VDC / 40 A	84%
PJTA700-230S24-XXX		700 W	24 VDC / 29.2 A	88%
PJTA700-230S27-XXX			27 VDC / 25.9 A	88%
PJTA700-230S28-XXX			28 VDC / 25 A	88%
PJTA700-230S48-XXX			48 VDC / 14.6 A	89%

Modules with non-standard output voltage from 12 to 60 VDC with maximum output current up to 50 A, could be delivered on request.

* For input voltage 230W (wide input) maximum output power lower at input voltage 100-176 VAC. See derating curves.

Standard models with two outputs

Module	Input voltage range	Output power	Output voltage / nominal output current	Typical efficiency
PJTA700-230WD1212-XXX	~100...242 VAC*	600 W	12 VDC / 25 A ; 12 VDC / 25 A	84%
PJTA700-230WD1515-XXX			15 VDC / 20 A ; 15 VDC / 20 A	84%
PJTA700-230WD2424-XXX		700 W	24 VDC / 14.6 A ; 24 VDC / 14.6 A	88%
PJTA700-230WD2727-XXX			27 VDC / 13 A ; 27 VDC / 13 A	88%
PJTA700-230WD4848-XXX			48 VDC / 7.3 A ; 48 VDC / 7.3 A	89%
PJTA700-230D1212-XXX	~176...242 VAC	600 W	12 VDC / 25 A ; 12 VDC / 25 A	84%
PJTA700-230D1515-XXX			15 VDC / 20 A ; 15 VDC / 20 A	84%
PJTA700-230D2424-XXX		700 W	24 VDC / 14.6 A ; 24 VDC / 14.6 A	88%
PJT700-230D2727-XXX			27 VDC / 13 A ; 27 VDC / 13 A	88%
PJTA700-230D4848-XXX			48 VDC / 7.3 A ; 48 VDC / 7.3 A	89%

Modules with non-standard output voltage from 12 to 60 VDC with maximum output current up to 50 A, could be delivered on request.

* For input voltage 230W (wide input) maximum output power decreases at input voltage 100-176 VAC. See derating curves.

Specifications for AC/DC power supplies PJTA700*

Input specifications	
Input voltage range / Input voltage transient deviation (1 s) 230 W**	~ 100...242 VAC (accepted=140...342V)/ ~ 100...264 VAC (accepted=140...373V)
Input voltage range / Input voltage transient deviation (1 s) 230	~ 176...242 VAC (accepted=248...342V)/ ~ 176...264 VAC (accepted=248...373V)
Input frequency	47...440 Hz
Inrush current at start-up@~230B	110 A
Power factor	>0,96
Harmonics content of input current	EN61000-3-2, class D
Output specifications	
Output voltage adjustment	±5%
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 changing of output current from 10 to 100% for dual output model	±2% for chan.1, ±7% for chan.2
Instability of output voltage in accordance to changing of output current for dual output model with a voltage value ≥20%	±2% for chan.1, ±12% for chan.2
Instability of output voltage in accordance to instability of input voltage	±0,5% for chan. 1, ±1% for chan. 2
Ripple and noise (peak-to-peak) (20 MHz)	<2% Uout
Overvoltage protection***	>125% Uout
Over current protection level & short circuit protection for single output model ***	Output current limiting at 110-120% of Iout nom
Over current protection level for dual output model ***	>120...140% Iout nom
Short circuit protection level for dual output model ***	>140% Iout nom, auto restore
Remote On/Off (inverse control – optional)	Shuts down by applying 3...5VDC (≤5 mA) on REM outputs
Max capacitance for single output model	not limited
Max capacitance for dual output model Uout 1, 2 =12 VDC, 50% Pout	38 0000 µF****
Output for fan	9.5...13 VDC, I _{max} =200 mA
General specifications	
Case temperature (operating N)	-40°C ...+85°C*****
Case temperature (operating P)	-50°C ...+85°C*****
Case temperature (storage)	-50°C ...+85°C
Level of operation of thermal protection (temperature of case)	82°C ...+95°C, auto restore
Output power derating (natural convection)	See diagram (dashed, dash-dotted curves)
Output power with heatsink with thermal resistance R _{ha} =0,12°C/W, difference between ambient and module case temperature would be 15°C	See diagram (solid curve)
High humidity	95% @ 35 °C
Conversion frequency, fixed	125 - 150 kHz
Insulation voltage input/case	~1500 VAC
Insulation voltage input/output, input/REM	~3000 VAC
Insulation voltage output/case, output/REM, REM/case	~500 VAC
Insulation voltage output/output	=500 VDC
Isolation resistance @ 500 VDC	20 MOhm
EMC standards	EN55022, class A (class B with filter)
Safety standard	Designed to meet IEC/EN60950
Thermal resistance case – environment without heat sink	1,8°C/W
Typical MTBF (T _{case} = 50°C; P _{out} = 0,7 P _{out} max)	40 000 hrs
Cooling method	Free air convection or forced air cooling
Weight (max)	1100 g

* All specifications are valid for normal climatic conditions, U_{in}.nom., I_{out}.nom., unless otherwise stated.

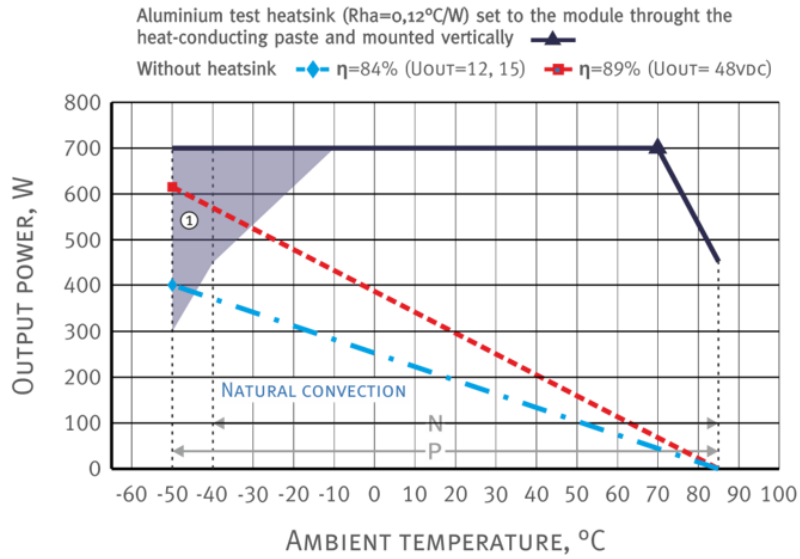
** For input voltage 230W (wide input) maximal output power decrease at input voltage 100...176 VAC according to the derating curves.

*** Parameters are stated for information purposes and could not be applied to long term work, exceeding maximum output current, at work outside of operating temperature range.

**** 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.

***** Turn-on delay of power supply at subzero temperatures can reach up to 5s at -40°C, 15...20s at -50°C.

Output power vs ambient temperature for input voltages ~176...242 VAC

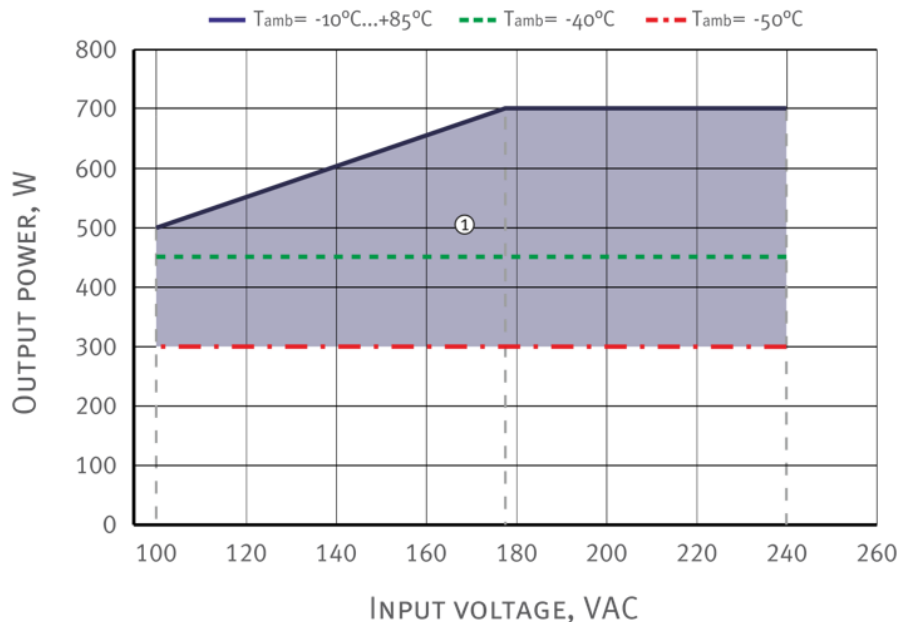


Dropping parts of the dashed and dash-dotted curves are in accordance with the **maximum temperature of the case** (for modules with index «N», «P» equal to +85 °C). Output power must not exceed the values which are limited by corresponding curve for a given ambient temperature.

Modules can be used without a heat sink only when attached to a heat conductive plate with thermal paste. The length and width of the plate should not be less than those of the case, and its thickness must not be less than 3 mm.

Points \blacktriangle , \blacklozenge and \blacktriangle represent simultaneously 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.

Output power vs input voltages



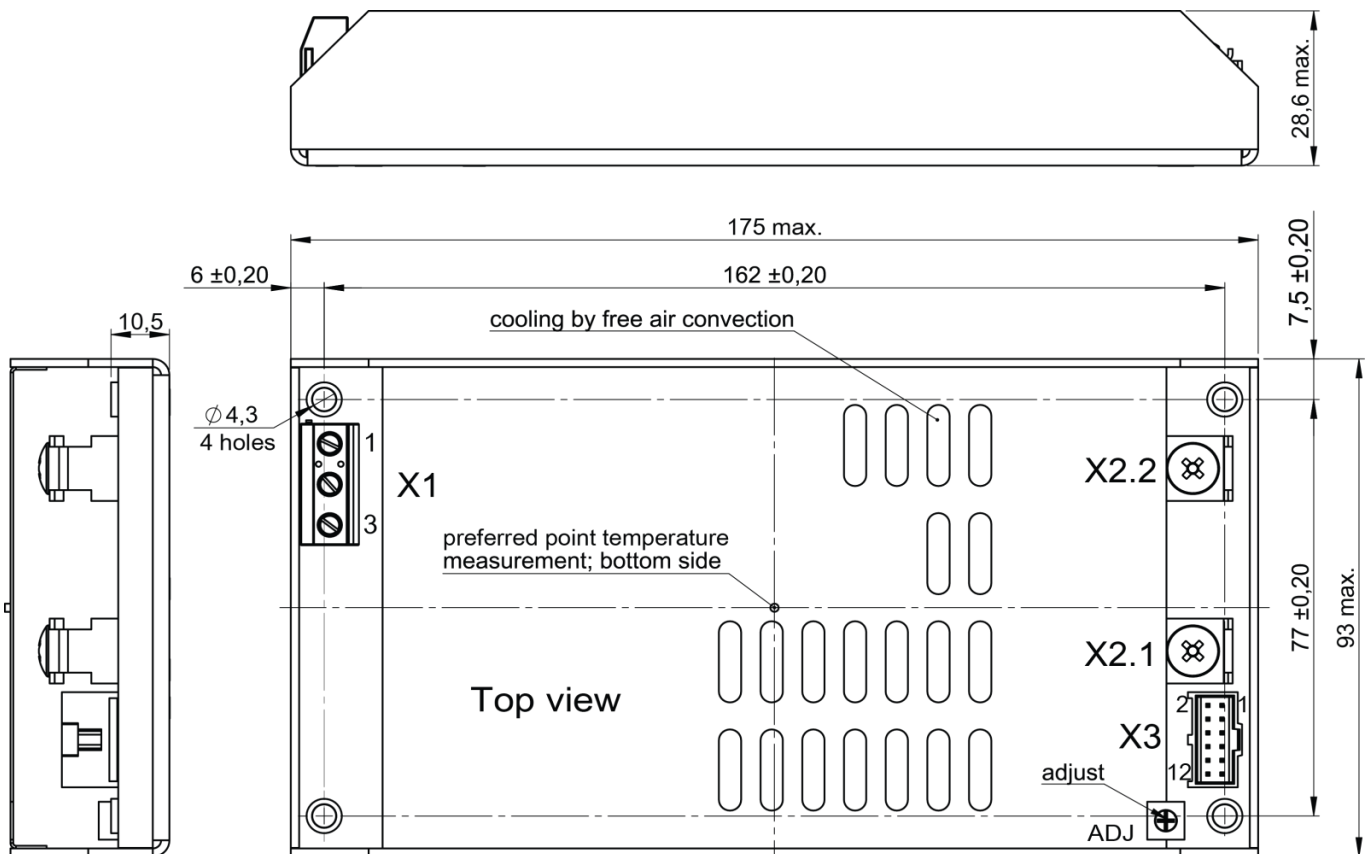
① - For ambient temperature $-50^{\circ}\text{C} \dots -10^{\circ}\text{C}$ in gray areas of diagrams some specification parameters may not be met.

Pin out (models with the terminal blocks)

X1.1	X1.2	X1.3	X2.1	X2.2	X3.1	X3.2	X3.3	X3.4	X3.5	X3.6	X3.7	X3.8	X3.9	X3.10	X3.11	X3.12
GND	N	L	-OUT	+OUT	ADJ	PARAL	+FAN	-FAN	-RS	-OUT	+RS	+OUT	not use	not use	-REM	+REM

X1	RATED WIRE SIZE SOLID: max.: 4mm² Stranded (flexible): max.: 2,5mm² Stranded with Ferrule: max 2,5mm² Screw size: M3 Torque: 0,5 Nm
X2.1, X2.2	Screw size: M5 Recommended torque: 2Nm Recommended: use Ring terminal, for example MOLEX 19323-0013, MOLEX 19324-0013.
X3	MOLEX, C-GRID III MALE – SDA-90130-1112. FEMALE – SD-90142-0012 (12 pin) USE WITH "GRIMP TERMINAL" SD – 90119-0109 or other. USE "HAND CRIMP TOOL" for C-GRID III female Crimp Terminals for example 63825-8100 or other depending on the CRIMP TERMINALS.

Single output model with terminal blocks (IV A case size)



Certificates

Certificate ISO 9001*
CE conformity declaration

- Production Management system and R&D is ISO certified

Note

Please note that information given in this document is not complete. More detailed information (additional requirements, typical connection schemes, operation manuals, etc.) may be provided to you upon request.

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