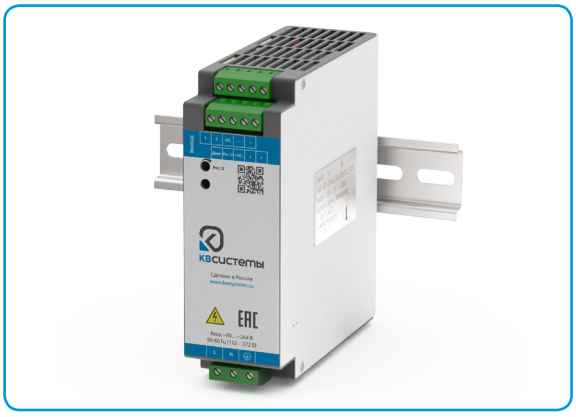
AC/DC POWER SUPPLY KAN-D300, 300 W



- DIN-rail mounting
- Wide operating temperature range –50...+70°C
- High Efficiency up to 89%
- Wide voltage adg. range (–50...+10%)
- Output current up to 25 A
- Convective cooling
- Low level of EMI noise EN55022 (CISPR22), Class B
- PFC
- Remote feedback

APPLICATIONS

- Industrial electronics and automation
- Oil-and-gas industry
- Nuclear power
- Security systems

MODEL RANGE

MODEL	OUTPUT VOLTAGE	RATED CURRENT (A)	EFFICIENCY % (TYP)
KAN-D300 C 12	12 VDC	25 A	87%
KAN-D300 C 24	24 VDC	12,5 A	88%
KAN-D300 C 48	48 VDC	6,25 A	89%

ORDERING INFORMATION

KAN — D 300 C 24 P

① ② ③ ④ ⑤ ⑥

① – AC/DC Power Supplies

② – Form factor for DIN-rail mounting

③ – Rated output power, W

④ – Index of nominal input voltage
C — 220 VAC (80...264 VAC)

⑤ – Nominal output voltage, VDC

⑥ – Index of operating temperature range
N — from –40 to +70°C
P — from –50 to +70°C

KWsystems

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SPECIFICATIONS KAN-D300*

Input specifications	
Input Voltage range	
C	80...264 VAC 112...372 VDC
Input Frequency	47-440 Hz
Power factor	
115 VAC; Pmax	>0,99
230 VAC; Pmax	>0,95
Output specifications	
Output voltage adjustment	-10..+10% Uout.nom built-in potentiometer -50...+10% Uout.nom if use pin ADJ.U
Output voltage setpoint accuracy	max 2%
Ripple and noise (p-p)	<2% Uout.nom.
Protection	
Short Circuit Protection**	auto repair
Overload Protection**	Pmax...1,2 Pmax
Overvoltage Protection**	<125% Uout.nom.
Overheating protection	trigger point at temperature >85 °C
General specifications	
Connection Type	pluggable screw connection
Power derating	-2% / °C after +60°C
Degree of protection	IP20
Ambient temperature range	
operating "N"	-40...+70°C
operating "P"	-50...+70°C
Humidity	98% on t° +40°C
Insulation voltage	
in./case	1500 VAC
in./out.	1500 VAC
out./case	500 VAC
isolation resistance @ 500 VDC	20 MOhm min
Typical MTBF	2000 kHrs (+25°C)
Cooling	convective
Housing	metal
Weight	1100 g

* All specifications are valid for normal climatic conditions (ambient temp. +15...+35°C; relative humidity 45...80%; air pressure $8,6*10^4$...$10,6*10^4$ Pa), Uin.nom., Iout.nom., unless otherwise stated.
** Parameters are stated for the information only and are not valid for continuous operation exceeding maximum output current and operation temperature range.

PSU APPLICATION NOTES

Location of units in electrical control unit.

To ensure unit's nominal thermal operating mode it is necessary to have gaps between unit's housing and walls of the electrical control unit: the gap above and under the PSU must be at least 66 mm, and from left and right of the PUS's housing — at least 20 mm.

Connection of units.

To connect PSU it is allowed to engage only standard plugs, supplied together with the unit. To avoid overheating of PSU's output connectors it is recommended to engage all the output contacts of the PSU (X2.4, X2.5, X2.6, X2.7).

Types of loads.

You should not connect the inductive load to the output of the unit without special protection measures, because self-induction EMF of the inductive load may damage the power supply unit.

Output voltage adjustment.

It is recommended that you do not adjust the output voltage by the PSU's built-in potentiometer and ADJ. U output, because voltage adjustment can go over the range specified in the technical documentation (overvoltage protection can operate as a result of high output voltage > +10% of Uout. nom). Therefore, if you are going to use adjustment by ADJ. U output you should preset the nominal value of the output voltage by the PSU's built-in potentiometer. To ensure that PSU operates correctly during output voltage adjustment it is recommended to connect the ADJ. U output to the terminals +RS or -RS. Connection to +OUT or -OUT outputs is not recommended.

Parallel operation.

In case of parallel connection of PSUs their positive outputs must be separated by Schottky Diodes with double current and voltage capacity. Outputs of external feedback should be connected before the diodes (+RS should be connected to the diode's anode), so the diodes have to be placed as closely to the load as possible. For example, for 24 V output voltage with load current 12,5 A it is necessary to use Schottky Diode with blocking capability of 60 V and operating current 30 A, e.g. 30STQ60SRVF. It is also necessary to consider the heat generated by separating diodes, they might require a heatsink. Cooling method of diodes is defined experimentally. Temperature of diodes must be the same (it is recommended to mount the diodes on a common heat sink and use them with common cathode). When using PSUs in parallel mode it is necessary to align their output voltage, so that the difference between units was not more than 50 mV, because there is no current alignment function between units. This will ensure balance load in the units. You should use the power wires of the same length and cross-section.

Serial connection.

It is not recommended to connect the unit's outputs in series as the units are not designed for serial connection.

It is not allowed to:

1. Connect in series or in parallel the output terminals of the PSUs by any other means than described in the application notes;
2. Drill additional holes or rework the unit's case! Please use only the supplied clamp for mounting the PSU on a DIN-rail;
3. Operate the PSU if there is dew-fall on case of the PSU;
4. In order to ensure the security it is prohibited to operate the PSU when it is not connected to the grounding terminal.

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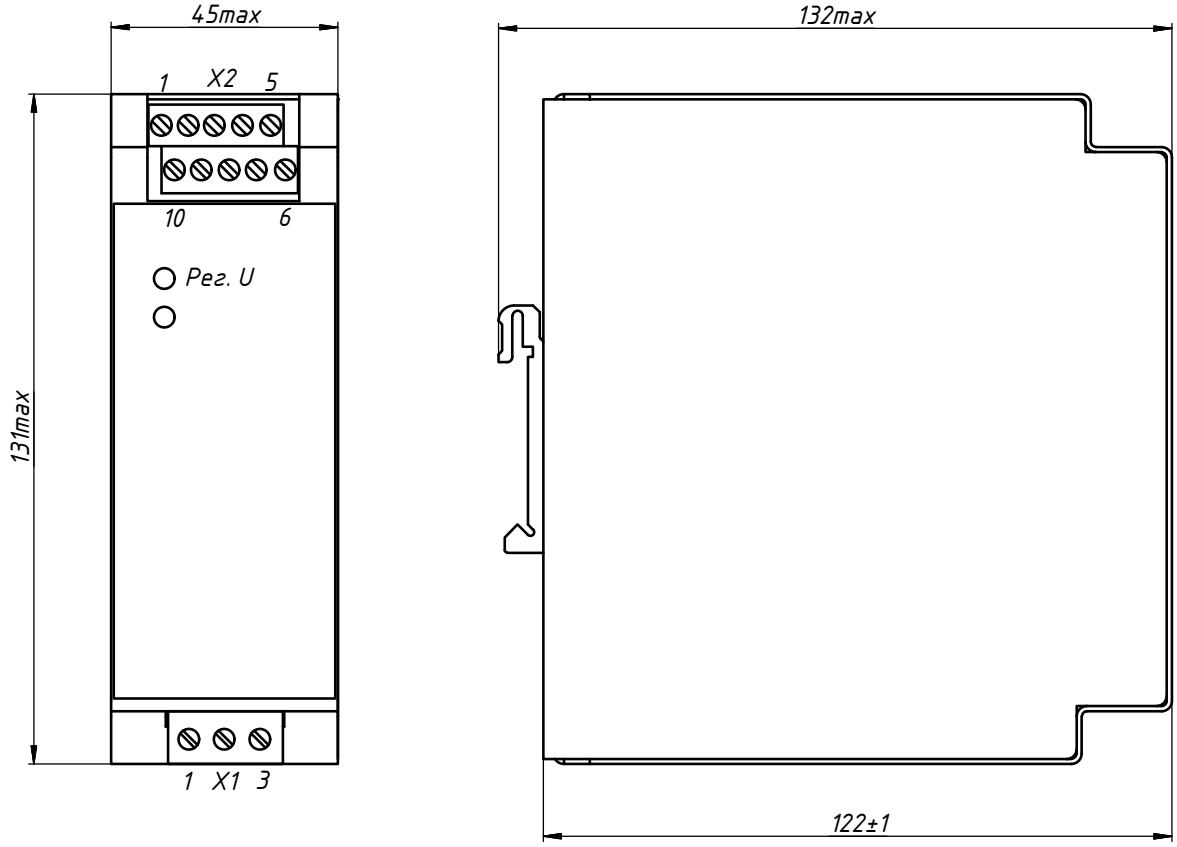
PIN OUT

№ PIN	X1.1	X1.2	X1.3
FUNCTION	L	N	⏚

№ PIN	X 2.1	X 2.2	X 2.3	X 2.4	X 2.5
FUNCTION	1	2	-RS	-OUT	-OUT

№ PIN	X 2.10	X 2.9	X 2.8	X 2.7	X 2.6
FUNCTION	PGOOD	TRIM.U	+RS	+OUT	+OUT

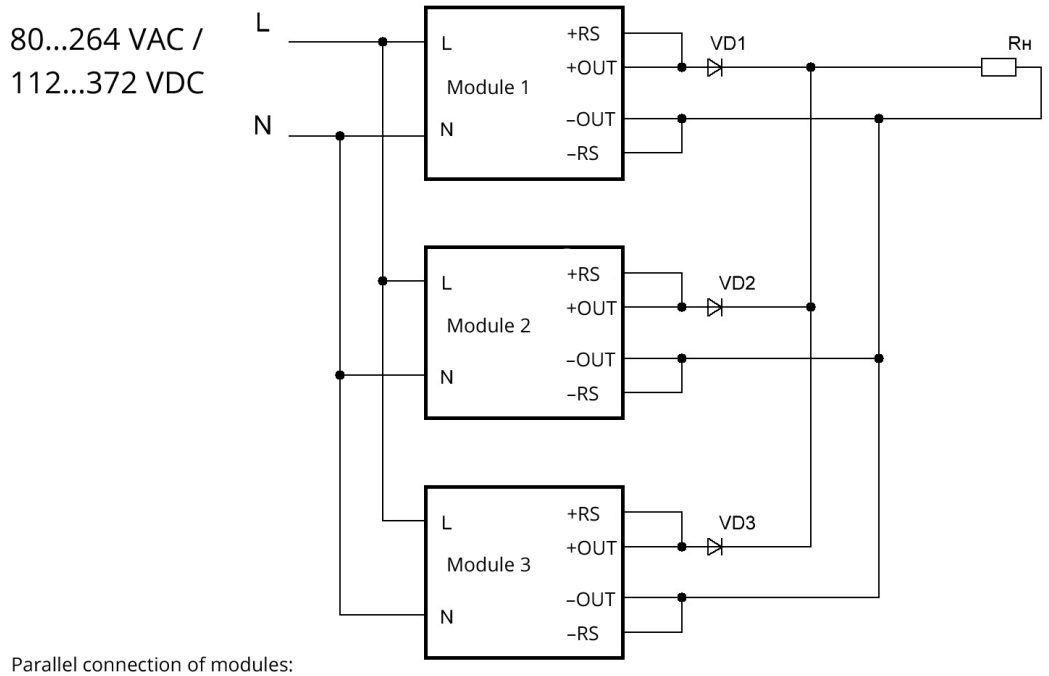
OUTLINE DIMENSIONS



UNIT'S PIN DESCRIPTION

X1.1 (L) X1.2 (N)	Unit's output. X1 connector is used to connect the input voltage. L — line, N — neutral. Observe the polarity.
X1.3 (case)	Unit's case. To ensure safe operation of the unit and low level of conductive interference the unit's case should always be connected to the ground bus!
X2.1 (1) X2.2 (2)	Galvanically separated contact group (Dry contact). Outputs 1 and 2 are a stack which does not have electrical connection with other circuit elements of the unit. Galvanically seprated stack is mounted on an optic coupler with transistor output, so the polarity must be observed! Polarity of the outputs is the following: output 1 — minus, output 2 — plus. Max allawable voltage is 30 V, max cuttent thour contact 1 and 2 is 40 mA. Isolation voltage between outputs 1, 2 and output is 1500 VAC, between outputs 1, 2 and output is 1500 VAC, between outputs 1, 2 and case is 1500 VAC. Outputs 1 nad 2 are closed to each other if the value of the output voltage is over 75% of the nominal preset value, voltage drop on the stack in this case will be max 0,7 VAC. If the output voltage of the unit is less than 75% of the nominal preset value (Uout. <75% of Uout.nom.; e.g. during power off or overload), outputs 1 and 2 with open. Power on/ power off hysteresis of the "dry contact" is max 5 V.
X2.3 (-RS) X2.8 (+RS)	Remote feedback. +RS and -RS outputs are designed to compensate for voltage drop on power conductors of the remote load. +RS output must be connected to the positive potential of the load terminal and -RS output – to negative one. +RS and -RS outputs should not be obligatory connected if you do not need the compensation of voltage drop on power conductors of the load. Polarity of the connection must be observed, violation of this can cause damage to the power supply!
X2.4 (-OUT) X2.5 (-OUT) X2.6 (+OUT) X2.7 (+OUT)	Unit's output. Voltage at contacts of output terminals equals nominal value preset by adjustment.
X2.9 (ADJ. U)	Output voltage adjustment by ADJ.U output. The unit has a built-in trimmer resistor, which can be used adjust output voltage within the range of +10...-10%. For a wider range of adjustment the unit is equipped with the ADJ. U output. ADJ. U. is designed for adjusting the output voltage within the range of +10...-50% of the nominal value (preset by the built-in potentiometer). Connection of ADJ.U output to the -RS output increases the PSU output voltage by 10% of the nominal value (preset by the built-in potentiometer) Connection of ADJ.U output to the +RS output increases the PSU output voltage by 50% of the nominal value (preset by the built-in potentiometer) It is allowed to connect ADJ.U output to +RS and -RS outputs through a trimmer resistor to select the necessary value of the output PSU's voltage from the range sepcified above.
X2.10 (PGOOD)	Output voltage diagnostic. PGOOD output employs the principle of "bare collector", i.e. if the output voltage is equal to 75% of the nominal set value, the output of the PGOOD closes to -RS output; if the output voltage of the unit is less than 75% of the nominal set value (Uout. <75% of Uout nom.), the output of the PGOOD turns into the condition of open collector (disconnects from the output -RS). On/off hysteresis of the PGOOD output shall be up to 5 V. Threshold of Power Good Function automatically adjusts to the preset output voltage. It is allowed to connect the voltage source to the to the PGOOD output through a limiting resistor from 10 kOhm to 47 kOhm. In this case at Uout. >75% from the preset Uout nom. PGOOD output voltage becomes equal to Upgood. <1 V; while at Uout. <75% of the preset Uout. nom., Upgood becomes >3 V. For correct operation of the unit we recommend that you use the PGOOD output for -RS outputs. The rated allowable voltage on PGOOD output for -RS output is 30 V. The rated allowable current through the PGOOD output is 50 mA.

PARALLEL CONNECTION OF MODULES



Parallel connection of modules:
VD1, VD2, VD3 — isolating diodes
RH — load

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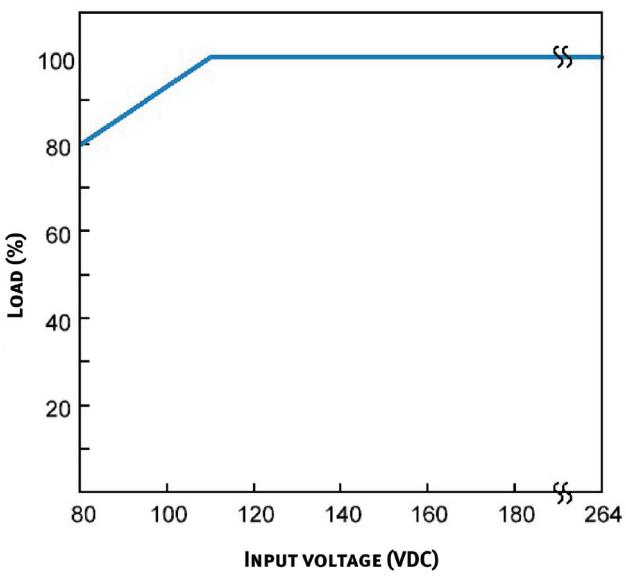
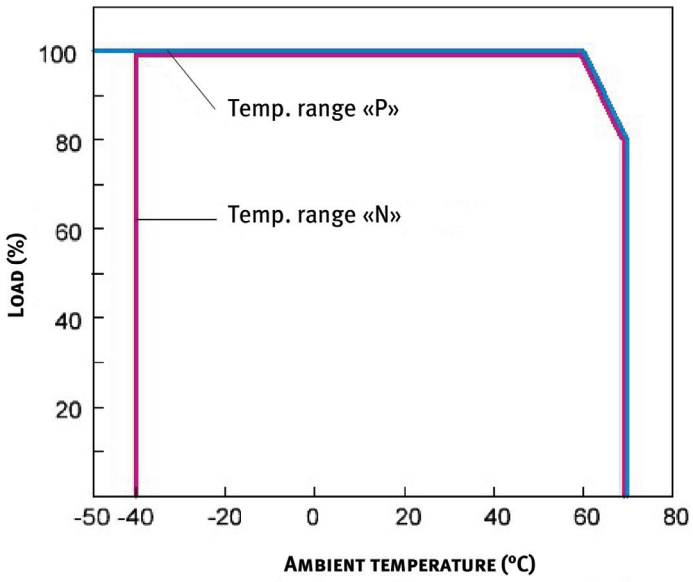
POWER DERATING





BLOCK DIAGRAM