

AC/DC power supplies

KAN Family KAN5000, 5 kW

Under development



Family description

Reliable AC/DC power supplies designed for harsh environments, extreme temperatures from -20 to $+50$ °C and high humidity. Output voltage up to 300 VDC, efficiency up to 95 % and EMC Class B (EN55022 (CISPR22)).

Built-in digital control allows integrating of KAN5000 into high power platforms fulfilling different tasks thanks to wide range of adjustments and service functions.

Intelligent active cooling decreases noise pollution, increases life of fans and improves operation temperature mode.

Features

- ◀ Input voltage: ~ 220 VAC (single phase)
- ◀ Efficiency up to 95 %
- ◀ Output voltage up to 300 VDC
- ◀ Output voltage adjustment 20...100 %
- ◀ Output current adjustment 0...100 %
- ◀ RS-485 – digital control and monitor interface
- ◀ Programmable operation mode: current source or voltage source
- ◀ Compact design – power density up to 19 W/in^3

Hot swap

Modular type

Multi-purpose application



Description of KAN5000 on the manufacturer's website:
eng.kwsystems.ru/catalog/models/33

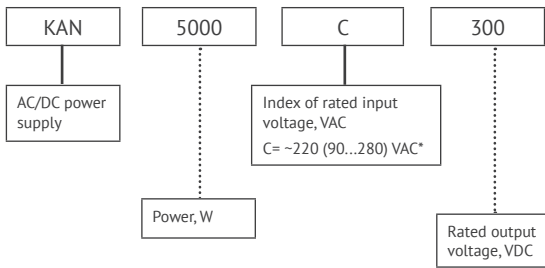
Order registration

+7 473 200 87 80, Global Operations Team

Technical support

Mikhail Timokhin, mtimohin@kwsystems.ru

Ordering information



Output specifications**

Parameter	Value		
Unit name	KAN5000C60	KAN5000C250	KAN5000C300
Rated output voltage, VDC	60	250	300
Output voltage range, VDC	30–66	125–250	150–300
Efficiency, %	93	95	95
Rated output current, A	83,3	20	16,7
Output current adjustment range, %***	0... 100		
Output voltage adjustment range, %	20...100		
Ripple and noise (p-p)	<1% Uout. nom		
Total voltage regulation, %	Input voltage variation 176–264 VAC Output current variation 0–100 %		max 2
Output voltage transient deviation Vs 10–100–10 % load	max 5 % Uout. nom		
Transient time	20 µs		
Parallel mode	up to 20 units***		
Malfunction signal	dry contact, closed – OK		
Start-up time	up to 2,5–4,5 s after power supply 2 s after supplying signal to Remote On/Off pins		

Input specifications**

Parameter	Value	
Mains type	Single phase 220 VAC	220 VDC
Input voltage range, VAC	90...280 ****	100...380 ****
Rated input voltage range, VAC (without derating)	174...264	240...370
AC mains frequency, Hz	45–65	0
PFC	active	
Power factor	>0,98 with full load	
EMC	IEC 61000-3-12:2004 MIL-STD-461E CE102	
EMI	IEC 61000-6-4:2006 MIL-STD-461E RE102	

* For KAN5000CXXX.

** All specifications are valid for normal climatic conditions (ambient temp. +15...+35°C; relative humidity 45...80%; air pressure 8,6*10⁴...10,6*10⁴ Pa), Uin.nom., Iout.nom., unless otherwise stated.

*** In case the output current is stabilized.

**** In case the input voltage decreases from 174 down to 90 VAC, the output power linearly drops down to 2000 W.

Protections

Type of protection	Single phase 220 VAC	220 VDC
Overheat protection	internal with hysreresis at +100°C	
Overvoltage protection, software	300 V	410 V
Overvoltage protection, vriable resistor	320 V	420 V
Overcurrent protection	>105 % Inom	
Short-circuit protection (with Uout. less then 50 VDC)	auto recovery	

Basic specifications

Parameter	Value	
Compliance	EN60950-1 EN55022, EN55024	+ +
Ambient temperature	operating	-20...+50°C (custom -40...+50°C)
	storage	-55...+70°C
Isolation voltage	input/case	3000 VAC
	input/output	3000 VAC
	output/case	1500 VAC
Isolation resistance	≥ 20 MOhm	
Cooling	built-in forced fan, adaptive	
MTTF	max 90000 hrs	
Case material	metal	
Dimensions	475×140×63 mm	
Weight	max 6	
Warranty	2 years	

Digital interface

Specifications of digital interface (option)		
Control interface	RS-485, isolated	
Number of units connected to RS-485 network	up to 30, separate and group control	
Control device	PC with Win XP, 7, 8	

Stabdard functions

Inrush current limitation.

Overcurrent protection.

Remote sence cut-off protection (overvoltage >105 % Uout. max).

Remote on/off.

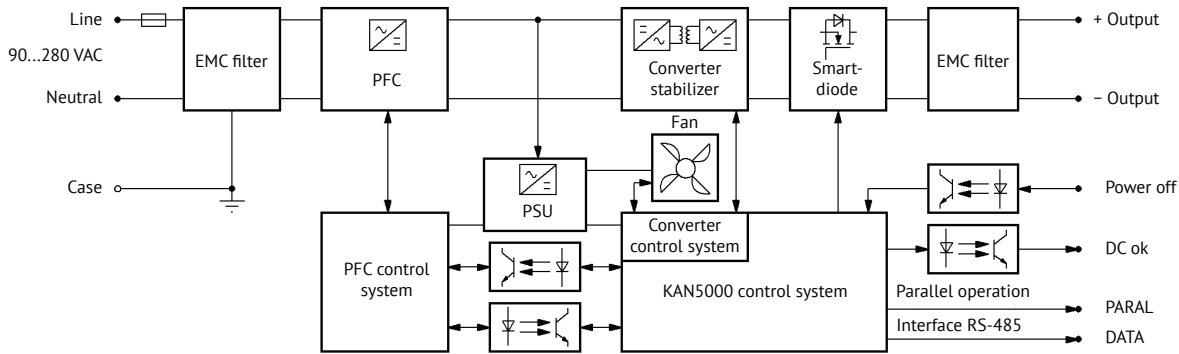
Mounting flanges.

Optional functions

Customized output voltage.

Different algorithms of thermal protection.

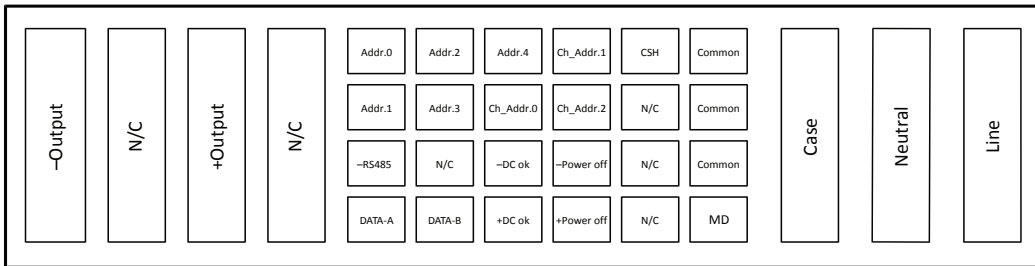
Block diagram



External connector

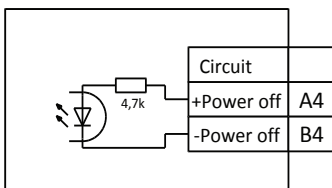
Connector type (block section): 1-6450130-4 «TE Connectivity» MBXL R/A HDR 4P+24S+3ACP

Mating connector type: 1-6450170-8 «TE Connectivity» MBXL R/A RCPT 3ACP+24S+4P

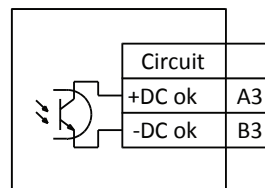


Discrete control circuit layouts

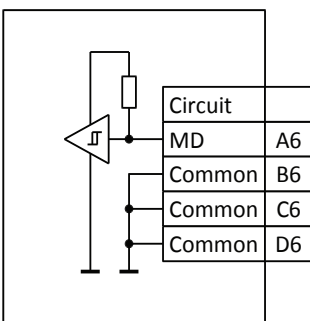
Remote power off signal



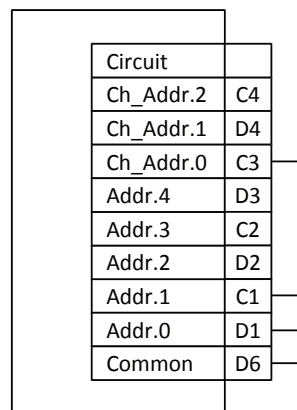
Module operation condition DC-OK signal



Disconnection detection layout



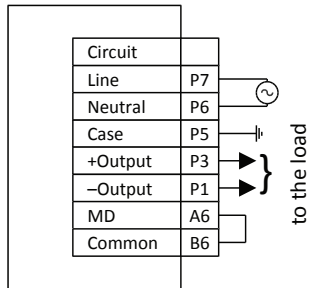
Example of converter address set-up



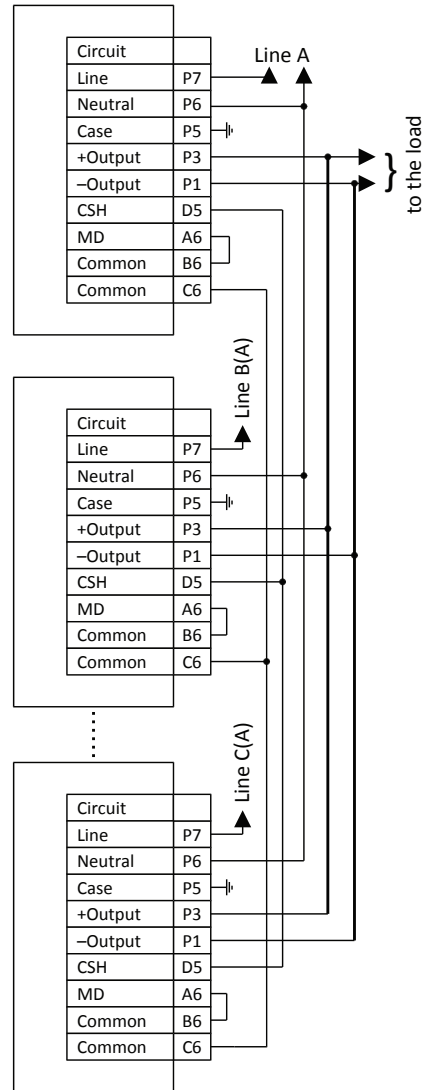
Address: 11011100b-DCh-220

Connection diagrams of KAN5000

Single type connection

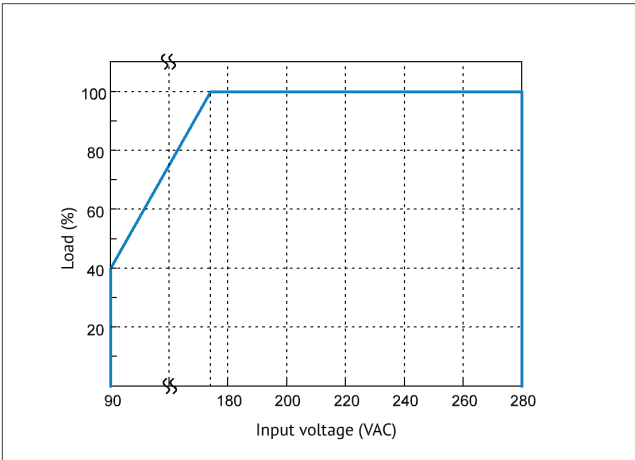


Parallel operation of several units

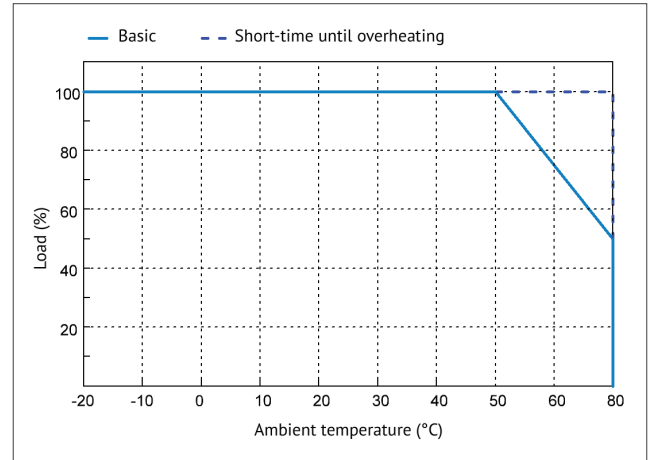


Derating

vs Input Voltage



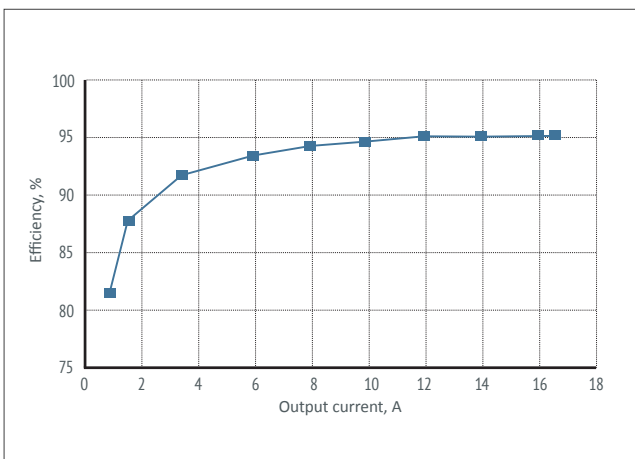
vs Temperature



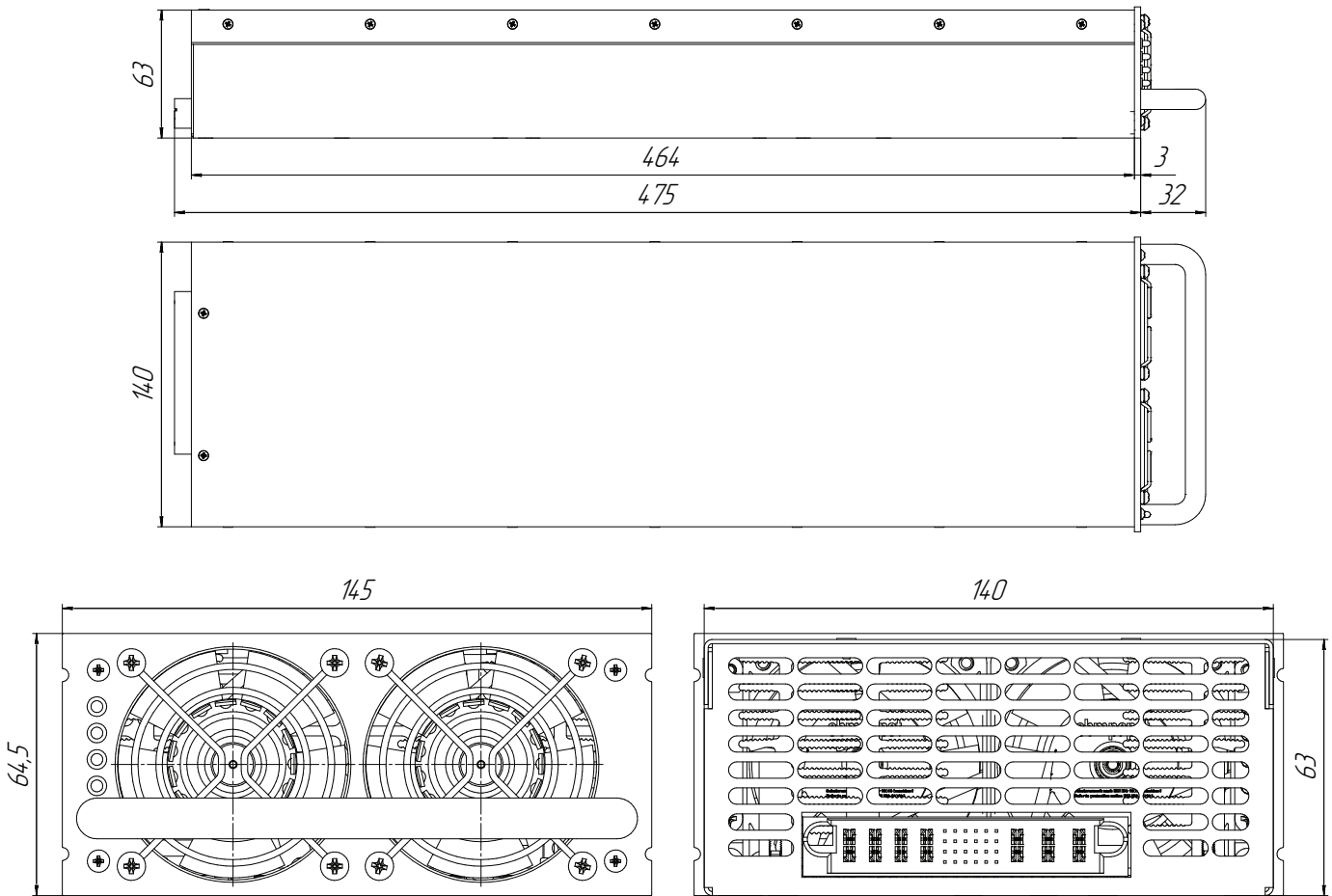
Diagrams show results of testing KAN5000C300, vertical axis relates to the Load (%).

Efficiency

Efficiency of KAN5000C300 vs output current



Dimensions



LED meaning

Symbol	LED	Meaning	Permanent	Blinking	PSU condition
~	green	MAINS	●		mains voltage within rated range (174–280 VAC)
				●	mains voltage is low (90–174 VAC)
U	green	Ustab.	●		output voltage stabilization
				●	power-off command received
I	green	Ustab.	●		output current stabilization / overload
				●	power-off command received
🔔	red	error	●		failure, mains is out of operating range, overheating, failure, overvoltage
				●	fan failure



www.kwsystems.ru info@kwsystems.ru

KW Systems, LLC is the leading Russian developer and manufacturer of AC/DC converters and power supply systems for mission critical applications.

Druzinnikov str. 1, Voronezh
394026, Russia
+7 473 200-87-80

1, bld. 2, BC "W Plaza 1",
office A403, Moscow
101000, Russia
+7 499 372-50-10