



SPECIFICATION FOR APPROVAL



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KEC-1.2KA-02FP

Open Frame Switching Power Supply

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KEC-1.2KA-02FP

Manufacturer Part No.: KS260307



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1. INPUT REQUIREMENTS

1.1 Highlights & Features

- Dual isolated DC outputs: 54V and 12V.
- Compliant with international safety and EMC standards.
- Requires forced-air cooling for rated output power.

1.2 General Description

The KEC-950A-02FP is a 950W open-frame AC-DC switching power supply designed for industrial and networking applications. It provides two regulated DC outputs (54Vdc and 12Vdc) and operates over a universal AC input range of 90–264Vac. Forced-air cooling is required for full-load operation.

1.3 Environmental Compliance

RoHS, REACH, and PAHs compliant.

1.4 Input Conditions

The power supply shall operate within the following input voltage range:

Parameter	Specification
Rated input voltage	100-240Vac
Operating range	90-264Vac
Rated input frequency	50/60Hz +/- 3Hz
Rated input current	15A maximum
Input protection	Internal AC input line fuse.
Power factor	> 0.95 at 115Vac/60Hz and >0.9 at 230Vac/50Hz under full load
Brownout protection	Output regulation is not guaranteed below 85Vac. Unit may shut down below 65Vac.

1.5 AC Inrush Current

- < 40A at 115Vac / 60Hz , cold start at 25°C
- < 60A at 230Vac / 50Hz , cold start at 25°C

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2. OUTPUT REQUIREMENTS

2.1 Output Voltage and Current

Item	Performance		Remarks
Output Voltage	54Vdc	12Vdc	
Output Tolerance	+/-5%	+/-5%	
Load Regulation	+/-5%	+/-5%	
Minimum Current	0.5A	0A	
Rated Output Current	16.6A	25A	
Ripple and Noise	600mVp-p	200mVp-p	Refer to Note (1)
Capacitive load	220~500μF	1000~20000μF	
Dynamic Load Regulation	+/-5%	+/-5%	Refer to Note(2)
Overvoltage protection	63V Max	16V	
Overcurrent protection	110%~150%	110%~150%	Max. load
Overshoot	<5%	<5%	
Undershoot	<5%	<5%	
Hold-up Time	10ms Min.	0ms Min.	Refer to Note (3)
Turn-on Time	3.0 Sec Max.		Refer to Note (4)

NOTE:

(1) 54V output decoupled with a 100 μF electrolytic and 0.1 μF ceramic capacitor. 12V output decoupled with a 500 μF electrolytic and 0.1 μF ceramic capacitor. Measurement frequency range is 500 Hz to 1MHz.

(2) The dynamic response of power supply will be measured including the minimum system capacitive load. The following table gives the maximum acceptable voltage transient for the current transients on the 54V and 12V output.

Output	Minimum load	Maximum load	Transient repetition rate	Minimum cap
54V	50%	100%	Load transient frequency: 100Hz and 1kHz Duty cycle: 50%	220uF
	0.5A	50%		
12V	50%	100%		1000uF
	0.2A	50%		

The current transient slew rate shall be 0.5A/us on the 54V and 0.5A/us on the 12V output.

(3) Tested at 115Vac/60Hz under full load. Measured from AC loss until outputs drop below 49V (54V line) and 10.8V (12V line).

(4) < 3.0s under full load and maximum system capacitance. Measured from AC application (0° phase angle) until output reaches 90% of nominal voltage.

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2.2	Rise time	< 50ms for all outputs to reach nominal regulation limits.
2.3	Short-circuit protection	The power supply withstands a continuous short circuit on any output and will automatically recover after the fault condition is removed (Auto-recovery).
2.4	Over temperature protection	The power supply will shut down during an over-temperature condition and automatically recover once the temperature returns to safe operating limits.

3. MECHANICAL

3.1 Enclosure and Layout

Weight	TBD g (Typ.)
Dimensions	190mm (L) x 90mm (W) x 39.5mm (H)

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4. REGULATORY COMPLIANCE

4.1 EMC Specifications

System-level integration is required to ensure full compliance of the end product.

4.1.1 Radiated and Conducted Emission

FCC Part 15 Class A.

EN55032 Class A.

4.1.2 Harmonics

EN 61000-3-2 Compliant.

4.2 Immunity

4.2.1 Electrostatic Discharge Immunity

EN 55035, EN 61000-4-2

Specification: ± 15 kV air, ± 8 kV contact (150 pF / 330 Ω network). Performance Criteria A.

4.2.2 Radiated Field Immunity

EN 55035, EN 61000-4-3

Field Strength: 3V/m (80% AM at 1 kHz). Additional testing at 1800/2600/3500/5000 MHz, Performance Criteria A.

4.2.3 Fast Transient Immunity

EN 55035, EN 61000-4-4

Power line: ± 1 kV

Performance Criteria A

4.2.4 Surge Immunity

EN 55035, EN 61000-4-5

Differential mode: ± 2 kV. Common mode: ± 4 kV. Applied at $+90^\circ$ / -270° phase angles.

Performance Criteria A

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4.3 Safety Requirements and Certification

4.3.1 Regulatory Standards

The power supply shall comply with the following international regulatory standards:

Certification	Country or Region	Certified Status	Standard
UL/CUL	USA/Canada	TBD	UL 62368-1
FCC	United States	TBD	Part 15 Class A
CE	Europe	TBD	EN 62368-1
CCC	China	TBD	GB4943.1
BSMI	Taiwan	TBD	CNS15598-1

4.3.2 Additional Safety Requirements

- ◎ Primary to Earth (FG): 1.5KV 1min. (trip level: 10mA) room temperature and ambient humidity.
1.8KV 3sec. (trip level: 10mA) for production test.
- ◎ Primary to Secondary: 3KV 1min. (trip level: 10mA) room temperature and ambient humidity.
DC 4.242KV 3sec. (trip level: 10mA) for production test.
- ◎ Insulation Resistance: 10MΩ(MIN.) at 500 VDC (Primary to Secondary).
- ◎ Leakage Current: 3.25mA max.

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5. RELIABILITY

5.1 MTBF

> 100,000 hours per Telcordia SR-332, Issue 3, at 25°C ambient and full rated load.

5.2 Electrolytic Capacitor Lifetime

Minimum 5-year operational lifetime at 110Vac input, full rated load, and 50°C ambient.

All critical E-Caps are 105°C-rated.

5.3 Shock

Compliant with IEC 60068-2-27.

Waveform: Half-sine

Peak Acceleration: 30 G

Pulse Duration: 11 ms

Test Axes: X, Y, and Z axes

Number of Shock Pulses: 3 shocks per direction (18 total)

5.4 Vibration

Compliant with IEC 60068-2-6.

Frequency Range: 10 Hz to 55 Hz

Acceleration: 2 G

Sweep Rate: 1 octave/minute

Test Axes: X, Y, and Z

Test Duration: 30 minutes per axis

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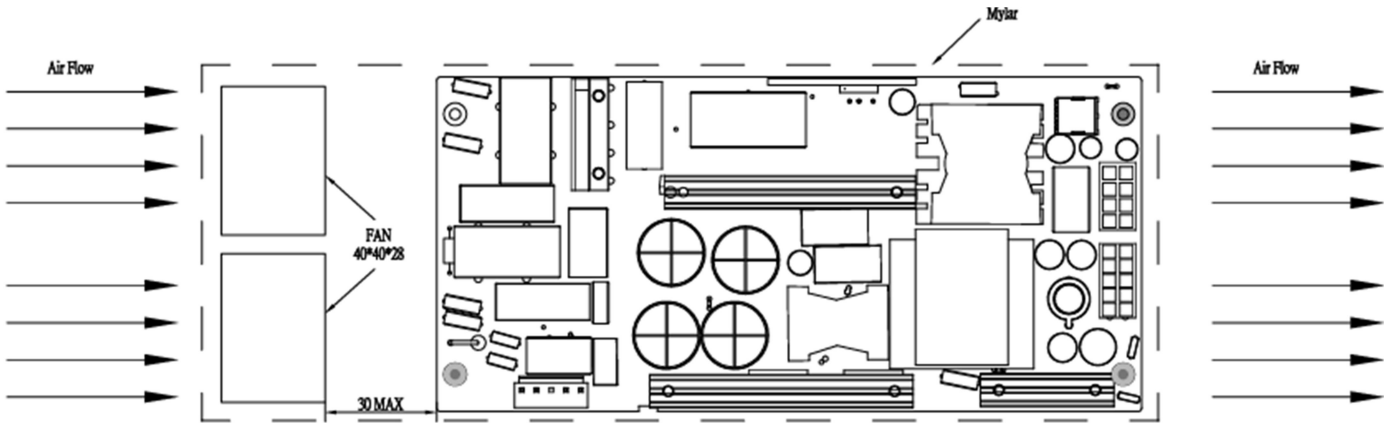
6. ENVIRONMENTAL REQUIREMENTS

Temperature	Operating	-10°C to +50°C
	Storage	-40°C to +85°C
Humidity	Operating	5%~95% (non-condensing)
	Storage	5%~95% (non-condensing)
Altitude	Up to 5000 meters.	

6.1 Operating Conditions

Forced air cooling of 31.3 CFM minimum is required for full-rated output operation.

Airflow direction: as shown in the figure below.

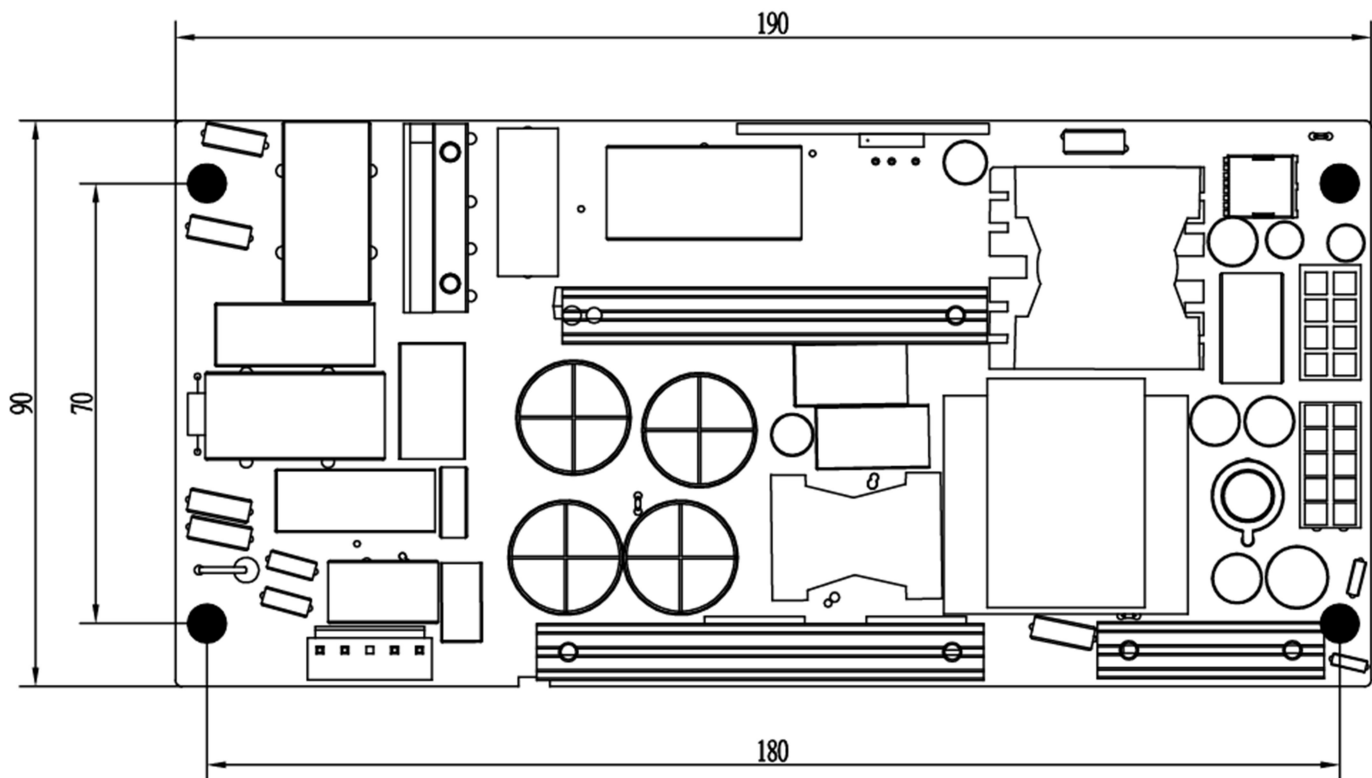


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7. APPEARANCE DRAWING: (UNIT: MM)



- NOTE:
- 1. PAHS REACH ROHS
 - 2. Tolerance: +/-1.0mm

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8. CONNECTOR & PIN DEFINITION

CN1	
PIN NO.	Signal
1	Line (L)
2	Line (L)
3	NC
4	Neutral (N)
5	Neutral (N)

CN2	
PIN NO.	Signal
1	12V PG
2	+12V GND
3	+12V GND
4	+12V
5	54V PG
6	+12V GND
7	+12V
8	+12V

CN3	
PIN NO.	Signal
1	NC
2	+54V GND
3	+54V GND
4	+54V
5	+54V
6	+54V GND
7	+54V GND
8	+54V GND
9	+54V
10	+54V

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9. PACKING (UNIT: MM)

To Be Determined