

40W, AC-DC converter



RoHS

FEATURES

- Universal 85-264VAC or 100-370VDC input voltage
- Operating ambient temperature range: -25°C to +70°C
- Output short circuit, over-current, over-voltage protection
- High efficiency, high reliability
- Regulated output, low output ripple & noise
- EMI performance meets CISPR32 / EN55032 CLASS B
- 2 years warranty

KO45-10Cxx series is one of KRECO's compact size power converter. It features universal AC input and at the same time accepts DC input voltage, low power consumption, high efficiency, high reliability, reinforced isolation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets UL/EN/IEC62368 standards. The converters are widely used in industrial, office and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current			Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.		
			(Vo1/Io1)	(Vo2/Io2)	(-Vo3/Io3)		Vo1	Vo2	-Vo3
EN	KO45-10C050512-20	40.5W	5V/3.00A	12V/2.00A	-5V/0.30A	78	7200	2000	220
	KO45-10C051212-20	42.6W	5V/3.00A	12V/2.00A	-12V/0.30A	78	7200	2000	300
	KO45-10C051515-16	43.5W	5V/3.00A	15V/1.60A	-15V/0.30A	78	7200	1500	220

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Input Voltage Range	AC input	85	..	264	VAC	
	DC input	100	..	370	VDC	
Input Frequency		47	..	63	Hz	
Input Current	115VAC	..	..	1.2	A	
	230VAC	..	..	0.7		
Inrush Current	115VAC	..	35	..		
	230VAC	..	50	..		
Leakage Current	240VAC/50Hz	0.5mA Max.				
Hot Plug		Unavailable				

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Vo1	..	±2	..	%
	Vo2, -Vo3	..	±10	..	
Line Regulation	Vo1	..	±0.5	..	
	Vo2, -Vo3	..	±1.5	..	
Load Regulation	Balanced load	Vo1	..	±2	%
		Vo2, -Vo3	..	±5	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value), room temperature	Vo1	..	120	mV
		Vo2, -Vo3	..	200	
Stand-by Power Consumption	230VAC	..	..	0.5	W
Temperature Coefficient	Vo1	..	±0.02	..	%/°C
Short Circuit Protection		Hiccup or turn off, continuous, self-recovery			
Over-current Protection		≥120%Io, self-recovery			

Over-voltage Protection	5VDC output	≤7.5V (Output voltage hiccup clamp or turn off)			
Minimum Load		10	--	--	%
Hold-up Time	115VAC input	--	8	--	ms
	230VAC input	--	50	--	

Note: *The "parallel cable" method is used for ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output	Electric Strength Test for 1min., leakage current <5mA	3000	..	..	VAC
Operating Temperature			-25	..	+70	°C
Storage Temperature			-25	..	+85	
Storage Humidity			..	..	90	%RH
Altitude			..	..	2000	m
Switching Frequency			..	65	..	kHz
Power Derating		-25°C to -10°C	2.0	..	..	% / °C
		+50°C to +70°C	2.5	..	..	
		85VAC-165VAC	0.375	..	..	% / VAC
		240VAC-264VAC	0.833	..	..	
Safety Standard		EN62368-1 (Report) ; Design refer to UL/IEC62368-1				
Safety Class		CLASS II				
MTBF		MIL-HDBK-217F@25°C >300,000 h				

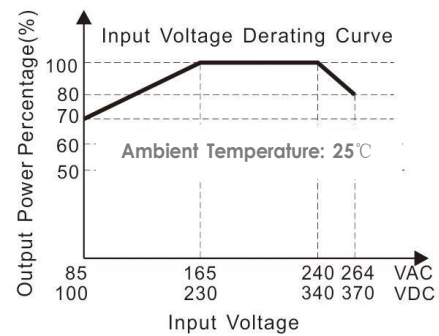
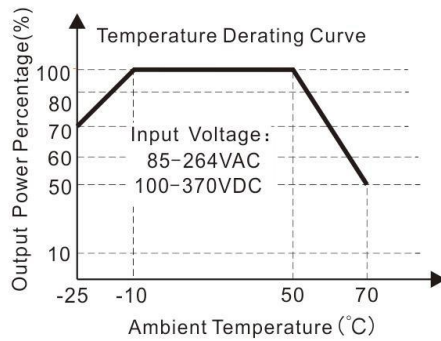
Mechanical Specifications

Dimension	102.00 x 51.00 x 27.50 mm
Weight	105g (Typ.)
Cooling method	Free air convection

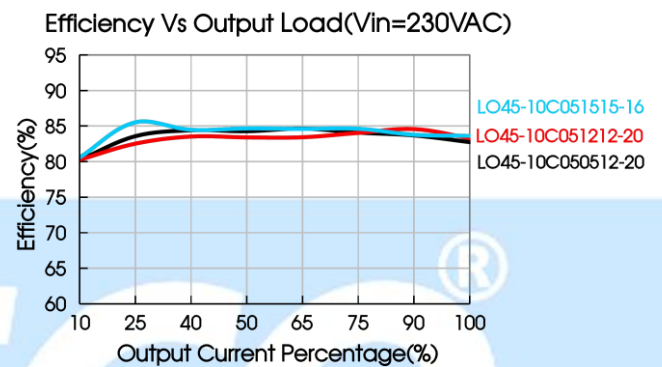
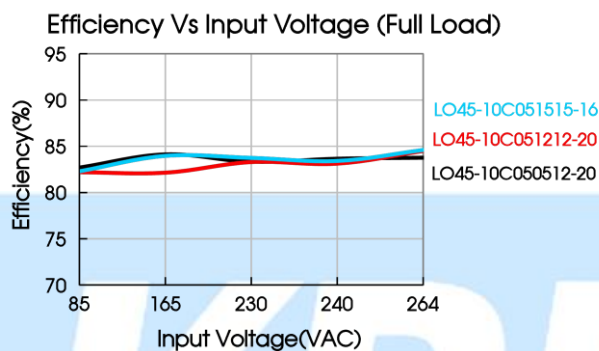
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B
	RE	CISPR32/EN55032	CLASS B
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±1KV perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s perf. Criteria A
	Voltage dips, short interruption and voltage variations	IEC/EN61000-4-11	100% dip 1 periods, 30% dip 25 periods,

Product Characteristic Curve



Note: ① With an AC input between 85-165VAC/240-264VAC and a DC input between 100-230VDC/340-370VDC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.



Design Reference

1. Typical application

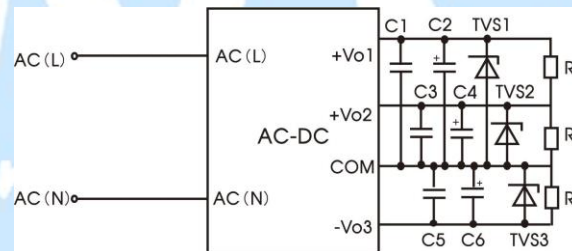


Fig. 1: Typical circuit diagram

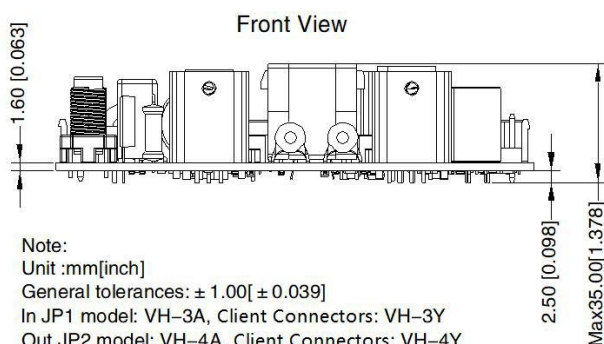
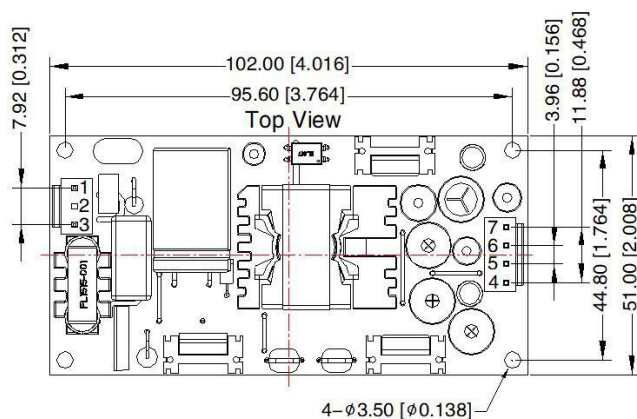
Part no.	C1/C3/C5	C2/C4/C6	TVS 1	TVS 2	TVS 3
KO45-10C050512-20	1μF/25V	10μF/25V	SMBJ7.0A	SMBJ20A	SMBJ7.0A
KO45-10C051212-20			SMBJ7.0A	SMBJ20A	SMBJ20A
KO45-10C051515-16			SMBJ7.0A	SMBJ20A	SMBJ20A

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2, C4, C6 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1, C3, C5 are ceramic capacitors used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

2. For additional information please refer to application notes on www.kreco.com.cn.

Dimensions and Recommended Layout



Note:
Unit :mm[inch]
General tolerances: ± 1.00 [± 0.039]
In JP1 model: VH-3A, Client Connectors: VH-3Y
Out JP2 model: VH-4A, Client Connectors: VH-4Y
Mounting hole screwing torque: Max 0.4 N · m
The layout of the device is for reference only, please refer to the actual product

Pin-Out			
Pin	Function	Product Connectors	Client Connectors
1	AC(L)	VH-3A or B2P3-VH or the same Spec.	VH-3Y or VHR-3N or the same Spec.
2	NoPin		
3	AC(N)		
4	-Vo3	VH-4A or B4P-VH or the same Spec.	VH-4Y or VHR-4N or the same Spec.
5	COM		
6	+Vo2		
7	+Vo1		

Note:

- For additional information on Product Packaging please refer to <https://www.KRECO.com.cn>. Packaging bag number: 58220192;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% with nominal input voltage and rated output load;
- All index testing methods in this datasheet are based on our company corporate standards;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.