

40W, AC/DC converter



## FEATURES

- Wide input voltage range: 85 - 264VAC/100 - 370VDC
- Low standby power consumption: 0.5W, conversion efficiency up to 84%
- Output short circuit, over-current, over-voltage protection
- UL60950, EN60950 approval
- Mounting: Chassis mounting

LH40 is a series of high efficiency 40W AC-DC power supplies which have advantages of high surge resistance, reliability, and low power consumption. The series products are widely used in industrial control, home automation, access control and a broad range of other electrical instruments and applications

## Selection Guide

RS Stock No.	Part No.	Output Power	Nominal Output Voltage and Current	Efficiency (230VAC, %/Typ.)	Max. Capacitive Load( $\mu$ F)
			(Vo/Io)		
1446273	LH40-10B12A5	40W	12VDC/3333mA	84	9000
1446274	LH40-10B15A5		15VDC/2666mA	84	7000
1446275	LH40-10B24A5		24VDC/1667mA	84	2000

## 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	--	440	Hz
Input current	115VAC	--	--	1.0	A
	230VAC	--	--	0.6	
Inrush current	115VAC	--	30	--	
	230VAC	--	50	--	
Built in input fuse		3.15A/250V, slow blow.			

## Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	LH40-10Bxx	--	$\pm 2$	--	%
Line Regulation		--	$\pm 0.5$	--	%
Load Regulation		--	$\pm 1$	--	%
Ripple & Noise	20MHz bandwidth (peak-peak value)	--	50	100	mV
Temperature Coefficient		--	$\pm 0.02$	--	%/ $^{\circ}$ C
Stand-by Power Consumption		--	--	0.5	W
Short Circuit Protection		Continuous, self-recovery			
Over-current Protection		$\geq 110\%I_o$ self-recovery			
Over-voltage Protection	12V Output	--	--	16	V
	15V Output	--	--	24	
	24V Output	--	--	35	
Min. Load	LH40-10Bxx	0	--	--	%
Trim				$\pm 10$	
Hold-up Time	115VAC input	--	15	--	ms
	230VAC input	--	80	--	

## General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output	Test time: 1min	LH40-10Bxx	3000	--	--	VAC
	Output-output						
Operating Temperature				-40	--	+70	°C
Storage Temperature				-40	--	+85	
Storage Humidity				--	--	95	%RH
Welding Temperature		Wave-soldering		260 ± 5°C; time: 5 - 10s			
		Manual-welding		360 ± 10°C; time: 3 - 5s			
Switching Frequency				--	65	--	kHz
Power Derating		-40°C to -30°C (LH40-10B12/15)		3.0	--	--	% / °C
		+55°C to +70°C (LH40-10B12/15)		3.7	--	--	
		+55°C to +70°C (LH40-10B24)		2.7	--	--	
Safety Standard				IEC60950/EN60950/UL60950			
Safety Certification				EN60950/UL60950			
Safety Class				CLASS II			
MTBF		MIL-HDBK-217F@25°C		>300,000 h			

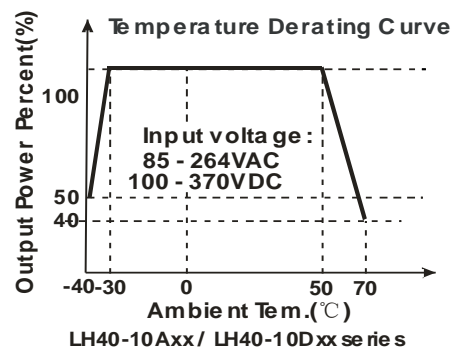
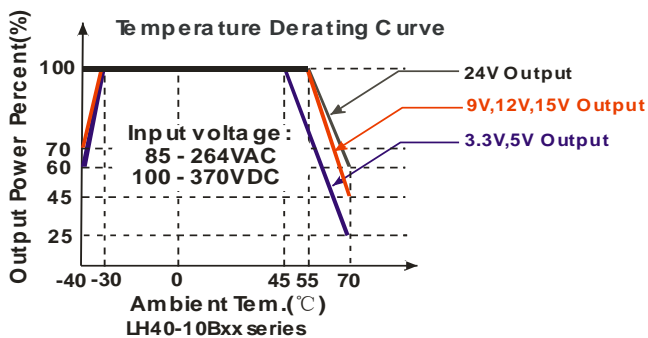
## Physical Specifications

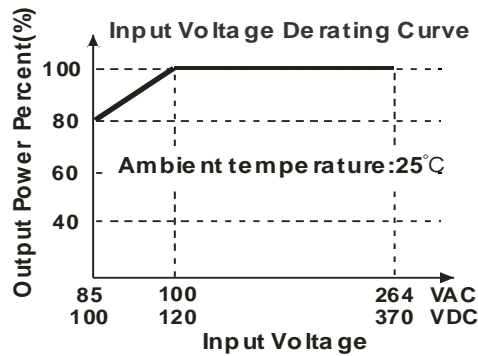
Casing Material		Black flame-retardant and heat-resistant plastic (UL94V-0)
Dimensions	A5 chassis package	135.00*70.00*33.50 mm
Weight	Horizontal package/A5 chassis package/A6 DIN-rail package	225g/310g/370g(Typ.)
Cooling Method		Free air convection

## EMC Specifications

EMI	CE	CISPR22/EN55022	CLASS B	
	RE	CISPR22/EN55022	CLASS B	
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	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/line to ground ±2KV	perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A
	PFM	IEC/EN61000-4-8	10A/m	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%, 70%	perf. Criteria B

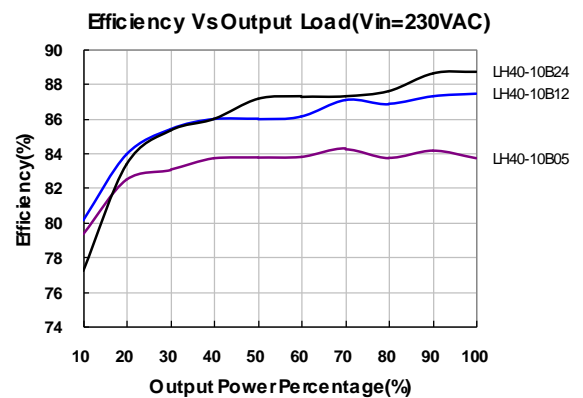
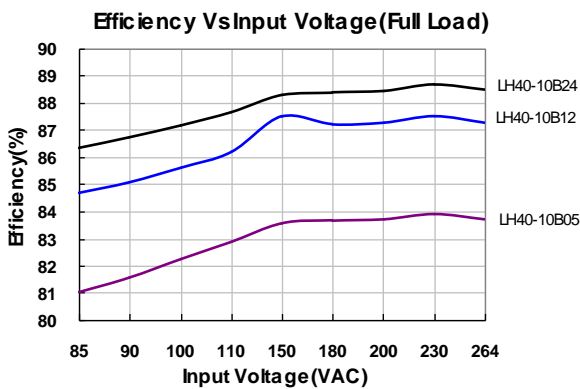
## Product Characteristic Curve





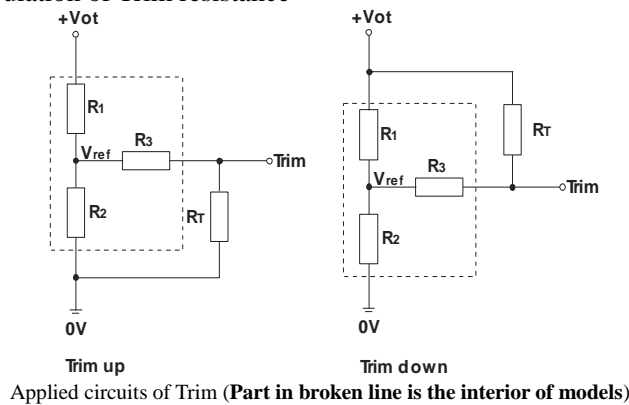
Note:

Input voltage should be derated based on temperature derating when it is 85-100VAC/100-120VDC;  
 This product is suitable for use in natural air cooling environments, if in a closed environment; please contact our company's FAE.



## Design Reference

Application of Trim and calculation of Trim resistance



Calculation formula of Trim resistance:

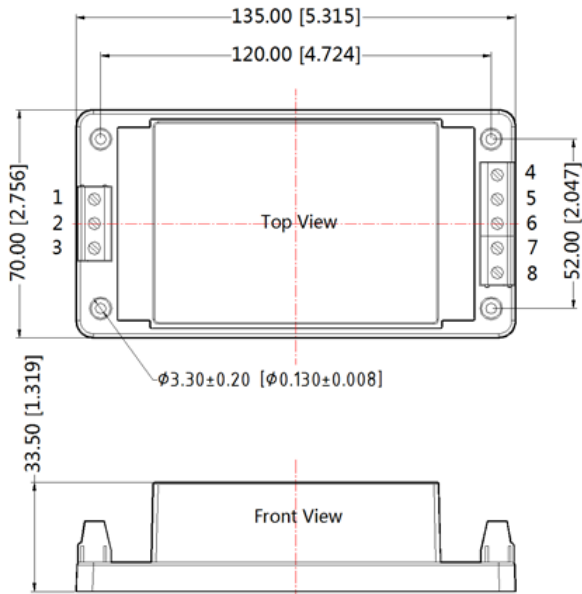
$$\text{up: } R_T = \frac{a R_2}{R_2 - a} - R_3 \quad a = \frac{V_{ref}}{V_{ot} - V_{ref}} \cdot R_1$$

$$\text{down: } R_T = \frac{a R_1}{R_1 - a} - R_3 \quad a = \frac{V_{ot} - V_{ref}}{V_{ref}} \cdot R_2$$

$R_T$  is Trim resistance,  
 $a$  is a self-defined parameter.

V <sub>out</sub>	R <sub>1</sub> (KΩ)	R <sub>2</sub> (KΩ)	R <sub>3</sub> (KΩ)	V <sub>ref</sub> (V)	V <sub>ot</sub> (V)
12V	3.83	1	1	2.5	Output voltage after regulation, variation ≤ ±10%
15V	4.99	1	1	2.5	
24V	8.66	1	1	2.5	

## A5 Chassis Package Dimensions



Pin - Out	
Pin	LH40
1	AC(L)
2	AC(N)
3	NC
4	+Vo
5	NC
6	-Vo
7	NC
8	Trim

Note:  
 Unit:mm[inch]  
 Wire range:24-12 AWG  
 Tightening torque: Max 0.4 N·m  
 General tolerances:±1.00[±0.040]

### Notes:

1. Packing bag number of Horizontal package: 58220021, the Packing bag number of A5: 58220031;
2. 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;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Specifications are subject to change without prior notice.