

## LO10-24BxxK

### Ultra wide input voltage range switched-mode power supply for electric-meter

#### FEATURES

- I Input voltage range: 30~280VAC/30~400VDC;
- I Conduction/Radiation: Class B;
- I Burst/Surge: Class 4;
- I Multi-output protection functions: short circuit protection, over-voltage protection;
- I High efficiency, high reliability, low ripple & noise, low standby power consumption;
- I Long-life low-impedance electrolytic capacitors;
- I Gild pin, customized available.



#### Ultra wide input voltage range switched-mode power supply for electric-meter

The LO10-24BxxK is designed for electric-meter application and operates over a very wide input voltage range: 30-280VAC / 30-400VDC, single output. The isolation voltage is 4000VAC between input and output. The product meets IEC/EN61000 "Burst ", "Surge " and " CISPR22/EN55022 Class B Conduction/ Radiation". So it supplies with the requirement of high isolation voltage and rigorous EMC.

#### PRODUCT PROGRAM

Model	Output voltage(V)	Output current (mA)	Ripple and Noise (typ)(mV)	Efficiency (%) (typ)
LO10-24B05K	5	1200	75	71
LO10-24B12K	12	550	130	77
LO10-24B13K	13	500	130	77

#### INPUT SPECIFICATIONS

Input Voltage Range	30~280VAC or 30~400VDC
Input frequency(Hz)	47~440
Input Current(A)	0.1 Typ @Vin=220V <sub>ac</sub> ,Io=100%
Standby power consumption (W)	0.2 Typ @Vin=220V <sub>ac</sub> ,Io=0

#### OUTPUT SPECIFICATIONS

Voltage set accuracy	±1 %	
Input variation	±0.5%	
Load variation (10% to 100%)	±1%	
Output Short circuit protection	Continuous, and auto recovery	
Output over voltage protection	LO10-24B05K	(Feedback-clamp) Voltage limited≤7.5V
	LO10-24B12K	(Feedback-clamp) Voltage limited≤15V
	LO10-24B13K	

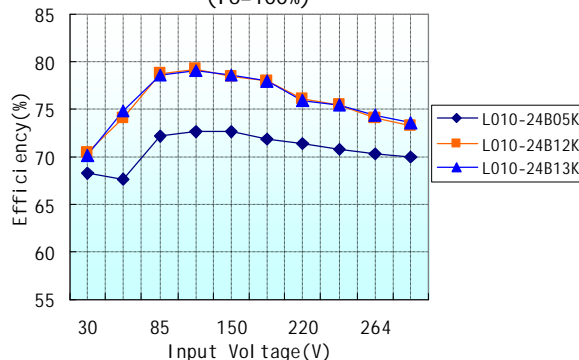
## COMMON SPECIFICATIONS

Leakage current(mA)		0.3Typ @Vin=220V <sub>ac</sub>		
Temperature drift(%/°C)		±0.02Max		
Start up time(ms)		50(Typ) @Vin=220V <sub>ac</sub> , Io=100%		
Hold-up time(ms)		200 (Typ) @Vin=220V <sub>ac</sub> , Io=100%		
Maximum capacitive load(μF)	LO10-24B05K	6000 @Vin=85V <sub>ac</sub> , Io=100%		
	LO10-24B12K	2000 @Vin=85V <sub>ac</sub> , Io=100%		
	LO10-24B13K	1500 @Vin=85V <sub>ac</sub> , Io=100%		
Isolation voltage	Input/Output	4000VAC 1 min; insulation resistance> 50MΩ@500VDC		
EMC Compliance	EMI	RE	CISPR22/EN55022 CLASS B	
		CE	CISPR22/EN55022 CLASS B	
	EMS	ESD	IEC/EN61000-4-2 Air ±8KV / Contact ±6KV	perf. Criteria B
		RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
		EFT	IEC/EN61000-4-4 ±4KV	perf. Criteria B
		Surge	IEC/EN61000-4-5 ±2KV	perf. Criteria B
		CS	IEC/EN61000-4-6 10 Vr.m.s	perf. Criteria A
		PFM	IEC/EN61000-4-8 10A/m	perf. Criteria A
Voltage dips、 short and interruptions immunity		IEC/EN61000-4-11 0%-70%	perf. Criteria B	
Environment	Operating tem., Humidity & altitude		-25~+70°C, 20-90%RH, 3000m(1000 feet)Max	
	Storage tem., Humidity & altitude		-25~+85°C, 20-90%RH, 9000m(3000 feet)Max	
	Vibration		10~55Hz, 19.6m/s <sup>2</sup> (2G), 3min; X, Y, Z axis 60min	
	Shock		196.1m/s <sup>2</sup> (2G), 11ms; X, Y, Z axis 1 time	
Others	Switching frequency		60kHz (typ)	
	Cooling		Free air convection	
	Weight		55g(typ)	
	Outline size		80mm(L)×40mm(W)×30mm(H)	

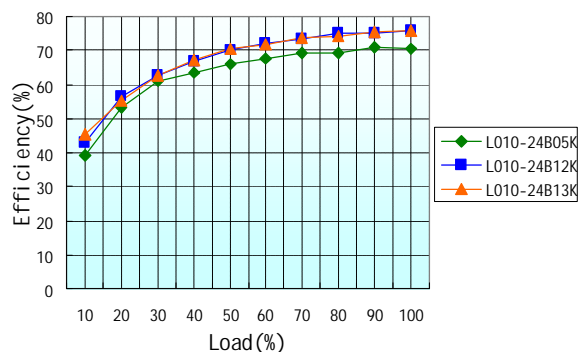
Note:  
 1. Unless otherwise specified, all specifications above are measured at rated input voltage and rated output load, TA=25°C, humidity < 75%;  
 2. Ripple and Noise were measured by the method of parallel lines. See detailed operation instructions at Testing of Power Converter section.

## CHARACTERISTIC CURVE

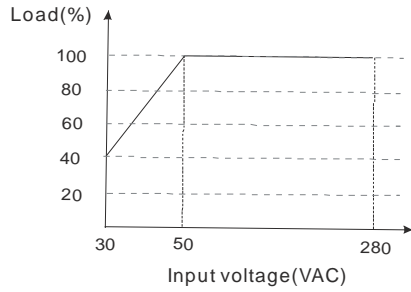
Input Voltage VS Efficiency curve  
(Io=100%)



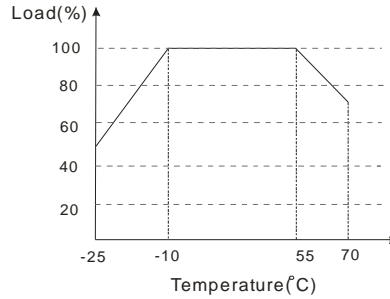
Load VS Efficiency curve (Vin=220V)



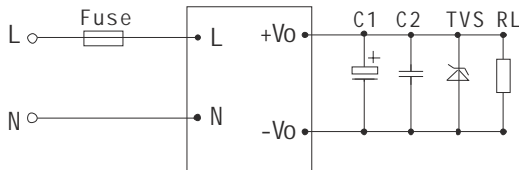
## INPUT VOLTAGE VS LOAD



## TEMPERATURE VS LOAD



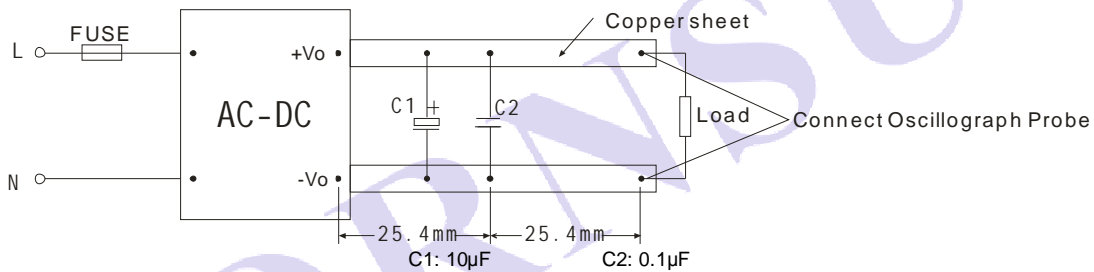
## TYPICAL APPLICATIONS



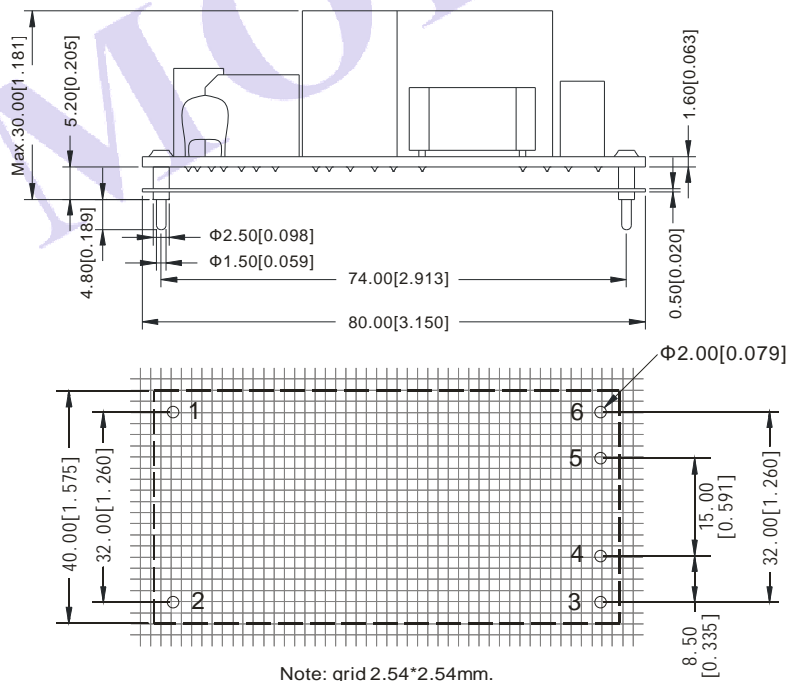
### Note:

Output filtering capacitor C1 is electrolytic capacitors, It is recommended to use high frequency and low impedance electrolytic capacitors (value:100 $\mu$ F/25V).C2 is ceramic capacitor and it is used to filter high frequency noise(Recommend value:0.1 $\mu$ F/50V). TVS is recommended component to protect post-circuits (when converter fails).

## PARALLEL LINES MEASURE



## OUTLINE AND DIMENSIONS

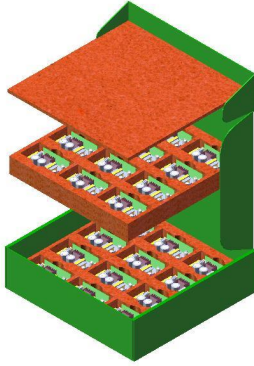


### NOTE:

- Unit: mm
- The other tolerances are  $\pm 0.30$ mm ,except especial explanation;
- FR-4,1.6mm thick double sided glass fiber PCB;
- 0.5mm black MYLAR insulating sheet material.

Pin	Name	Function
1	ACL	AC voltage line wire(L wire) or positive input voltage(DC)
2	ACN	AC voltage neutral wire(N wire) or negative input voltage(DC)
3	NC	NC
4	No Pin	No pin
5	OUT-	The second output voltage negative(-)
6	OUT+	The first output voltage positive(+)

## PACKAGE DIAGRAM



Inner packaging dimensions: L\*W\*H=365\*350\*105mm

Packaging quantity: 24PCS

Outer packaging dimensions: L\*W\*H=390\*360\*245mm

Packaging quantity: 48PCS

### **MORNSUN Science & Technology Co.,Ltd.**

Address: No. 5, Kehui St. 1, Kehui development center, Science Ave., Guangzhou Science City, Luogang district, Guangzhou, P.R.China.

Tel: 86-20-38601850

Fax:86-20-38601272

[Http://www.mornsun-power.com](http://www.mornsun-power.com)