

## Typical Performance

- Ultra wide range input (4:1), output 10W
- Conversion efficiency 91% (Typ)
- Isolated voltage 1500Vdc
- Ultra-low standby power consumption:0.036W (Typ)
- Ultra-fast startup: 1ms (Typ)
- Operating temperature range: -40°C~+85°C
- Input undervoltage protection, output short circuit, overcurrent, overvoltage protection
- Metal shell, low output ripple
- International standard pins, PCB board in-line installation

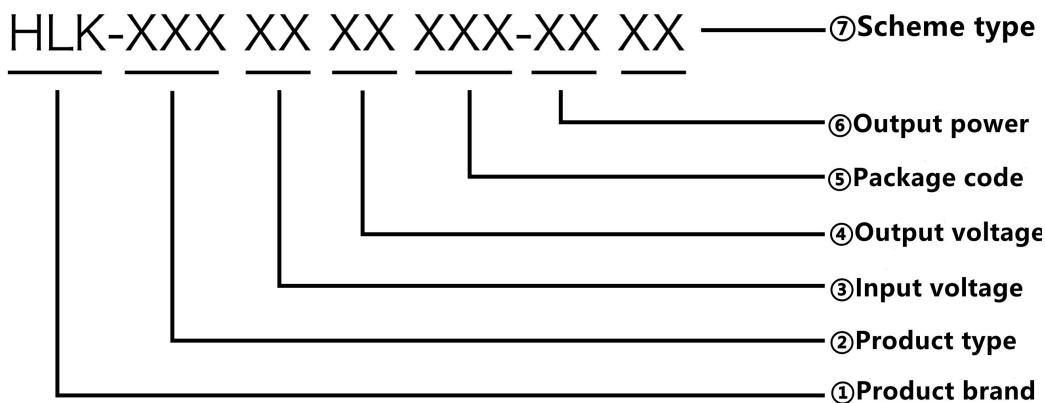
10W, ultra-wide voltage input, isolated voltage regulator single/dual, DIP package, DC-DC power module



RoHS

The output power of UR(A)B\_YMD-10WR3 series products is 20W, 4:1 wide voltage input range, efficiency up to 91%, 1500VDC conventional isolation voltage, allowable operating temperature -40°C to +85°C, with input under-voltage protection, Output overvoltage, overcurrent, short circuit protection function, bare metal meets CISPR32/EN55032CLASSA, widely used in medical, industrial control, electric power, instrumentation, communication, railway and other fields.

## Product Coding Rules



## Product List

Model <sup>①</sup>	Input Voltage range (Vdc)		Output Voltage/Current		Ripple and Noise	Maximum capacitive load	Efficiency @ full load
	Nominal value <sup>②</sup> (range value)	Max value	Output voltage (Vdc)	Output current (mA) (Max.Min.)	Full load (mVp-p) (TPY/Max.)	μF Max.	% (Min/TPY)
URB2403YMD-10WR3	24 (9-36)	40	3.3	2400/0	30/50	2500	80/82
URB2405YMD-10WR3			5	2000/0	30/50	2200	83/85
URB2412YMD-10WR3			12	833/0	50/80	680	87/89
URB2415YMD-10WR3			15	666/0	50/80	470	88/90
URB2424YMD-10WR3			24	416/0	50/80	220	89/91
URA2405YMD-10WR3			±5	±1000/0	30/50	1100	83/85
URA2412YMD-10WR3			±12	±416/0	50/80	330	86/88
URA2415YMD-10WR3			±15	±333/0	50/80	220	88/90
URA2424YMD-10WR3			±24	±208/0	50/80	100	89/91
URB4803YMD-10WR3			48 (18-75)	80	3.3	2400/0	30/50
URB4805YMD-10WR3	5	2000/0			30/50	2200	83/85
URB4812YMD-10WR3	12	833/0			50/80	680	87/89
URB4815YMD-10WR3	15	666/0			50/80	470	88/90
URB4824YMD-10WR3	24	416/0			50/80	220	89/91
URA4805YMD-10WR3	±5	±1000/0			30/50	1100	83/85
URA4812YMD-10WR3	±12	±416/0			50/80	330	86/88
URA4815YMD-10WR3	±15	±333/0			50/80	220	88/90
URA4824YMD-10WR3	±24	±208/0			50/80	100	89/91
URB1D03YMD-10WR3	110 (40-160)	180			3.3	2400/0	30/50
URB1D05YMD-10WR3			5	2000/0	30/50	2200	83/85
URB1D12YMD-10WR3			12	833/0	50/80	680	87/89
URB1D15YMD-10WR3			15	666/0	50/80	470	88/90
URB1D24YMD-10WR3			24	416/0	50/80	220	89/91
URA1D05YMD-10WR3			±5	±1000/0	30/50	1100	83/85
URA1D12YMD-10WR3			±12	±416/0	50/80	330	86/88
URA1D15YMD-10WR3			±15	±333/0	50/80	220	88/90
URA1D24YMD-10WR3			±24	±208/0	50/80	100	89/91

Note:

1. Due to the limited space, the above is just a list of typical products. If you need products other than the list, please contact the sales department of our company.
2. The maximum capacitive load indicates the maximum capacitive load that can be connected to +Vo or -Vo. If it exceeds this value, the product will not be able to start normally.
3. If the input voltage exceeds the maximum value, it may cause permanent damage to the product.

**Test conditions: Unless otherwise specified, all parameter tests are measured under nominal input voltage, purely resistive rated load and 25°C room temperature.**

## Input Features

Project	Operating conditions	Min.	Typ.	Max.	Unit	
Input current (full load/ no load)	24VDC Nominal Input Series, Nominal Input Voltage	3.3V	-	402/1	413/2	mA
		Other	-	490/1	502/2	
	48VDC Nominal Input Series, Nominal Input Voltage	3.3V	-	201/0.5	207/1	
		Other	-	245/0.5	251/1	
110VDC Nominal Input Series, Nominal Input Voltage	3.3V	-	87/0.3	90/0.5		
	Other	-	100/0.3	109/0.5		
Reflected ripple	24VDC Nominal Input Series, Nominal Input Voltage	-	40	-	mA	
	48VDC Nominal Input Series, Nominal Input Voltage	-	30	-		
	110VDC Nominal Input Series, Nominal Input Voltage	-	20	-		
Impulse voltage (Isec.max)	24VDC Nominal Input Series, Nominal Input Voltage	-0.7	-	50	VDC	
	48VDC Nominal Input Series, Nominal Input Voltage	-0.7	-	100		
	110VDC Nominal Input Series, Nominal Input Voltage	-0.7	-	200		
Starting voltage	24VDC Nominal Input Series, Nominal Input Voltage	-	-	9	VDC	
	48VDC Nominal Input Series, Nominal Input Voltage	-	-	18		
	110VDC Nominal Input Series, Nominal Input Voltage	-	-	40		
Input undervoltage protection	24VDC Nominal Input Series, Nominal Input Voltage	5.5	6.5	-	VDC	
	48VDC Nominal Input Series, Nominal Input Voltage	12	15.5	-		
	110VDC Nominal Input Series, Nominal Input Voltage	32	36	-		
Start time	Nominal input voltage and constant resistance load	-	1	-	mS	
Input filter type		PI type				
Hot plug		Not support				
Remote control terminal (Ctrl) *	Module turned on	Ctrl floating or connected to TTL high level (3.5-12VDC)				
	Module turned off	Ctrl is connected to GND or low level				
	Input current at shutdown	-	0	1	mA	

Note: \*Ctrl control pin voltage is relative to input pin GND

## Output Features

Project	Operating and test conditions	+Vo1			-Vo2		
		Min.	Typ.	Max.	Min.	Typ.	Max.
Load percentage	Load percentage	0%	-	100%	0%	-	100%
Output Voltage Accuracy		-	±1.0%	±2.0%	-	±2.0%	±3.0%
Linear adjustment rate	Input voltage range	-	±0.2%	±0.5%	-	±1.5%	±2%
Load regulation	20%~100% rated load, balanced load	-	±0.5%	±1%	-	±4.0%	±5.0%
Ripple & Noise	Pure resistive load, 20MHz bandwidth, peak-to-peak	-	50mVp-p	80mVp-p	-	50mVp-p	80mVp-p
Start delay time		-	1ms	-	-	1ms	-
Output voltage regulation	Input voltage range	-	No adjustment end	-	-	No adjustment end	-
Dynamic response step deviation	25% nominal load step	-	±3.0%	±5.0%	-	±3.0%	±5.0%
Dynamic response recovery time		-	300μs	500μs	-	300μs	500μs
Output overvoltage protection	Full voltage range input	110%Vo	-	160%Vo			
Output overcurrent protection	Full voltage range input	110%Io	150%Io	200%Io			
Output short circuit protection	Full voltage range input	Sustainable, self-healing					

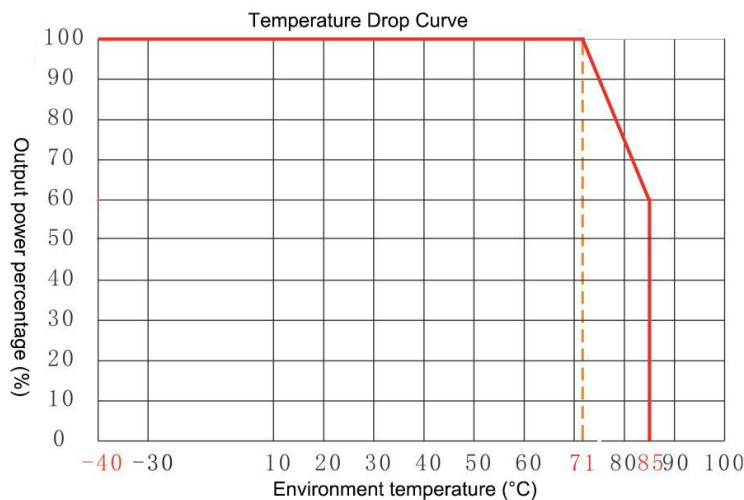
Note:

- ① For product models with output voltages of ±5VDC and ±9VDC, under 0%-5% load conditions, the maximum output voltage accuracy is ±5%
- ② When tested under the working conditions of 0%-5% load, the index of the load adjustment rate is ±5%
- ③ 0%-5% load ripple & noise is less than or equal to 5% Vo. Test method for ripple and noise The twisted pair test method can add capacitive load to the output to reduce light load ripple.

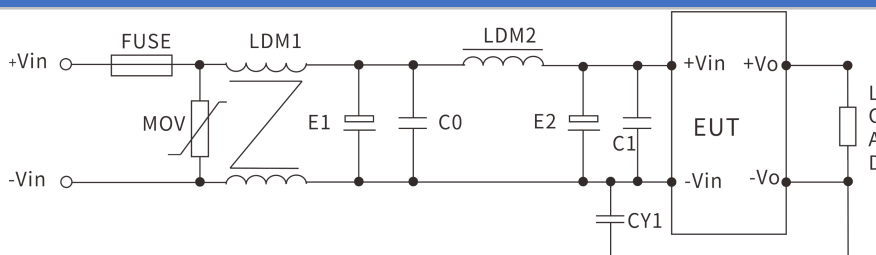
## General Features

Project	Operating conditions	Min.	Typ.	Max.	Unit
Insulation voltage	Input-output, test time is 1 minute, leakage current is less than 1mA	1500	--	--	VDC
Insulation resistance	Input-output, isolation voltage: 500VDC	1000	--	--	MΩ
Isolation capacitor	Input output, 100KHz/0.1V	--	1000	--	pF
Operating temperature	Reference temperature derating curve	-40	--	+85	°C
Storage temperature		-40	--	+125	
Maximum temperature of the shell during		--	--	+100	
Storage humidity	No condensation	5	--	95	%RH
Pin soldering temperature	The solder joint is 1.5mm away from the shell, 10 seconds	--	--	+300	°C
Switch level	PWM mode	--	250	--	KHz
Vibration		10-55Hz,10G,30Min.alongX,YandZ			
Shell material		Aluminum alloy shell plastic bottom cover			
Minimum time between failures	MIL-HDBK-217F@25°C	--	2X10 <sup>5</sup>	--	Hrs

## Temperature Characteristic Curve



## EMC Peripheral Recommended Circuit

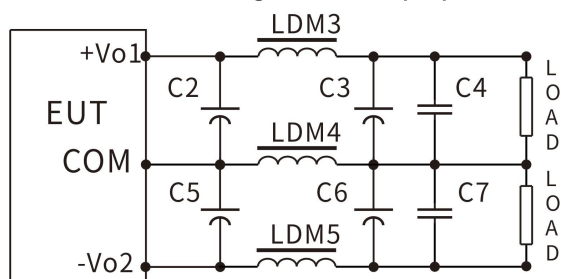


Parameter recommendation: The following are typical parameters, please adjust accordingly according to the actual use environment

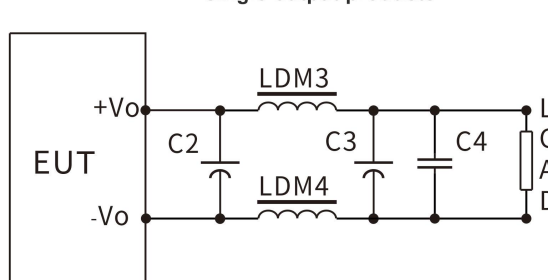
Device code	24V input product	48V input product	110V input product
FMSE fuse	Access the corresponding fuse according to customer needs		
MOV varistor	14D560K	14D101K	14D201K
LDM1 common mode inductance	10mH	15mH	30mH
E1、E2 electrolytic capacitor	100 $\mu$ F/50V	100 $\mu$ F/100V	63 $\mu$ F/200V
C0、C1 ceramic capacitors	1 $\mu$ F/50V	1 $\mu$ F/100V	0.47 $\mu$ F/250V
LDM2 DM inductor	10 $\mu$ H	15 $\mu$ H	68 $\mu$ H
CY1 safety Y2 capacitor	1nF/250Vac		

### Output Filter Peripheral Recommended Circuit

Positive and negative dual output products



Single output products



When the requirements for ripple & noise are general, it is recommended to use only C2 and C5 for the periphery; when the requirements for ripple & noise are strict, the circuit shown above is recommended.

Note: 1. C2, C3, C5, C6 adopts high-frequency low-resistance electrolytic capacitors, and the total capacity cannot exceed the maximum capacitive load marked in the manual, otherwise the module will not start normally.

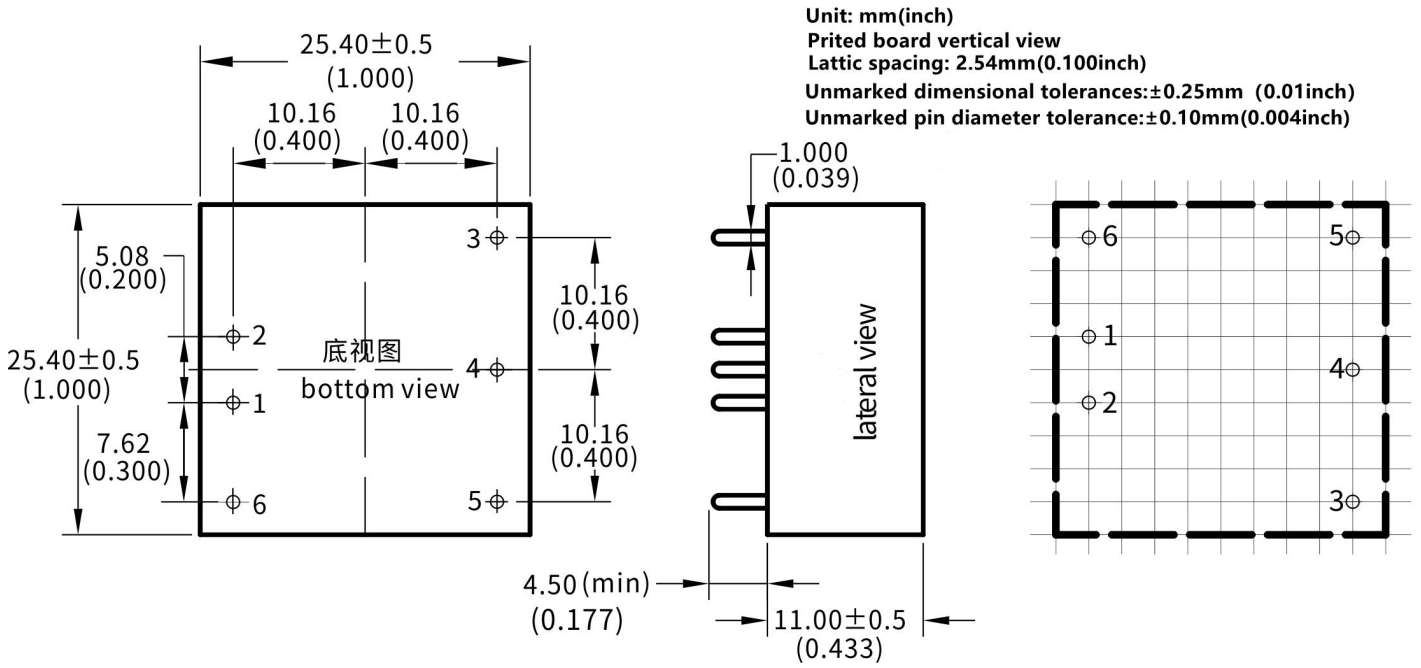
2. When capacitive load, a minimum load of 3% must be guaranteed, otherwise it will cause abnormal module output

3. LDM5 is only used in dual output products.

Parameter recommendation:

Device code	3.3V output	$\pm$ 5V or 5V output	$\pm$ 9V/12V or 9V/12V output	$\pm$ 15V or 15V output	$\pm$ 24V or 24V output
LDM3 inductance	0.47 $\mu$ H	1 $\mu$ H	2.2 $\mu$ H	2.2 $\mu$ H	4.7 $\mu$ H
LDM4 inductance	0.47 $\mu$ H	1 $\mu$ H	2.2 $\mu$ H	2.2 $\mu$ H	4.7 $\mu$ H
LDM5 inductance	-	1 $\mu$ H	2.2 $\mu$ H	2.2 $\mu$ H	4.7 $\mu$ H
C2、C3 electrolytic capacitor	220 $\mu$ F	220 $\mu$ F	100 $\mu$ F	100 $\mu$ F	68 $\mu$ F
C5、C6 electrolytic capacitor	220 $\mu$ F	220 $\mu$ F	100 $\mu$ F	100 $\mu$ F	68 $\mu$ F
C4、C7 ceramic capacitors	1 $\mu$ F/50V				

## Package Size and Pin Function Diagram



Single(S)	1	2	3	4	5	6
	-Vin	+Vin	+Vo	NP	GND	CTRL
	Input negative	Input positive	Output positive	Not connected	Output ground	Control port
Doul(D)	-Vin	+Vin	+Vo1	COM	-Vo2	CTRL
	Input negative	Input positive	output positive 1	Common port	Output negative 2	Control port

\*Note: If the definition of each pin of the power module is inconsistent with the selection manual, the label on the physical label shall prevail.

## Package Description

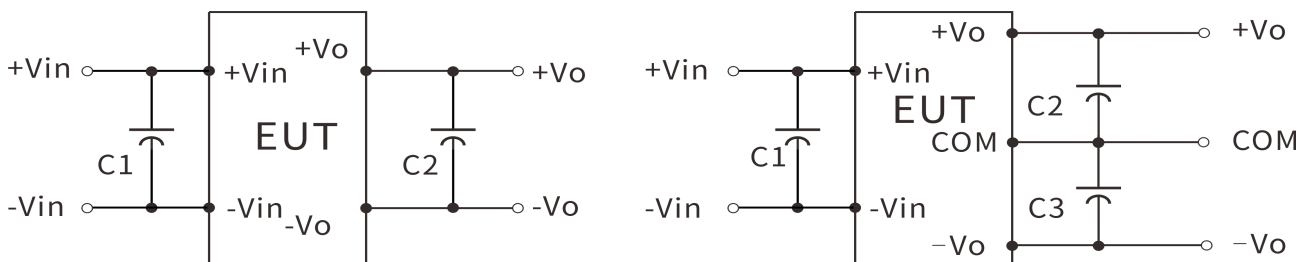
Package code	LxWxH	
A3	25.4X25.4X11.0mm	1.000X1.000X0.433inch

## Test Application Reference

Recommended test circuit

1、DC/DC test circuit:

Generally recommended capacitors: C1: 47-100μF; C2、C3: 10-22μF。



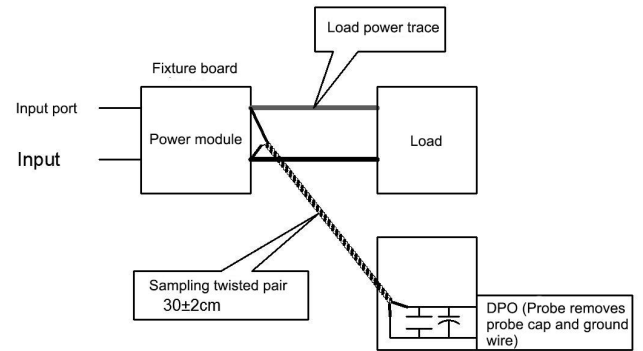
## 2、Ripple & noise test: (twisted pair method 20MHZ bandwidth)

Testing method:

1、Ripple noise is connected by 12# twisted pair, the bandwidth of the oscilloscope is set to 20MHz, the bandwidth of the probe is 100M, and the 0.1uF polypropylene capacitor and the 47uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probe end, and the oscilloscope sampling uses the Sample sampling mode.

### 2、Schematic diagram of output ripple noise test:

Connect the power input terminal to the input power supply, and connect the power output to the electronic load through the fixture board. The test uses a 30cm±2cm sampling line to directly sample from the power output port. The power line selects the wire with the insulation sheath of the corresponding wire diameter according to the magnitude of the output current.



## Contact

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