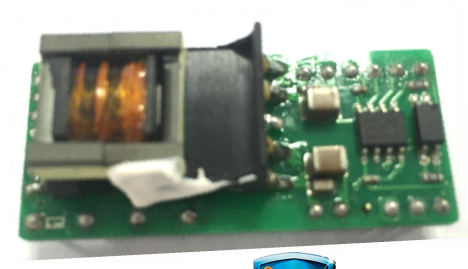
3W, Isolated 485 ACDC power supply



RoHS

3 years Warranty

FEATURES

- Ultra wide input voltage range:85 - 305VAC/100 - 430VDC
- Output short circuit, over-current protection
- High baud rate up to 500kbps
- The bus is able to support 128 nodes at maximum
- High efficiency, high power density
- Low power consumption, Green power
- Open frame, Compact size
- Flexible design of peripheral circuit reduces layout problems

Integrated 3W Isolated 485 ACDC power supply, the product can be directly connected to the mains AC220V power supply, the product output two isolated power supply, including one DC power output power up to 3W, another DC power output for bus communication, input AC Power supply and two output DC power supply between the high isolation voltage of 4000VAC, two output DC power supply isolation voltage between 1500VDC, the product can be used in industrial instrumentation, industrial automation and other industries.

Selection Guide

Part No.	Output Power	Rated Output Voltage(Vo)	Rated Output Current Io (mA)	Efficiency (230VAC, %/Typ.)	Baud rate (kbps)	Number of Nodes
TLA03-03K485	3W	3.3V(1.65W)/5V(0.125W)	500/25	55	500	128
TLA05-03K485		5V(2.5W)/5V(0.125W))	500/25	68		
TLA12-03K485		12V(2.5W)/5V(0.125W)	200/25	70		

Power Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	305	VAC
	DC input	100	--	430	VDC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	0.15	A
	230VAC	--	--	0.07	
Input Surge Voltage	115VAC	--	--	13	
	230VAC	--	--	23	
Recommended External Input Fuse		1.0A, slow fusing, necessary			
Hot Plug		Unavailable			

Power Output Specifications

Item	Operating Conditions			Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Balanced load	Primary output	3.3V	3.0	3.3	3.6	VDC
			5V	4.75	5	5.25	
			12V	11.4	12	12.6	
		Secondary output	5V	--	5	--	
Line Regulation	Balanced load	Primary output			--	±1.5	%
		Secondary output		--	--	±2	
Load Regulation	Double isolated output (Primary output)			--	--	±5	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	Primary output		--	--	200	mV
		Secondary output		--	--	300	
Temperature Coefficient				--	--	±0.15	%/℃
Short Circuit Protection				Continuous, self-recovery			
Over-current Protection				120 - 300%Io, self-recovery			
Min. Load	Double isolated output (Primary output)			50	--	--	mA
	Double isolated output (Secondary output)			10	--	--	
Max. Capacitive Load (μF)				100(Primary output)/22(Secondary output)			uF

Note: * Ripple and noise are measured by "parallel cable" method, please see AC-DC Converter Application Notes for specific operation.

Signal Input Specifications(VCC=3.3V)

Item		Symbol	Min.	Typ.	Max.	Unit
TXD Logic Level	High-level	V_{IH}	0.7VCC	--	VCC	VDC
	Low-level	V_{IL}	0	--	0.8	
RXD Logic Level	High-level	V_{OH}	VCC-0.4	3.1	--	
	Low-level	V_{OL}	0	0.2	0.4	
TXD Drive Current		I_T	2	--	--	mA
RXD Output Current		I_R	--	--	4	
CON Drive Current		I_{CON}	--	--	5	
Serial Interface		Compatible with + 3.3 V UART interface only				

Signal Input Specifications(VCC=5.0V)

Item		Symbol	Min.	Typ.	Max.	Unit
TXD Logic Level	High-level	V_{IH}	0.7VCC	--	VCC	VDC
	Low-level	V_{IL}	0	--	0.8	
RXD Logic Level	High-level	V_{OH}	VCC-0.4	4.8	--	
	Low-level	V_{OL}	0	0.2	0.4	
TXD Drive Current		I_T	2	--	--	mA
RXD Output Current		I_R	--	--	4	
CON Drive Current		I_{CON}	--	--	5	
Serial Interface		Compatible with + 5 V UART interface only				

Signal Output Specifications

Item	Symbol	Min.	Typ.	Max.	Unit
Difference Level	$V_{diff(d)}$, R_L=54Ω	1.5	2	Vo	VDC
Bus Pin Maximum Voltage		-7	--	12	VDC
Difference Load Resistance		54	--	--	Ω
Difference Input Impedance	-7V≤V_{CM}≤+12V	96	--	--	kΩ
Bus Interface Protection		ESD protection			

Signal Transmission Specifications

Item		Symbol	Min.	Typ.	Max.	Unit
Data Delay	TXD Transmit Delay	t_T	--	55	110	ns
	RXD Receive Delay	t_R	--	65	110	
	Hand off Delay	$t_{R-}t_T$	--	--	18	us

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	Input-output	With the test time of 1 minute and the leak current lower than 5mA	AC-DC	4000	--	--	VAC
			DC-DC	1500	--	--	VDC
Operating Temperature				-40	--	+85	℃
Storage Temperature				-40	--	+105	
Storage Humidity				--	--	85	%RH
Power Derating		Operating temperature derating	-40℃ to -20℃	3.0	--	--	%/℃
			70℃ to 85℃	1.67	--	--	
		Input Voltage derating	85VAC-100VAC	1.2	--	--	%/VAC
			277AVC-305VAC	1.1	--	--	
Welding Temperature		Wave-soldering		260 ± 5℃; time：5 - 10s			
		Manual-welding		360 ± 10℃; time：3 - 5s			
MTBF		MIL-HDBK-217F@25℃		>300,000 h			

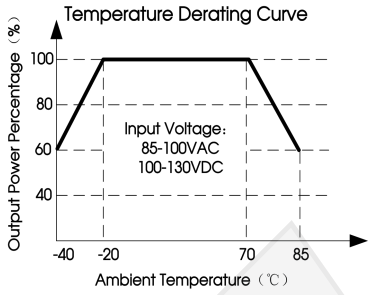
Physical Specifications

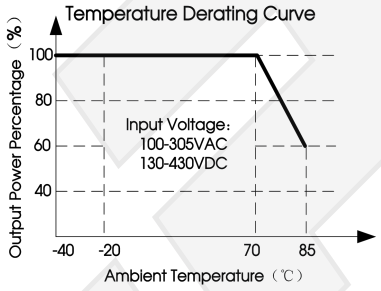
Dimensions	44.16*19.62*16.34 mm
Weight	8g (Typ.)
Cooling Method	Free air convection

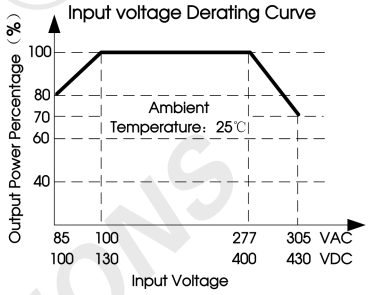
EMC Specifications

EMI	CE	CISPR32/EN55032	CLASS A (see Fig.1)	
		CISPR32/EN55032	CLASS B (see Fig.2)	
	RE	CISPR32/EN55032	CLASS A (see Fig.1)	
		CISPR32/EN55032	CLASS B (see Fig.2)	
EMS	ESD	IEC/EN 61000-4-2	Contact ±4KV (Power output port and bus port)	Perf. Criteria B
	EFT	IEC/EN61000-4-4	±2KV (see Fig.1)	perf. Criteria B
		IEC/EN61000-4-4	±4KV (L、N) (see Fig.2)	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±1KV (L、N) (see Fig.1)	perf. Criteria B
		IEC/EN61000-4-5	line to ground ±2KV (A、B)	perf. Criteria B

Product Characteristic Curve







Note: ①When input 85-100VAC/277-305VAC/100-130VDC/400-430VDC, it need to be voltage derated on basis of temperature derating;
②This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.

Design Reference

1. Typical application circuit

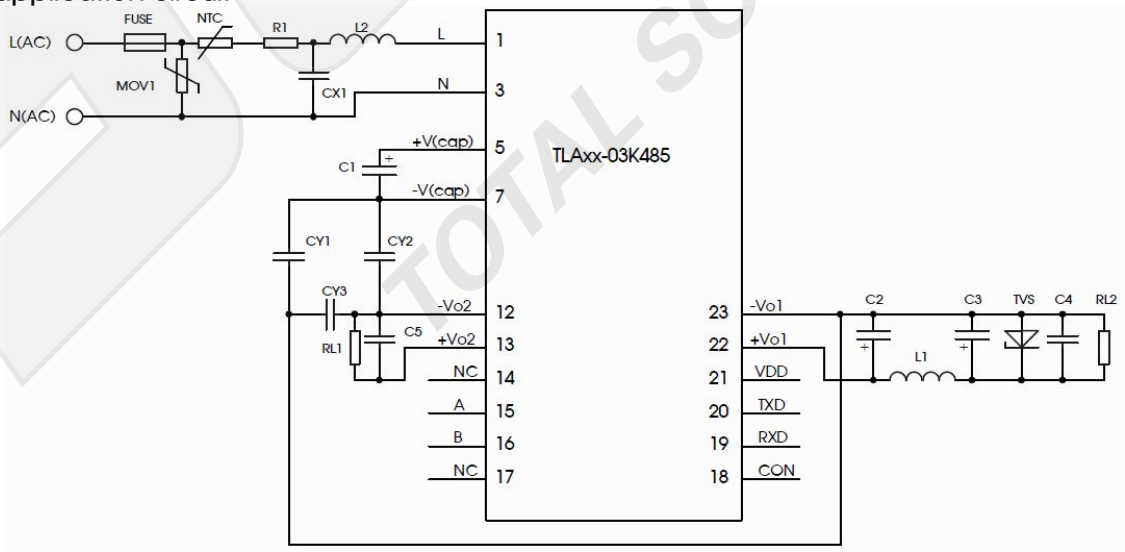


Fig.1

FUSE	C1	L2	NTC	C2	L1	C3	C4	CY1/ CY2	TVS	CY3	CX1	C5
necessary				necessary				necessary		necessary		necessary
1A/300V	22uF / 450V -40 to 85℃	4.7mH	13D-5	270uF/16V (Solid Capacitor)	4.7uH	120uF/ 25V	0.1uF	2200pF/ 400VAC	SMBJ7.0A	560pF/ 400VAC	0.047uF /480V	100uF/16V

2. EMC solution-recommended circuit

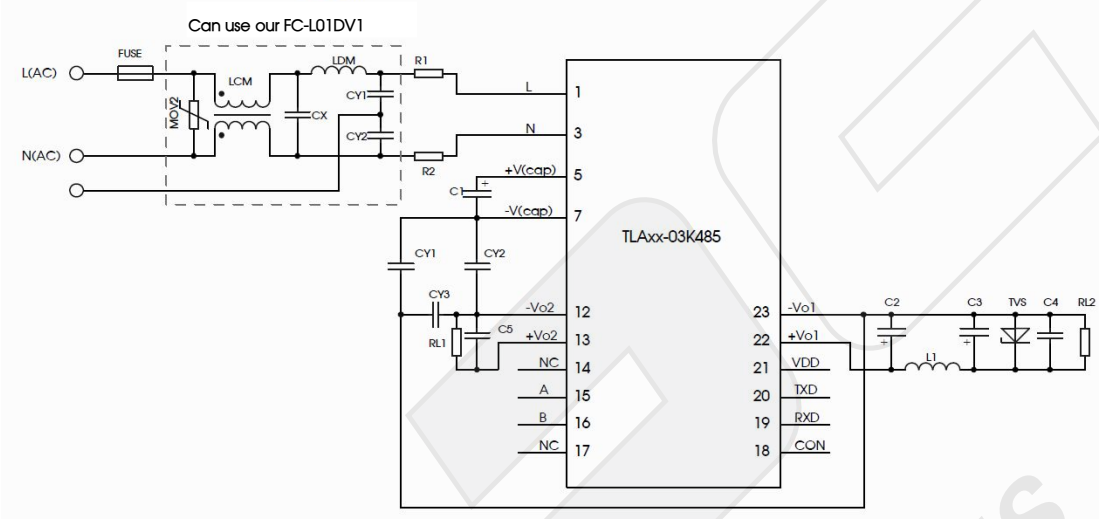
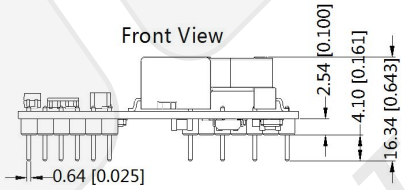


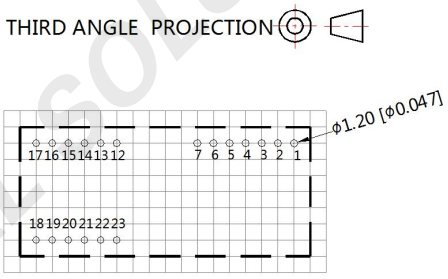
Fig.2

R1, R2: for the current limiting resistor, Recommended value12Ω, 2W; MOV1 recommended 14D561.
To ensure that the use of Vo2 output minimum load current 10mA case, and then into the 2kΩ load resistance, or to ensure that the minimum output current Vo2 output 12.5mA.

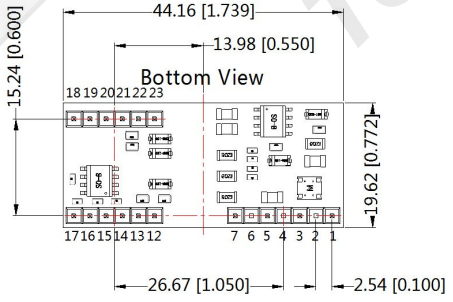
3. For more information about Mornsun EMC Filter products, please visit www.mornsun-power.com to download the Selection Guide of EMC Filter

Dimensions and Recommended Layout





Note:Grid 2.54*2.54mm



Pin-In&Out			
Pin	Function	Pin	Function
1	AC(L)	13	+Vo2
2	-	14	NC
3	AC(N)	15	A
4	-	16	B
5	+V(cap)	17	NC
6	-	18	CON
7	-V(cap)	19	RXD
8	-	20	TXD
9	-	21	VDD
10	-	22	+Vo1
11	-	23	-Vo1
12	-Vo2		

Note:
Unit: mm[inch]
Pin section tolerances:±0.1[0.004]
General tolerances: ±1[±0.039]

Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com.Packing bag number:58220026;
2. Input and output must be external electrolytic capacitor, please refer to the typical application circuit;
3. This model is open plate, in order to meet the safety requirements of the module primary and secondary external components between the need to maintain a safe distance of at least 6.4mm;
4. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage (115V and 230V)and rated output load;
5. In order to improve the efficiency of conversion at light load, the module may have audio noise, but does not affect product performance and reliability;
6. After the module is assembled, it needs to be fixed
7. All index testing methods in this datasheet are based on our Company's corporate standards;
8. We can provide product customization service;
9. Products are related to laws and regulations: see "Features" and "EMC".
10. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units

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